Workforce Management Administrator's Guide

Workforce Management 8.5.2

10/9/2024

Table of Contents

Workforce Management 8.5 Administrator's Guide

Welcome to the Workforce Management 8.5 Administrator’s Guide. The topics in this guide introduce you to the concepts, terminology, and procedures relevant to Genesys Workforce Management.

Find the information you need by clicking the topic links below or by using the Table of Contents in the left-side navigation bar.

Orientation

Find information that provides an overview of Workforce Management.

Overview

Architecture

Integration

High Availability

Deployment

Find procedures that will help you to deploy WFM manually or by using wizards.

Planning

Installing Workforce Management

Starting and Stopping WFM

Using ETL Database

Daily Operations

Find information about setting up and performing WFM Daily Operations in your environment.

Scheduling

Forecasting

Monitoring

Calendar Management

Localization

Find procedures and other information about how to localize your WFM deployment.

Genesy Localization (Language Packs)

Self-Localization

Reports and Metrics

Find information about WFM reports,

WFM Primers

Find information about how to use WFM

metrics, and use ETL Database to enable other customized reporting.

Schedule Summary View and Report

Contact Center Performance Report

Agent Adherence Report

Primers to optimize the efficiency of your contact center.

Multi-Forecasting

Time Off

Overlays

About Workforce Management

Genesys Workforce Management (WFM) provides a sophisticated package of contact-center management tools, enabling contact center managers to better manage their workforce. It is designed for the true multi-media, multi-site environment, providing optimal schedules for multi-skilled agents who may handle customer interactions of different media types. Agent preferences, skills, proficiency, customer segmentation, historical trends, such as email response times, and outbound call lengths are all considered within the forecast, schedule, and adherence components.

WFM is designed to integrate with the Framework components of the Genesys Customer Interaction Management Platform and Genesys Routing. Key functionality is presented through a web interface, which increases its accessibility and flexibility.

Agents and their skill sets are entered and maintained in Genesys Administrator, so there is no need to re-enter this information in a stand-alone workforce management application. This integration also allows contact centers to leverage real-time statistics, contact-center performance, and agent adherence data across all communication channels.

Workforce Management consists of the following components:

- WFM Web (with separate interfaces for Supervisors and Agents)
- WFM Server
- WFM Daemon
- WFM Builder
- WFM Data Aggregator
- WFM Database Utility (includes the Backup-Restore Utility)
- WFM API

WFM also requires a database to store all the relevant configuration, forecasting, scheduling, agent adherence, performance, and historical data.

> **Important**
>
> WFM Configuration Utility is discontinued and no longer supported. Functionality that was previously in this component is now in WFM Web.

Find a high-level description of Workforce Management in the Overview and subtopics.

Document change history

This topic contains a summary of the topics that are new or have changed significantly in the specified version of this Administrator's Guide.

Document version 8.5.215

- A new section Integration with Genesys Cloud was added to the Integration topic to describe how Genesys Engage customers can access features in Genesys Cloud through integration.
- A new topic Schedule Validation Errors and Warnings was added to provide a list of Warning and Errors messages and their descriptions.

Document version 8.5.214

- High Availability was updated to provide information about how WFM components support high availability.
- A new topic Redesigned Web Supervisor and Agent interfaces was added to describe the redesigned Supervisor and Agent interfaces and how to enable access to them.
- Securing connections on WFM servers was updated to include information about support for TLS 1.2 and FIPS 140-2.
- Managing the WFM Database was updated to include information about new purging procedures.
- Time-off Primer was updated to describe minor changes to the time-off process flow.

Document version 8.5.211

- The topic Securing connections on WFM servers has been updated to describe the latest procedures and guidelines for securing connections on WFM servers.

Document version 8.5.209

- A paragraph in Managing Overtime Requirements describes the Overtime Bidding feature, introduced in this release.

Document version 8.5.208

- The Using Self Localization topic was updated to document the inclusion of two new files in the `localization.bat` file.
- Information about the WFM Agent Mobile Client was added to two topics: Architecture and Component Descriptions.
- Information about WFM configuration options (descriptions, creating configuration options and sections, removed or changed options) was removed from this guide and added to the Workforce Management Options Reference. The following topics were removed from this guide:
  - "WFM Configuration Options"
  - "Creating New Configuration Sections and Options"
  - "WFM Server Options"
  - "WFM Web Options"
  - "WFM Builder Options"
  - "WFM Data Aggregator Options"
  - "WFM Daemon Options"
  - "WFM Options Changed or Removed"
- The section "Frequently Asked Questions About Purging Procedures" (previously a subtopic of Managing the WFM Database) was removed from this guide and added to the *Workforce Management ETL Reference*.

Document version 8.5.207

- Two new options were introduced in the WFM Server Application: **[ScheduleService]** TradePreprocessingEnabled and **[ForecastService]** ServiceLevelMethod.
- WFM Server Application's **[CalendarService]** WaitlistTimeout configuration option has a new default value, and it's **[CalendarService]** BiddingTimeout option is obsolete and was removed.
- A change was made to WFM Server's **[Calendar]** PreventTimeOffNoAvailability configuration option to accurately describe the behavior when the option is on.
- An important note was added to Managing the WFM Database about access the WFM Database directly to create custom reports.

Document version 8.5.206

- A new topic was added, describing how to assign user access to WFM features and functionality by using Genesys Administrator. See Managing WFM Roles in Genesys Administrator.
- The topic "WFM in Multi-Site Environments" was removed. Some out of date content was deleted and some content was moved to Load Balancing (see next bullet).

- The sub topics Adding Connections to WFM Server and WFM Builder Configuration were moved to Load Balancing (see previous bullet).
- A new section was added to WFM Policy Objects to describe the WFM Payback Exceptions feature and how to enable it. See Payback Exceptions.
- Four new configuration options were added to the WFM Web Application:
  - **[Functionality]** InsertPaybackException
  - **[Functionality]** NewAgent
  - **[Functionality]** useRolesSecurity
  - **[AgentSchedule]** LimitScheduleDetails

Document version 8.5.205

There were no updates or changes made to this document in this release.

Document version 8.5.204

- Minor corrections were made to the following topics and procedures:
  - Major Software Releases and Iterations
  - Using Stored Procedures for Database Maintenance
  - Performing Database Cleanup (Oracle)
  - Performing Database Cleanup (MSSQL)

Document version 8.5.203

- The topic Time-Off Bidding was updated to describe the feature enhancements that were implemented in this release.
- A new topic was added to Major Software Releases and Iterations to describes major releases and iterations of a major release.

Document version 8.5.202

- Two new configuration option descriptions were added to the WFM Web Application:
  - **[Functionality]** PreventFraming
  - **[Options]** ExternalHelp

Document version 8.5.201

- A new subtopic "Exception Memos" was added to Exception Types to describe the new feature about adding and editing Exception memos in Schedules, Calendar items, and Meetings.
- Many updates were made to Managing the WFM Database to describe the WFM Backup/Restore Utility (BRU) and remove references to DB2, which is no longer supported.
- Two new procedures "Performing Database Cleanup (Oracle)" and "Performing Database Cleanup (MSSQL)" were added to Managing the WFM Database
- A new subtopic When do Time-Off Slots Become Available? was added to Enabling and Configuring Wait-lists.
- The topic, "WFM Client Options" was removed.
- Some WFM options were removed, moved, or renamed. For details, see the Workforce Management Options Reference.

Overview

Genesys Workforce Management (WFM) is a strategic asset in advancing your goals of providing the highest-quality customer service for the best value. In today's contact center, interactions take a multitude of forms, and agents may have a broad variety of skills. WFM creates forecasts and schedules for multi-skilled agents who are handling interactions in a variety of media, as well as for a more traditional single-skilled agent pool handling mostly voice interactions.

WFM enables Supervisors to create proposed future schedules, Agents to bid on those schedules, and Supervisors to integrate the bids into real schedules.

WFM enables agents to request time off and specific working hours, and also to trade schedules with other agents, without sacrificing optimal staffing levels. Flexible agent scheduling can help improve agent retention, resulting in fewer new hires who require training before they can become effective promoters of your business.

WFM provides real-time contact-center performance and agent-adherence monitoring. You can immediately adjust the number of agents working on a specific activity if you see that the service-level statistics for that activity have fallen out of the acceptable range. Or, if the service levels are more than satisfactory, you can encourage agents to spend additional time up-selling new products, move them to another activity, or even give them time off.

The next few topics provide a high-level overview of the WFM features and functions. In New in 8.5 Releases |ReadMe, you will find recent additions and changes to WFM functionality that may be of particular interest to those migrating from an earlier release of Genesys WFM.

The information in this Administrator's Guide:

- Is valid only for the 8.5 release(s) of this product.
- Introduces the product, lists important features, and presents the WFM architecture.
- Offers deployment-planning recommendations and considerations.
- Explains how to configure and install the Workforce Management (WFM) components.
- Explains how to start and stop all components.
- Explains how to use the WFM Backup-Restore Utility (BRU).
- Provides troubleshooting suggestions.
- Includes a list of WFM-specific terms and their definitions.

The Genesys Glossary, which provides a comprehensive list of the Genesys and computer-telephony integration (CTI) terminology and acronyms used in this document.

Other topics of interest

- High Availability

- Integration
- Daily Operations

Important WFM Features

Forecasting

Scheduling

Calendar Management

Policy Objects

Multi-Channel Adherence

User Security

Notifications

Performance

Adherence

Reports

Architecture

This topic explains the interconnections among the various components of Genesys Workforce Management (WFM) and how WFM interacts with the Genesys Framework. It includes information about WFM components, data flow, and the Genesys Framework servers to which WFM connects.

WFM functionality is provided via two graphical user interface (GUI) applications and a mobile app, a command-line application, and five servers. See Interrelationship of Components for a graphic overview of all the components and their interrelationship.

Applications

The user-facing applications are:

- WFM Web for Supervisors (browser-based)
- WFM Web for Agents (browser-based)
- WFM Agent Mobile Client
- WFM Database Utility/Backup-Restore Utility

Servers

The applications mentioned above are supported by these servers:

- WFM Server
- WFM Data Aggregator
- WFM Builder
- WFM Web
- WFM Daemon (server/background process)

In addition, you need to use a web server as a container for the WFM Web server. Genesys WFM supports Tomcat for this purpose, but does not include Tomcat in its installation package. You must obtain and install it separately.

When deploying Tomcat (before deploying WFM Web), follow best practices for Tomcat security to ensure proper hardening of Tomcat deployment. Redeploying or upgrading WFM does not affect hardening.

For supported versions of Tomcat, see "Prerequisites" in the *Supported Operating Environment Reference Manual*.

Interrelationship of Components

The figure below shows the Workforce Management components and their interrelationships. WFM draws on Configuration Layer data and statistical data provided by Stat Server.

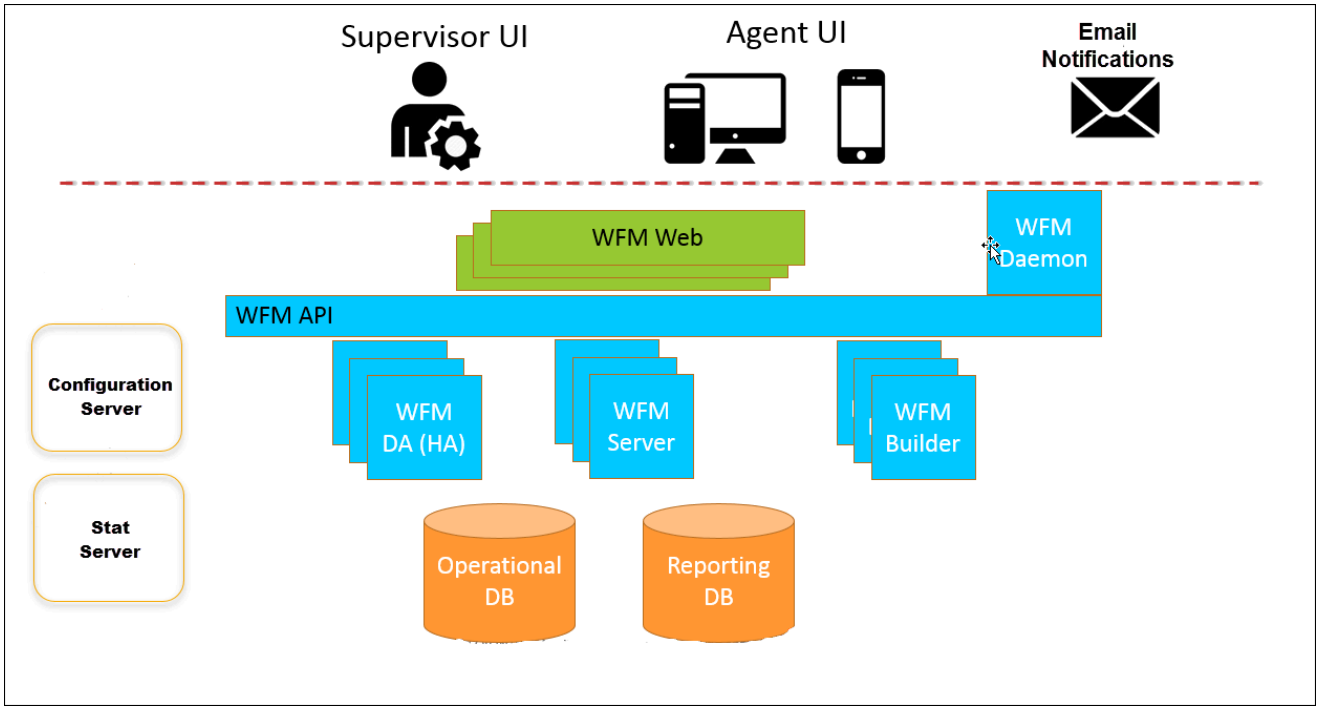

Figure: WFM Components and Solution Architecture

Related topics

- Component Descriptions
- Component Connections

Component Descriptions

This topic contains descriptions of the Workforce Management (WFM) components.

Web

WFM Web is a server application that is hosted on a servlet container and provides content for two Web browser-based user interfaces, one for Supervisors, one for Agents, and one for the agent mobile client. The appropriate interface opens after login, depending on the login information you enter.

The system administrator or supervisor provides agents with the URL to access WFM Web for Agents on their desktop (for example, `http://<wfm_web_server>:8080/wfm85x`) or smartphone (`http://<wfm_web_server>:8080/wfm85x/m`). The agent simply enters their user name and password in the **Login** window.

- Web for Supervisors—Includes calendar management, forecasting, scheduling, real-time agent adherence, contact-center performance statistics, configuration of email notifications, and reporting. These functions are all entirely accessible through any computer with a supported browser and network access.
- Web for Agents—Enables contact center managers to easily distribute schedule information to their employees and provides agents with proactive scheduling capabilities, such as entering schedule preferences, planning time off, schedule bidding, and trading schedules.
- Agent Mobile Client—Enables agents to use their mobile devices to access their schedules, enter schedule preferences, plan time off, trade schedules, and change their personal information settings.

> **Tip**
>
> There is an increased demand on the web server when WFM Web is deployed, because it now provides almost all client user-interface functionality. In addition, WFM Web is also the web server component that generates reports. To find sizing recommendations for WFM Web server, see the *Genesys Hardware Sizing Guide.*

Redesigned Web Supervisor and Agent interfaces

In 8.5.2, the WFM Web Supervisor and Agent interfaces were redesigned. The previous applications are still available, but are renamed WFM Web for Supervisors (Classic) and WFM Web for Agents (Classic). The Help was also renamed. See *Workforce Management Web for Supervisors (Classic) Help* and *Workforce Management Web for Agents (Classic) Help*.

> **Important**
> As of August 2019, the Web for Agents (Classic) UI is deprecated and will be unavailable in future releases. Genesys recommends that you change the configuration to display the current Agent UI instead of the Agent (Classic) UI. The latest Agent UI has feature parity with Web for Agents (Classic) UI.

Enabling Supervisors to access the interface

The Web Supervisor interface (introduced in WFM Web 8.5.214.14) displays only the updated Forecast module, with all of the same functionality of the classic version, but with new controls, icons, and tools bars with which supervisors can perform Forecasting tasks. You can control supervisors' access to this interface by setting the NewSupervisor configuration option to the appropriate value.

See also, the *Workforce Management Supervisor Help*.

Enabling Agents to access the interface

The Web Agent interface (introduced in WFM Web 8.5.205.07) displays all of the same functionality of the classic version, but with new controls, icons, and tools bars with which agents can perform their day-to-day tasks. You can control agents' access to either interface by setting the ClassicAgent and NewAgent configuration options to the appropriate values.

See also, the *Workforce Management Agent Help*.

Backup-Restore Utility

Use this utility (found in the Database Utility component IP) to format a new database schema to update the WFM database, which is a common task that must be done as part of an upgrade to a newer WFM release.

> **Tip**
> If you are migrating from an earlier release to WFM 8.5 and want to find important advisories about the database migration process, see the procedures provided in the "Workforce Management Migration Procedures" chapter of the *Genesys Migration Guide.*

Servers

The GUI applications are supported by the following servers:

- WFM Server—Automatically synchronizes configuration data, and acts as the main data and application services source and locator for WFM clients.
- WFM Data Aggregator—Collects historical data and provides real-time agent-adherence information to users of WFM Web for Supervisors.
- WFM Builder—Builds WFM schedules.
- WFM Web Server—Serves content for the Web browser-based GUI applications and generates reports upon request from users of WFM Web for Supervisors.
- WFM Daemon—can be configured to send (through a customer-supplied SMTP server) email notifications to agents and supervisors.

Database

WFM also requires a database to store all the relevant configuration, forecasting, scheduling, agent adherence, performance, and historical data.

Connections to Genesys Framework

WFM connects to the following Genesys Management Framework servers:

- Stat Server—Provides statistical data to WFM Data Aggregator.
- Configuration Server—Provides Genesys' centralized configuration information to the WFM, and authenticates all WFM users and components.

WFM works in single-site environments or across multi-site enterprises.

Component connections

The WFM component connections table shows the connections that are configured on the **Connections** tab of each component's Application object. These connections offer an alternative, but complementary, way of understanding the Workforce Management architecture. Here are some things to consider:

- As you can see, WFM Server acts as a hub, connecting to, and being connected to, every component.
- The WFM database, represented in the WFM component connections table by its Data Access Point (DAP) forms a different sort of central hub with many of the components connecting directly to it. Others connect indirectly, through WFM Server.
- Through its connection to Stat Server, WFM Data Aggregator provides one point of interaction between Workforce Management and the Genesys Framework. All components are connected to the Configuration Layer in the sense that they exist as objects in the Configuration Database.
- If you are using Management Layer, the Message Server connections and the WFM Solution object specification of the instance of Solution Control Server (SCS) used to control the solution also connect Workforce Management with the Genesys Framework.

WFM component connections

Component name	Connections to:							
	Server	**Builder**	**Daemon**	**Data Aggr.**	**Web**	**DAP**	**Stat Server**	**Msg Server**
Server	(X+)	X+		(X+)		X		(X)
Builder	X							(X)
Daemon	X				(X)			(X)
Data Aggregator	X					X	X	(X)
Web	X				(X)			(X)
Database Utility (Backup-Restore Utility)						X		

Footnotes:

- Configure the Message Server connections if you are using Management Layer to run Workforce Management.
- WFM Server may connect to other instances of WFM Server if you are using an environment with a number of WFM Servers and want to create schedules for all the sites they serve. For information about how to create this configuration, see WFM Server Configuration and Multi Forecasting Primer.
- You can configure and connect to multiple instance of WFM Builder. See WFM Builder Configuration.

Component name	Connections to:
	• Although the WFM Daemon connection to WFM Web is marked as optional (X), it is required if you want to use WFM's scheduled reporting. For example, if this connection is not set, WFM Daemon cannot generate the Report Scheduler. • The WFM Daemon background process connects to Genesys Configuration Server for authentication, configuration and connection to other Genesys servers' information. It retrieves all data required for its work from WFM Server.

Table legend:

- **X**—single connection
- **X+**—one or more connections
- **(X)**—optional connection

Secure Connections

While the Transport Layer Security (TLS) configuration for WFM Server, Builder, and Data Aggregator adhere to the common guidelines in the *Genesys Security Deployment Guide*, the TLS configuration for WFM Web and Daemon does not. For information and procedures related to securing connections, see Securing connections on WFM servers.

Integration

In this topic, find out how WFM integrates with other Genesys solutions and about WFM Integration API.

Integration With Other Genesys Solutions

Workforce Management is tightly integrated with the Genesys Customer Interaction Management (CIM) environment.

Configuration Layer Integration

WFM can automatically retrieve agent and skills information from the Genesys unified configuration environment, reducing the effort needed to maintain the WFM system and removing the chance of human errors caused by redundant data entry. You can configure WFM to place agents within a site automatically, based on their switch logins, if the switch is used to represent a site in WFM. Also, you can easily configure WFM to retrieve statistics from Routing objects (queues, routing points, virtual queues, and so on) within the Genesys platform, reducing the effort needed to support changes in routing strategies

Management Layer Integration

Management Layer delivers powerful solution-wide control of Genesys solutions from a single access point. Through Solution Control Interface (SCI), Management Layer provides control and monitoring functions that allow a user to start or shut down single applications, or an entire solution, in a single operation and to monitor current runtime status of applications and entire solutions.

Workforce Management is integrated with the Genesys Management Layer, enabling easy solution-wide configuration, overview of Workforce Management status, and automatic switching to backup servers if necessary.

If you use Management Layer to control and monitor WFM, each computer on which a Workforce Management server is installed also runs a Local Control Agent that constantly checks that server's status. If a server goes down, SCI signals the user, enabling a prompt response.

Problems are centrally logged for convenient access. For more information on the Management Layer, see the *Management Layer User's Guide*. Management Layer installation and configuration are described in Genesys Management Framework documentation.

Enterprise-Routing Integration

You can configure Genesys Universal Routing (URS) to route calls based on WFM schedules. Doing so can help ensure a more-balanced multi-skill workload for agents and improved schedule adherence.

Routing strategies can route based on the anticipated availability of an agent. For example, interactions are not routed to agents immediately before they are scheduled for a break. This

improves agent adherence and leads to better customer service and worker efficiency. Schedules are created in WFM Web for Supervisors and stored in the WFM database. You configure WFM routing strategies in Interaction Routing Designer, a user interface provided with ER to create routing strategies.

WFM Integration API

The WFM Integration API enables you to create a client application that, in turn, enables you to retrieve WFM information and make certain changes to WFM objects.

For example:

- The WFM Schedule includes planned meetings, trainings, time off, and so on for all agents. You can use the WFM Integration API to facilitate integration of this WFM data with third-party human resources applications and PIMs such as Outlook.
- You can take information from third-party applications and incorporate it in WFM without having to manually re-enter each update into WFM.
- You can retrieve WFM data and use it to generate custom reports using your preferred reporting tool.
- You can read agent schedule information, such as the total number of paid hours an agent worked during a particular day, and automatically feed this information into a payroll system.

> **Important**
> Not all WFM functionality is available through the WFM Integration API.

For detailed information about the WFM Integration API, see the *Integration API Developer's Guide* (JavaDoc).

High Availability

Workforce Management (WFM) components support high availability (HA) implementations (or do not), as described in this topic.

WFM component	HA type	Description
WFM Server	warm standby	Configure WFM Server as a primary/backup pair and if the primary server goes down, the client servers (WFM Web, WFM Data Aggregator, and WFM Builder) can connect to the backup WFM Server, acting as primary. See Connect to Backup WFM Server.
WFM Data Aggregator	hot standby	Install a second Data Aggregator server as a backup and configure it to take over automatically if the primary server goes down. The backup reads the same information as the primary Data Aggregator, so if it is necessary to switch to the backup, there is no delay or loss of data. At the transition, the backup Data Aggregator simply starts writing to the database, beginning where the primary Data Aggregator left off.
WFM Server (ETL)	not supported	Only one instance of Server (ETL) is allowed.
WFM Builder	not applicable	You can connect WFM servers to any number of WFM Builder instances. In this configuration, which acts as an HA and load balancing implementation, the request and response between WFM Server and Builder works as follows: • WFM Server sends an IS ALIVE request to all of the WFM Builder instances in it's connections. • All WFM Builder instances that are ALIVE and/or FREE (not running schedules) send a response. • WFM Server then sends build requests only to those WFM Builder instances.

WFM component	HA type	Description
WFM Daemon	not supported	Only one instance of WFM Daemon is allowed. Having more than one instance of WFM Daemon in an environment causes issues, such as duplicate notifications and missing or duplicate scheduled reports.
WFM Web	not applicable	WFM Web is not a server, but is an application that runs a servlet. However, you can implement HA by introducing a front-end web server/load balancing into your environment.

Planning Your Deployment

Before configuring Workforce Management (WFM), plan a detailed, suitable combination of Genesys Administrator objects and workforce management activities. This information is the basis for all subsequent workforce planning and should not be changed. Any changes to the workforce management activity configuration might compromise the usefulness of historical data. Agents, users, time zones, and skills are defined as objects in Genesys Administrator. These objects are brought into WFM through automatic synchronization with the Configuration Database.

Carefully consider the relationships among these objects when using them for enterprise planning. The relationship between skills configured in Genesys Administrator and activities created in Web for Supervisors, is especially important.

Using WFM Web

WFM Web for Supervisors enables you to configure WFM objects and working rules in the **Configuration** and **Policies** modules of the application. Configuration objects include user security settings, organizations, activities, schedule-state groups, skills, and time zones. Organization rules, contracts, shifts, task sequences, time-off types, time-off accrual rules, exception types, meetings, marked-time types, and rotating patterns are set up in the Policies module.

WFM Web includes modules that enable you to import and export historical data, and provides calendar management, forecasting, scheduling, performance monitoring, real-time agent-adherence monitoring, and reporting capabilities. The success of your forecasts and schedules depends considerably on the accuracy and completeness of your configuration of WFM objects and working rules.

Other topics to help with your planning

- About WFM Configuration Objects
- About WFM Policy Objects
- Forecasting Considerations
- Scheduling Considerations
- About Performance Monitoring
- About Adherence Monitoring

WFM Configuration Objects

WFM Web's **Configuration** module enables you to configure a number of object types. The following sections briefly describe each object type and offer some considerations to assist you in planning your configuration.

> **Important**
>
> The following sections provide only brief introductions to these objects and focus on aspects relevant to deployment planning. For a full description, see *Workforce Management Web for Supervisors Help*.

Agents

When you are setting up or making changes within your contact center you must plan for and manage the contact information, agent IDs, and profiles for all agents in the various sites within the enterprise. WFM Web provides many configuration panes and categories that you can use to manage agents effectively. See also **Configuration > Agents** in the *Workforce Management Web for Supervisors Help*.

Organization

Use the **Organization** module to configure sites, business units, and time zones. To configure this module, determine the sites that belong to business units. Decide on the site properties, the maximum seats, the Data Aggregator and WFM Server the site uses, the switch you will use to collect statistics, and so on. Collect information about agent team and site associations, as well as agent settings, such as rotating pattern (if any), contracts, and rules for the accrual of accrued time off.

Keep in mind that there are many WFM configuration objects that are associated with a site, including **Rotating Patterns**, **Contracts**, **Activities**, **Time-Off Types**, **Time-Off Rules**, **Exception Types**, and more. When you move an agent from one site to another, you must reassign that agent to a new Contract, Time-Off Rules, and new Rotating Patterns—if these were previously assigned. You must take this action to correctly schedule the moved agent under the new site.

Business Units

At times, you might need to create business units. To create and configure new ones, see the **Configuration > Organization > Business Units > Creating Business Units** in the see *Workforce Management Web for Supervisors Help*.

Sites

Sites can be equivalent to switches, which are defined in Genesys Administrator and imported into WFM. You can also create sites in WFM that are unrelated to a switch. This is appropriate when switches do not correlate with your company's organization. For example, a single location could be divided into multiple entities to reflect divisions along business unit lines.

To configure sites in your enterprise, see the WFM Web for Supervisors **Configuration > Organization** module.

Teams

Within new or existing sites, you can create and add agents to teams. Creating teams enables you to group agents meet scheduling and business requirements. You can organize teams by agent skill sets, schedule, sales targets, achievements, geographies, or any other factor. For example, email agents, Christmas sales drive, or platinum customer care. An agent can belong to only one team at a time. Use the **Sites > Properties** pane in Web for Supervisors to create teams.

Time Zones

Time zones are set up in Genesys Administrator and imported into WFM during synchronization. You can assign time zones to business units only. You can also configure a default time zone, for efficiency in configuring new objects, and a user time zone, which is used as the alternative time zone in WFM Web Performance views. All newly created sites and business units use the default time zone, unless specified otherwise.

To learn how to configure and work with Time Zones, see the **Configuration > Time Zones** in the *Workforce Management Web for Supervisors Help*.

Schedule-State Groups

A *schedule-state group* is a collection of schedule states that is linked to a site. These include breaks, meals, exceptions, activities, time off, and so on. You can group these, and then associate the group with one or more Genesys states.

Additionally, you can configure adherence thresholds for this schedule state group, which define when an agent should be considered to be non-adherent to the schedule states contained in the group.

To configure schedule-state groups, determine what schedule states you are using, what are the most logical groupings, and which Genesys state(s) best corresponds to each group.

To learn how to configure Schedule State Groups and Adherence Rules for them, see the **Configuration > Schedule State Groups** in the *Workforce Management Web for Supervisors Help*.

Activities

Activities are defined as different categories of work that comprise the total workload for a contact center. Workload and staffing forecasts are created for each activity. Each site configures its own activities, to take into account of local conditions. All agent work that is forecast and scheduled must be assigned to an activity.

Activities can take various forms. They might describe types of work, such as inbound calls or email; groups of customers served, such as preferred customer care; or work times, such as overnight. You can also use activities for non-CTI work. Each activity is then associated with one or more preconfigured skills. Because activities are a fundamental unit for forecasts and schedules, it is critical that you configure them accurately.

Maximum Simultaneous Users for Activities

The Maximum Simultaneous Users feature limits the number of agents that can be scheduled for an activity, even if the workload requires more. Maximum Simultaneous Users can be understood as a way to prevent excessive staffing for some activities so that the agents can be moved to more important activities, even if it leaves some less-important activities understaffed. This feature is best used when the contact center is understaffed as a whole. As the Maximum Simultaneous Users value is reached, agents are then assigned to other activities.

> **Important**
> Only use the Maximum Simultaneous Users feature in a multi-skilled environment.

Activity Sets

The *Activities* module enables you to set activity open hours and staffing constraints. You can also use it to create activity sets (previously called exclusivity sets).

Activity sets provide a means to combine activities into groups for multi-skilled scheduling. Activity sets are associated with sites. Any agent can work on an activity set if that agent has the skills required for the activities included in the activity set. When performing activity set work, agents must perform only the activities included in the set for a specified period of time.

When planning your deployment, consider which activities could logically be grouped into activity sets.

Multi-site Activities

Multi-site activities, formerly called virtual activities, are performed at multiple physical sites. They enable you to view several local activities as a single WFM object. The performance information is split among the sites that perform the activity. You can build interaction volume forecasts, staffing forecasts, and view contact center performance for multi-site activities.

Activities Statistics

Administrators and supervisors can associate Stat Server statistics with activities and multi-site activities in WFM Web. WFM uses the WFM Data Aggregator to track four statistical categories: `Interaction Volume`, `Abandonment Percentage`, `Quality of Service`, and `Handle Time`. These statistics are written to the WFM database, providing the historical data necessary for WFM Forecasting, Scheduling, Performance monitoring, and Adherence monitoring.

Because WFM Data Aggregator receives its statistics from the Genesys Stat Server, it supports a very flexible configuration. In WFM Web you associate Stat Server statistics with activities. These Stat Server statistics may be *out-of-the-box* or customized statistics.

For example, you can sum up values from any set of statistics you want, such as `totalTalkTime` + `totalHoldTime` + `totalAfterCallWorkTime`. This type of flexible configuration overcomes the limitations of ACD switch reports and integration, allowing you to choose the statistics that best represent the work associated with servicing each customer interaction.

Skills

You can configure interactions to be routed to specific agents within a contact center, based on skill definitions.

For example, you may want to have incoming interactions go first to an agent at the highest level of a certain skill. If no agent with that skill level for that activity is available, then the interaction can be routed to an agent with the next highest level of that skill. If no agent is available at that level, then the interaction can be routed to the next available agent, regardless of the agent's skill level for the activity.

The contact center manager can decide whether to staff for the higher skill levels, or whether to staff so that any agent can handle the interaction.

Skills are defined and assigned to agents in Genesys Administrator, then imported into WFM automatically during synchronization. In WFM, skills are assigned to business units. A skill can be assigned to one business unit only and can be assigned only to activities and profiles under this business unit. To learn how to assign skills to business units, see the **Configuration > Skills** topic in the *Workforce Management Web for Supervisors Help*.

> **Important**
>
> After you update the WFM database to 8.5.1, skills are no longer assigned to specific business units. For example, if you previously assigned a skill to BU1, you cannot use this skill for activities under other business units, but you can use this skill for activities and profiles under BU1.

Matching Skills and Activities

Activities often correspond to skills but may also correspond to agent skill levels. Choosing an

appropriate strategy for a contact center's activities allows for improved staffing decisions.

For example, in a simple scenario, the relationship among the queue, skills, and activities is a 1-1-1 correspondence. As things get more complex, the relationships get more complex. Activities consist of multiple skills, and each site has many activities associated with it. The goal is to find the best combination of relationships to meet staffing requirements.

Users

Users are supervisors and other persons who are not agents. They are divided into two groups:

- Users who have been imported into WFM (WFM users).
- Users who are configured in Genesys but not selected as WFM users (Genesys Users).

In WFM Web you can create a list of existing WFM users or import Genesys users from Genesys Administrator. You can configure user properties, and assign security roles and privileges to them, enabling access to specific business units, sites, and teams within the enterprise.

Before you import Genesys users into WFM, ensure you understand the how the user's security rights and privileges are impacted by the move. Be sure to read the topics Roles and Genesys Administrator Objects Imported to WFM.

Users are configured in the WFM Web for Supervisors **Configuration > Users** module.

Roles

Workforce Management (WFM) uses roles and privileges to manage user access to WFM functionality. WFM has its own security/access rights system that defines the objects and modules that each WFM supervisor user can access in WFM. In addition, WFM implements tenant security for the objects that are shared with Genesys Configuration Layer.

WFM implements security/access as follows:

- If the user belongs to **Enterprise** in Genesys Administrator, all objects are accessible to the user in WFM, if the appropriate WFM access rights are assigned.
- If the user belongs to a **tenant**, the WFM user has access to object under that tenant only, even if the WFM access rights are assigned for related objects.

> ### Important
> WFM follows tenant access rights only (and no other Configuration Layer access rights).

User security roles are configured in the **Configuration > Roles** module, enabling you to configure security settings for all supervisors (that is, all non-agents who use WFM). It groups role privileges into the following categories: **General**, **Configuration**, **Policies**, **Calendar**, **Forecast**, **Schedule**, **Trading**, **Performance**, **Adherence**, **Reports**, and **Notifications**. Under each category are various options.

For example, **Notifications** is an option under the **Configuration** category. If a user is assigned the **Notifications** privilege, that user can then access the **Notifications** module in WFM Web. Users without this permission cannot access and therefore cannot modify the configuration of email notifications.

> **Important**
>
> There is a distinction between the **Notifications** category and the **Notifications** privilege under the **Configuration** category. For further clarification, see **Configuration > Roles** in the *Workforce Management Web for Supervisors Help*.

The user security settings allow for a great deal of flexibility. You can specify which sites and business units, teams, and so on, the user can access. You can configure calendar, forecast, and schedule access; read-only access; or full access.

In addition, you can enable users to make only pending schedule changes—that is, schedule changes that require approval from a qualified user before they are incorporated into the **Master Schedule**.

To configure user security settings efficiently, determine the access levels appropriate for all users. You can change settings at any time, as necessary. You can also use security roles to more easily configure security settings for users, by creating a Security Role, assigning privileges to it, and then assigning one or more WFM users to that security role.

When importing users, administrators will configure a security role. All new users added to the WFM system will be assigned to this security role—and will be limited to its access permissions. Roles can be changed at any time. See the **Configuration > Roles > Creating Roles** in the *Workforce Management Web for Supervisors Help*.

For information about how to assign roles and privileges for individual agents or groups of agents, see Managing WFM Roles and Privileges in GAX.

WFM Policy Objects

Contractual obligations, legal requirements, and business practices comprise constraints under which a contact center operates. Workforce Management (WFM) enables you to use Policy objects to specify constraints in great detail, resulting in forecasts and schedules that comply with constraints while optimizing staffing levels.

Exception Types

Exception types define periods of time when agents are engaged in non-work activities, such as training or meetings. Each site configures its own set of exception types based on its business requirements. You can configure exceptions to be considered when the Meeting Planner is in use, to be convertible to a day off, and so on. You can assign agents to multiple partial-day exceptions if the exceptions do not overlap.

Because you can group agents into teams, you can assign exceptions to large groups of agents at one time.

> **Important**
> Genesys recommends that you make use of the time off capabilities introduced in 8.x releases, rather than configuring time off using exception types.

Payback Exceptions

Payback exceptions are unpaid part-day work intervals that are inserted into schedules to make up for missed time due to lateness or personal appointments. Supervisors and agents can insert these exceptions and specify payback options to recoup missed time.

Payback exceptions might not be applicable or required in all sites, business units, or contact centers. To enable this functionality, administrators must ensure the InsertPaybackException configuration option in WFM Web Application's **[Functionality]** section is set to `true` (default).

For information about how supervisors and agents can use payback exceptions, see Insert Exceptions with Payback in the *Workforce Management Web for Supervisors Help* and Inserting Payback Exceptions in the *Workforce Management Agent Help*.

Exception Memos

You can add Exception memos in Schedules, Calendar items, and Meetings to provide comments or additional information about Exceptions types. Exception memos can contain up to 256 characters.

Memos in Calendar Items

When you create Exception memos in Calendar items, they are visible in the Schedule views after they are scheduled, and preserved if transferred between Schedule scenarios, from Scenario to Master Schedule, or from Master to Schedule Scenario. If you edit the memo in the Calendar, the schedule reflects the change without having to be rebuilt or republished. If this same memo is in the schedule (rather than in Calendar items), it is not saved in the Calendar. Instead, WFM creates a new memo that is related to this scheduled Exception. This newly-created memo is not related to the Calendar item. Therefore, changing the original memo in the Calendar item does not affect this instance of the scheduled Exception—it is a separate memo.

> ### Tip
> You can create an Exception memo in the schedule, even if you have created an Exception without a memo in Calendar items. Again, the scheduled Exception memo is not synchronized with the Calendar item Exception and will not reflect any modifications made to Exception memo in the schedule. See Memos in Schedule Views.

If you delete an Exception and its memo in the Calendar, it will no longer be visible in the schedule. However, you can enter a new memo for the Exception that is not related to the Calendar item. If there are multiple instances of an Exception in multiple scenarios and/or the Master Schedule and you delete the related Calendar item, all instances become separate Exceptions.

When you change a memo in a scheduled Exception the change is reflected in the schedule audit and history. If the settings for the Exception type allow, scheduled Exception memos are swapped and traded with Exceptions. If a calendar-related memo is swapped or traded, WFM copies it to the schedule and disassociated it from the calendar.

Exception memos are displayed:

- In the **Details** bar at the bottom of the **Schedule Intra-Day** and **Agent-Extended** views.
- Next to the scheduled **Exception Type Name** in the **Individual Schedule** and **Team Schedule** reports.
- In the schedule details (and printed schedule details) for the Web for Agents > **My Schedule** view, in a manner similar to the reports.

Memos in Schedule Views

While creating new Exceptions in the Schedule Scenario or Master Schedule that are not associated with a Calendar item, you can also add and edit an Exception memo. You can edit Exception memos that have been inserted directly into the schedule and initially created without memos or those that became schedule-only Exceptions after the related Calendar item was deleted. (See Memos in Calendar Items.) However, each Exception is edited separately, even if they were inserted using the **Insert Multiple** wizard.

> **Important**
> Due to the size limitations for an entire scheduling day, the memo might not fit into the schedule if there are multiple exceptions with long memos in the same agent day.

Exception memos are published or extracted to and from the Master Schedule along with Exceptions, and are transferred when you create scenarios, based on data from another scenario or data taken from the Master Schedule. They are also committed (together with Exceptions) from the agent's schedule to the the Master Schedule. However, unlike Exception memos created in Calendar items, after publishing or creating schedules, the link between Exceptions is not maintained and editing one instance of a memo does not change other instances.

After the schedules are published, the memos appear in the **Details** bar at the bottom of the Schedule > Intra-Day and Schedule > Agent Extended views. You might not see the entire memo, depending on the length of the memo or number of characters. However, when editing the memo, the entire memo text is displayed.

Memos in Meeting Exceptions

Entering memos in Meeting Exceptions is not quite the same as adding Exception memos in the Calendar or Schedule views. In the meeting **Properties** settings, the **Meeting Name** field can include a short memo, further describing the type or purpose of the meeting. For example, `exception_name, meeting_name (exception_memo)`. Together with the **Meeting Name** and **Exception Type** this memo is displayed in published schedules, just as exception memos are for Calendar items and Schedule views.

Time-Off Types

Use the **Time-off Types** module to create time-off types for each type of time off that you want to be able to track.

Time-off types include vacation, personal time off, flexible time off, paid sick days, floating holidays, and more. They can be accrued (time off accumulates over time) or awarded (the total amount of time off for the year is assigned at a single time). For example, you might want personal time off to accumulate, whereas holidays—since there is a fixed number during the year—can be awarded.

You can associate multiple time-off rules with a single time-off type. This enables you to have different time-off types accumulate at different rates. For example, you can set different time-off rules for different levels of seniority.

Time-Off Rules

The Time-Off Rules module enables you to set allocation parameters for both accrued and awarded time-off types. Constraints include the number of hours that are assigned per year or that accumulate per working period, and the carry-over date for each time-off type you use, and whether time-off requests can be auto-approved.

Each type of time off can be associated with one or more time-off rules. Because you can configure a number of time-off types (using the WFM Web's Time-Off Types module), you can have time off accumulate at different rates, providing more flexibility in managing contact-center staff.

You also use this module to assign time-off rules to specific agents. Agents can have multiple time-off rules assigned, each with its own time-off type.

Configure Time-Off Rules

To learn how to create and configure time-off rules, see the topic Policies > "Time-Off Rules" topic in *Web for Supervisors Help*.

Meetings

Use the *Meetings* module to create meetings and assign them to agents. You can set up a series of recurring meetings that must meet your constraints for frequency, number of occurrences, and so on.

Use the Meeting Planner in the WFM Web to configure preplanned meetings such as team meetings that recur weekly or monthly. If you need to create an ad hoc meeting, use the Meeting Scheduler within the WFM Web for Supervisors `Application`.

Marked Time

Marked Time types are specific periods of time that you want to monitor and report on that are not already labeled using an existing category. For example, you might want to mark the periods that agents worked on a particular project. Or you can mark overtime so that you can report on it.

You can insert and view Marked Time in the **Schedule > Intra-Day** views in WFM Web for Supervisors. The Schedule Marked Time report and Schedule Marked Time Totals report provide marked time statistics.

Shifts

The method used to create WFM shifts allows for a flexible description of shift duration and of start

and end times. Additionally, WFM schedules use flexible break and meal parameters.

In a sense, a WFM shift is an abstraction, representing countless possible working times, even though you can configure a shift to produce very regular, fixed, agent schedules.

A single WFM shift can incorporate hundreds of possible start times and duration as long as they fall within the parameters of the contract. However, through more rigid shift configuration, agent start times and workday duration can be fixed. This combination of flexibility and structure makes the WFM shift a tremendously powerful scheduling mechanism. In fact, in some cases, you can configure an entire contact center using only a few WFM shifts.

Allocating WFM Shifts Effectively

The WFM shift contrasts sharply with the conventional notion of a shift, with fixed weekly start time, fixed duration, and set breaks. You can configure shifts to work in tandem with contracts, which efficiently and effectively controls the placement of working times.

For example, consider a contact center with a standard full-time shift of 8 hours a day, 5 days a week, and an alternative full-time shift of 10 hours a day, 4 days a week. Both types of agents can use a single shift with a flexible duration of 8–10 hours per day. In either case, the agents are contracted to receive 40 hours work each week and to work 4 or 5 days. You can configure WFM to guarantee that specific agents work 4 or 5 days a week, or you can leave it to the WFM Scheduler to determine how many agents of each full-time type should be used to provide the least costly schedule.

Such an efficient method of shift allocation allows you to take into account the effect of complex scheduling requirements and agent-centric considerations, while making the best possible use of multi-skilled agents.

If you have a need in your contact center for more precise control over when an agent works and the duration of his workday, you may consider using Rotating Patterns. This is a way to lock in specific types of schedules for an agent without creating a unique shift for him.

Contracts

Contracts are sets of rules that describe the contact center’s contractual obligations to agents. The maximum working hours for a contract should include allowances for meetings, training, overtime, and other planned, paid activities. You can configure an unlimited number of contracts. In some cases a unique contract might be necessary for each agent.

Use contracts to describe a single agent’s availability. For example, a student might prefer to work Monday, Wednesday, and Friday evenings, any time Tuesday and Thursday, and have weekends off for study and fun. You could configure this student’s contract to enable these availability parameters.

A contract is not the same as a shift. A shift indicates the hours an agent *will* work, whereas a contract describes how many hours an agent *should* work. For further details on shifts, see Shifts.

Constraints for Working Days, Hours, and Days Off

You can set the numbers of working days and hours and days off for one of several scheduling periods, depending on which best suit your enterprise’s business practices and any applicable legal requirements. You can set these parameters per week, per month, or per any period of 2 to 6 weeks.

For example, you can ensure that employees always receive 2 weekends off per month or work an exactly specified number of hours per 6-week period.

Configuring Profiles

A *profile* is an abstract or hypothetical agent constructed from user-defined contract data. You can create multiple profile types, which you can use to construct schedules containing empty schedule slots appropriate for the contracts you have or intend to hire for. You can insert actual agents into the schedule slots after you build the schedule.

Rotating Patterns

Rotating patterns increase scheduling flexibility and control. A rotating pattern is a series of weekly patterns arranged in a repeating sequence. You construct each weekly pattern from a combination of shift assignments, agent availability times, days off, and so on, depending on what constraint is most important for any specific day.

Rotating patterns include availability times as options for weekly pattern days. If used, these availability settings override the availability settings that you configured in the Contract module for that day. Rotating pattern assignments are displayed in the Calendar along with all other pre-planned data.

User security

The Workforce Management (WFM) Web for Supervisors' user security views Roles and Users in the **Configuration** module, enable you to fine-tune the precise access each user has to WFM modules, objects, and functions. For example, you can:

- Limit certain users so that they can view only certain sites or teams.
- Limit certain users so that they can read the schedule but not change it.
- Limit access to reports.
- Limit access to WFM configuration settings modules, such as **Contracts** and **Time-Off Rules**.

Securing schedule changes

User security enables you to control who can make changes to schedule scenarios and to the Master Schedule. Users might be able to enter changes to the Master Schedule, but unable to commit or approve changes. These changes are in **Pending** status. An authorized user can then review the changes, and either commit/approve them or roll back/delete the changes.

This enables contact center managers to provide Master Schedule access to certain users who might not ordinarily have access. For example, supervisors who manage teams of agents, but who don’t normally have any scheduling responsibility, can enter team meetings or other exceptions into the schedule. Workforce-scheduling professionals can then review these to ensure that coverage is not adversely affected.

Importing Genesys Administrator objects into WFM

Workforce Management has its own security/access rights system, but also implements tenant security for the objects that are shared with Genesys Administrator. (See Roles.)

You define Switch, Person (agents and supervisors), Skills, and Time Zone objects in Genesys Administrator, which are then saved in the Configuration Database.

When you click a Person (agent) object in Genesys Administrator the **Properties** dialog box opens enabling you to select various parameter for this object, including the Skill set that you want to associate with the agent.

> **Important**
> WFM synchronization automatically brings Person objects and assigned Skill information in the Configuration Database into the WFM Database.

Agent field in Genesys Administrator

When importing users into WFM, users (non-agents) available for selection have the **Agent** check box cleared in the Genesys Administrator **Properties** dialog box, as shown in the example below.

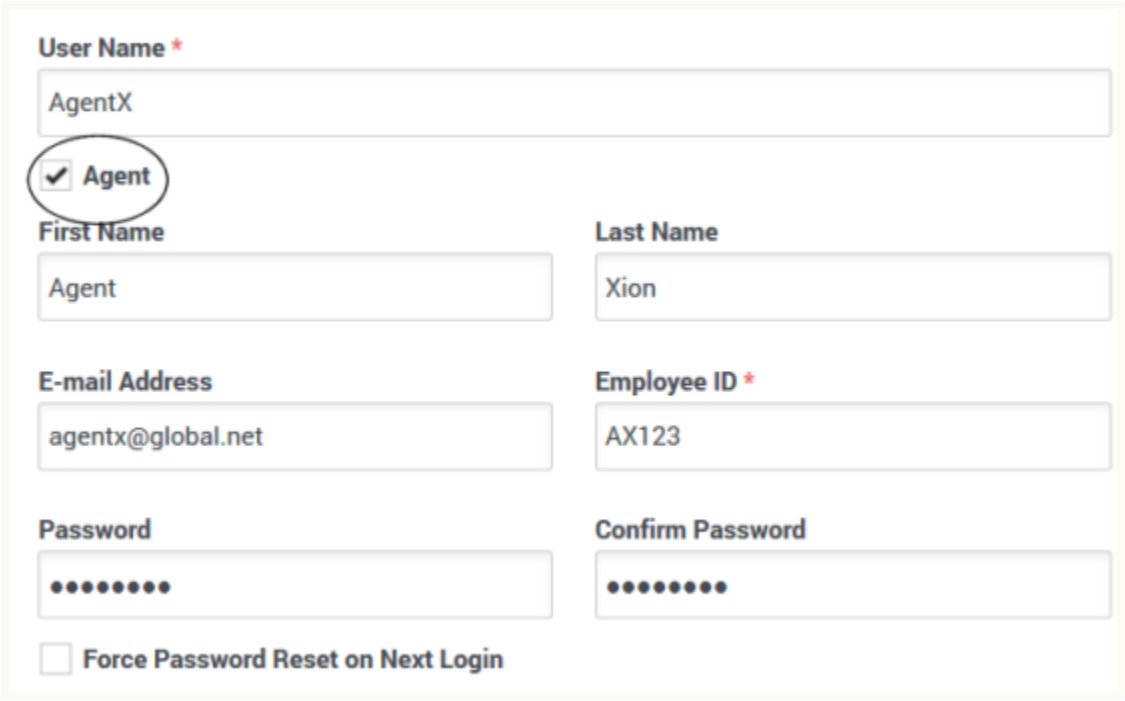

Figure: Agent Check Box

Genesys Administrator security

The security setup in Genesys Administrator also applies to WFM. For example, a user who is logged in to Web for Supervisors, but does not have permission to view certain objects/users in the Genesys Administrator, will not be able to view those objects/users in Web for Supervisors.

A user's ability to see, interact with, and synchronize agents and skills in WFM matches that user's tenant-based access permissions in the Genesys Administrator. In other words, in order to access an agent or a skill in WFM, you must also be able to access them in Genesys Administrator.

> **Important**
>
> In Genesys Administrator, you can restrict access (using security permissions) to objects, including Person objects. If you do not see a particular user in WFM under the Genesys Administrator heading, check that **Person** object's Genesys Administrator security settings.

This access permission is tenant-based. If you are working in a multi-tenant environment, this behavior affects every display of agents or skills in WFM. Tenants exist only in a multi-tenant

environment.

About the WFM database

You create or update the WFM Database schema using the WFM Backup-Restore Utility. You configure the WFM Database using WFM Web for Supervisors. For more information about the WFM Backup-Restore Utility, see Managing the WFM Database.

Managing WFM roles in GAX

Although Workforce Management (WFM) has its own set of roles and privileges, there might be a need in your contact center to have finer control over agents' access to certain WFM features and functionality. Besides the WFM Web application options that are applicable for all agents, Genesys Administrator Extension (GAX) provides another level of control and flexibility, with roles and privileges that enable you to customize individual agent's access or a group of agents who might need similar access.

Assigning WFM roles and privileges in GAX

Purpose: To enable roles and privileges for WFM agents using Genesys Administrator Extension.

Start of Procedure

1. In the WFM Web Application, set the **[Functionality]** useRolesSecurity configuration option value to `true`.
2. In GAX, import the WFM_Web.xml file containing descriptions of the available WFM Web security rights.
   See *Genesys Administrator Extension Help*
3. In GAX, go to **Configuration > Accounts > Roles**.
4. Open the WFM Role object to which you want to assign privileges.
5. In the **Assigned Privileges** section, find **CfgWFMWeb**.
   WFM privileges are listed under CfgWFMWeb in the object tree.
6. Assign agents to Access Groups that have appropriate roles and privileges, or assign roles and privileges directly to individual agents.
   After you assign access rights or privileges, agents can access only the functionality that is enabled for them. See the WFM roles and privileges in the table below.

End of Procedure

> ### Tip
> Agents who have no assigned roles or privileges, by default can access only the **Schedule** and **Configuration** modules in WFM Web for Agents. If you assign more than one role to an agent and at least one of the roles grants a specific right, then the agent has that right.

WFM privileges in GAX

You can assign the following privileges to WFM agents using Genesys Administrator Extension. Check the related Application option to see a description of the functionality.

> **Important**
>
> New Access Groups must be assigned SYSTEM privileges to ensure they work as expected.

Privilege	Related Application option
WFM_AGENT_TRADING_ALLOW_ACCESS	AllowScheduleTrading
WFM_AGENT_TRADING_TRADE_ONLY_INSIDE_TEAM	TradeOnlyInsideTeam
WFM_AGENT_TRADING_ALLOW_ENTER_COMMENTS	AllowNoComments
WFM_AGENT_TIMEOFF_ALLOW_ACCESS	AllowTimeOffPlanner
WFM_AGENT_TIMEOFF_ALLOW_ENTER_PAID_TIME	AllowEnterPaidTime
WFM_AGENT_TIMEOFF_ALLOW_ENTER_FULL_DAY_START_END	AllowEnterFullDayStartEnd
WFM_AGENT_SCHEDULE_ACCESS_LEVEL_TEAM	AccessLevel
WFM_AGENT_SCHEDULE_ACCESS_LEVEL_SITE	AccessLevel
WFM_AGENT_SCHEDULE_ACCESS_LEVEL_BU	AccessLevel
WFM_AGENT_SCHEDULE_ALLOW_ACCESS_TO_OTHERS_SCHEDULES	AllowAccessToOthersSchedule
WFM_AGENT_SCHEDULE_ALLOW_INSERT_EXCEPTIONS	AllowInsertExceptions
WFM_AGENT_SCHEDULE_COMMIT_AGENT_INSERTED_EXCEPTIONS	CommitAgentInsertedExceptions
WFM_AGENT_BIDDING_ALLOW_ACCESS	AllowBidding
WFM_AGENT_CONFIGURATION_ALLOW_ACCESS_TO_CARPOOLS	AllowAccessToCarpools
WFM_AGENT_PREFERENCES_ALLOW_ACCESS	AllowPreferences
WFM_SCHEDULE_INSERT_PAYBACK_EXCEPTION	InsertPaybackException
WFM_SCHEDULE_LIMIT_SCHEDULE_DETAILS	LimitScheduleDetails

Managing Dual-Role Users

Workforce Management (WFM) supports the capability to assign two roles (Agent and Supervisor) to a single agent.

At times, there are people in your contact center who require multiple role assignments. For example, an agent who is promoted might sometimes be required to perform a supervisor's tasks, which would require them to be assigned both Agent and Supervisor roles.

This topic describes how to create and manage dual-role assignments.

There are two types of role assignments within the scope of this functionality: Supervisors and Administrators.

Supervisor

Assign this role to agents who are being promoted to a supervisor's position.

> ### Tip
> In Genesys Administrator Extension (GAX), this Person object is configured with the **Agent** check box enabled.

After logging in to WFM, this user:

- Sees the WFM Web for Supervisors homepage.
- Can open the Agents UI in a separate browser window by clicking **Open Agent** in the Supervisors UI.
- Can work in Supervisors UI and Agents UI simultaneously.
- Has implicit access rights to the team to which he belongs and the objects in his/her assigned site.
- Is assigned the **WFM Role**. If the **WFM Role** is not preconfigured in GAX, this user has minimum access rights to the **Configuration** > **Organization** views.
- In the Web for Agents UI:
  - In the **Other Schedules** view, can see agents and trade schedules within his/her own team and agents who have no assigned team.
  - In the **Bidding** > **Schedule** > **Scenarios** view, can bid on all agents' schedule profiles, except agents from other teams.
  - In the **Browse Shared Transport** view, can see agents' shared transport from his/her team and agents who have no assigned team.
- In the Web for Supervisors UI:

- In the **Schedule** views, can build schedules.
- In the **Adherence** views, can see adherence information.

> **Tip**
> If the promoted agent is not assigned to any team, in the Web for Agents UI:
>
> - **Other Schedules** view—Can see and trade schedules only with agents who have no assigned team.
> - **Bidding** > **Schedule** > **Scenarios** view—Can bid on his/her own schedule profile and agents' schedule profiles who have no assigned team.
> - **Browse Shared Transport** view—Can see agents' shared transport that have no assigned team.
>
> If this agent needs to trade schedules, bid on schedule profiles, or see agents' shared transport from other teams or sites, you must grant access rights to the appropriate teams or sites in the Web for Supervisors **Configuration** > **Users** > **Access Rights** view.

Administrator

Assign this role to a person who is initially hired as a WFM Supervisor. In this case, the person does not have a dual-role, but instead, is automatically imported into WFM as **WFM Supervisor** after the first login.

> **Tip**
> In GAX, this Person object is configured with the **Agent** check box disabled.

After logging in to WFM this user:

- Is automatically imported into WFM
- Sees the WFM Web for Supervisors homepage.
- Has access rights to all teams, sites, and business units, and the objects therein
- Is assigned the **WFM Role**. If the **WFM Role** is not preconfigured in GAX, this supervisor has maximum access rights to all WFM views.

Set up dual-role agents and provide access rights

The following procedures describe how to set up dual-role agents n GAX and WFM Web for Supervisors:

1. Create the Genesys roles

- In GAX, create the **WFM Administrator** and **WFM Supervisor** roles.

2. Assign the roles

1. In GAX, create dedicated Access Groups (for example, WFM Administrators or WFM Supervisors)
2. Add the Persons objects to either one of these groups (or assign the Person objects directly to roles without using Access Groups).

> **Important**
> **Do not add the same Person object to both access groups.**

   - Add the **WFM Administrators Access Group** to **WFM Administrator Role Members**.
   - Add the **WFM Supervisors Access Group** to **WFM Supervisor Role Members**.

3. Configure WFM to support dual-role agents

1. In GAX, add the **[auth]** configuration section and the following options to the WFM Server Application:
   - roles.supervisor = <Comma-separated list of supervisor role names in Configuration Server, for example WFM Supervisor1,WFM Supervisor2, etc.>
   - roles.administrator = <Comma-separated list of administrator role names in Configuration Server, for example WFM Administrator1,WFM Adminstrator2, etc.>
2. Add the following options to preconfigure a default WFM role to which you can assign administrators and supervisors:
   - roles.supervisor.default = <WFM role name>.
   - roles.administrator.default = <WFM role name>.

When the WFM role is specified in the options, users are assigned the role after first log in.

Remove dual-roles from users

> **Tip**
> This applies only to agents who were promoted to a Supervisor role.

To remove the Genesys role assignment from the agent:

- In GAX, remove the agent from the **WFM Supervisors Access Group** or remove the agent from the role, directly.
  Changes take effect the next time the agent logs in.

Data Synchronization

Workforce Management (WFM) Server performs data synchronization automatically, bringing Configuration Database objects, such as agents, agent skills, and time zones into WFM. You can set the level of synchronization for full and real-time synchronization, and set the time period, in which you want WFM to perform full synchronization.

> **Tip**
> WFM Server can only update usernames and email addresses of existing users. New users are not imported during synchronization. New users are imported manually using WFM Web.

The WFM Server performs real-time synchronization after these tasks are completed:

- Adding new agents
- Removing terminated agents
- Updating an agent's information
- Adding or deleting an agent's skills
- Updating an agent's skill level
- Adding or deleting skills
- Synchronizing time-zones (only if applicable)

In addition, WFM Server:

- Excludes from dynamic synchronization those agents who are manually terminated, but are still in the Configuration Server database.
- Dynamically synchronizes terminated agent who are reinstated only after it performs full synchronization. Only then, does WFM Server re-read these agents, which means in most environments (including Genesys Cloud), these agents are not synchronized until WFM Server restarts.

> **Tip**
> The scenario described above is common among customers that utilize the "reuse person objects" approach in the Configuration Server database whereas, they edit existing person objects rather than create new ones. As in WFM, these person objects are manually terminated and then manually reinstated (by checking or unchecking the Termination Date check box and entering a date in Web for Supervisors **Agent Properties**), but they are *not* dynamically synchronized until WFM Server is restarted or switchover occurs (if there is a backup WFM Server instance).

You configure this functionality in the **[ConfigService]** section of the WFM Server Application's **Options** tab. For more information, see the SynchronizationLevel and SynchronizationTimeout configuration options.

Before you configure these options, take note of the objects that WFM Server will synchronize when set to these levels 1 and 2:

SynchronizationLevel = 1	SynchronizationLevel = 2
Synchronizes only agents in sites that are explicitly assigned to this WFM Server in Web for Supervisors **Organization** > **Sites**. Skills are not fully synchronized, but they are imported if the agent to be synchronized has skills that are not yet imported. Time zones are not synchronized.	Full synchronization is on, including time zones and skill definitions. Agents of all sites and unassigned agents are synchronized, except those belonging to sites that are explicitly assigned to a different WFM Server in Web for Supervisors **Organization** > **Sites**.

Genesys recommends that only one WFM Server in the deployment have its SynchronizationLevel option set to 2. If the deployment consists of multiple WFM Servers, set this option value to `0` in all other WFM Servers, so only one WFM Server performs the synchronization. Set the option value to 1 only in special cases, such as when agent synchronization will be performed by multiple WFM Servers.

> **Important**
>
> To avoid errors during synchronization and further work, your configuration must not contain duplicate names for switches, time zones, or skills—not under different tenants, and not in different Genesys Administrator instances that access the same WFM database.

Enabling WebSockets for cache synchronization

To prevent a stale cache when multiple servers are using cached database content, changes to the cached content and the database itself must be synchronized. WFM Server currently employs a synchronization method that is based on database timestamps. However, this method can add strain to the database, because it requires a lot of round-trip retrievals to obtain the timestamps of the current records .

To alleviate some of the load on the database, you can configure WFM to use an optional, complementary cache synchronization method, which is based on a fast peer-to-peer data exchange between servers over WebSockets, thereby reducing round-trip retrievals and improving performance. You can enable it by configuring the **[auth]** provider configuration option and enabling the use of WebSockets in WFM Server by setting the **[Server]** webevents option value to 1 in the WFM Server Application.

When configuring deployments with enabled WebSockets, ensure that all WFM Server making changes to the database are connected to each other. It doesn't matter whether the connection is direct, indirect, or even cyclic WebSocket messages received by one WFM Server will be relayed to all connected servers that haven't seen the message.

If a proxy server is used between WFM Servers, the proxy also must be configured to support WebSockets.

Forecasting and scheduling

When planning for your contact center's Workforce Management (WFM) forecasting and scheduling requirements, keep the following information in mind.

Forecasting considerations

You can create forecasts based on various kinds of data. Ideally, you already have a substantial quantity of good-quality historical data on contact center interactions that you can import into the WFM database. If you have historical data, you can use either of two forecasting algorithms depending on the amount of quality historical data available. The Expert Average Engine requires a full week of historical data with no missing timesteps. To use the Universal Modeling Engine, you must have at least a full year of historical data to create forecasts.

If historical data is unavailable or of poor quality, you can create forecasts based on templates. Templates reflect estimated interaction levels for different days and times and can be constructed for each activity.

When you do not have enough historical data to use the Expert Average Engine or the Universal Modeling Engine, you can combine the historical data with overlap templates, which fill in gaps in the historical data.

Creating optimal forecasts depends not only on whether historical data is available, but also on usual workflow. Contact centers with very regular interaction volumes require different forecasting considerations than contact centers that experience frequent or marked variations of interaction levels.

If your site activity load is highly predictable, you can apply a specific interaction volume or AHT to each time interval in the scenario.

Forecasting also incorporates figures such as staffing overheads, service objectives, and occupancy into the staffing calculations, allowing precise regulation of forecasting levels. You can create a variety of forecast scenarios, by using different service objectives or staffing parameters to help you create realistic contact center strategies for varying circumstances. After you decide which scenario best fits your environment, you publish it to the WFM database, where it becomes a part of your Master Forecast, upon which schedules are built.

Factors and events

Events are specific instances of occurrences that affect scheduling requirements and forecasts. For example, a catalog drop might increase demand for agents handling inbound interactions. By configuring an event, you can forecast and schedule to incorporate its effects, ensuring appropriate staffing levels throughout the period that the event affects.

WFM can track events that may affect interaction volume. These events are based on factors, which are event types upon which events are built. When planning your forecasting, consider what factors and events might affect forecasts so you can configure them before creating forecasts. A sales

promotion or marketing campaign, for example, may cause a predictable peak in interaction volume. Such events are entered in WFM Web and used by the advanced WFM algorithms. If an event recurs, the forecasting algorithms learn the impact of that event and account for its impact in future forecasts.

To learn how to create and configure Events and Factors (Events are instances of Factors), see the **Forecast > Historical Data Views > New Event Page** in the *Workforce Management Web for Supervisors Help*.

Scheduling considerations

WFM schedules each agent individually, building schedules that allow for intra-day overhead. Therefore, you do not need to inflate staffing requirements to accommodate overhead. The only overhead additions that you need to account for are intangibles, such as starting up agent desktop applications, bathroom breaks, and so forth, and unplanned overhead, such as training or meetings that are not yet scheduled (or sick days, which, presumably, are always unplanned).

> **Important**
> The schedule is only as accurate as the forecast. If you do not build the forecast carefully, the schedule will not necessarily provide adequate coverage.

Because each site is different, some planners might choose to fully configure meetings and training. Others might opt to build these into the schedule after it is generated. WFM supports both strategies. However, a good rule of thumb says that if the meeting or training must occur at a specific time, it should be configured beforehand. Otherwise, you can add meetings and training after building the schedule.

Creating blank schedules

Agent-based scheduling might not always be appropriate for your contact center. If not, you can also create schedules using profile agents. Profile agents are user-defined, hypothetical agents, based on contract data. Using profile agents results in blank schedules that contain an appropriate number and assortment of schedule slots for the agents to be hired.

> **Tip**
> You can combine profile agents with actual agents when creating a schedule.

Managing schedule bidding

Supervisors can create a profile schedule which authorized Agents then bid against, for the schedule slots that they prefer. The Supervisor can automate the resolution of conflicting bids according to

stated Agent preferences as well as their Seniority and Rank, and then tweak it manually before publishing the official schedule. Such a schedule can be designed to repeat over an entire quarter.

Performance and Adherence Monitoring

This topic provides information that you should consider when planning your performance and adherence monitoring for your contact center.

About Performance Monitoring

The *Performance* module of WFM Web for Supervisors enables you to view how closely your service objectives are being met at the site, business unit, and activity level. You can also configure alerts to appear when service objective statistics fall outside of an acceptable range. You need to consider what your target service objectives are. To help you determine the most effective way to resolve unacceptable performance, the Performance module includes What-If capabilities, where you can see the potential effect of changing some parameter in your environment.

The table below lists the statistics shown on the `Performance > Intra-Day` view and explains how each is calculated. For more information about how to configure statistics, see Locating Preconfigured Stat Server Statistics in Genesys Administrator and the "Activities" section in the *Workforce Management Web for Supervisors Help*.

Statistic	Definition
Interaction Volume—Forecast	Taken from the Master Forecast Interaction Volume. For sites, business units, and the enterprise, this is the sum of the associated local activities.
Interaction Volume—Actual	The Interaction Volume collected by WFM Data Aggregator. The specifics of the statistic being monitored is determined by the Interaction Volume statistic defined for this activity in WFM Web. For sites, business units, and the enterprise, this is the sum of the associated local activities.
Interaction Volume—Difference	The difference between the forecast and actual Interaction Volume collected by WFM Data Aggregator.
Interaction Volume—Difference %	The difference between the forecast and actual Interaction Volume collected by WFM Data Aggregator, expressed in a percentage.
AHT—Forecast	Taken from the Master Forecast AHT. For sites, business units, and the enterprise, this is the weighted average of the associated local activities (weighted by the corresponding forecast interaction volumes).
AHT—Actual	The AHT collected by WFM Data Aggregator. The specifics of the statistic being monitored is determined by the AHT statistic defined for this activity in WFM Web. For sites, business units, and the enterprise, this is the weighted average of the associated local activities (weighted by the

Statistic	Definition
	corresponding actual handled interaction volumes).
AHT—Difference	The difference between the forecast and actual AHT collected by WFM Data Aggregator.
AHT—Difference %	The difference between the forecast and actual AHT collected by WFM Data Aggregator, expressed in a percentage.
Abandoned-Interactions—Scheduled	The percentage of calls expected to be abandoned with the number of scheduled agents working, assuming that the forecast IV and AHT are correct. For sites, business units, and the enterprise, this is the sum of the associated local activities (weighted by the corresponding forecast interaction volumes).
Abandoned-Interactions—Calculated	The number of required calls expected to be abandoned with the number of calculated agents working, assuming that the forecast IV and AHT are correct. For sites, business units, and the enterprise, this is the sum of the associated local activities (weighted by the corresponding forecast interaction volumes).
Abandoned-Interactions—Required	The number of required calls expected to be abandoned with the number of required agents working, assuming that the forecast IV and AHT are correct. For sites, business units, and the enterprise, this is the sum of the associated local activities (weighted by the corresponding forecast interaction volumes).
Abandoned-Interactions—Actual	The actual number of abandoned calls as collected by WFM Data Aggregator. The specifics of the statistic being monitored is determined by the Abandoned Calls Percentage statistic defined for this activity in WFM Web. For sites, business units, and the enterprise, this is the sum of the associated local activities (weighted by the corresponding actual interaction volumes).
Service-Level—Scheduled	The Service Level that would be expected if the scheduled number of agents are working, assuming that the forecast IV and AHT are correct. This calculation is based on the Service-Level objectives defined when you built the Staffing forecast. If you did not define these objectives, this value is not calculated. For sites, business units, and the enterprise, this is the weighted average of the associated local activities (weighted by the corresponding forecast interaction volumes).
Service-Level—Calculated	The expected Service Level if the calculated number of agents are working, assuming that the forecast IV and AHT are correct. This calculation is based on the Service-Level objectives defined when you built the Staffing forecast. If you did not define these objectives, this value is not calculated. For sites, business units, and the enterprise, this is the weighted average of the associated local

Statistic	Definition
	activities (weighted by the corresponding forecast interaction volumes).
Service-Level—Required	The Service Level that would be expected if the required number of agents are working, assuming that the forecast IV and AHT are correct. This calculation is based on the Service-Level objectives defined when you built the Staffing forecast. If you did not define these objectives, this value is not calculated. For sites, business units, and the enterprise, this is the weighted average of the associated local activities (weighted by the corresponding forecast interaction volumes).
Service-Level—Actual	The actual Service-Level percentage collected by WFM Data Aggregator. The specifics of the statistic being monitored is determined by the `Service Level Percentage` statistic defined for this activity in WFM Web. For sites, business units, and the enterprise, this is the weighted average of the associated local activities (weighted by the corresponding actual distributed interaction volumes).
Deferred Service-Level—Scheduled	Weighted average of (achieved) scheduled Service-Level percentage (weighted on Forecasted Interaction Volume) for the activity of type Deferred.
Deferred Service-Level—Calculated	Weighted average of (achieved) calculated Service-Level percentage (weighted on Forecasted Interaction Volume) for the activity of type Deferred.
Deferred Service-Level—Required	Weighted average of (achieved) required Service-Level percentage (weighted on Forecasted Interaction Volume) for the activity of type Deferred.
Deferred Service-Level—Actual	Weighted average of (achieved) actual Service-Level percentage (weighted on Actual Distributed Interaction Volume) for the activity of type Deferred.
Actual Queue	The actual number of interactions in the backlog queue at the end of the period.
ASA—Scheduled	The ASA that would be expected with the number of scheduled agents, assuming that the forecast IV and AHT are correct. For sites, business units, and the enterprise, this is the weighted average of the associated local activities (weighted by the corresponding forecast interaction volumes).
ASA—Calculated	The ASA expected with the number of calculated agents, assuming that the forecast IV and AHT are correct. For sites, business units, and the enterprise, this is the weighted average of the associated local activities (weighted by the corresponding forecast interaction volumes).

Statistic	Definition
ASA—Required	The ASA that would be expect with the number of required agents, assuming that the forecast IV and AHT are correct. For sites, business units, and the enterprise, this is the weighted average of the associated local activities (weighted by the corresponding forecast interaction volumes).
ASA—Actual	The ASA collected by WFM Data Aggregator. The specifics of the statistic being monitored is determined by the ASA statistic defined for this activity in WFM Web. For sites, business units, and the enterprise, this is the weighted average of the associated local activities (weighted by the corresponding actual interaction volumes).
Coverage	Number of agents scheduled for each activity. If an agent works only part of a time interval, only the portion during which the agent works (rounded to the nearest minute) is counted toward scheduled staffing. As a result, these values may be fractions or decimals.
Staffing—Calculated	The number of agents per timestep for each activity. Taken from the Master Schedule. In a multi-skill environment, an agent may be available for multiple activities but will only be scheduled for one activity in any timestep. If an agent is scheduled to work only part of a time interval, only the fraction of the time period during which she or he works is counted. Therefore, the value for staffing may be expressed as a fraction. For example, if an agent is scheduled to work for 10 minutes of a 15–minute timestep, she is counted as 2/3 (or .667) of an agent.
Staffing—Required	Required number of agents per timestep scheduled for each activity. Taken from the Master Forecast.
Variance—Scheduled	The value obtained by subtracting the scheduled number of agents working during a timestep from the optimal staffing for that timestep. *Optimal staffing* is a calculation based on actual interaction volume, actual AHT, and the service objectives specified in the forecast. This value is not displayed but is used in calculating Variance values.
Variance—Required	The value obtained by subtracting the required number of agents working during a timestep from the optimal staffing for that timestep. *Optimal staffing* is a calculation based on actual interaction volume, actual AHT, and the service objectives specified in the forecast. This value is not displayed but is used in calculating Variance values.
Headcount—Scheduled	The number of agents scheduled for each timestep. Multi-skilled agents are counted once for each activity they can potentially work on for each timestep. If a multi-skilled agent has the skills to

Statistic	Definition
	work on two activities that are both open during a particular timestep, she or he is counted twice. As a result, in a multi-skilled environment the total number of agents for a timestep may be larger than the total number of agents.
Headcount—Actual	The actual number of agents working on an activity during each timestep. This value may be a fraction because an agent may work on the activity for only part of a timestep.

About Adherence Monitoring

WFM Adherence monitors real-time agent status on multiple media channels using statistical information that Data Aggregator draws from Stat Server. Agent adherence to schedule states is evaluated based on user-defined adherence thresholds. To enable Adherence features such as real-time monitoring, you must configure Stat Server and WFM Data Aggregator to collect and store the appropriate interaction information.

For a detailed explanation of the setup required for accurate adherence monitoring, see Configuring Stat Server Statistics.

Customized View in Web for Agents

Workforce Management (WFM) enables you to add custom views to the Web for Agents interface, which in turn provides customized information to specific agents. For example, the agent might see their adherence in a customized format.

WFM itself does not provide this information, but rather obtains it via a URL to a custom application that gathers data from either a third-party database or the WFM API. While WFM supports the custom view, it does not provide the functionality to produce the data used in the custom view.

This functionality is controlled by configuration options in the WFM Web Application. Use Genesys Administrator to create a new section in the WFM Web Application's **Options** tab named **[AgentCustom]**. In the new section, add the following options:

- name
- url
- agenttag

See the *Workforce Management Configuration Options Reference*.

> **Important**
> All three options must be added for the custom module to appear in the Web for Agents interface.

After these options are configured, the custom view is displayed together with WFM Web for Agents' standard modules at the top of the interface.

Deploying WFM

A successful Workforce Management (WFM) deployment requires more than installing and setting up the software. You must design effective strategies to use for translating corporate business rules into WFM objects and constraints. For this reason, it is important to understand key WFM concepts before configuring and using the application.

This topic introduces the WFM features and functions you must understand to effectively deploy this product in your enterprise, and provides procedures to help you install WFM and maintain it after it is up and running. Use the information in these sections to achieve an successful, customized deployment.

> ### Important
> This topic provides a conceptual overview of WFM objects and settings. For software and hardware prerequisites, see the *Genesys Supported Operating Environment Reference Manual* and the *Genesys Hardware Sizing Guide*, both of which are available on the Genesys Customer Care web site.

Preparing to install WFM

To prepare Workforce Management (WFM) for installation, read through the topics on this page and complete the procedures as required.

WFM works in conjunction with a number of software components. Before installing WFM, set up Genesys Framework. The installation should include at least the following components:

- Genesys Administrator
- DB Server
- T-Server
- Stat Server

> **Important**
> For full interoperability with WFM 8.5, the Genesys components must be release 7.6 or later. Using WFM 8.5 with earlier releases of these components limits use of Management Layer support and Reason Code support. For example, the WFM Daemon wizard will work only with Genesys Framework 7.6 or later, because it uses the new WFM Daemon Application type which was introduced in Configuration Manager 7.6.

Major software releases and iterations

When installing WFM components, ensure they are all within the same major release stream. Mixing components from different major release streams is untested and therefore, not supported in production environments. The major release stream is determined by the first three digits in the release number. For example, 8.5.0, 8.5.1, 8.5.2.

Starting in 8.5.2, WFM is released in multiple iterations. You can determine the iteration number by checking the middle three digits. For example, iterations for major release 8.5.2 might look like this: 8.5.**200**.00, 8.5.**201**.00, 8.5.**202**.00, or 8.5.**203**.00. Note that the first iteration is **200** and not **201**. Currently, this is applicable to 8.5.2 release only.

You can mix and match 8.5.2 components of different iterations—for example, you can run WFM Server 8.5.203.xx with WFM Web 8.5.202.xx—but if you do, you might notice that there are rules or exceptions about how new features appear, or if they appear at all. For example, enhancements added to a feature in iteration 2 (perhaps 8.5.**201**.00), they might not appear in iteration 1; Or a new feature might require the latest version of multiple WFM components. If you have only one of the required components in the latest version, the software will not malfunction, but the new feature will not be available.

Be sure to check the release number carefully when deploying or updating WFM software.

Software requirements

For complete and up-to-date information on software requirements, review the *Genesys Supported Operating Environment Reference Manual*. You will need a Genesys-supplied login and password to access certain documents there.

Management Framework system requirements

Genesys Management Framework enables administrators to start, stop, and monitor the status of entire solutions from a centralized location. To use Management Layer, you must also have the following Genesys Framework components installed:

- DB Server
- Genesys Administrator
- Message Server
- Log Database
- Solution Control Server (SCS)
- Solution Control Interface (SCI)
- Local Control Agents (LCA)

For more information on installing any of these components, see the *Management Framework Deployment Guide* and related documentation.

To use Management Framework, you must install LCA on the servers running WFM Builder, WFM Server, WFM Data Aggregator, and WFM Daemon.

Register the server host computers

You must register each host computer that runs one or more of the servers. See Registering a Host Computer.

Connect to backup Configuration Server

After installation, WFM components connect to Configuration Server to obtain information about the environment. If the primary Configuration Server is not available during startup, WFM Web, Server,

Builder, Daemon, and Data Aggregator can connect to the backup Configuration Server.

To implement this feature in 8.1.3 and later releases

- For WFM Web and Daemon, this feature is implemented automatically during installation.
- For WFM Server, Builder, and Data Aggregator this feature is implemented by setting the `backuphost` and `backupport` options in the Start command line or in the NT Service command line.

To implement this feature in 8.1.2

- For WFM Web, manually configure two optional keys `backuphost` and `backupport` in the `ConfigServer.properties` file located in the Tomcat directory `webapps\wfm\WEB-INF` (assuming WFM Web was deployed as `wfm.war`, otherwise replace `wfm` with the specified name). After you have made the changes, save the file and restart the host.
- In the `WFM Server Application`, `WFM Builder Application`, and `Data Aggregator Application` objects, set the `backuphost` and `backupport` options to take effect during startup. (These options are not set automatically during installation for these components.)
- For WFM Daemon, no configuration is required.

Connect to backup WFM Server

If you plan to install a redundant WFM Server, you can configure it as the backup server for the primary `WFM Server Application` in Genesys Administrator. All WFM components will then connect to the backup server if the primary WFM Server fails.

Create Your WFM database

If you are updating from WFM 7.6 to WFM 8.5, you do not need to create a new database. Simply update your current database as described in Managing WFM Backup-Restore Utility.

Database access privileges

You must have specific security roles or access privileges to access the database which differ slightly, depending on the platform being used.

Microsoft SQL Server (MSSQL) security roles:

Creates and maintains WFM database (can use all WFM applications and their functionality):

- db_datareader
- db_datawriter
- db_ddladmin (must to be able to CREATE/ALTER/DROP OBJECTS, DISABLE/ENABLE TRIGGERS, TRUNCATE

TABLES, UPDATE STATISTICS)

Uses WFM applications only (does not access database server directly nor modify WFM database objects):

- db_datareader
- db_datawriter

Oracle Database Server security roles:

- GRANT CREATE SESSION TO <user name>
- GRANT CREATE TABLE TO <user name>
- GRANT CREATE VIEW TO <user name>
- GRANT CREATE PROCEDURE TO <user name>
- GRANT CREATE SEQUENCE TO <user name>
- GRANT CREATE TRIGGER TO <user name>
- GRANT CREATE TYPE TO <user name>
- GRANT UNLIMITED TABLESPACE TO <user name>

> **Important**
>
> The privileges listed above must be assigned to Oracle database owners to ensure WFM Applications are fully functional when the WFM database runs on an Oracle platform.

Create a database access point

Many of the WFM Application objects require a connection to a Database Access Point (DAP), which specifies the name and location of the WFM Database. To create a DAP, see Creating a Database Access Point.

Requirements for using an Oracle Database

Regardless of the version of Oracle Database Server used, Genesys recommends that you use the latest Oracle 64-bit client on all WFM hosts. Use the latest Oracle 64-bit client with Oracle NET and Oracle Provider for OLE DB.

Import the WFM templates

WFM component applications use `Application` templates. For information about how to import the templates, see *Genesys Administrator Extention Help*.

Procedures

The following procedures relate to the topics on this page:

Registering a host computer

Purpose: To enable the computer to run one or more servers required by WFM.
Prerequisites: The computer being registered is on the same network as the computer you are using to register it.

Start of Procedure

1. Identify the host computer's assigned name on the network.
2. Open Genesys Administrator and select **Environment** > **Hosts**.
3. Right-click **Hosts** and from the shortcut menu, select **New** > **Host**.
4. In the dialog box that opens, enter the host name of a computer on which you are installing a WFM server.
   Host names must be lowercase. They are case sensitive.
5. Enter the host computer's operating system, version, and its IP address.
6. Accept the default port number, and ensure the **State Enabled** check box is selected.
7. Click **Apply**.
8. Repeat the process for all computers that will run a WFM server.

End of Procedure

Creating a database access point

Purpose: To enable WFM Server to specify the database access point (DAP) on their Application object **Connections** tab.
Prerequisites: You know the name of your new WFM Database, its location, its type, and the login name and password for a user with DBO privileges.

Start of Procedure

1. In Genesys Administrator, open **Environment**'*Bold text*' and then right-click **Applications**.
2. In the shortcut menu that appears, select **New Application**.

3. In the **Templates** list, choose your DAP Application template and then click **OK**.
4. On the **General** tab, enter a unique DAP name.
5. On the **Server Info** tab, enter any valid host name and port number.
   WFM does not use them, but you cannot save the DAP Application object unless these fields are filled in.
6. Enter the appropriate information on the remaining Application object tabs, specifically the DAP fields required for Oracle and MSSQL database servers.
   - For Oracle enter: DBMS name, DBMS type, username and passwords.
   - For MSSQL: DBMS name, DBMS type, database name, username and passwords.

   If you need help with this step, see *Framework Database Connectivity Reference Guide*.
7. To save the new Application object, click **OK**.

End of Procedure

Installing the Oracle client with Oracle NET and Oracle provider for OLE Database

Purpose: To install the Oracle client with Oracle NET.

Start of Procedure

1. Uninstall all Oracle Client software that is currently installed. Use the Oracle Deinstall Tool and steps described in the *Database Client Quick Installation Guide*. See the topic, "Removing Oracle Database Client Software".
2. Download one of WFM *certified* Oracle Client complete installation package with Oracle ODAC 64-bit.
3. During Oracle client installation, use any type of installation.
   Recommended types are Administrator or Runtime installation types which will install all required components. The installation type Instant Client requires an additional Oracle Provider for OLE DB installation, found in Oracle ODAC. The installation type Custom requires you to manually select the Oracle NET and Oracle provider for OLE DB.
4. Connect Oracle Database client to an Oracle Database. In the *Database Client Quick Installation Guide*, see the topic, "Oracle Database Client Post installation Tasks".

End of Procedure

Installing Oracle ODAC with Oracle provider for OLE DB and Oracle instant client

Purpose: To install Oracle ODAC with Oracle provider.

Start of Procedure

1. Uninstall all Oracle Client software that is currently installed. Use the Oracle Deinstall Tool and steps described in the *Database Client Quick Installation Guide*. See the topic, "Removing Oracle Database Client Software".
2. Download one of WFM *certified* Oracle Client complete installation package with Oracle ODAC 64-bit.

3. During the Oracle ODAC installation, select Oracle Provider for OLE DB and Oracle Instant Client components.
4. Connect Oracle Database Client to an Oracle Database. In the *Database Client Quick Installation Guide*, see the topic, "Oracle Database Client Post installation Tasks".

End of Procedure

Installing Workforce Management

This topic provides step-by-step instructions for installing and configuring Workforce Management (WFM), including creating your WFM database.

> **Important**
>
> If you are migrating from a previous version of WFM, read the instructions in the "Workforce Management Migration Procedures" chapter of the *Genesys Migration Guide* before beginning your installation. In particular, WFM 8.1 requires a new, separate database into which your existing data is imported.

This topic includes the following pages:

- Manually Creating and Configuring the Application Objects
- Installing WFM Backup-Restore Utility
- Installing and Uninstalling WFM Components

You can install, create, and configure WFM components, by using the Configuration Wizards or perform these tasks manually. The procedures are the same to the end of the section Import the WFM Templates. For instructions about how to perform a manual setup of WFM Application objects, see Manually Create and Configure the Applications.

> **Important**
>
> Genesys recommends that you do not install WFM components, by using a Microsoft Remote Desktop connection. The installation must be performed locally.

Before running Workforce Management Setup or the Installation and Configuration Wizards:

- Review the predeployment topics in Deployment Planning.
- Verify that you have set up the computers that will be running WFM, as described in Preparing to Install WFM.

Manually Creating and Configuring WFM Application Objects

This topic contains information and procedures that will help you use Genesys Administrator and other tools to manually create Workforce Management (WFM) Application objects and perform other configurations manually.

Manually Create the Application Objects

If you are familiar with Genesys Administrator, you can create and configure the component Application objects manually rather than using the wizards. See Creating New Sections and Options.

> ### Tip
> You might also want to install redundant WFM Servers. If so, see Connect to Backup WFM Server.

WFM Daemon Setup

To successfully run WFM Daemon, you must set the correct SMTP server host and port. Depending on your configuration, you might also need to set the user name and password. For information about how to set these options, see the **[SMTP]** section of WFM Daemon Options.

To support automatic report creation, perform these configurations using Genesys Administrator:

- In the WFM Web Application, set the **[Reports]** ServerURL configuration option. See Installing WFM Web as Report Server.
- In the WFM Web Application, set the **[Reports]** PathToAutoGeneratedReports to the network path for storing generated reports.
- In the WFM Daemon Application, add a connection to the WFM Web Application that you installed as the report server in Installing WFM Web as Report Server.

For notifications to work successfully:

- Each agent and supervisor must have the proper email set. E-mail addresses are initially defined in Genesys Administrator as part of the **Person** object. Once email addresses exist in the Configuration Database, they are automatically imported into WFM Database.

- The supplied SMTP server must be configured to accept emails for those addresses. Before anything can be sent, you must first configure notifications in WFM Web for Supervisors, **Configuration** module.
- A Supervisor's ability to receive notifications depends on their security settings (see User Security). Supervisors must be granted rights to receive notifications for each notification type and have access to the agent teams for which they want to receive notifications.

For more information about user security and notifications, see *Workforce Management Web for Supervisor Help*.

Manually Change Configuration Server Host and Port

You might need to change the Configuration Server host and port information for the WFM servers after installing WFM.

> **Important**
>
> Editing a `startServer.bat` file is effective only if the server is started by using the `.bat` file. If you start the server manually from the control panel, or if it is started automatically as a Windows service, you must unregister the server and then re-register it. If you start the server using the Solution Control Interface (SCI), you must change the settings for the server in the server's **Application** object, by using Genesys Administrator.

To update or change this information manually you can use one of two methods:

- Edit the `startServer.bat` file for each affected server.
- Unregister the servers and then reregister them, by using the updated host, port, and application name information.

For procedures that describe both methods, see Editing the startServer.bat Files and Using Server Registration to Change Host and Port.

The `startServer.bat` files for each server are located in the same directory as the executable for that server.

Backup Configuration Server Host and Port

WFM Web supports a backup Configuration Server during application startup with the addition of two new values in `ConfigServer.properties` file: `BackupHost` and `BackupPort`. These options are specified in the same way as the `Host` and `Port` options and have the same meaning, except that they specify how to connect to the backup Configuration Server. If the primary Configuration Server is not available, WFM Web uses this information to connect to the backup Configuration Server.

To configure these options manually, edit the `ConfigServer.properties` file in the Tomcat directory `webapps\wfm\WEB-INF` (assuming that WFM Web was deployed as `wfm.war`, otherwise `wfm` should be

replaced with the specified name). In addition, the application name must be the same on both primary and backup Configuration Server.

For more information about configuring connections to backup Configuration Server, see Connect to Backup Configuration Server.

> **Tip**
> These options might not be set automatically during application startup. By default, they do not exist. Therefore, you must configure the options manually, as described above.

Procedures

Click the drop-down list below to display a list of procedure related to the topics on this page.

Creating Application Objects Manually

Purpose: To create WFM Application objects manually.

Start of Procedure

1. In Genesys Administrator, open the **Environment** > **Applications** folder.
2. Right-click in the folder and select **New Application** from the shortcut menu that appears.
3. Browse to and select the appropriate application template from those you previously imported. If necessary, see Importing Application Templates for instructions.
4. Enter the appropriate information in each tab of the **Application** object.
   The information on most of these tabs is familiar to regular users of Genesys Administrator. Ensure the settings are correct on the Connections tab of each Application object. For the complete set of required connections, see WFM Component Connections.

End of Procedure

Next Step:

- Manually configure the **Options** tab settings. For a list of options with default settings and descriptions, see *Workforce Management Options Reference*.

Editing the startServer.bat Files

Purpose: To edit the WFM `startServer.bat` files.

Start of Procedure

1. To edit the WFM `startServer.bat` file, stop the WFM server.
2. Open the `startServer.bat` file in a text editor such as WordPad.
3. Change the host and port information.
4. Save the edited file.
5. Restart the server.

End of Procedure

Using Server Registration to Change Host and Port

Purpose: To change the host and port for a server.

Summary: You can also change the host and port information for the servers by unregistering them as services and then re-registering them using the new host and port.

Start of Procedure

1. Execute the following command from the command line to unregister the installed service:
   <server .exe filename> -remove
   For example, WFMServer.exe -remove
2. Register the service with new host and port information:
   <server .exe filename> -install -host “<hostname>” -port “<portnumber>” -app <applicationname>
   For example, WFMServer.exe -install -host “Siamese” -port 4000 -app WFMServer_76

End of Procedure

Installing WFM Backup-Restore Utility

The Workforce Management (WFM) Backup-Restore Utility (BRU) configures the database you created (see Create Your WFM Database) to receive WFM data. If you are migrating from a previous version of Genesys Workforce Management (WFM), the WFM BRU also transfers your existing data into the new database.

> **Important**
>
> If you are migrating, see the "Workforce Management Migration Procedures" chapter in the *Genesys Migration Guide* for instructions. The procedures in this Administrator's Guide are based on the assumption that this is a new installation and do not describe the steps that are necessary for migration.

Procedure: Installing the Backup-Restore Utility

Purpose: To install the WFM BRU.

Start of Procedure

1. On your Workforce Management release disk, navigate to the `solution_specific\WFMDatabaseUtility\windows` directory.
2. Double-click `Setup.exe`.
   The Database Utility Installation Wizard opens.
3. Click `Next` to start using the Database Utility Installation Wizard.
4. Select the directory into which you want to install the WFM Backup-Restore Utility and then click `Next`.
5. On the `Ready to Install` window, click `Install`.
   A progress bar shows the setup status.
6. Click `Finish` to close the Installation Wizard.

End of Procedure

Running the Backup-Restore Utility

The Backup-Restore Utility (BRU) command line utility is included in the WFM Database Utility Installation Package (IP). Use it to create a new database schema, update an existing schema, or to backup and restore the database. See Using the Backup-Restore Utility.

Installing and uninstalling WFM components

This topic provides information and procedures about how to install and uninstall the Workforce Management (WFM) components. All of the component installations are straight forward, but you will need to complete additional tasks for WFM Web. See Installing WFM Web.

To uninstall any or all WFM components, see Uninstalling Workforce Management.

Installing the components

Before you begin installing the WFM components, determine whether to install more than one component on a single machine. If you do so, determine which components should be installed together.

See Deploying WFM, for some general deployment guidelines and recommendations. See the *Genesys Hardware Sizing Guide* for more extensive recommendations.

By default, all the servers are installed as Windows Services. For instructions about how to use Windows services, see the Windows Help file.

For instructions about how to install and uninstall the WFM components, see the procedures on this page and Installing WFM Web.

> **Important**
>
> Functionality that was previously in the WFM Configuration Utility is now in WFM Web (see Workforce Management 8.5 Release Information) and Configuration Utility is no longer supported, nor delivered on the WFM Installation DVD.

Date and time dependencies for WFM Applications

The following are the sources of the date and time setting for WFM applications:

- In WFM Web Supervisor, the date, time, and number formats depend on the language preferences configured in the browser you are using.
- In WFM Web Agent, the date and time format depends on the locale of Web Server and is identical for all agents connected to the same server.

Uninstalling Workforce Management

Use the Task Summary in this section to ensure you have completely uninstalled WFM.

Task summary: Uninstalling WFM Web

Task	Description and procedures
Stop all WFM components, including those running as Windows Services.	See Starting and Stopping WFM Components.
If you are using Tomcat, delete WFM from Tomcat.	For instructions, see Deleting WFM Web from Tomcat.
Use Add/Remove Programs to uninstall the WFM components from the Windows platform.	For instructions, see Using Add/Remove Programs to Uninstall WFM.
If you are using a Unix-based platform, delete all files in the relevant folders.	Be sure to use caution when deleting files.

Procedures

Use the procedures below to install and uninstall WFM components.

Installing WFM Server

Purpose: To install WFM Server.

Start of Procedure

1. On your Workforce Management release disk, navigate to the `solution_specific\WFMServer\windows` directory.
2. Double-click `Setup.exe`.
   The WFM Server Installation Wizard opens.
3. Click **Next** to begin using the Wizard.
4. Enter your Configuration Server host name, port number, user name, and password, and then, click **Next**.
   A list of WFM Server Application objects displays.
5. Select the correct **Application** object and then click **Next**.
   The properties for each WFM Server Application object display in the Application Properties list when that Application is selected.
6. Specify the destination directory into which you want to install WFM Server. Then, click **Next**.
7. In the **Ready to Install** window, click **Install**.
   A progress bar shows the setup status.

Restart your computer before starting WFM Server. If you are installing multiple components on one

machine, you can install them all before restarting. However, you cannot install multiple instances of the same component on the same host. **End of Procedure**

Installing WFM Server as a dedicated ETL Server

Purpose: To install and configure a separate instance of WFM Server as the ETL Server.

> **Tip**
> Installing ETL Server is optional

Start of Procedure

1. On your Workforce Management release disk, navigate to the `solution_specific\WFMServer\windows` directory.
2. Double-click `Setup.exe`.
   The WFM Server Installation Wizard opens.
3. Click **Next** to begin using the Wizard.
4. Enter your Configuration Server host name, port number, user name, and password, and then, click **Next**.
   A list of WFM Server Application objects displays.
5. Select the **WFM Server for ETL Application** template and then click **Next**.
   The properties for the WFM Server for ETL Application object display in the Application Properties list when that Application is selected.
6. Specify the destination directory into which you want to install WFM ETL Server. Then, click **Next**.
7. In the **Ready to Install** window, click **Install**.
   A progress bar shows the setup status.

Restart your computer before starting WFM ETL Server. If you are installing multiple components on one machine, you can install them all before restarting. However, you cannot install multiple instances of the same component on the same host. **End of Procedure**

For more information about WFM ETL Server, see Using ETL Database Schema.

Installing WFM Builder

Purpose: To install WFM Builder.

Start of Procedure

1. On your Workforce Management release disk, navigate to the `solution_specific\WFMBuilder\windows` directory.

2. Double-click `Setup.exe`.
   The WFM Builder Installation Wizard opens.
3. Click **Next** to begin using the Wizard.
4. Enter your Configuration Server host name, port number, user name, and password, and then, click **Next**.
   A list of WFM Builder Application objects displays.
5. Select the correct **Application** object and then click **Next**.
   The properties for each WFM Builder Application object display in the Application Properties list when that Application is selected.
6. Specify the destination directory into which you want to install WFM Builder. Then, click **Next**.
7. In the **Ready to Install** window, click **Install**.
   A progress bar shows the setup status.
8. Click **Finish** to close the Installation Wizard.

End of Procedure

Installing WFM Data Aggregator

Purpose: To install WFM Data Aggregator.
Summary: A restriction limits the number of clients to about 8 if WFM Data Aggregator and WFM Web are installed on the same computer. For full details, see TCP/IP Connection Settings.

Start of Procedure

1. On your Workforce Management release disk, navigate to the `solution_specific\WFMDataAggregator\windows` directory.
2. Double-click `Setup.exe`.
   The WFM Data Aggregator Installation Wizard opens.
3. Click **Next** to begin using the Wizard.
4. Enter your Configuration Server host name, port number, user name, and password and then, click **Next**.
   A list of WFM Data Aggregator Application objects displays.
5. Select the correct **Application** object and then click **Next**.
   The properties for each WFM Data Aggregator Application object display in the Application Properties list when that Application is selected.
6. Specify the destination directory into which you want to install WFM Data Aggregator. Then, click **Next**.
7. In the **Ready to Install** window, click **Install**.
   A progress bar shows the setup status.
8. Choose to restart your computer now or later and then click **Finish** to close the Installation Wizard.

Restart your computer before starting WFM Data Aggregator. If you are installing multiple components on one machine, you can install them all before restarting. However, you cannot install multiple instances of the same component on the same host. **End of Procedure**

Installing WFM Daemon

Purpose: To install WFM Daemon.
Prerequisites: Framework and Java SDK are installed and configured. To determine the required versions of Framework and Java, consult the WFM section at the end of the table “Product Prerequisites” in the *Genesys Supported Operating Environment Reference Manual*.

> **Tip**
>
> You must install a Java version that includes the **<specifier%gt;** time zones update. See details and use the Java version that is specified on the java.sun.com website.

Start of Procedure

1. On your Workforce Management release disk, navigate to the `solution_specific\WFMDaemon\windows` directory.
2. Double-click `Setup.exe`.
   The WFM Daemon Installation Wizard opens.
3. Click **Next** to begin using the Wizard.
4. Enter this information for your Configuration Server: host name, port number, user name, and password. Then click **Next**.
   A list of WFM Daemon Application objects displays.
5. Select the correct **Application** and then click **Next**.
   The properties for each WFM Daemon Application object displays in the Application Properties list when that Application is selected.
   - If you are using Genesys Configuration Server releases later than 7.2 but earlier than 7.5, your WFM Daemon’s **Application** type must be **Genesys Generic Server**.
   - If you are using Genesys Configuration Server 7.5 or later, your WFM Daemon’s **Application** type must be **WFM Daemon**.
6. Specify the destination directory into which you want to install WFM Daemon. Then, click **Next**.
7. In the **Ready to Install** window, click **Install**.
   A progress bar shows the setup status.
8. Choose to restart your computer now or later and then click **Finish** to close the Installation Wizard.

Restart your computer before starting WFM Daemon. If you are installing multiple components on one machine, you can install them all before restarting. However, you cannot install multiple instances of the same component on the same host.

For more information about WFM Daemon, see Using Email Notifications in WFM. **End of Procedure**

Deleting WFM Web from Tomcat

Purpose: To delete WFM Web from Tomcat.
Summary:

- Genesys recommends using Tomcat Manager to correctly deploy/undeploy WFM Web.
- Uninstalling WFM Web does not remove the `.war` file or the `WFM` directory from the `webapps` folder. Genesys recommends that you remove the `.war` file and `WFM` directory prior to reinstalling or updating WFM Web.
- If you reinstall or update WFM Web, before clients can access the software, you must remove the old file and replace the `.war` file with the new version of the file. The default file name is `wfm.war` and the default directory name is `wfm`.
- If you reinstall WFM Web without first manually deleting these files, the files are not updated. WFM Web will not run if you install a later version of WFM Web over an earlier one without first deleting these files.

Start of Procedure

1. Open the `<CATALINA_HOME>:\webapps` directory.
2. Delete the WFM `.war` file and the `WFM` directory from the `webapps` folder.
3. Delete the `$CATALINA_BASE\work\Catalina\localhost\wfm` folder.

End of Procedure

Using Add/Remove Programs to uninstall WFM

Purpose: To uninstall WFM components using the Add/Remove Programs tool on Windows platforms.

Start of Procedure

1. Select **Start** > **Settings** > **Control Panel** and open **Add/Remove Software**.
2. Scroll through the list of programs to locate the one you intend to uninstall.
3. Click **Change/Remove**.
4. When the UninstallShield Wizard opens, follow the prompts.

> ### Tip
> Although you might not be prompted to restart your computer after removing a WFM component, it is recommended.

End of Procedure

Installing WFM Web

Before you install Workforce Management Web, you must consider ensure the prerequisites, and some web tools and applications are installed and configured on the WFM Web host computer. Use the Task Summary in this section to ensure you have adequately prepared the WFM host and your installation goes smoothly.

For information and procedures describing how to uninstall WFM Web, see Uninstalling Workforce Management.

Task summary: Preparing and installing the WFM Web host

Task	Description and procedures
Ensure the prerequisites are installed.	Framework 7.6 or higher and Java SDK are required. To learn which version of Java is required, consult the WFM section at the end of the table "Product Prerequisites" in the *Genesys Supported Operating Environment Reference Manual*.
Install and configure Jakarta Tomcat.	For installation and configuration instructions specific to Genesys Workforce Management, see Configuring Tomcat for WFM Web.
Install the WFM Web application.	See Choosing the Platform for WFM Web.
Install a supported browser on each workstation that will access WFM Web.	For WFM Web for Supervisors, the browser installation must include the appropriate Java plug-in. If this plug-in was not installed with the browser, download the plug-in from java.sun.com. To learn which version of Java is required, consult the WFM section at the end of the table "Product Prerequisites" in the *Genesys Supported Operating Environment Reference Manual*. **Important to Note**—If the computers that will be accessing WFM Web for Supervisors have pop-up blockers installed, they must be configured to allow popups from the WFM Web URL. Otherwise, pop-up blockers prevent WFM Web for Supervisors from opening. The version of Java that you install must include the latest time zones update (TZ/Olson database). See java.sun.com for details and use the Java version that is specified there.
Ensure your browser and TCP/IP settings are configured to run WFM Web for Supervisors correctly.	See Browser Security Considerations and TCP/IP Connection Settings
Verify that your window resolution has been set to display WFM Web correctly.	WFM Web is optimized for a window resolution of at least 1024 x 768. At lower resolutions, some elements (such as table headers) might not display correctly.
(Optional) Set up WFM Web as Report server.	See Recommendations for WFM Web as a Report

Task	Description and procedures
	Server.

Browser security considerations

WFM Web uses technical approaches that might be affected by web browser security settings, such as:

- WFM Web uses signed Java applets on Supervisors' workstations.
- WFM Web uses Java applets on Supervisors' workstations that are run by Sun's Java Plug-in. On Windows operating systems, the Java Plug-in is running as ActiveX, which means that supervisors must have rights to run ActiveX controls.
- WFM Web uses non-encrypted form data in the login page for all users.
- WFM Web relies on active scripting for all users.
- When running WFM Web in an AIX or Solaris operating system environment, if the X Server software is not installed, reports might not be generated or might be generated incorrectly. In the case of WFM Web, X Server provides fonts and related functionality.

TCP/IP connection settings

In environments with higher loads (more than 100 total supervisors or 50+ supervisors running agent real-time adherence views) you might need to change the default TCP settings on computers running the WFM servers: WFM Web, WFM Data Aggregator, and WFM Server. You can determine whether you need to adjust your settings by monitoring the number of TCP sockets in the TIMED_WAIT mode. If the number exceeds 2000 on one computer or if WFM Web with servers start to report TCP socket errors, modify the settings to make TCP release port resources faster.

> ### Tip
> Genesys has identified this issue on Windows-based machines. Similar changes are probably required for other operating systems. However, Genesys has not determined recommended adjustments to other operating systems.

To resolve this issue, you must make changes to the `HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters\` section in the registry of the host computers.

You can find a reference for this registry modification in the Microsoft TCP/IP Implementation Details document for the appropriate operating system at www.microsoft.com.

Genesys recommends these values:

- Increase the **MaxFreeTcbs** configuration option value from 2000 to 9000.
- Increase the **MaxFreeTWTcbs** option value from 1000 to 8000.
- Increase the **MaxHashTableSize** option value from 512 to 2048.
- Increase the **MaxUserPort** option from value 5000 to 65534.
- Reduce the **TcpTimedWaitDelay** option value from 240 to 60.

Configuring Tomcat for WFM Web

After installing WFM Web, use Tomcat Manager to deploy it or manually copy the .war file (by default, located in the WFM8\Web directory) to the Tomcat webapps directory.

> **Tip**
> When using Tomcat Manager to deploy WFM Web, you might need to increase the file size limit in the Manager's settings if the wfm.war file that is produced by the installer is too large to deploy with the default settings.

Tomcat is available for download at jakarta.apache.org. There is no charge for this program.

For basic installation and configuration instructions, see the Tomcat documentation, available at the same website as the program.

> **Warning**
> Genesys developed and tested supported servlet containers using the default settings as configured for each particular servlet runner during installation time. Any changes to default settings are described in this document. If you use custom settings for servlet containers and experience issues while configuring and/or running WFM Web, Genesys recommends that you evaluate the impact of those custom settings. You might need to re-adjust them to ensure they do not interfere with the operation of WFM Web.

The following sections describe specific configurations that enable Tomcat to support WFM Web:

Set environment variables

When configuring Tomcat, add the variables JAVA_HOME and CATALINA_HOME to the Windows **Start** > **Settings** >**; Control Panel** > **System** > **Environment** > **System Variables** list. Enter the full path to each home directory for the values for theses variables. CATALINA_HOME is the folder in which

Tomcat is installed.

JVM command-line settings

Tomcat's default settings are not suitable for production sites that experience moderate or heavy load. To support Web Services, you must enter the settings in the Table: Tomcat JVM Settings for the Java Virtual Machine (JVM) that runs Tomcat.

You can enter Tomcat settings in different ways, depending on your Tomcat version and configuration. Refer to your Tomcat documentation for details.

Table: Tomcat JVM settings

JVM Setting	Purpose
`-Xms256m`	Instructs JVM to initially allocate 256 MB of memory for its own needs.
`-Xmxnm`	Determines the maximum amount of memory the JVM can allocate for its own needs. For example, `-Xmx256m` would allocate a maximum of 256 MB. If you are experiencing `OutOfMemory` exceptions with Tomcat, increase this setting's n parameter to provide Tomcat more memory. Make sure that enough physical memory is available to support the parameter that you choose.
`-XX:MaxPermSize =256m`	Sets the size of the Permanent Generation, so Tomcat can run properly. 256 is the (mandatory) minimum value. This option is required only for environments in which Tomcat is configured to use versions prior to JDK 8.
`--add-modules=java.se.ee`	Starts the WFM Web application when using Java 9+.
`--add-opens=java.base/java.util=ALL-UNNAMED`	Opens access to the modules required to run WFM when using Java 9+.
`--add-opens=java.base/java.util.concurrent=ALL-UNNAMED`	Opens access to the modules required to run WFM when using Java 9+.

WFM 8.5 requires settings changes to the `Apache Tomcat Properties` dialog, accessible by opening the file `C:\Apache\Tomcat7.0\bin\tomcat7w.exe` (the location on your computer might be different). Select the `Java` tab. See Table: Minimum Tomcat Java Settings.

Table: Minimum Tomcat Java settings

Item	Recommended setting
Initial memory pool	`1024`
Maximum memory pool	`4096`

End of support for Java Plug-Ins in browsers

Browsers no longer support Java plug-ins, starting with Java 9. As a workaround, WFM Web enables users to run Java views in browsers by generating and downloading the `wfm.jnlp` file, which launches automatically. It then starts as a standalone Java Webstart application, containing Java-based Web for Supervisor views. In some cases, you might have to save the `wfm.jnlp` file to your hard drive and start it as you would any other application.

You must enable the **RUN_JAVA_STANDALONE** option in WFM Web and be aware of some limitations when using a standalone Java Webstart application. For more information about using Java Webstart, see Changing WFM Web Application Settings and Limitations When Using Browsers That Do Not Support Java Plugs-Ins in the *Workforce Management Web for Supervisors Help*.

Choosing the platform for WFM Web

Install WFM Web on either a Windows or a Unix-based platform:

- To install on Windows platforms, see Installing WFM Web (Windows).
- To install on Unix-based platforms, see Installing WFM Web (Unix).

Recommendations for WFM Web as a Reports server

Workforce Management no longer uses the WFM Reports server component found in previous WFM versions to generate reports. Instead, Workforce Management uses the WFM Web component to generate reports.

In addition to functioning as a Reports server, by default, WFM Web 8.1 continues to perform all its usual WFM Web functions.

Report generation requires the same, and sometimes more hardware requirements than other WFM Web functions, Genesys recommends that medium or large sites (as described in the *Genesys Hardware Sizing Guide*) install a separate WFM Web Server to function as a Reports server. If you are upgrading, use the same hardware previously used for the 7.2 WFM Reports component to set up 8.1 WFM Web as the Reports server.

To install WFM Web as the reports, see Installing WFM Web as Reports server.

Procedures

Use the procedures below to install WFM Web.

Installing WFM Web (Windows)

Purpose: To install WFM Web on the Windows platform.

Start Procedure

1. On your Workforce Management release disk, navigate to the windows subdirectory in the `solution_specific\WFMWeb` directory.
2. Double-click `Setup.exe`.
   The WFM Web Installation Wizard opens.
3. Click **Next** to begin using the Wizard.
4. Enter your Configuration Server host name, port number, user name, and password, and then, click **Next**.
   A list of WFM Web Application objects displays.
5. Select the correct **Application** object and then click **Next**.
   The properties for each WFM Web Application object display in the Application Properties list when that Application is selected.
6. Specify the destination directory into which you want to install WFM Web. Then, click **Next**.
7. In the **Ready to Install** window, click **Install**.
   A progress bar shows the setup status.
8. Click **Finish** to close the Installation Wizard.
9. Locate the WFM `.war` file in the directory where it was installed and move it to the directory for the web server you are using.
   For example, if you are using Tomcat, deploy the `.war` file in the `webapps` directory.

End Procedure

Installing WFM Web (Unix)

Purpose: To install WFM on the Unix platform.
Prerequisites: The library **libnsl.so.1** should be installed on your system before starting the procedure.

Start Procedure

1. On your Workforce Management release disk, navigate to the appropriate subdirectory in the `solution_specific\WFMWeb` directory.
   Your choice of subdirectory depends on the platform on which you are installing WFM Web. The choices are AIX and Solaris.
2. Launch `install.sh`.
3. Enter this information for your Configuration Server: host name, port number, user name, and password.
4. Enter the name of your **WFM Web Application** object.
5. Specify the destination directory into which you want WFM Web installed.
6. Click **Finish** to close the Installation Wizard.

7. Locate the WFM `.war` file in the directory where it was installed and move it to the directory for the web server you are using.
   For example, if you are using Tomcat, deploy the `.war` file in the `webapps` directory.

End Procedure

Installing WFM Web as a Reports server

Purpose: To install and configure a separate instance of WFM Web as the Reports server.

Start Procedure

1. Install WFM Web using the steps, as described in Installing WFM Web (Windows) or Installing WFM Web (Unix).
2. In the Genesys Administrator, in the **WFM Web Application** properties, set the value for option **[Reports]** ServerURL, by entering the complete URL that was used to installed WFM Web.
   For example: `http://<host>:<port>/<appname>`
   In this example:
   - <host> and <port> refer to where the servlet container (the one that will function as the report server) for WFM Web is running.
   - <appname> is the name that is used while WFM Web is being deployed.

   You will use this URL to login to the WFM Web Server that will function as the Reports server.
3. In the **Connections** tab of the **WFM Web Application** that will perform all the usual WFM Web functions except report generating, include the **Application** name of the **WFM Web Application** that will function as the Reports server.
4. In the **Connections** tab of the **WFM Daemon Application** include the **Application** name of the **WFM Web Application** that will function as the Reports server. Completing this step ensures the WFM Report Scheduler works.

End Procedure

Securing connections on WFM servers

Workforce Management (WFM) supports Transport Layer Security (TLS) 1.2 for connections within WFM, and Genesys Management Framework, and between WFM and third-party software (with the exception of SMTP servers). WFM supports configurations that use only FIPS 140-2-compliant algorithms for encryption, hashing, and signing secure network connections.

Secure connections between servers

The information in this topic is provided to help you to configure secure connections between servers.

TLS configuration for WFM servers adhere to the common guidelines in the *Genesys Security Deployment Guide* with one limitation, parameters of the secure connection must be configured on the Host level.

WFM servers support Mutual TLS within WFM, and between WFM and Genesys Framework.

WFM Server, Builder, Data Aggregator, and Daemon use Windows security provider SChannel when running on Windows hosts. To support configurations that use only FIPS 140-2 compliant algorithms for security connections, enable the FIPS local/group security policy flag. For more information, see Microsoft FIPS 140 Validation.

WFM Web and WFM Daemon

Since WFM Web and Daemon have a dependency on Java, the TLS implementation uses Java Secure Socket Extensions from Oracle JDK along with a configured provider.

You must configure two certificate stores on the WFM Damon and WFM Web hosts:

- Java Keystore for certificates that are required for TLS communications with WFM components
- Windows Certificate Store for certificate that is required for TLS communications with Framework components

To configure these secure connections, complete the procedure below and adhere to common guidelines in the *Genesys Security Deployment Guide*.

Procedure: Importing Certificates for WFM Web and Daemon

Purpose: To import certificates that support secure connections for WFM Web and WFM Daemon.

Start procedure

1. Import certificates to the Java Keystore that is used by WFM Daemon and Tomcat (WFM Web):
   - **For WFM Daemon**—Import the WFM Daemon, Server, and Web host certificates to the Java Keystore used by WFM Daemon. By default, the path is `JAVA_HOME/jre/lib/security/cacerts`

Find the value for `JAVA_HOME` by opening the `wfmdaemon.cmd` file in the WFM Daemon installation folder in line set `JAVA_HOME`.

- **For WFM Web**—Import the WFM Web (Tomcat), Data Aggregator, Daemon, Builder, and Server host certificates to the Java Keystore used by Tomcat.
  You can use the Java Keytool to import certificates to the Java Keystore. For example

  ```
  keytool.exe -import -alias tomcat -file C:\Certificates\tomcat.crt -keystore
  “C:\Program Files\Java\jdk1.8.0_181\jre\lib\security\cacerts” -storetype JKS
  -storepass changeit
  ```

2. Import the host certificate (on which WFM Daemon or WFM Web is installed) to the Windows Certificate Store for the user account that starts WFM Daemon or Tomcat (WFM Web) as a service.
   After installation, the WFM Daemon and Tomcat (WFM Web) user account is Local System, by default.
   - Complete the following steps, using the Microsoft PsExec tool to import certificates to Windows Certificate Store for the **Local System** account.
     1. Download the Microsoft PSTools.
     2. Unpack `PsExec64.exe`.
     3. Run the Command Prompt as **Administrator**.
     4. Execute the command `PsExec64.exe –i –s mmc.exe`.
        This command is run Microsoft Management Console for the Local System account
     5. Click **File** > **Add/Remove Snap-in…**
     6. Add the certificates snap-in for the **My user** account
     7. Import the certificate to the **Personal** folder
     8. Verify that the **Trusted Root Certification Authorities** folder contains the issuer certificate.
     9. Repeat steps 5 to 8 to import the certificate for the **Computer** account.

End procedure

Secure connections between WFM Web server and WFM Web clients

The information in this topic will help you to configure secure connections between WFM Web and WFM Web clients.

WFM Web

WFM Web server runs in an Apache Tomcat Servlet/JSP container. Therefore, the secure connection must be configured in the servlet container. For more information see Apache Tomcat SSL/TLS Configuration HOW-TO.

To support configurations that use only FIPS 140-2 compliant algorithms in security connections between WFM Web server and WFM Web clients, configure Apache Tomcat to support FIPS 140-2. For more information, see Apache Tomcat Native Library.

WFM Web clients

TLS support must be enabled in browser that runs WFM Web for Supervisor, WFM Web for Agents, and WFM Agent Mobile Client.

To run WFM Web for Supervisor Java-based views, you must also import the WFM Web (Tomcat) server certificate to the Java Keystore that is used by the browser or by the Java Webstart application on the host on which you plan to run WFM Web for Supervisors.

Secure connections between WFM servers and MS SQL database

By default, WFM Server and WFM Data Aggregator use the outdated Microsoft OLE DB Driver (SQLOLEDB) to connect to MS SQL Server. However, this driver does not support TLS 1.2.

Procedure: Installing the latest Microsoft OLE DB Driver

Purpose: To support TLS 1.2 in the connections between WFM servers and MS SQL database

Start procedure

1. Install the Microsoft OLE DB Driver (MSOLEDBSQL) 18.2.2 or later on the WFM Server and WFM Data Aggregator hosts.
2. In Genesys Administrator:
   - Set the **[Server]** OLEDB_Provider configuration option value to `MSOLEDBSQL` in the WFM Server Application.
   - Set the **[Server]** OLEDB_Provider configuration option value to `MSOLEDBSQL` in the WFM Data Aggregator Application.
     If the [Server] section does not exist, create it. See Creating New Sections and Options in the *Workforce Management Options Reference*.
3. Configure MS SQL Server to force encryption.
4. Restart WFM Server and Data Aggregator.

End procedure

Next step: Configure the WFM Backup/Restore Utility (BRU).

Configuring the WFM BRU

After the latest Microsoft OLE DB Driver is installed, the WFM Backup/Restore Utility must be configured to use the following connection switch:

```
-DSN "Provider=MSOLEDBSQL;Data Source=<DBMS Name>;Initial Catalog=<Database Name>;User
ID=<User Name>;Password=<Password>;"
```

For example:

```
WFMBRU.exe -BACKUP -DSN "Provider=MSOLEDBSQL;Data Source=<DBMS Name>;Initial
```

```
Catalog=<Database Name>;User ID=<User Name>;Password=<Password>;" -FILE <backup>.db
```

Starting and Stopping WFM

To maintain your Workforce Management (WFM) Servers, you can start and stop them by using Management Layer or start and stop them manually.

Using the Solution Control Interface

When using Management Layer, start WFM Server, WFM Builder, WFM Data Aggregator, and WFM Daemon by using the Solution Control Interface (SCI). Confirm that all servers are running, then start WFM Web manually (even when you are using Management Layer).

For more information on Management Layer topics, see the *Framework Management Layer User's Guide*.

For more information about how to use SCI, see *Framework Solution Control Interface Help*. To view Help, open SCI, and click **Help**.

Procedure: Starting WFM Servers Using SCI

Purpose: To start Workforce Management by using SCI.
Prerequisites: Management Layer is running.

Start of Procedure

1. Start the SCI.
2. Go to the **Solutions** view.
3. Right-click the desired solution and from the shortcut menu, select **Start**.
4. Optionally, select the desired solution and on the menu bar choose **Action** > **Start**.
   The command to start WFM is sent to Solution Control Server (SCS), which uses Local Control Agents (LCA) to activate the WFM solution components in the order established during solution configuration.
   SCI reports a successful start of WFM after all solution components display Running status within the configured timeout. When all servers are started, the solution status changes from Stopped to Started.
   Many components are shared by a number of solutions. Therefore, some WFM components display the status Running before WFM is started.

SCI reports a successful start of WFM unless a required WFM component was not started. For more information, see *Framework Solution Control Interface Help*. To view the Help, open SCI and click **Help**. **End of Procedure**

Procedure: Stopping WFM Servers Using SCI

Purpose: To stop WFM while running SCI.

Prerequisites: You are using Management Layer.

Start of Procedure

1. Start SCI.
2. Go to the **Solutions** view.
3. Right-click the desired solution and from the shortcut menu, select **Stop**.
4. Optionally, select the desired solution and on the menu bar choose **Action** > **Stop**.
   The command to stop WFM is sent to Solution Control Server (SCS), which uses Local Control Agents (LCA) to activate the WFM solution components in the order established during solution configuration.
   When all servers are stopped, the solution status changes from Started to Stopped.

> **Important**
>
> Many components are shared by a number of solutions, therefore, some WFM components display the status **Running** before WFM is stopped.

End of Procedure

WFM Servers on Windows

On the Windows platform, WFM servers (Server, Builder, Data Aggregator, and Daemon) are installed as Windows Services by default.

Use the procedures in this section to start Workforce Management servers as Windows Services.

Procedure: Configuring Windows Services

Purpose: To open and configure the Windows Service on WFM Server, WFM Builder, WFM Data Aggregator, and WFM Daemon.

Start of Procedure

1. >In Windows, select **Start** > **Programs** > **Settings** > **Control Panel** > **Services**.
   The Services window appears. Each service has status settings showing whether it starts manually or automatically and whether it is currently running.
2. Highlight the service you want to configure and then click **Startup**.
3. Select **automatic** or **manual** and click **OK**.
4. In the **Services** window, click **Close**.
   The settings are saved.

End of Procedure

Procedure: Starting Windows Services Manually

Purpose: To start a Windows service manually on WFM Server, WFM Builder, WFM Data Aggregator, and WFM Daemon.
Prerequisite: This Windows service is configured to start manually.

> **Tip**
> If a Windows Service is configured to start automatically, it will start whenever the computer is started. No further action is required.

Start of Procedure

1. In Windows, select **Start** > **Programs** > **Settings** > **Control Panel** > **Services**.
   The Services window appears.
2. Highlight the service that you want to start and click **Start**.

End of Procedure

Procedure: Starting WFM Servers Manually

Purpose: To start the WFM Server, WFM Builder, WFM Data Aggregator, and WFM Daemon manually.

Start of Procedure

1. In Windows, select **Start** > **Programs** > **Genesys Solutions** > **Workforce**

Management **>** *<server name>***.**

1. **The server console window opens and the server begins its initialization routine.**
2. If desired, right-click the window title bar to change server display settings.
3. Minimize the window after the server has started.

End of Procedure

Procedure: Stopping Servers Manually

> **Important**
> If you terminate a server using the Windows Task Manager, you will lose all data on currently active interactions because Windows does not allow enough time for the servers to save the active data. Use this procedure for WFM Server, WFM Builder, WFM Data Aggregator, and WFM Daemon only.

Purpose: To terminate a server process that is running in a console window rather than as a Service (without using the Windows Task Manager).
Summary: The method for stopping a server manually depends on whether or not you installed it as a Windows Service. If the server is running in a console window rather than as a Service, shut it down using this procedure.

Start of Procedure

1. Enter **Ctrl+Break]** or **[Ctrl+C]**.
   You cannot close a server by clicking the Close button (X) or by selecting File > Close from the console menu bar. Abrupt or abnormal shutdown can cause data loss.

End of Procedure

Procedure: Stopping Servers from the Command Prompt

Purpose: To stop a server's Windows Service from the Command prompt.

> **Important**
> This procedure does not apply to WFM Daemon.

Start of Procedure

1. >In Windows, select **Start** > **Programs** > **Command Prompt**.
2. Change to the directory in which the server's `.exe` file is located.
3. At the prompt, enter `<servername>.exe -sstop`.
4. If you are using SCI in the Management Layer:
   1. Select the server application.
   2. Click **Stop**.

End of Procedure

Procedure: Stopping Windows Services

Purpose: To stop a Service from the Services window.

Start of Procedure

1. In Windows, select **Start** > **Programs** > **Settings** > **Control Panel** > **Services**.
2. Select the appropriate service.
3. Click **Stop**.
4. Click **Close**.
5. If you are using SCI in the Management Layer:

1. Select the server application.
2. Click **Stop**.

End of Procedure

Starting and Stopping WFM Web

Unlike the other WFM servers, WFM Web is a web application and opens in a web browser. Use the procedures in this section to stop and start WFM Web.

Procedure: Starting WFM Web

Purpose: To start WFM Web.
Prerequisites: The WFM Servers are running.

Start of Procedure

1. Start your web server (for example, Tomcat).
   For starting, stopping, and other configuration instructions, see the documentation for your web server.
2. Open a web browser.
3. Type or paste the WFM Web URL into the address line of the browser and press **Enter**.
   The User Login dialog box appears.
   Contact your system administrator for the URL. The URL is case-sensitive, so it's important you follow the capitalization settings exactly.
4. Enter your user name and password, and click **OK**.
   Supervisors see the WFM Web for Supervisors UI. Agents see the WFM Web for Agents UI.

End of Procedure

Procedure: Stopping WFM Web

Purpose: To log out of WFM Web.

Start of Procedure

1. In any window in WFM Web, click **Log off**.

End of Procedure

Daily Operations

After deploying Workforce Management (WFM), there are many tasks that, as a workforce administrator, you will need to perform regularly and sometimes on a daily basis. These topics provides information about setting up and performing these daily operations in your environment.

Scheduling

Performance, Adherence, Reports

Forecasting

User Security

Calendar Management

Time-Off Bidding (see also the Time-Off Primer)

Task Sequencing

E-mail Notifications

Scheduling Meals & Breaks

Enabling WaitLists

Tracking Overtime

Scheduling

This topic provides detailed information about Workforce Management (WFM) Scheduling that will help you to plan and create schedules for your workforce.

Scheduling Overview

Workforce Management (WFM) uses the published Master Forecast to create agent schedules that comply with user-defined business constraints. Or you can create “empty” schedules to which you can then assign agents. Schedule constraints include available personnel with required skills, staffing requirements, employment contracts, business policies, and agent preferences.

The staffing requirements act as a target for schedule generation. An optimized schedule ensures the least amount of over- and understaffing while still meeting contractual obligations. WFM uses each agent’s individual skills, contracted working rules, and calendar items as guides to help identify when each agent can work, and what he or she will work on.

WFM aids compliance with regional working rules by helping to apply the following aspects of Contract rules:

- User-defined weekend days
- Schedule synchronization based on specific days of the week
- Maximum number of consecutive weekends an agent may work

You can schedule agents to be available to perform multiple types of work at once or you can schedule them to work on specific types of work for periods of time within their day. You can also combine these, to create schedules in which some periods are set aside for specific types of work while at other times agents perform any work that arrives for which they are qualified.

Once you finalize your schedule, you can publish it to the Master Schedule, where it immediately becomes available for agents to view through WFM Web for Agents. Agents may then trade their schedules as needed, if the schedule trade complies with trading rules and is either auto-approved or is approved by a qualified supervisor.

Maximum Agents by Length of Schedule Period

You can build schedules for up to 5,000 agents and 6 weeks. Memory requirements are decreased, and contiguous memory is not necessary for scheduling. If you have 1.5 GB of virtual memory available, you can now build large schedules (5,000 agents). Generally, for schedules with 2,000 or fewer agents, 600 MB of virtual memory is enough.

> **Tip**
> Consider the preceding limits to be rough estimates; scheduling duration varies depending on your configuration. There is no way to provide a general estimate for schedule build time, based on just a few simple parameters such as the number of schedule weeks and the number of agents. The maximum schedule size must be determined uniquely by each user, based on specific performance requirements.

Profile Scheduling

Although agent-based scheduling offers a multitude of advantages, in some cases you must build schedules without agents assigned to them. To do so, you create a schedule composed of empty schedule slots that are appropriate for the contract types or agent skill sets you currently have, or for which you anticipate hiring. WFM offers several methods for creating blank schedules to which you can assign agents:

- **Scheduling Using Profiles**—Profiles are based on contracts and include a skill set. They are used to represent a typical kind of agent or a proposed new agent classification. For example, you can create a new flexible full-time profile to enable planners to evaluate the adoption of a 4-day, 10-hours-per-day work week. Each profile has a skill set with assigned skill levels. Scheduler uses either a user-specified number of each profile type or a blend of profiles based on the current staff, to create blank schedules to which you can assign qualified agents.
- **Mixed Scheduling**—You can build schedules using a combination of profiles and actual agents. This can enable planners to create additional optimized schedules for expected new hires or for outsourced agents to use.
- **Schedule Bidding**—Supervisors create an optimal set of schedules with no agent names, authorize a set of agents to participate in the bidding process, and open the schedules for bidding. Agents review the schedules on which they are qualified to work, and bid by numbering the most desirable and least desirable schedules 1, 2, 3, and so on. The Supervisor can then have WFM assign the schedules to the agents automatically, based on the agents' bids as well as their seniority and/or "rank".

Automated Schedule Bidding

Automated Schedule Bidding allows supervisors to create schedules with no agent names associated, and then distribute them to agents via the Web. The agents can view, filter, and sort these schedules, and bid on their favorite schedules over a preconfigured period of time. An automated assignment engine then assigns schedules to agents, based on their bids and their seniority and/or rank. When possible, preplanned Calendar items such as granted time off, days off, and exceptions are integrated into agent schedules when the schedules are published to the Master.

This new and powerful feature helps contact centers to comply with union regulations requiring that agents be assigned their desired schedules based on their seniority or rank. It also enhances supervisor productivity by automating the process. Even in non-unionized contact centers, automated schedule bidding improves agent satisfaction by giving agents more control over their future schedules.

Skills-Based Scheduling

You can build schedules based on primary and secondary skills. WFM defines activity/skill levels as follows:

- **Primary activity**—Is assigned to the agent directly and *not marked* as secondary. If activity assignment is based on skills and skill levels, the primary activity is one, for which none of the agent's skills are marked as secondary.
- **Secondary activity**—Is assigned to the agent directly and *marked* as secondary. If activity assignment is based on skills and skill levels, the secondary activity is one, for which at least one of agent's skills is marked as secondary.

> **Important**
> WFM Builder API 8.5.1 or later must be installed to enable full implementation of this feature. If you installed an older WFM Builder API or you have disabled the primary/secondary activities feature, scheduling behavior is the same as in earlier versions.

Algorithm for Skills-Based Scheduling

Agents are typically assigned a list of activities to work on for each day of the schedule scenario. When primary/secondary skills-based scheduling is enabled, WFM assigns two lists of activities: primary activities and secondary activities, and uses the following algorithm for daily distribution:

1. Minimum required primary activity
2. Minimum required all activities
3. Regular required primary activity
4. Regular required all activities

Here are some other things to consider when using skills-based scheduling:

- For timesteps, when no activities are selected during daily distribution or if activities are removed during swapping, the primary activities have a higher weighting during selection.
- While tasks are being optimized, the primary activities have a higher weighting during activity selection.
- Task sequences, activity sets, and scheduled shift items might negatively impact primary/secondary activity selection. Be sure to check every timestep individually to determine if any agents are working on a secondary activity, instead of a primary activity.

Multi-Site Planning

Using a familiar tree structure, you can configure WFM's objects to correspond exactly to your Enterprise organization. For centralized, multi-site contact centers, WFM enables forecasting and building of schedules for work activities spanning all sites.

For decentralized, multi-site contact centers, WFM supports two main models.

- For multi-site contact centers that distribute calls based on percentage allocation, WFM enables you to forecast interaction volumes centrally and distribute the workload to each site for further planning efforts. Each site can set parameters such as service objectives and staffing requirements, and can build schedules.
- For multi-site contact centers that are virtualized and distribute calls based on agent availability, skill set, and so on, WFM enables you to forecast staffing centrally and then split the staffing requirements to each site. Schedules may then be built for each site. By building staffing requirements centrally, WFM can account for the efficiencies of scale that are seen in a true virtual contact center environment.

The browser-based capabilities provided by WFM ensure that in any multi-site environment users across the enterprise can participate in the planning process.

Also see Multi Forecasting Primer.

Agent Preferences

The Scheduler can optionally consider agent preferences when building schedules. Agents can enter preferences for shifts, days off, availability, and time off using WFM Web for Agents. Supervisors can enter agent preferences in WFM Web for Supervisors and, with the appropriate security permissions, can grant or reject preferences. If a supervisor grants a preference, the calendar algorithm considers that agent's preference when building the schedule, along with various other criteria such as seniority.

Preference Fulfillment and Schedule Optimization

Contact center administrators can also specify whether preference fulfillment or schedule optimization is the more important goal. This adds another layer of control over preference scheduling.

Flexible Shifts

The method WFM uses to create shifts enables you to configure flexible shift durations and start and end times. Additionally, WFM schedules use flexible break and meal parameters.

In a sense a WFM shift is an abstraction, representing countless possible working times. This is true even if the shift is configured to produce very regular, fixed, agent schedules. This is in contrast to the conventional notion of a shift with a mandatory fixed weekly start time, fixed duration, and set

breaks.

A single WFM shift can incorporate hundreds of possible start times and durations as long as they fall within the parameters of the associated contract. However, through synchronicity constraints and use of more-rigid shift configuration settings, you can fix agent start times and workday durations. This combination of flexibility and structure makes the WFM shift a tremendously powerful scheduling mechanism. In fact, in some cases, you can configure an entire contact center using only a few WFM shifts.

Example of a WFM Shift:

Consider a contact center with a standard full-time shift of 8 hours a day, 5 days a week, and an alternative full-time shift of 10 hours a day, 4 days a week. You can schedule both types of agents using a single shift with a flexible duration of 8 to 10 hours per day. In either case, the agents are contracted to receive 40 hours work each week and to work 4 or 5 days. You can configure WFM to guarantee that specific agents work 4 days a week and others 5 days, or let the WFM Scheduler determine how many agents of each full-time type to use to provide the most effective schedule.

Task Sequences

WFM task-based scheduling enables you to configure sequences of work activities to be used in shifts. These task sequences guarantee that a specific period of time is spent on a specified activity or set of work activities.

Using task sequences, multimedia contact centers can generate agent-friendly schedules that build in extended periods of time set aside for handling specific tasks. Agents are thus able to focus on a single media or skill set, enabling them to complete their tasks more effectively, without the confusing effects of frequently switching media. Contact center planners can ensure that task time is equitably distributed among all qualified agents. And WFM can optimize the assignment of task times based on forecast staffing requirements.

For example, you can guarantee that all appropriately skilled agents receive exactly 2 hours of outbound work for every shift, or you can allow WFM to determine how much outbound work to distribute to each agent. You can configure Genesys Routing to use WFM schedule information as input for routing decisions. In this way, you can use task-based scheduling to provide a closed-loop routing system that complements an agent-based approach to contact center management.

For more information about task sequences, see Configuring WFM Task Sequences.

Schedule Trading

WFM schedule trading enables agents to trade schedules among themselves. They can do so either through a trade with a specified agent or through a trade open to any qualified agents within their community.

Contact center planners no longer need to spend an excessive amount of time managing and processing agent schedule-trade requests. Agents feel that they have flexibility when they need to

change their usual schedule and that they have more proactive control over the times they work. In some cases, schedule trades can be approved without supervisor intervention, enabling managers to focus on trades that may affect service levels or violate company policies.

Marked Time

Use marked time to distinguish any periods of time that are not otherwise tracked and reported on in an existing WFM category. For example, you can create a marked-time type for a particular project. Or you can use marked time to identify overtime periods that you want to appear in a report.

You configure marked-time types using WFM Web. You can specify marked time in WFM Web for Supervisors and view periods of marked time in its Intra-Day schedule view. You can report on marked time using the Schedule Marked Time Report and the Schedule Marked Time Totals Report.

Intra-Day Scheduling

The WFM Web for Supervisors Intra-Day schedule views enable you to make real-time adjustments to schedule scenarios or to the Master Schedule. You can insert exceptions, edit or change shift start and end times, assign meetings, enter time off for an agent who has suddenly gone home ill, change the activities agents are working on, or make other changes to the schedule to improve contact center performance and to make the schedule reflect actual contact center circumstances.

You can make changes one at a time or use one of the Schedule wizards to make changes to multiple agents' schedules at once.

Intra-Day Schedule Re-Optimization

When you build a schedule in WFM, the scheduling algorithm minimizes the over and under-staffing of agents against the forecasted staffing requirements, while meeting the configured working rules. Since schedules can be built several weeks in advance, a variety of circumstances can cause the schedule to become suboptimal by the time a particular schedule day arrives.

Here are some examples:

- Contact center management re-forecast volumes and staffing for the day.
- Agents called in sick or were granted time off.
- Existing agent schedules were manually adjusted.
- Additional agents were added into the schedule.
- Meetings or other types of exceptions were added to the schedule.

It does not make sense to re-optimize schedule items for days or hours that have already passed. For most contact centers, it is also not practical to re-optimize the current hour. Any changes to meals, breaks, and/or work activities might be difficult to communicate to the affected agents. For these reasons, a re-optimization wizard allows you to select the date, start time, affected agents, and the

set of schedule items to be re-optimized.

For example, you have the option to re-optimize the placement of:

- Breaks only
- Meals and breaks only
- Activity sets/task sequences/activities only
- Breaks/meals/activity sets/task sequences/activities without affecting shift start/end times
- Breaks/meals/activity sets/task sequences/activities, and shift start/end times

Re-optimization provides some flexibility if you do not wish to change certain shift items or work activities because it might be difficult for your agents to adjust to those changes. For example, if agents use their meal breaks to go out of the office and go to appointments, you might not want to change these times once they have been published. Similarly, you can decide whether shift durations should be allowed to change or not. In some contact centers, this can be done to offer additional work hours to certain agents. In other contact centers, this is not a desired practice.

Additionally, you can choose to exclude from re-optimization any agents whose schedules have already been manually edited. You might have already spent time manually adjusting shift items or work activities for an agent (for example, you moved meals or breaks based on a particular request from an agent) and you don’t want to lose those changes.

Pending Schedule Changes

Users who do not have the Approve Changes security permission enabled can make only pending changes to the Master Schedule. Pending changes do not affect the official version of the Master Schedule.

A user with the Approve Changes security permission enabled must commit pending changes before they are incorporated into the official schedule. Discarded changes are *rolled* back.

Alternatively, such a user can go to the Master Schedule Changes Approval module (invisible to users without the Approve Changes security permission enabled). There, she or he can review the pending changes to the Master Schedule made by any user, and approve or reject them.

You can also enter pending changes into a schedule scenario. Such pending changes are visible only to the user who entered them. You can later review your pending changes, and either commit them or roll them back. Once committed, the changes are visible to all users with access to the schedule scenario.

> **Tip**
>
> If a scenario with pending changes is published to the Master Schedule, the pending changes are not included.

Schedule State Group Totals View

This view provides intra-day totals of the number of agents in each schedule state group (Meetings, Lunch, Breaks, and more).

It helps managers and supervisors understand how many agents are scheduled for each type of activity during a particular time period, and provides a snapshot view of productive vs. nonproductive time on an intra-day basis.

Schedule Validation Messages

When you are creating and publishing schedules, you might see one or more error or warning messages while WFM is building or validating schedules. For a complete list of these messages and their descriptions, see Schedule Validation Errors and Warnings in this guide.

Forecasting

Use the Workforce Management (WFM) Forecasting tools to predict contact-center workload and staffing requirements, based on historical data or user-defined templates. WFM offers flexibility, by providing multiple methods to forecast the workload and staffing requirements for work activities.

Start by creating one or more forecast scenarios. Creating multiple scenarios enables you to see the effects of changes to forecasting parameters, such as service objectives and predicted interaction volume. When you have determined the most satisfactory forecast, publish it, making it the Master Forecast on which schedule scenarios, and eventually the Master Schedule, are based.

If you choose to, you can derive workload forecasts from historical information that is either collected automatically by WFM from the Genesys system or imported from `.csv` files using the WFM Web. You can also create workload and staffing forecasts as reusable templates. Once you have generated a workload prediction, WFM determines the staffing requirements needed to service the workload, taking into account any applicable service objectives.

> **Important**
>
> WFM Configuration Utility is no longer supported and the Import/Export Data functionality is now in WFM Web. See the Import and Forecast Report topics in the *Workforce Management Web for Supervisors Help*.

Using Historical Data

WFM automatically collects historical data from Stat Server for all work activities handled by the Genesys platform encompassing all media, contact segments, and service types. Using Genesys Stat Server, rather than automatic call distribution (ACD) reports, provides you with far greater flexibility in defining and gathering statistics that provide an appropriate measure of contact center performance over time.

WFM analyzes interaction volumes and average handling time (AHT) in order to predict future trends for each work activity. This data enables WFM to build accurate forecasts for the anticipated workload, and to calculate the staffing required to meet that workload.

Using the WFM API, you can also develop a custom application that will enable Interaction Volume and AHT data from a third-party system to be imported directly into the WFM database. This is useful if you want to use WFM to forecast and schedule a type of work that is not being routed by Genesys.

Flexible Forecasting

WFM supports an unlimited number of forecasting scenarios, enabling you to create multiple forecasts and evaluate how changes in the parameters or the forecasting method that you use, affect expected service objectives. Resource planners can then easily create reliable forecasts, fine-tuning the results in tabular and graphical data views. You can also save forecast workforce data as templates for use in subsequent forecast building.

WFM offers several different forecasting methods of varying complexity:

- **Automated**—Use one of two WFM automated algorithms:
  - Expert Average Engine (EAE)—Good for work activities that have a reasonable amount of historical data or those that fluctuate more dramatically because of unknown factors.
  - Universal Modeling Engine (UME)—Good for work activities with more than one year of historical data and accurate forecasting event information.
- **Template based**—Good for work activities with little historical information or for activities with very predictable interaction traffic.
- **Copy historical data**—Good for work activities when you have some historical data, but not enough to use the Automated method (EAE or UME). You can combine the historical data with overlap templates, which fill in gaps in the historical data.
- **Use value**—Good for work activities if your site activity load is very regular. Applies a specific interaction volume or AHT to each time interval in the scenario.

Using Forecasting Events

WFM can track events that might affect interaction volume. A sales promotion or marketing campaign, for example, might cause a predictable peak in interaction volume. These types of events are entered in WFM Web for Supervisors and used by the advanced WFM algorithms. If an event recurs, the forecasting algorithms learn the impact of that event and account for its impact in future forecasts.

Setting Service Objectives

With WFM forecasting, you can set specific service objectives. You can also adjust these objectives and then rebuild the forecast, which provides a detailed "what-if" analysis of the potential impact of staffing or service-objective changes. WFM forecasting uses parameters to determine effects of different service objective settings, such as:

- Interaction volumes
- Average handle time (AHT)
- Average speed of answer (ASA)

- Desired percentage of interactions handled within a target time (service level)
- Occupancy
- Maximum percentage of abandoned interactions

Deferred-Work Forecasting

WFM is designed to consider work activities that can be deferred, such as email, as inherently different from *immediate* work, such as a phone call. WFM uses a proprietary algorithm designed to distribute the backlog of interactions that can be deferred across the day in order to satisfy your service goal, which is expressed in minutes, hours, or days.

Spreading out the deferred work enables you to avoid spikes in workload forecasts when a contact center opens for the day, or during brief periods of high volume.

Multi-Skill Support

A multi-skilled contact center presents an opportunity for increased productivity.

An agent might be idle in a single-skill environment, because she cannot answer calls that are queuing for a particular activity/skill that she possesses—because the schedule prevents her from using that skill.

In a multi-skilled environment, the agent can use her additional skills to answer calls. A multi-skilled agent is qualified to work on multiple activities, and therefore can perform different types of work during a shift.

In a multi-skill environment, an agent can be available for multiple activities during any timestep. The agent can be scheduled to work on an activity for only part of a timestep, and only the fraction of the time period during which she works is counted.

Because of this, the value for staffing can be expressed as a fraction. For details, see Multi Forecasting Primer.

Monitoring Workforce Performance and Adherence

Workforce Management (WFM) provides the tools, described in this topic, to help you can monitor the performance and adherence in your workforce environment. You can generate Performance and Adherence reports, enabling you to analyze data and spot trends that might be developing over time. These reports and many others provided by WFM, are described in this topic.

Performance

The Performance modules compare the forecast and schedule to what is actually happening in the contact center. WFM shows intra-day statistics, such as interaction volume, average handling time (AHT), agents logged in, service level, average speed of answer (ASA), and abandons, and compares them to the planned values.

Intra-day contact-center performance data is displayed in an informative and easy-to-read format, enabling efficient performance monitoring and quick response to unanticipated interaction flow or agent-staffing situations.

WFM also provides a “what-if” calculator as an aid to decision making. You can enter new values for staffing, interaction volume, and/or other performance statistics into the `What-If` window. The what-if calculator then supplies the results to be expected if the values change as you project.

See also, Contact Center Performance Report Metrics.

Adherence

Workforce Management provides real-time agent-adherence data, which compares the current agent status to the scheduled status. WFM can track agent adherence per time interval on a single channel or across multiple channels simultaneously.

Agents who are not adhering to their schedules (within user-defined thresholds) are highlighted in yellow if they are nonadherent or in red if they are severely nonadherent. WFM also displays the amount of time, in minutes, that the agent’s current status has differed from the scheduled status. This running total is continually updated.

Multi-Channel Adherence

To enable tracking of multi-channel adherence in WFM Web, assign a media channel to a Schedule State Group; WFM then calculates adherence by comparing real-time states to the scheduled states

for that channel. See the example in Use Case 1: Multi-Channel Adherence.

Use Case 1: Multi-Channel Adherence
A site in the contact center has voice and email related activities, and agents can make outbound calls, which are scheduled as exceptions. The schedule state groups can be configured as follows:

Schedule state group	Channel	Schedule state	Real-time state
Inbound calls	Voice/unspecified	All (immediate) voice-related activities	**WaitForNextCall**, **CallRinging**, **AfterCallWork**, **CallInbound**
Outbound calls	Voice/unspecified	Exception types that represent outbound call work	**WaitForNextCall**, **CallRinging**, **AfterCallWork**, **CallInbound**
E-mail	*<channel_name>* (for example, **email**)	Deferred, email related activities	**WaitForNextCall**, **CallRinging**, **AfterCallWork**, **CallInbound**
Overhead	None (no channel)	Breaks, meals, time off, exceptions, etc.	**NotReadyForTheNextCall**, **LoggedOut**

If WFM is tracking multi-channel adherence, and there are no Schedule State Groups with a channel name under the Site, WFM calculates adherence as it would for a single agent real-time state, and Stat Server aggregates the statistics as it did prior to 8.5. However, if there is at least one Schedule State Group with a configured channel name, WFM tracks multiple channels. For each Site, WFM tracks as many different channels as there are distinct channel names for all Schedule State Groups under the Site.

For information about how to configure multi-channel adherence, see the topic Configuring Media Channels for Schedule State Groups in the *Workforce Management Web for Supervisors Help*.

For information about WFM adherence calculations, see How WFM Calculates Adherence.

> **Tip**
> After updating to 8.5, if any site in your environment supports multiple media channels and you have configured Schedule State Groups to a setting other than **None**, the Agent Adherence Report includes data that differs from the data in WFM 8.1.3 in two ways:
>
> 1. For any given set of criteria (site/timezone/agent/date), the data in the 8.5 report is different than the data in the 8.1.3 report, because the adherence rules change when you add multi-channel settings to Schedule State Groups, which means the adherence percentages also changes.
> 2. The Schedule State, Agent State, Start Time, End Time columns are in reverse order. In 8.5, the report displays the columns in this order: Start Time, End Time, Schedule State, Agent State.

Using Reason Codes

WFM enables you to enter reason (aux) codes when you configure agent-adherence rules. The reason codes are linked to Genesys **Agent States** and add additional details to the state information. The Genesys **state + reason** code combination is mapped to WFM Scheduled State Groups and is displayed in **Adherence** views.

> **Tip**
> When you filter on user-defined reason codes in the **Adherence Filter** dialog, the reason code that you specify must not contain any spaces within or at the end of the key value.

For example, an agent might signal that she is in a **NotReady** state. By adding a reason code, she can specify that she is doing after-call work or answering email. This detailed information then appears in the WFM **Web Adherence Details** view and agent-adherence reports.

To use reason codes, your switch must support them. See your T-Server documentation to find out whether your switch can include reason codes when it sends Genesys **TEvents**.

See also, Agent Adherence Report Metrics and End Notes

Reports

WFM Web for Supervisors provides access to a variety of reports that are designed to present key contact-center data in a flexible and accessible format. The report types are:

- Configuration Reports—Contain information about work activity configuration.
- Policies Reports—Contain information about agents, contracts, shifts, and rotating patterns.
- Calendar Reports—Contain information about time off and agent calendar items.
- Forecast Reports—Display forecast interaction volumes, AHT, and staffing requirements in tabular and graph formats.
- Schedule Reports—Display schedule data for agents, activities, teams, sites, multi-site activities, and business units at various granularities. Also present budget information and schedule validation warnings and errors.
- Performance Reports—Contain various types of contact-center performance statistics in detailed and summary formats.
- Adherence Reports—Contain agent-adherence information for agents, teams, sites, business units, and the enterprise.
- Audit Reports—Contain information that enables you to audit a history of changes made within the Calendar subsystem and a history of changes made to the Master Schedule.

For more information about Workforce Management report data and other metrics, see WFM Metrics.

How WFM Calculates Adherence

Workforce Management (WFM) calculates adherence for single channel or multi-channel environments. For sites, in which there are schedule state groups configured for a single channel, WFM compares the agent's real-time state to the current schedule state. For sites, in which there are schedule state groups configured for multiple channels, WFM compares the agent's real-time state and reason code on each channel, with the scheduled states for that same channel during each specified time interval. If at least one scheduled state for that channel can be mapped to the channel real-time state, according to its adherence rules, the agent is considered adherent.

Single-Channel Adherence Calculation

Single channel agent adherence is calculated as follows:

1. WFM maps the agent's real-time state plus the reason code. If there is more than one reason code, there is more than one state + reason code mapping. If there is no reason code, WFM uses only the state for mapping. For example, if the agent has real-time state WaitingForNextCall with reason codes r1 and r2, for adherence purposes, WFM maps WaitingForNextCall + r1 and WaitingForNextCall + r2.
2. WFM then finds all schedule state groups that are adherent to at least one agent real-time state from step 1. A list of schedule state groups is compiled that maps to the state, based on the configuration of the schedule state groups.
3. WFM obtains all scheduled states from the current agent schedule and maps them to the schedule state groups.
4. WFM collects all schedule state groups from step 3.
5. WFM Intersects the sets of schedule state groups from steps 2 and 4. If the intersection is not empty, the agent is adherent.

Multi-Channel Adherence Calculation

Multi-channel agent adherence is calculated as follows:

1. Similar to step 1 in Single-Channel Adherence Calculation, WFM maps the agent real-time state + reason code. However, in addition to the aggregated agent state, WFM also adds separate real-time states for each channel configured on the site. (Agents can sometimes have no state on certain channels.) If reason codes are used, WFM could map multiple state + reason code pairs for each channel, plus the aggregated state.
2. Similar to step 2 in Single-Channel Adherence Calculation, WFM maps schedule state groups adherent to the aggregated state. However, in addition, WFM finds a separate set of schedule state groups for each channel. WFM considers only the schedule state groups that are specifically assigned to a particular channel for adherence with the states on that channel. WFM considers the schedule state groups without a channel for adherence with the aggregated agent state.

3. WFM obtains all scheduled states from the current agent schedule and maps them to the schedule state groups.
4. WFM collects all schedule state groups from step 3.
5. WFM Intersects the sets of schedule state groups from steps 2 and 4 separately for each channel. If both sets are empty or the intersection is not empty, WFM considers the agent is adherent to the channel. For the aggregated agent status, WFM assumes adherence, when either the pair in step 4 is empty or step 2 and step 4 intersect. WFM considers the agent adherent, if he/she is adherent on all channels and adherent to the aggregated status.

The multi-channel algorithm also comes to a boolean conclusion; that is, the agent is either adherent or non-adherent. However, to be adherent the agent must be adherent on every channel, on which he/she is scheduled or, for which he/she receives a real-time state. Also, if the agent is scheduled on non-channel-related states, he/she must also be adherent to those states. See the example in Use Case 2: Multi-Channel Adherence.

Use Case 2: Multi-Channel Adherence
This use case is based on the schedule state group configuration in Use Case 1: Multi-Channel Adherence.

Summary	Real-time state	Scheduled states	Adherence
Agent is working on voice only, but scheduled for email and voice	Agent state: CallInbound DN email: NotReady DN 2323: CallInbound	E-mail activity, voice activity	Not adherent
Agent is working on email and voice, but scheduled for email only.	Agent state: CallInbound DN email: WaitForNextCall DN 2323: CallInbound	E-mail activity	Not adherent
Agent is on a break.	Agent state: NotReady DN email: NotReady DN 2323:NotReady	Break	Adherent

Calculation of Agent Headcount

WFM calculates the agent head count for activities in this way: If the activity belongs to a channel-related schedule state group, the agent is counted for the activity, only if the he/she is compliant with the adherence rules for that channel. Also, if an agent is non adherent overall, but adherent for a channel, the agent is added to the headcount for the activities for that channel.

Calendar Management

Workforce Management's (WFM) unique agent-based scheduling approach enables robust agent-calendar management prior to scheduling. WFM can incorporate known obligations into agent schedules to ensure that agents can keep appointments and request adjusted shifts or working hours while WFM maximizes contact-center efficiency. By more accurately planning for known obligations, WFM can take the guesswork out of forecasting for staffing overheads, leading to more efficient use of the agent pool.

Planning and Scheduling Meetings

The Meeting Planner provides great flexibility when planning meetings. You select the meeting participants, define the range of time in which the meeting should occur, and set the duration of the meeting. You can configure recurring meetings, specifying either the number of occurrences or the start and end dates of the meeting series and the interval (weekly, for example).

The Meeting Scheduler builds the meeting into the work schedules of the participants during the scheduling process, finding the optimal times for agents' shifts and the meeting at the same time.

The meeting is included as an exception in all attendees' schedules. WFM displays the meeting exception in the **Schedule** views using the meeting short name, so you can find it easily when looking at schedules. If a sufficient percentage of participating agents is unavailable, then the meeting is not scheduled, and you receive a warning.

Additional Functionality

Use the Meeting Scheduler...

- To insert meetings directly into multiple agent schedules as an exception after building the schedule.
- To create optimally-scheduled meetings within an existing schedule.

Use the Meeting Planner...

- To configure meetings that are pre-planned, such as recurring team meetings.

Play 'what if'...

- To add a meeting to a schedule that has already been built, and WFM will insert the meeting into the most optimal time slot, based on the list of participants.

Supervisors can use this feature to better determine the optimal meeting times that otherwise required manual calculation or guesswork.

Time Off

You can use the WFM Web's **Time-Off Types** module to configure multiple types of time off. Doing so enables you to set different characteristics for each type, define different rules for the accumulation of accrued time off and distribution of awarded time off, and fine-tune your record-keeping using the Time-Off Report.

Time off can be accrued or awarded. The settings for these differ slightly, but both are configured in the WFM Web's **Time-Off Rules** module. You can configure separate time-off rules for each time-off type, or assign several time-off types to the same time-off rule, meaning all of the time-off types assigned to this rule share the time-off balance.

You can also associate multiple time-off rules with one time-off type. For example, you might want to have different accrual rules for agents with more seniority than for those who were recently hired. By assigning the appropriate time-off rule to each agent who receives time off of that type, you can determine the rate at which each agent accrues the time off.

Use the **Calendar** module in WFM Web for Supervisors to set time-off limits. You can set time-off limits for an activity, for a team, or for an entire site. You can also set different time-off limits for a specified period. For example, you might want to further limit time off because of special circumstances.

You can also set different time-off limits for various periods during the day. For example, you might permit more time off in the evening than in the busier morning.

Agents can view their balances for each time-off type and request time off in WFM Web for Agents. Agents can request both full-day and part-day time off. Supervisors can enter time-off requests into the WFM Web for Supervisors **Calendar** module.

Requested time off can be manually approved by the supervisor or automatically approved by WFM Web, based on agent time-off balances and the limits set on the number of agents with time off per activity, team, or site.

When the Scheduler runs, all time off that has been granted is scheduled. Additional time off can be scheduled, depending on whether it meets time-off limits and scheduling optimization constraints. Once time off is scheduled, agents can no longer edit or remove the time-off assignment using WFM Web for Agents.

Time-Off Wait-List

When a time-off request is made, but time-off limits have already been reached, if the agent asks for the request to be wait-listed, the request remains in the WFM Calendar in a **Preferred** status, rather than being declined. Supervisors can view this *wait list* in the Calendar, sorting the time-off requests by timestamp, and selectively grant time-off requests.

Supervisors can grant agent time off for future periods, if the time-off limits are raised, or if other agents cancel their existing requests. This improves supervisor productivity by no longer requiring them to track these requests with a paper-based system.

Your supervisor can enable automatic approval (also known as *auto-granting*), which eliminates the need for that supervisor to approve your legitimate time-off requests.

Time Off Within Bidding Periods

You can enable Time-Off Bidding by configuring bidding periods in WFM Web and associating them with sites within your enterprise. Agents within the site can submit multiple time-off requests concurrently and WFM processes them within the specified bidding period. This configuration ensures that agent requests are all granted, declined, or wait-listed on the same processing date and eliminates the possibility of some requests for a vacation period being granted, while others are not. For details, see Time-Off Bidding.

Schedule Exceptions

Exceptions are not work items but are additions to the schedule that must be taken into account to allocate agent time correctly. Examples of exceptions include meetings, training, and special projects.

Exception Types

You create exception types based on the needs of your contact center. These types can be extremely flexible and you can link them to other WFM scheduling features. For example, you can specify that some exception types are used in meeting planning, and that some can be converted to a day off, if necessary.

Exceptions can be full-day or part-day. You can assign multiple part-day exceptions, assuming they do not overlap or otherwise violate internal WFM consistency checks.

Exception and Preference Hierarchy

Exceptions and preferences are ranked in a hierarchy. This means that, if multiple exceptions and preferences are assigned for an agent on a single day, Calendar Management analyzes the assignments and immediately selects the highest-priority exception for assignment, noting the others as declined.

However, declined exceptions and preferences are stored in the WFM database, in case there are changes to calendar information later. If, for example, a training session is canceled, an agent’s previously overridden day-off preference might then change status and be available for scheduling.

Time-Off Bidding

Time-off bidding enables WFM to process agent requests for time off that are within configured bidding periods. This ensures that concurrent requests made for the time slot defined by the bidding period are granted, declined, or wait-listed during multiple iterations of bid processing, which occurs between the bidding period's **Start Date and Time** and **End Date and Time**. WFM grants these requests, based on the **Seniority and Rank** and **First come, first served** bidding period properties, if there are available time slots. After the bidding process is finished, WFM grants all other requests (previously not granted), based on the order of submission.

Time-off requests within a bidding period are processed multiple times, enabling agents to make changes to their requests when they do not get their preferred time-off choice in the first round, due to configured time-off limits. For example, if the highest-ranking agent's time-off request cannot be granted within a bidding period processing iteration, WFM waits for a period of time (set in the **Allowed Agent Timeout** bidding period property) to ensure that the agent has time to change his/her time-off request.

For information about time-off basics, when the bidding feature is not enabled, see the WFM Time-Off Primer.

Bidding Periods

Create and configure bidding periods in WFM Web for Supervisors **Configuration** module. Bidding periods define rules and constraints that are applied when agents enter their time-off requests and continue to be applied during bid processing. Time-off requests are processed between the Processing Start date/time and Closing date/time that is specified in the bidding period. Your contact center requirements will determine whether or not you need to create bidding periods.

Any changes you make to the bidding period can take effect immediately. If items are flagged by a bidding period and you later delete the period before the Processing Start date/time occurs, requests for that period are not processed unless you create a new bidding period that covers the dates of those items. If you enter items and then set the bidding period, items are processed if they are eligible for processing (flagged as Preferred, Wait-Listed).

If you need to temporarily suspend a bidding period process for any reason, you can do so by changing the **Do not process this bidding period** setting in the bidding period **Properties** pane. See Suspending a Bidding Period in the *Workforce Management Web for Supervisors Help*

Date and Time Settings in Bidding Period Properties

Bidding period properties include a few date and time settings, such as **Opening Date and Time**, **Processing Start Date and Time**, **Closing Date and Time**, **Start Date and Time**, and **End Date and Time**. You must understand how each of these settings (and all of the other properties of the bidding period) affect the bid assignment process, especially if you are creating multiple bidding periods, some with processes running in parallel.

The time zone for these dates/times is specified in the bidding period property **Time Zone**. For a description of this setting and all of the other configurable bidding period properties, see Bidding

Period Properties in the *Workforce Management Web for Supervisors Help*.

Batching Requests

WFM batches the agent's time-off request for several dates that fall within a bidding period, marks them as one request and, after all of the items pass validation, saves them to the WFM database. The initial request can contain any number of items.

A request can fall into several bidding periods, but is eligible for processing in only one bidding period. A request is eligible for processing if it is submitted between the bidding period's Opening date/time and the Closing date/time.

Agents cannot delete or recall a single item in a batch request that contains multiple items; WFM performs the same action on all items in the request. The same rule applies if the status of time-off items in the batch changes (to Granted, Preferred, or Declined). However, a supervisor can override it.

Bid Processing

You can manually modify all items in a request before the Processing Start date/time. Items in a request that you manually grant are not automatically processed. WFM processes bidding items between the Processing Start date/time and the Closing date/time if the requests in the specified bidding period have not been processed.

During bid processing, any one of the following scenarios can occur:

- All items in request can be auto-granted (and possibly auto-published), based on the agent's ranking criteria, assuming agent’s bidding status is set to Ready.
- WFM keeps all items in a request in Preferred status, if the following conditions apply:
  - Auto-grant does not apply for at least one item in the batch request.
  - The bidding period no longer applies (was deleted or edited) for at least one item in the request.
  - There are no time-off slots available to accommodate all batch request items during bid processing.

After bid processing is finished, requests can become eligible for wait-list processing on a first come, first served basis.

Bid Process Flow

This bid process flow is described here, in detail.

1. User creates Bidding Period

The time-off bidding process flow begins with creating a Bidding Period object, specifying time-off request dates/times, setting the Opening date/time and Processing Start/Closing dates/times, and associating it with specific sites within a business unit. The bidding period begins to affect agent

requests after the Opening date/time. Preferred, wait-listed time-off requests made before the bidding period is opened are not processed until bidding period processing ends. Then, they are all processed on a first come, first served basis.

2. Agents enter time-off requests

After the Opening date/time, new time-off requests become preferred, wait-listed. WFM begins pooling these requests for future processing. Agents should be encouraged to enter their most preferred time-off choice, even if they don't know whether or not it will be granted. The automatic bidding process works most efficiently when the most preferred time-off choice is in the request pool, because it does not have to stop to allow the agent to make another time-off choice.

After entering their first choice, agents set their bidding status to Ready, enabling bidding process to consider the request at the appropriate time. If agents are not participating in the bidding and not requesting time-off, they must still set their bidding status to Ready. If they do nothing, their status is Entering, which prompts the automatic process to stop and wait for time-off requests.

3. Automatic bid assignment process runs. Agents modify their time off choices, if necessary

At the specified Processing Start date/time, WFM begins attempts to grant agent time-off requests, considering agents one-by-one in the predefined order. If all of the preferred, wait-listed time-off requests within the bidding period can be granted, WFM changes the agent's bidding status to Granted. WFM sends an email notification to the agent, indicating that the requests have been granted and then, moves on to the next agent.

If WFM cannot grant any of the agent's preferred, wait-listed requests within the bidding period, it estimates a timeout interval, enabling the agent to change his/her time-off requests to comply with time-off limits. WFM sets the agent status to Waiting and emails a notification to the agent, indicating the timeout interval in which the agent can update his/her request. WFM does not process lower-ranking agents, based on the bidding criteria, until:

1. The current agent changes his/her time-off requests and/or signals WFM to proceed, by setting his/her bidding status to Ready.
2. The estimated timeout interval expires and WFM sets the agent bidding status to Timed Out.
3. The supervisor manually skips the agent, by setting his/her bidding status to Skipped.

The bid assignment process restarts between Processing Start date/time and the Closing date/time to process the time-off requests at the configured frequency. If there is nothing to process, (some agents are still in the timeout interval or all agents are processed) the process skips the bidding period until the next iteration.

4. Supervisors can enter new time-off requests or modify existing requests at any time

Supervisors can enter new time-off requests for the agent, change existing requests, or manually grant requests at any time. Also, when the bid assignment process is waiting for the agent to change the time-off request (agent status is **Waiting**), supervisors can manually skip the agent. To adjust the processing order, supervisors can set the agent's status to **Ready** or **Skipped** at any time, indicating that the bidding process should consider, or not consider the agent for bidding.

When the agent's status is **Skipped**, the bid assignment process moves on to the next agent in the next iteration.

If the supervisor sets the **Wait-listed** option to the preferred time-off item they created and if it is within the time-off bidding period, then the bidding process handles this request as if the agent is bidding. If this time-off item is not within the time-off bidding period, then the **Wait-listed** option will not be saved.

5. Agents can enter new requests at any time

Agents can enter new time-off requests at any time between the Opening date/time and Closing date/time, even if the bid assignment process has started and WFM has already processed the agent's existing requests. The new requests are set to preferred, wait-listed, like all other requests that are pooled for bidding. After entering the new requests, agents must change their bidding status to **Ready**. The bid assignment process considers the new requests, based on the bidding period criteria. If there are time-off requests that are already granted to lower-ranked agents, based on the bidding period criteria, those requests are not revoked. However, the agent's new preferred, wait-listed requests are considered ahead of other lower-ranking agents who still have time-off requests that have not been granted.

Time-Off Balances

Bidding time-off items display as regular time-off items and reduce the agent's time-off balance for the specific time-off type.

Wait-List Processing

Wait-Listed requests are not processed within bidding periods that are not yet processed. If there are no configured bidding periods or a bidding period for the wait-listed item date is already processed, the entire request is wait-listed if the BatchRequest configuration option in the **[CalendarService]** section of WFM Server Application is set to `true`. In previous WFM releases, items were wait-listed one by one.

WFM generates a warning when the time-off limit has been reached.

Time-Off Limits

Time-off limits can be changed during an active bidding period, but do not take effect until the Processing Start date/time for that period. The bidding period implies that time-off limits are set to `0` and time-off requests are not granted. If there is no configured bidding period for a certain date, time-off limits work as in previous WFM releases.

Time-Off Limits in the Agent Interface

This is how time-off limits appear in the Web for Agents interface: If agents are requesting time-off within an open bidding period, only Granted time off will be counted and displayed in their Time Off view.

Initially, when bidding period opens and agents begin to request time off, they will see all open time-off slots according to time-off limits, irregardless of how many agents have preferred a particular time slot. When bid processing starts and WFM begins granting requests, the agents begin to see slots being taken. When the automatic bid assignments process pauses and the agent status is **Waiting**, the agent will see slots available for him/her.

Interoperability between Releases

The enhancements to the time-off bidding feature described in these topic are implemented in the 8.5.203 release. Therefore, in certain environments, some WFM components might have the feature implementation deployed and some might not. If this is the case in your environment, WFM will revert back to the 8.5.1 functionality, with the exception of all back-end algorithms—they will be replaced by the new ones. For example, if WFM Server is updated, but others, such as WFM Web and the WFM database are not, the new algorithm will still work, but with default values. If the WFM database is not updated, you might not be able to save some data, such as the bidding period agent statuses, but they would be gracefully handled by the WFM application.

The current first come, first served sorting criteria is new in release 8.5.203 and uses the timestamp from the last time the agent changed their bidding status to **Ready**. Previously, it was based on the Calendar item's timestamp.

Using Task Sequences

This topic presents information about how to configure task sequences. It supplements the information found in *Workforce Management Web for Supervisors Help*.

Definitions

Within Genesys Workforce Management, a task sequence is a defined period of time during that agents can work only on one task or a specified set of tasks, called an activity set. You could also think of a task sequence as an *activity sequence*.

Activities

Activities (tasks) are work that is tracked and managed using Workforce Management. For example, a business might define the following activities in WFM Web for product A:

- Answering inbound calls
- Responding to email
- Completing after-call work
- Performing scheduled callbacks
- Participating in chat sessions

These same activities might also be defined for products B and C.

You can use any activity set that is configured for a specific site and use the same activity set in any number of task sequences.

Purpose of Task Sequencing

Task sequences enable you to control how much the nature of an agent’s work changes during part of a day. You can avoid asking agents to jump constantly from activity to activity—a situation that can result in agent confusion and fatigue and lower productivity. You do this by configuring task sequences. Once configured, you can assign a task sequence to any compatible shift in the same site.

Creating Task Sequences

You create task sequences in the Web for Supervisors **Policies** module, by selecting **Shifts > Task Sequences**. The **Task Sequence** pane is also where you configure task sequences for a shift, by selecting one of three options:

- **Do not use Task Sequences**
- **Task sequences must be used**
- **Task sequences can optionally be used**

If you want to use task sequences, create them by configuring the settings in the Task Sequence panes. See **Task Sequence** panes in Web for Supervisors below.

Also, see the procedure Creating a Task Sequence in the *Workforce Management Web for Supervisors Help*.

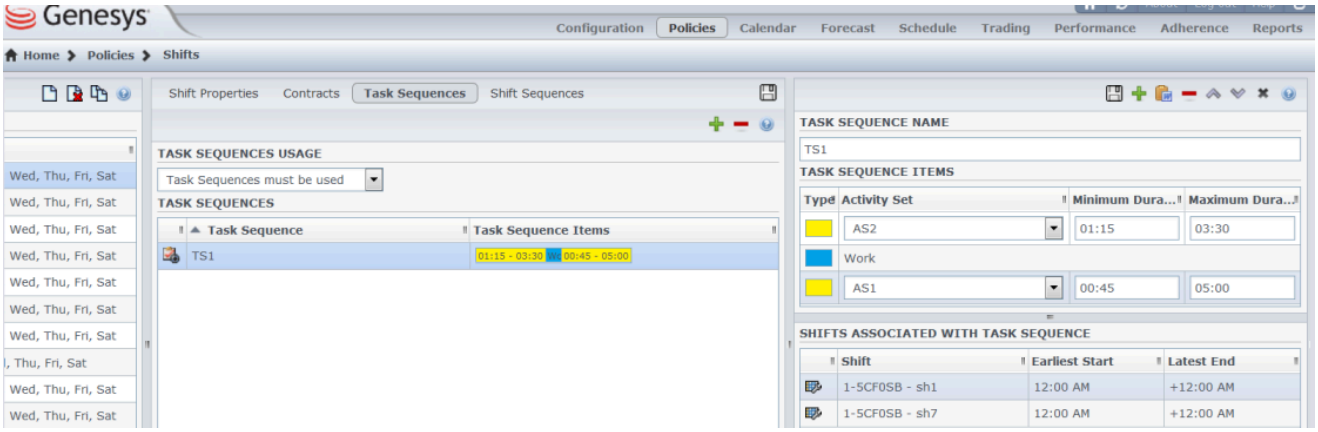

Figure: Task Sequence Settings

How Task Sequences Appear in WFM

After you configure task sequences and assign them to shifts (which are then assigned to agents), task sequences appear in the **Intra-Day** and **Agent-Extended** views.

The task sequence appears as an organized group of yellow and blue areas (unless you change the colors in WFM Web Supervisors' **Configuration** module). For example, the figure above shows a task sequence that consists of a regular work item in blue and two activity sets in yellow.

The schedule can contain elements other than task sequences, but the order of task sequence items remains the same.

Using Email Notifications

This topic provides information about how to use the Notifications module in Workforce Management (WFM) Web for Supervisors to configure email notifications, by site, for the following types of events:

- Schedule trade status changes—Agents and supervisors who are affected by schedule trade proposals or responses can receive these notifications.
- Time-off request status changes—Agents and supervisors who are affected by time-off requests can receive these notifications.
- Schedule modifications—Agents who are affected by schedule changes can receive these notifications.
- Time-off bidding changes—Supervisors and agents who are affected by time-off bidding status changes can receive these notifications.

Preparing to Send Notifications

WFM Daemon, a standalone server component, sends out notifications to agents and supervisors.

By default, WFM does not send out notifications to agents and supervisors. There are a few things you need to do before WFM sends them.

For example, agents and supervisors who are to receive email notifications must have their email addresses configured. These email addresses are stored as part of the **Person** object in the Genesys Configuration Database and are synchronized into WFM automatically.

Supervisors must have the appropriate security rights to configure notifications. See Configuration Role Privileges in the *Workforce Management Web for Supervisors Help*.

Additionally, WFM must be set up properly and connected to a customer-supplied SMTP server. For details about how to configure WFM Daemon to send notifications, see WFM Daemon Options. After you complete these steps and the procedures below, WFM sends notifications of the selected type.

Finally, you must select at least one site to send notifications of a given type in the **Associated Sites** tab in Web for Supervisors **Notifications** view.

Rules for Sending Notifications

WFM Daemon uses specific rules for sending each of the four types of notifications, see in the Rules for Sending Notifications in the *Workforce Management Web for Supervisors Help*.

Users must have the appropriate security rights to receive notifications. See Notification Role Privileges in the *Workforce Management Web for Supervisors Help*.

Setting Up Email Notifications

To set up email notifications, complete all of the procedures in this section.

Creating and Configuring WFM Daemon

Purpose: To create and configure the **WFM Daemon Application** object.

Start of Procedure

1. In Genesys Administrator, create the **WFM Daemon Application** and install it.
   See Creating Application Objects Manually.
2. Configure the WFM Daemon's connection to the **WFM Server Application**.
   See WFM Component Connections.
3. Configure the SMTP server settings for the WFM Daemon.
   See the WFM Daemon's [SMTP] configuration section.

End of Procedure

Configuring a Security Role

Purpose: To create a user security role to access email notifications.

Start of Procedure

1. In WFM Web for Supervisors' **Configuration** module, select **Roles**.
2. In the Role pane, click **New**.
   A new security role appears in the Role pane with a default name.
3. In the Role Privileges pane, change the **Name** of the role (if desired).
4. In the list of Role Privileges, expand **Notifications** and check the boxes beside the privileges you want to assign to this role.
   Be sure to uncheck all privileges in the entire list that you do not want to assign to this role.
5. Click **Save**.

End of Procedure

For a complete description of the WFM security roles and privileges, see **Roles** in the *Workforce Management Web for Supervisors Help*.

Assigning a Security Role to a User

Purpose: To assign a security role to a user, enabling access email notifications.

Start of Procedure

1. In WFM Web for Supervisors' **Configuration** module, select **Roles**.
2. At the top of the Role Privileges pane, click **Users**, and choose one of the following:
   - Click **Assign Users** to assign a WFM user to this role.
     A new pane opens, containing a list of WFM users.
   - Click **Import Genesys User** to assign a Genesys user to this role.
     A new pane opens, containing a list of Genesys users (in Genesys Administrator).

   New users are automatically granted access to all modules, objects, and sites
3. Select the users you want to assign to this role and click **Apply**.
4. In the Users pane, click **Save Now**.

End of Procedure

Adding E-mail Addresses to the WFM Database

Purpose: To add supervisor and agent email addresses to the WFM Database, so they can receive notifications.

Prerequisite: Supervisor and agent email addresses have been added to the WFM Database.

Start of Procedure

1. In Genesys Administrator, add these email addresses to the **Supervisor** and **Agent person** objects.
   After WFM synchronization, the email address will be available in the WFM Database.

End of Procedure

Enabling Notifications in Web for Supervisor

Purpose: To configure Web for Supervisors to enable notifications.

Start of Procedure

1. In Web for Supervisors' **Configuration** module, select **Notifications**.
2. Select **New**.
3. In the **Type** drop-down list, select a notification type.
4. Click any of the **Token** buttons to add them to the **Subject** field for all notifications of this type.
5. Populate the **Message Body** field for all notifications of this type.
   You can change the text in the subject and message body or keep the default.
6. Click the **Associated Sites** tab.
7. Check the sites for which you want to enable notifications.
8. Click **Save**.

If the WFM Daemon is running and properly connected to a running SMTP server, you can now use

the feature. Check WFM Daemon’s status in the Windows Services Control Panel or through the Solution Control Interface (SCI).

End of Procedure

For additional information about notifications, including descriptions of the rules that generate them, see Notifications in the *Workforce Management Web for Supervisors Help*.

Scheduling Breaks and Meals

This topic describes how to use Workforce Management (WFM) to schedule meals and breaks in conjunction with Exceptions.

Pre-planned Breaks and Meals

Workforce Management enables you to pre-plan the breaks and meals (called *shift items*) that will be scheduled during a particular shift. You can define several parameters for these shift items, such as the *time window* during which they should be scheduled and whether they are paid or unpaid.

For example, if you set up a shift called **8-Hour Full-Time**, as part of the shift item configuration, you have specified that there should be a 15- minute paid break in the shift. The **Min Length from Shift Start** parameter is set to `2:00` (2 hours) and the **Max Length from Shift Start** parameter is set to `4:00`.

Additionally, your shift item configuration specifies that there should be an unpaid meal in the middle of the shift, with both the **Min Time Before This Meal** and **Min Time After This Meal** parameters set to `3:00`.

You have configured a rotating pattern for a particular agent that specifies that the agent should work the 8-hour full-time shift every day, starting at 8:00 a.m.

Due to the shift item configuration, when WFM builds a schedule scenario that includes this agent, it will try to schedule the break and meal in the following time windows:

- It will try to schedule the break in the time window between 10:00 a.m. and 12:00 p.m.
- It will try to schedule the meal in the time window between 11:00 a.m. and 1:30 p.m.

Sometimes the configured time windows for breaks and/or meals conflicts with planned exceptions, such as meetings, training sessions, or administrative time, that were entered through the WFM Calendar. In these cases, the behavior of the Scheduler varies, depending on the particular type of shift item and its properties.

Default Behavior of the Scheduler

This section describes the default behavior of the Scheduler in the following three scenarios.

When Unpaid Breaks Conflict with Exceptions

When the time window of an unpaid break is covered by a planned exception, the Scheduler *relaxes* the constraints of the break, in order to schedule it. That is, the time window is widened in both

directions (if possible) so that the break can be scheduled adjacent to the exception—either immediately before the exception or immediately after the exception.

This relaxation of the break constraints occurs because unpaid breaks are considered mandatory by the Scheduler due to their effect on the paid time of the shift.

There will be instances when one or more unpaid break(s) cannot be scheduled, even though they are considered mandatory. For example, if a shift has a paid duration of 8 hours, and there is a granted exception in the Calendar that also has a paid duration of 8 hours, that would not leave any time remaining for the Scheduler to place an unpaid break. As a result, the unpaid break is not scheduled and a warning is generated when the scenario is built.

When Paid Breaks Conflict with Exceptions

Unlike unpaid breaks, by default, paid breaks are not considered mandatory. Therefore, if there is a conflict between a planned exception and a paid break—so that the time window of the paid break is covered by the exception—by default, the paid break is not scheduled when the scenario is built.

When Meals Conflict with Exceptions

Meals are considered a mandatory part of a shift, if the shift has a meal configured. If there is a conflict between a planned exception and a meal—so that the time window of the meal is covered by the planned time for the exception—one of two things happen when the scenario is built:

- WFM looks for, and finds, another shift that is compatible with the agent’s contract, and allows the exception to be scheduled, or
- When WFM resolves the conflicting items in the Calendar (prior to the schedule being built), it declines the exception unless it can find another shift that is compatible with the agent's contract that allows the exception to be scheduled. In this case, the exception is not scheduled and a warning is generated.

Changing the Behavior of the Scheduler

Configuration options are available that can change the default behavior of the Scheduler when breaks and/or meal time windows conflict with planned exceptions. The options are described in this section.

Paid Breaks are Mandatory

This is an optional setting that controls whether or not a paid break is scheduled even when the time interval of the break is covered by an exception. As described above, this is always the behavior of the Scheduler with unpaid breaks. However, if this setting is turned on, the same behavior occurs with paid breaks; if the time interval of the paid break is covered by an exception, the paid break will be scheduled adjacent to the exception—either immediately before the exception or immediately after it.

There still might be times when some breaks cannot be scheduled, even if this setting is turned on, because there is not enough room in the shift to accommodate the exception and all the configured

breaks. In this case, a warning will be generated when the scenario is built.

See below, some sample scenarios when WFM would not be able to schedule a break (paid or unpaid), regardless of whether the user defines this as being mandatory or not:

Example 1:
There is a shift with an 8-hour duration but which is 7.5 paid hours. The user grants a paid exception that is 7.5 hours, right in the middle of the shift, leaving 15 minutes on either side of the exception in which to schedule any breaks. If there is a 30-minute unpaid break to schedule, it cannot be scheduled unless the user wants to allow breaks to be scheduled “during the exception” (see below for more information about that optional setting).

Example 2:
There is an 8-hour shift from 8:00 a.m. to 4:00 p.m. The configuration of Break 1 (15-min) allows the break to be scheduled in a time window between 9:00 A.M -10:30 a.m. The configuration of Break 2 (15-min) allows the break to be scheduled within a time window between 2:00 p.m. - 4:00 p.m. The user grants an exception in the Calendar from 8:00 a.m. - 3:45 p.m. Unless the user wants to allow break(s) to be scheduled “during the exception,” one of the breaks cannot be scheduled, because there are only 15 minutes within the shift that is not already covered by the exception, and two 15-minute breaks to schedule.

Example 3:
There is an 8-hour shift from 8:00 a.m. - 4:00 p.m. The user grants an exception in the Calendar from 8:00 a.m. - 11:45 a.m. and another exception from 12:00 p.m. - 4:00 p.m. This leaves only 15 minutes between the two exceptions in which to schedule any breaks. Unless the user wishes to allow break(s) to be scheduled “during the exception,” it is likely that one or more breaks would not be scheduled.

Example 4:
Assume a shift from 8:00 a.m. - 1:00 p.m., one exception from 8:30 a.m. - 11:30 a.m., and two 1-hour breaks (the first one with configured window from 9:00 a.m. - 11:00 a.m., and the second one from 12:00 p.m. - 1:00 p.m.). Because the exception covers the first break, the break should be placed after the exception (because there is no room before it), from 11:30 a.m. - 12:30 p.m. Because of the scheduling of the first break, there is no room for the second break at all (but not because of the exception). In this case, one of the breaks would not be scheduled.

Suppress Break-Related Warnings

This is an optional setting to control whether schedule warnings that describe issues with break scheduling are hidden from the user. If you are scheduling a lot of long exceptions that you know will make it impossible for the Scheduler to fit in most of the breaks you have configured, you might want to check this setting so that the break-related warnings are suppressed. This allows you to focus on the other schedule warnings that you want to resolve.

Allow Breaks and Meals During Exception

For each **Exception Type**, this setting might be turned on. If this option is configured, then if a planned exception of this type is being scheduled and it covers the time window of a break, the Scheduler tries to schedule the break during the exception, preserving the original configured time window. The Scheduler might not always be able to accomplish this, so if it cannot schedule one or more breaks during the exception, it will next try to schedule them adjacent to the exception. This

setting always affects the scheduling of unpaid breaks. This setting only affects the scheduling of paid breaks, if paid break scheduling is configured as mandatory.

This setting also controls whether the Scheduler will try to schedule meals during an exception, in cases when the configured time window of the meal is covered by the exception. However, if the Scheduler is unable to schedule the meal during the exception for some reason, it will not be scheduled adjacent to the exception as it will try to do with breaks.

It is important to note that when the user configures an exception type, such that break(s) and meal(s) could be scheduled during the exception, it does not mean that all of these shift items will be scheduled during the exception. For example, the user has configured a 15-minute break with a 5-minute start step. The break configuration permits the break to be scheduled somewhere between 8:45 a.m. and 10:15 a.m. There is an exception from 9:00 a.m. - 10:00 a.m. The break could be scheduled in many possible places, including:

```
8:45 a.m. - 9:00 a.m.
9:00 a.m. - 9:15 a.m.
9:05 a.m. - 9:20 a.m.
9:10 a.m. - 9:25 a.m.
. . .
9:45 a.m. - 10:00 a.m.
```

Also note that although the absolute start and end times of the exception will not be changed. For example, it is possible that the start of the exception could be covered by a break (both the break and the exception start at the same time).

Other Considerations

When there is no conflict between an exception and some break(s), but yet the exception makes it impossible for WFM to schedule the breaks according to all of their configured constraints, WFM continues its default software behavior, which is to relax the break constraints so that they can be scheduled.

Example 1:
There is a 15-minute break that could be scheduled between 9:00 a.m. - 1:00 p.m., and a second 15-minute break that could be scheduled between 10:00 a.m. - 2:00 p.m. The user has configured that the minimum distance between these breaks must be 3 hours. The user has granted an exception that goes from 11:00 a.m. - 3:00 p.m. It is impossible to meet the minimum distance constraint and also schedule these two breaks within their configured time windows. Therefore, WFM could relax the break constraints, in order to meet the minimum distance constraint and one break would be scheduled prior to the exception, and the other break would be scheduled after the exception.

As described above, when relaxing break constraints to accommodate planned exceptions, WFM attempts to schedule the break immediately adjacent to the exception. However, it is not always possible to do this, and sometimes there will be a small duration of activity work scheduled between the break and the exception.

Example 2:
The user has granted an exception from 12:00 p.m. - 1:05 p.m., and the configured time window for a particular 15-minute break specifies that the break must be scheduled somewhere between 1:15 p.m. - 2:15 p.m. Based on schedule coverage, WFM could place that break at 1:15 p.m., leaving just 10 minutes of activity work in between the exception and the break.

Example 3:
The user has granted an exception from 12:00 p.m. - 2:00 p.m., and the configured time window for a particular 15-minute break specifies that the break must be scheduled somewhere between 1:00 p.m. - 2:16 p.m. WFM would only have between 2:00 p.m. - 2:16 p.m. in which to schedule the break. WFM could schedule the break from 2:01 p.m. - 2:16 p.m., leaving 1 minute of work between the exception and the break.

Also note that the features described in this section only address partial-day exceptions, not full-day exceptions. Therefore, if the user needs to schedule an exception that covers a worker's entire shift, they should consider using a full-day exception type.

Example 4:
The user wants to grant an exception (type: meeting) after the Schedule has been built. In the Calendar, the user creates the `Calendar Item` and rebuilds the schedule. The meeting is reflected in the updated schedule and, in some cases, takes place during a paid break/meal or is adjacent to it.

> **Tip**
> If the user attempts to schedule the meeting, by using the Meeting Planner (after the schedule is built), the meeting is not scheduled, nor is the warning messages suppressed—assuming that the system is configured in this way.

Hierarchy of Constraints

If breaks cannot be scheduled according to all of their configured constraints, WFM tries to satisfy the constraints in the following order:

1. Time window
2. Start step & start offset
3. Minimum distance between shift items
4. Maximum distance between shift items

Enabling Wait-Lists

This topic contains lists and descriptions of the conditions and settings that make Workforce Management (WFM) wait-list functionality possible, and offers or refers to instructions for these tasks:

- Automatic Approval (sometimes called auto-granting)
- Auto-publishing
- Wait-listing
- Handling preferred time-off requests
- Making ungranted time-off requests *count* in a build
- Improved viewing time-off availability

If WFM cannot immediately grant a time-off request, it puts the request on a waiting list (called *wait-listing*). When all requirements are met, including configuration, WFM can grant the request and insert it into the Master Schedule automatically.

The information in this topic supplements the information found in *Workforce Management Web for Supervisors Help* and *Workforce Management Web for Agents Help*.

Overview

WFM considers all wait-listed time-off requests on a First-In, First-Out (FIFO) basis, using the date and time of the request. To determine if there are slots available for the wait-listed time-off request, the process first considers all time-off instances that are Granted/Granted and Scheduled and have intersecting timesteps with the wait-listed request for time off. If the **[CalendarService]** CalendarOverScheduleData configuration option in the WFM Server Application is set, then Granted/Not Scheduled time-off instances are also taken into account before processing the wait-list.

Next, WFM considers all Preferred time-off requests that were submitted earlier than the wait-listed request that is currently being processed. Only Preferred time-off instances that count against the time-off limit according to their actual status are considered. Also, if an earlier Preferred request is not valid for time off within the various limits, it is ignored.

You can configure the advance threshold for automated time-off wait-lists. You can also configure the minimum number of weeks in advance that a request can be made for each time-off rule; that minimum number is called the automatic approval threshold. If an ungranted time-off request in the wait-list violates the automatic approval threshold, then WFM removes the request from the wait-list. That time-off request remains in the status Preferred, but it cannot remain wait-listed.

See Enabling Automatic Approval and Configuring the Threshold below.

Events that might change the system's ability to grant time off, such as the agent's contract availability status, can affect the validity of any time-off request. Thus, wait-listing takes place on a schedule that is specified by a timeout option.

Enabling and Configuring Wait-Lists

The following sections provides information about enabling and configuring wait-lists, and describes how auto-approvals, thresholds, and auto-publishing affect wait-lists.

Automatic Approval of Time-Off Requests

Wait-list automation is related to automatic approval functionality. The common workflow of wait-list automation is:

1. An agent's time-off request is automatically approved, but there are no time-off slots within the limits of the request.
2. The request is wait-listed until an appropriate time-off slot becomes available, and then it is automatically approved, if possible.
3. If automatic approval is enabled but the time-off request is beyond the automatic approval threshold, then the request cannot be wait-listed. It is instead saved with the status **Preferred**.

When do Time-Off Slots Become Available?

Time-off slots become available when:

- A supervisor declines a time-off request
- An agent recalls a time-off request
- An agent or supervisor deletes a time-off request.

Time-off slots are taken (or unavailable) when a Granted or Preferred or Scheduled time-off request is entered.

> **Tip**
> Automatic approval must be enabled for wait-lists to work. If automatic approval is not enabled, then the supervisor must manually grant time-off requests and a request cannot be wait-listed, even if requested by the agent.

Viewing Available Time-Off Slots

Now agents can see if the time off that they want is available before they request it. At the **Time Off** screen, just hover the cursor over any time slot, and you will see time-off limits and wait-list data about the time slot in a popup.

Enabling Automatic Approval and Configuring the Threshold

Automatic Approval must be enabled for wait-lists to work.

To learn about automatic approval, see **Rules for Requests** in the *Workforce Management Web for Supervisors Help*.

To enable and configure automatic approval, see the options **Automatically approve time-off request if: Request is made by the following number of weeks in advance <*number*>** and **Minimum requested time off is <*number*>** (hours and minutes).

Configuring Auto-Publishing

When WFM automatically approves a time-off request, it can also insert it into the Master Schedule automatically, if auto-publishing is enabled.

To enable and configure auto-publishing, use Genesys Administrator to set the WFM Server Application **[CalendarService]** AutoPublishTimeOffToSchedule configuration option value to 1 or 2.

Configuring Wait-Lists

Wait-listing is a background function that is enabled by circumstances and configuration. The circumstances are: automatic approval must be enabled and an agent's time-off request must be valid (time-off slots and agent credit must be available).

To configure wait-listing, use Genesys Administrator to set the WFM Server Application **[CalendarService]]** WaitlistTimeout configuration option.

When are Time-Off Requests Wait-Listed?

- When the time-off request is valid (for example, not for time in the past).
- When the time-off request is not for more time than the agent's time-off balance contains.
- When the automatic approval option is enabled.

WFM will only wait-list those time-off requests that would have been automatically approved, if not for time-off limits. Also:

- If automatic approval is not set up in the accrual rule or the threshold has been passed, then that particular time-off item cannot be wait-listed.
- The requesting agent should have sufficient time-off balance and there can be no other restrictions.
- If limits allow, the request will be granted and not wait-listed.

Treatment of Preferred Time-Off Requests

Preferred time-off requests (having the status Preferred) are not considered during schedule building. When a master schedule is published, Preferred time off does not count against limits and agent balance anymore, because they are usually not scheduled.

To override this functionality, use Configuration Manager or Genesys Administrator to set the WFM

Server Application **[CalendarService]** CalendarOverScheduleData configuration option, which makes unscheduled time off count against the agent balance and time-off limits.

See Requesting Time Off in the *Workforce Management Web for Agents Help*.

Use Cases and Notes

The following use cases discuss scenarios to compare availability and seniority, and provide some additional important rules to keep in mind.

When Availability Overrides Seniority

1. Request A asks for time slots that are not available (8AM-6PM). The time 8-9AM is not available, and so Request A is wait-listed.
2. Request B comes in later, but asks for time slots that are available (10AM-6PM).

The Result:
Request B is granted and Request A remains wait-listed, even though Request B came in later.

When Seniority Overrides Availability

1. Request A is wait-listed. The time slots for automatic approval of this request become available, but the wait-list timeout has not yet expired.So this request remains wait-listed.
2. Request B comes in later and asks for the same time slots as Request A.

The Result:

- If the time slots are available for both requests, Request B is honored immediately and Request A is honored after the wait-list timeout expires.
- If the time slots are available for only one request, Request B is wait-listed and after the wait-list timeout expires, Request A is granted first.

Rules to Remember

- When the wait-list process can grant a request, it changes the saved status of that request to granted (and removes the internal wait-list flag).
- If the auto-publish and wait-list functions are set up together, then granted requests are published to the master schedule.
- A wait-listed request can be granted only if: automatic approval is enabled, the time-off request is valid, there are no other restrictions.

WFM removes from the wait-list any time-off request that has expired (the timesteps that it specifies are in the past) or belongs to an agent with no time-off balance.

Managing Overtime Requirements

Workforce Management (WFM) provides Overtime planning and tracking views for supervisors, into which they can enter overtime hours for a single agent or multiple agents by specifying the time interval and activity. In addition, supervisors can create Overtime Offers that agents can use to bid on overtime slots to add to their schedules, providing coverage for overtime requirements for a specific activity or multi-site activity.

During the overtime insertion process WFM:

- Finds the appropriate shift definition for the extended shift
- Schedules breaks/meals on the overtime part of the shift
- Designates overtime by specifying a marked time

> **Tip**
> Overtime functionality is available on the **Master Schedule** only.

Supervisors can also enter overtime in the **Intra-Day**, **Agent Extended**, and **Weekly** views by inserting a work set with **Marked Time**. **Secondary** shifts and activities can be used to plan overtime.

Overtime Requirements View

In WFM Web, you can plan, set, and track how overtime requirements are met in the **Master Schedule > Overtime** view. To use this view, set the user security rights in **Configuration > Roles > Role Privileges > Access Overtime Requirement** or **Configuration > Users > Role Privileges > Access Overtime Requirement**.

Overtime data is displayed in a grid, which has an editable **Overtime Requirement** column and a read-only **Overtime Scheduled** column. The **Overtime Scheduled** column is calculated according to the scheduled **Marked Time** (ensure the **Used to mark Overtime** option is checked). The following optional columns contain information that justifies the need for overtime hours (see the figure below):

- Staffing—Calculated and required staffing.
- Difference—The difference between schedule coverage and calculated or required staffing.
- Variance—Equals the coverage minus the calculated, and is the anticipated unplanned overhead.

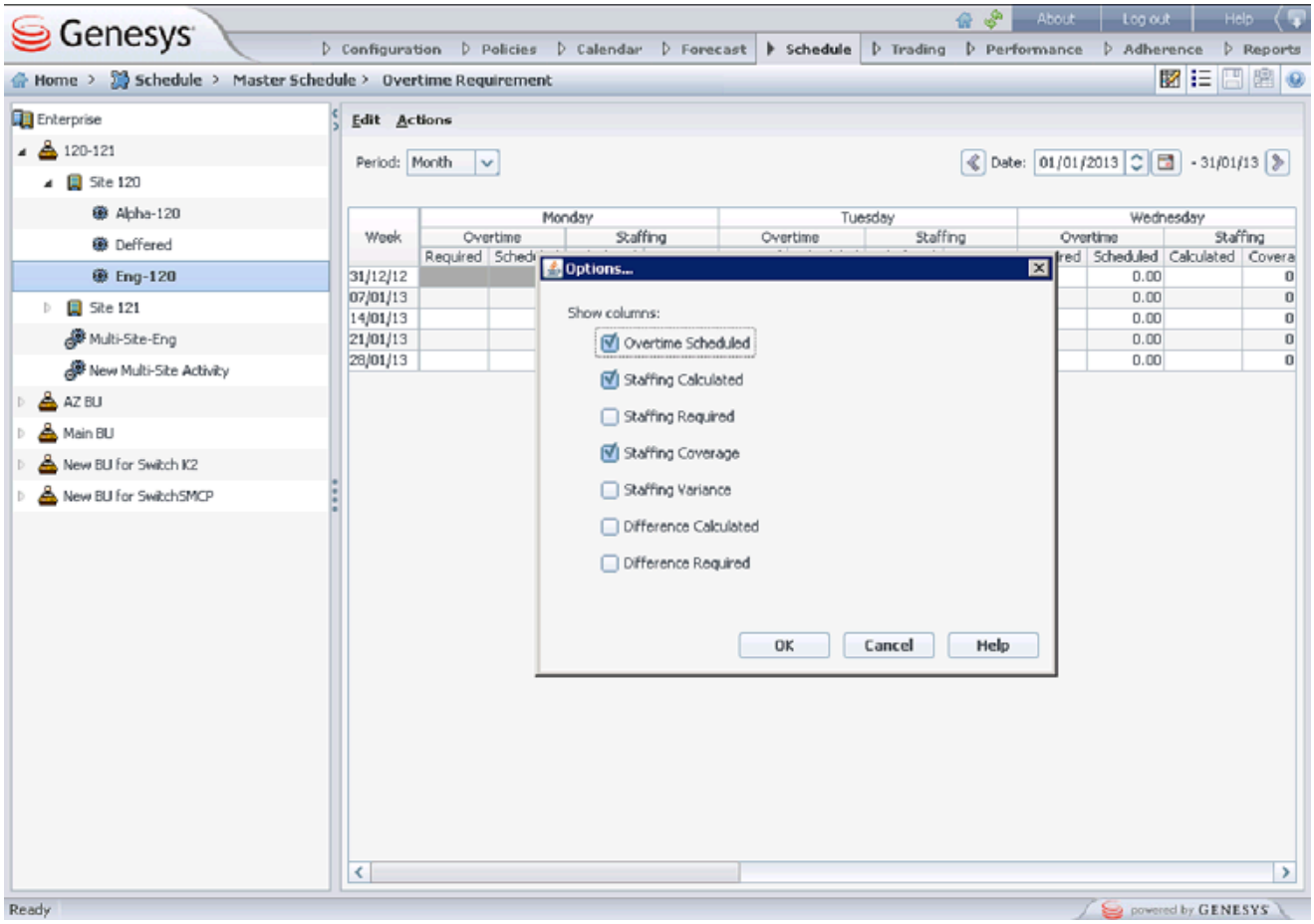

Figure: Overtime Requirement View with Monthly Granularity

Assigning Secondary Skill Sets for Overtime

Shifts are assigned to contracts in Web for Supervisors in the **Policies > Contracts** view (see the figure below) as either Primary or Secondary. Secondary assignments are used for overtime only and represent a broader set of constraints, while Primary assignments are used for other functionality.

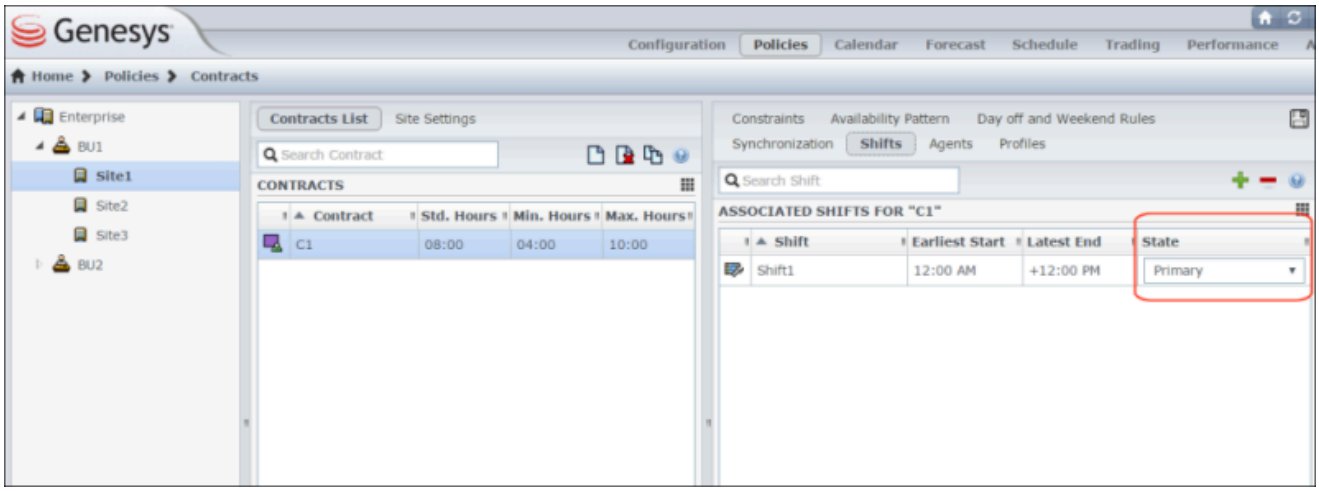

Figure: Web for Supervisors—Policies > Contracts > Shift Assignment

Secondary activities can be defined in one of two ways in Web for Supervisors in the **Configuration > Agents > Activities** view (see the figure below):

1. Assigning skills to the agent as **Secondary**
2. Assigning activities as **Secondary** with an effective date.

During overtime, agents can work on activities for which they are not normally scheduled. Therefore, entering overtime for an agent can change the agent's work day so that the usual shift definition no longer fits.

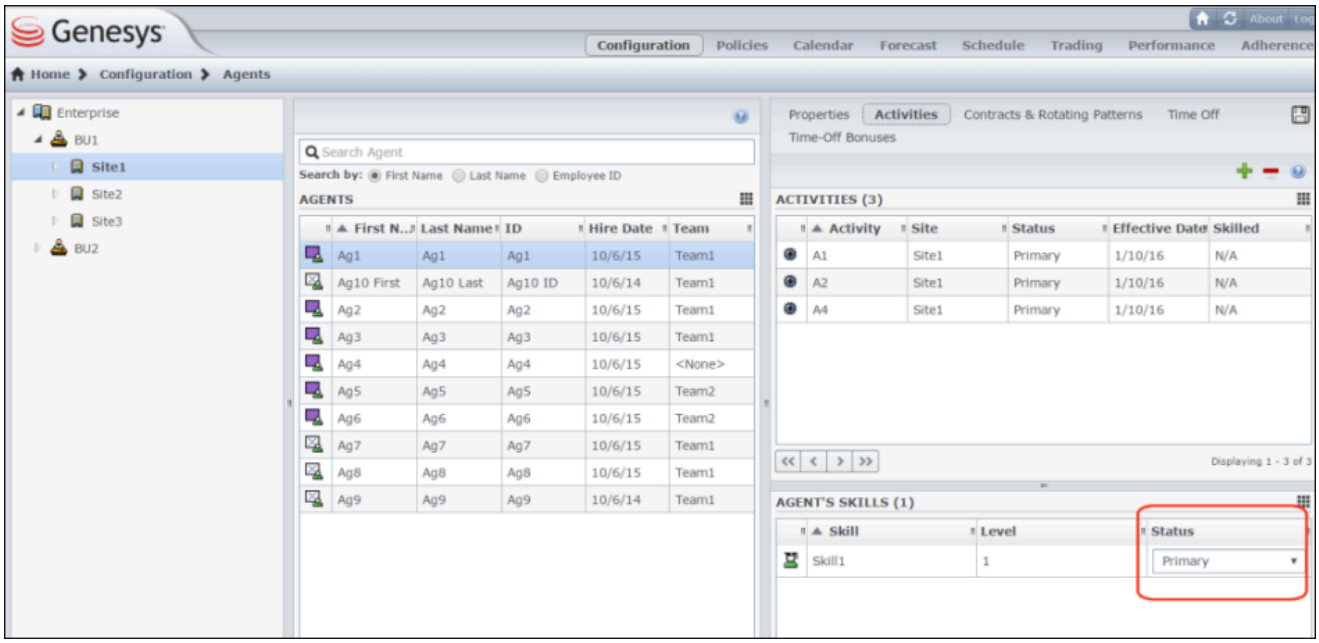

Figure: Web for Supervisors—Configuration > Agents > Activities View

> **Tip**
> During WFM migration from 7.6.1 to 8.x, all shifts and activities are set as Primary assignments.

Configuring Overtime for Individual Agents

The **Overtime** view is available in the **Master Schedule** only. However, you must publish a scenario with the inserted work sets before the information can be seen in the Overtime view.

You can schedule overtime for an agent by inserting a work set and using **Marked Time** to mark it as overtime. Use one of the wizards in the following views:

- **Insert Wizard—Schedule > Intra-Day**, **Agent-Extended** views (**Master** and **Scenarios**)
- **Insert Multiple Wizard—Schedule > Intra-Day**, **Agent-Extended**, and **Weekly** views (**Master** and **Scenarios**)

Using the Insert Multiple Wizard to Set Overtime for an Agent

Purpose: To add a work set for an individual agent for overtime by using the **Insert Multiple Wizard** in WFM Web.

Start of Procedure

1. In the **Intra-Day**, **Agent Extended**, or **Weekly** view, select **Insert Multiple** from one of the following:
   - Actions toolbar
   - Actions menu
   - On the agent's schedule, right-click and select the **Shortcut** menu (not in Weekly view)

   If you have unsaved changes, WFM Web prompts you to save them before proceeding.
2. In the **Insert Multiple Wizard**, select **Insert Work set**.
3. Create a new overtime work set by selecting **Marked Time** for the designated work type.

> **Tip**
> You must select **Marked Time**; otherwise the resulting work set is not created as overtime (see the figure below). Also, inserting a work set over an existing shift can change the scheduled activities in the affected interval.

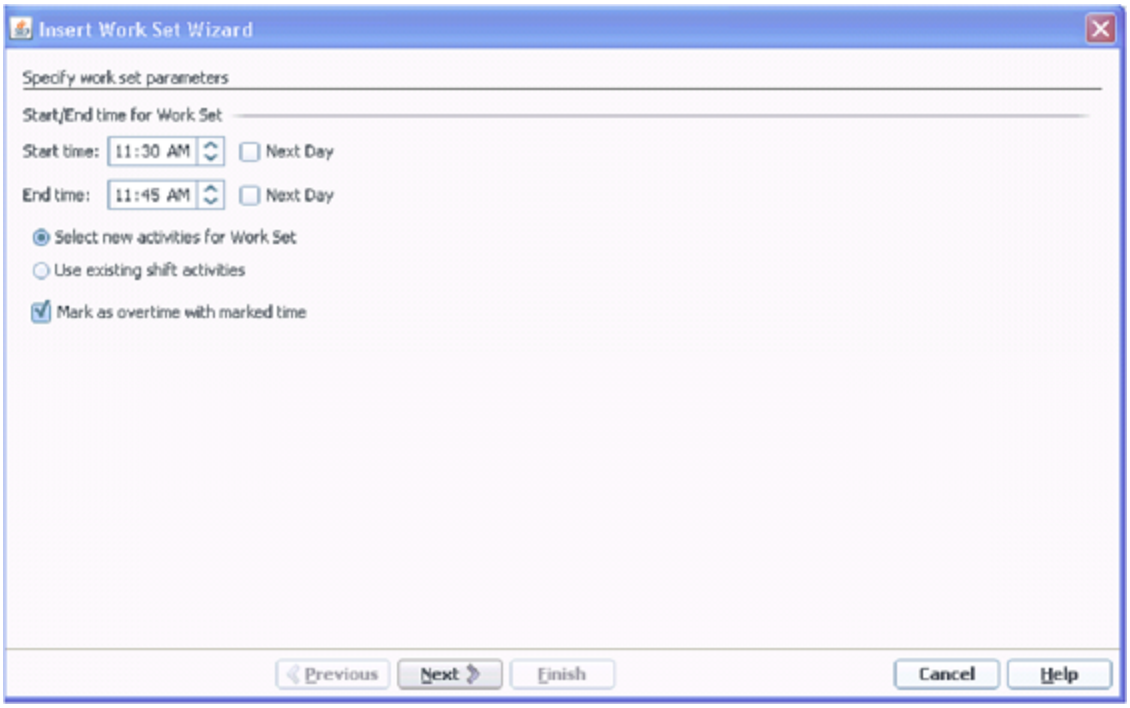

Figure: Insert Multiple Wizard—Inserting an Overtime Work Set

End of Procedure

Tracking Scheduled Overtime Results

You can use the following views to track scheduled overtime results:

- **Schedule > Master Schedule > Intra-Day** view in the **Performance Data** pane
- **Schedule > Master Schedule** > **Overtime Requirement** view

The **Performance Data** pane separates the scheduled overtime part of the coverage within the calculated staffing graph and distinguishes it from the overtime requirement. See the figure below.

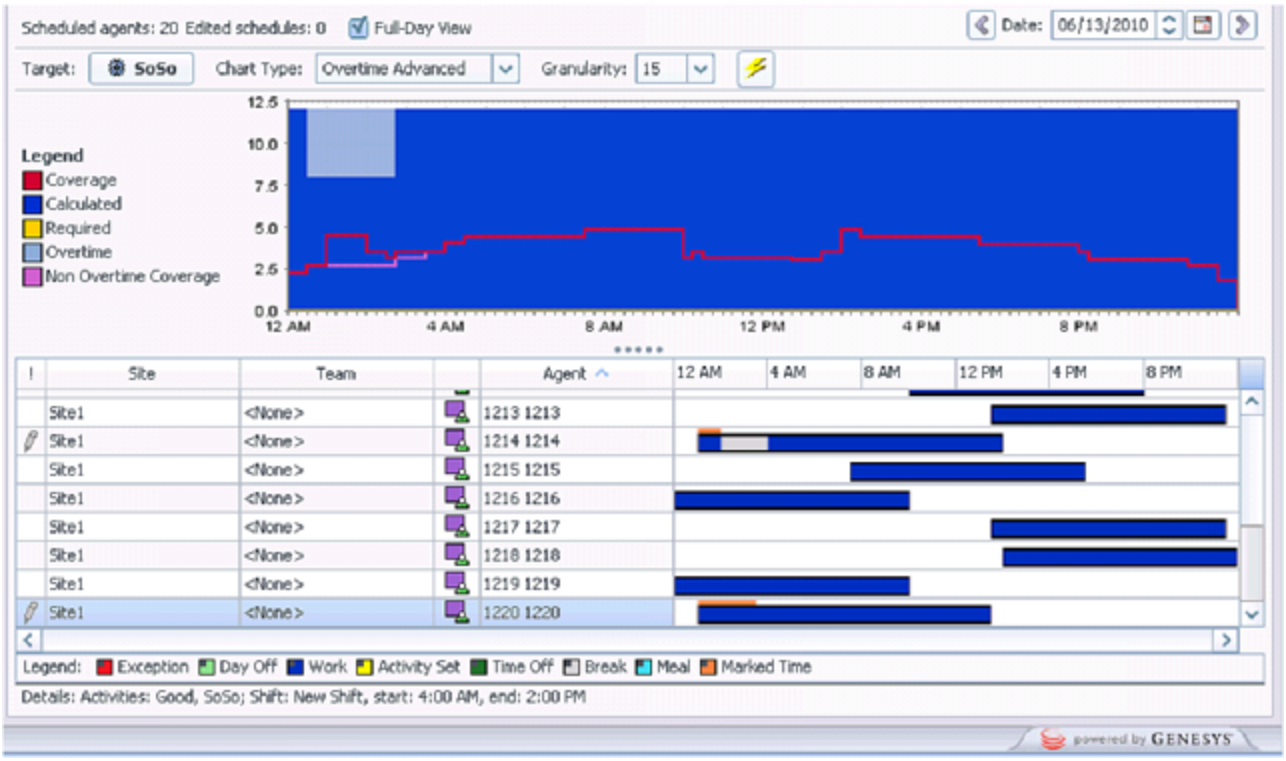

Figure: Performance Data Graph—Full Day View

Overtime Bidding Offers

Supervisors with the appropriate role privileges can create Overtime Offers for a specific activity or multi-site activity in Web for Supervisors' **Overtime Bidding** view in the **Schedules** module. Offers are associated with the Master Schedule only and WFM uses the offer properties and other data in the automatic overtime scheduling process—the *other data* being the overtime slots chosen by agents when they are bidding on open offers.

Supervisors must have the Access Overtime Requirements and Overtime Bidding role privileges for the Schedule module. Then, they can track the overtime requirement that is currently scheduled, by checking the Marked Time that is denoted as "mark as overtime" in the agents' schedule for the activity or multi-site activity associated with the Overtime Offer.

Agents use the **Bidding** module in Web for Agents to see open schedules bidding scenarios or overtime offers, on which to bid. When they select an overtime offer, they can then choose the overtime slots they want added to their schedules. Agent see overtime offers only after the supervisor marks the offer as "open" and only if the supervisor has associated the agent and his/her site with the offer.

Continuous Processing of Overtime Offers

You can enable WFM to continuously process Overtime Offers, which have FIFO selected for agent bid

ranking criteria. Continuous, automatic processing is enabled by the new **[ScheduleService]** ProcessOvertimeTimeout configuration option in the WFM Server application, which specifies the time interval between overtime bidding processes.

For more information about Overtime bidding, see the *Workforce Management Web for Supervisors Help* and *Workforce Management Agent Help*.

For information about WFM Role Privileges see Assigning Role Privileges and Schedule Role Privileges topics in the *Workforce Management Web for Supervisors Help*.

Configuring Data Aggregator

You configure Data Aggregator (DA) to enable statistics gathering and set certain parameters to ensure the specified Data Aggregator application can be restarted within sites and business units. However, you might also want to configure configure Reason Codes to provide more specific information about agent states, or configure a separate Data Aggregator instance as a hot-standby backup server.

Setting Up Data Aggregator

To set up Data Aggregator, you set certain parameters in the WFM Web **Organization** module, in either the **Business Unit** or **Sites** views. The parameters are set to:

- Enable Data Aggregator to be restarted at the business units or site level
- Define the Tenant (default is always **Environment**) and password
- Display the specified Stat Server (read-only parameter)
- Align the Data Aggregator's time profile with Stat Server's time profile.

> ### Important
> To view and configure these settings in the **Business Units** or **Sites** panes, you must have the **Access backend configuration** security right. See the **Configuration > Organization** module, **Business Units > Configuration** and **Sites > Configuration** panes in the *Workforce Management Web for Supervisors Help*.

Adding Reason Codes

When associating agent schedule states provided by WFM with Genesys events, you can configure reason codes with Genesys events. This allows you to refine the Genesys agent-state information that WFM uses to track agent compliance with their scheduled states.

WFM Data Aggregator can process reason codes that come from hard and/or soft phones. To receive reason codes from hard phones, or in a mixed hard/soft phone environment, complete the following procedure:

Configuring Data Aggregator to process reason codes

Purpose: To enable Data Aggregator to process Reason Codes.
Prerequisite: You created a **WFM Data Aggregator Application** object for the current installation in Genesys Administrator.

> **Tip**
> You can use reason codes only if your CTI environment supports them.

Start of procedure

1. In Genesys Administrator, open the **WFM Data Aggregator Application** object.
2. Click the **Options** tab.
3. In the **[Options]** section, create an option named ReasonCodeKeyName, if it does not already exist.
4. Set the option value to `ReasonCode`.
5. Save the changes.

Dependency:
When Data Aggregator receives agent states from Stat Server, it looks for the key name ReasonCode (the value set in the WFM DA ReasonCodeKeyName configuration option) to read reason codes. To ensure Data Aggregator receives **NotReady** reason codes in a format it requires:

1. In the Workspace Desktop Edition application properties, go to the **Annex** tab of each action code that WFM will use.
2. Add the **[interaction-workspace]** configuration section (if it does not already exist).
3. Add the **reason-extension-key** = `ReasonCode` option.
4. If your corporate switch supports the aux-work value, also add the **extensions** = `false` option.
   ***Do not* add the extensions option if aux-work is not supported on your switch.**
5. Save the configuration settings.

End of procedure

For more information about **NotReady** reason codes, see Not Ready Reason Codes in the *Workspace Desktop Edition Deployment Guide*.

For more information about how WFM uses reason codes, see Using Reason Codes.

Using Hot-Standby Data Aggregator for Backup

You can configure a hot-standby backup WFM Data Aggregator for each primary WFM Data Aggregator server. You will need to create an **Application** object for the backup server and then, in

the primary **Data Aggregator Application**, create a connection to the backup. See Manually Create the Application Objects.

The backup reads the same information as the primary WFM Data Aggregator, so if it is necessary to switch to the backup, there is no delay or loss of data. At the transition, the backup WFM Data Aggregator simply starts writing to the database starting from where the primary WFM Data Aggregator left off.

If configured properly, WFM Data Aggregator also backs up data in the event of a disconnect from the database and the subsequent WFM Data Aggregator shutdown. It first writes all current data to a local *dump file*. You must specify a path and file name for the dump file, by completing the following procedure:

Configuring Data Aggregator to Backup Data on Disconnect

Purpose: To enable an emergency Data Aggregator info dump.
Prerequisite: You created a **WFM Data Aggregator Application** object for the current installation in Genesys Administrator.

> ### Important
> You can use reason codes only if your CTI environment supports them.

Start of Procedure

1. In Genesys Administrator, open the **WFM Data Aggregator Application** object.
2. Click the **Options** tab.
3. In the **[Options]** section, create a configuration option named DBDumpFile, if it does not already exist.
4. Set the option value to a path and file name—for example: `C:\DAEmergency\DBDumpFile.txt`.
5. Save the changes.
   If WFM Data Aggregator loses its connection to the database, before closing down it writes all current data to the local file (the so-called *dump file*). After restart and reconnection to the database, WFM Data Aggregator reads the dump file, writes the data to the database, and deletes the dump file.

> ### Important
> The dump file does not prevent data loss during the period that WFM Data Aggregator is shut down.

End of Procedure

Managing the WFM Database

Use Workforce Management (WFM) Backup-Restore Utility (BRU) to configure, update, maintain, backup, anonymize Personal Identifiable Information (PII) data, restore, and if required, migrate your database. Using a command line console, the Backup-Restore Utility provides a number of functions, enabling you to perform the tasks described in this topic.

> **Tip**
>
> Genesys does not support direct access to the WFM Database to create custom reports. The WFM Database structure often changes and any custom reports created by directly accessing the database could stop working after any update. Use the supported methods described in Using ETL Database Schema and *Integration API Developer's Guide* to generate custom reports.

Overview

Use the BRU to:

- Create and configure a new database.
- Update your database to that latest release.
- Perform other database updates as needed.
- Perform regular maintenance, such as cleanup of obsolete data.
- Migrate data from a previous WFM release to a WFM 8.5 database.
- Anonymize PII (Personal Identifiable Information) data only or anonymize all objects names.

> **Important**
>
> To ensure the WFM Web Application works properly:
>
> - Set the Microsoft SQL and Oracle database management systems (DBMS) to be case-insensitive.
> - If your WFM database is deployed on the Microsoft SQL DBMS, the WFM schema requires you set **READ_COMMITTED_SNAPSHOT** to `ON`, by executing the following DB statements:
>
> ```
> ALTER DATABASE <WFM_DB> SET READ_COMMITTED_SNAPSHOT ON WITH ROLLBACK
> ```

```
IMMEDIATE;
```

New Database Configuration

The WFM Backup-Restore Utility populates and configures the new database for you, setting up the necessary tables, views, indexes, and so on. For instructions, see Using the Backup-Restore Utility.

If you are already using WFM 7.x, its not necessary to install a new database. Simply perform a database update to transition your database to release 8.5.

Updating Your WFM Database

From time to time, Genesys issues Maintenance Releases (MR) of its products. Some of the Workforce Management updates require database updates. If so, you can perform them using the WFM BRU.

Performing a Database Update

Execute WFM BRU by using two options:

- `-DB <database connection information>`
- `-UPDATE`

Example:
`WFMBRU.EXE -DB "mssql;MSSQL2012_SERVER;WFM_DB;sa;password" -UPDATE`

> **Important**
> If you are migrating from WFM 7.6 to 8.5, all you need to do to your database is to update it. You do not need to create a new database.

Anonymizing Data in WFM DB

The Personal Identifiable Information (PII) anonymization capability of the database backup has been added to the WFM Database Backup/Restore utility (WFMBRU). If the main WFM database needs to be shared (externally or internally, for some testing or another purposes) with sensitive data hidden, the

WFM database anonymization feature can be used to make sensitive data impersonal and masked. Using this feature, customers can create WFM database backup with anonymized data, which can be restored in other environments later while having all sensitive data hidden.

WFM Database Utility supports backup procedure with two anonymization data modes:

- **ANONYMIZE_PII** — When this option is used, there will be nothing left in the database that can be used to identify any user or agent. For instance, first and last names, email, employee ID, any personal comments, messages, or memos.
- **ANONYMIZE_FULL** — When this option is used, there will be no PII in the database and also nothing that can potentially be used to identify the customer. That is, no customer created names like site, business unit, activity, shift names, etc.

Backing Up and Restoring Your Database

The BRU provides an improved method of backing up and restoring the WFM Database. Use the following procedures to backup and restore your database:

Backing Up the Database

Execute WFM BRU by using three options:

- `-DB <database connection information>`
- `-BACKUP`
- `-FILE <backup file name>`

Example:
```
WFMBRU.EXE -DB "mssql;MSSQL2012_SERVER;WFM_DB;sa;password" -BACKUP -FILE "WFM_BACKUP.db"
```

Restoring the Database

Execute WFM BRU by using three options:

- -DB <database connection information>
- -RESTORE
- -FILE <backup file name>

Example:
```
WFMBRU.EXE -DB "mssql;MSSQL2012_SERVER;WFM_DB;sa;password" -RESTORE -FILE "WFM_BACKUP.db"
```

For more information about BRU, see Using the Backup-Restore Utility.

Using Stored Procedures to Purge Data

To properly maintain your WFM Database, you might need to periodically clean up or purge obsolete data. The procedures Performing Database Cleanup (Oracle) and Performing Database Cleanup (MSSQL) describe how to do this by using stored procedures. For the access privileges required to perform maintenance and other tasks on the database, see Database Access Privileges.

Starting in 8.5.214, the WFM Database schema has 2 sets of stored procedures in 6 distinct groups. The latest procedures are improved, cleaning up data much faster than the previous procedures. You can use the latest or previous purge procedures to cleanup your database. In the table below, the latest procedures are in bold.

Each of the previous procedures has only one date parameter and deletes specific data up to (but not including) that date.

Each of the latest procedures has three parameters, as follows:

1. The number of days back that the data should be cleaned up
2. The transaction size
3. The output parameter that returns the deleted records count

Here are the default values for these parameters:

- In MSSQL scripts:
  ```
  @DAYS_BACK INT = 90,
  @MAX_PURGE_CHUNK INT = 10000,
  @DEL_COUNTER INT OUTPUT
  ```

- In Oracle scripts:
  ```
  DAYS_BACK IN NUMBER DEFAULT 90,
  MAX_PURGE_CHUNK IN NUMBER DEFAULT 10000,
  DEL_COUNTER OUT NUMBER
  ```

Table: Purge Procedures

Group	Procedure (latest version in bold)	Description
Calendar	**WMP_DEL_CAL_ITEMS2** WMP_DEL_CAL_ITEMS	Purges Calendar items of all types for dates earlier than the provided date. Also purges Meetings that end earlier than the provided date.
Configuration	**WMP_DEL_CONF_T_AG2** WMP_DEL_CONF_T_AG	Purges agents whose termination date is earlier than the provided date and who do not have any Schedules, Calendar items, Agent Real Time State changes, are not included in any Schedule

Group	Procedure (latest version in bold)	Description
		Scenarios, and are not assigned to any Meetings. Before purging Terminated Agents, you can delete any related data by using other procedures. For example: • Schedules can be deleted using a separate WMP_DEL_SCH_MASTE procedure. • Schedule Scenarios can be deleted using a separate WMP_DEL_SCH_SCENA procedure. • Calendar items and Meetings can be deleted using a separate WMP_DEL_CAL_ITEMS procedure. • Agent Real Time State changes can be deleted using a separate WMP_DEL_H_AGENT_ST procedure.
	WMP_DEL_CONF_EXCE2 WMP_DEL_CONF_EXCE	Purges Exception types previously deleted on dates earlier than the provided date.
	WMP_DEL_CONF_ACTI2 WMP_DEL_CONF_ACTI	Purges Activities previously deleted on dates earlier than the provided date.
	WMP_DEL_CONF_REPO2 WMP_DEL_CONF_REPO	Purges reports previously created on dates earlier than the provided date.
Schedule	**WMP_DEL_SCH_MASTE2** WMP_DEL_SCH_MASTE	Purges Master Schedules for dates earlier than the provided date.
	WMP_DEL_SCH_SCENA2 WMP_DEL_SCH_SCENA	Purges Schedule Scenarios that ended earlier than the provided date.
	WMP_DEL_SCH_TRADE2 WMP_DEL_SCH_TRADE	Purges Schedule Trade Proposals that expired earlier than provided date together with the related responses and trades.

Group	Procedure (latest version in bold)	Description
Forecast	**WMP_DEL_FOR_MASTER2** WMP_DEL_FOR_MASTER	Purges the Master Forecasts and Master Forecast Comments that were created on dates earlier than the provided date.
	WMP_DEL_FOR_SCENAR2 WMP_DEL_FOR_SCENAR	Purges the Forecast Scenarios that ended earlier than the provided date, and Forecast Scenarios Comments created on dates earlier than the provided date. Comments are deleted, but not counted.
History	**WMP_DEL_H_AGENT_ST2** WMP_DEL_H_AGENT_ST	Purges the history of Agent Real Time State changes that occurred earlier than the provided date.
	WMP_DEL_H_ACT_PERF2 WMP_DEL_H_ACT_PERF	Purges the historical Performance information for all activities in all sites and business units for dates earlier than the provided date.
	WMP_DEL_H_OV_TEMPL2 WMP_DEL_H_OV_TEMPL	Purges Overlap templates that end earlier than the provided date.
	WMP_DEL_H_NOTIFICA2 WMP_DEL_H_NOTIFICA	Purges Calendar, Schedule, and Schedule Trade notification acknowledgments generated earlier than the provided date.
Audit	**WMP_DEL_CAL_AUDIT2** WMP_DEL_CAL_AUDIT	Purges all Calendar audit records generated earlier than the provided date.
	WMP_DEL_CONF_AUDIT2 WMP_DEL_CONF_AUDIT	Purges all Configuration audit records generated earlier than the provided date.
	WMP_DEL_SCH_AUDIT2' WMP_DEL_SCH_AUDIT	Purges Schedule audit records generated earlier than the provided date.
	WMP_DEL_FOR_AUDIT2 WMP_DEL_FOR_AUDIT	Purges Forecast audit records generated earlier than the provided date.
WMP_DEL_ALL		This procedure is added for convenience only. It calls all of the **latest** procedures (in this table) one by one and returns the

Group	Procedure (latest version in bold)	Description
		sum (count) of the deleted records. Tip WFM counts directly deleted records only. However, since records in related tables are also deleted by database triggers, the total number of deleted records in tables can be higher than reported.

Purging Procedures

Use the procedures below to perform cleanup on Oracle or MSSQL databases. Although these procedures describe how to use the Oracle and MSSQL utilities, you can use other utilities to execute stored procedures, if you wish.

The latest WFM purging procedures (see table above) enable you to purge data faster than the previous procedures. You can still use the previous procedures to purging data, but cleanup will take longer to complete.

Performing Database Cleanup (Oracle)

Purpose: To remove obsolete data from your Oracle database.
Prerequisite: Your database is up-to-date and the database tool used to execute SQL statements is available. The `sqlplus.exe` utility is available in Oracle Client installation.

> **Warning**
> Double-check your choices before you execute the commands. You cannot retrieve deleted data.

Start of Procedure

1. Add statements to the SQL script file using the required date. For example, to purge Calendar Audit data:
   - Using the **latest** procedure (fast cleanup) up to 100 days back from the current date:

```
SET SERVEROUTPUT ON

DECLARE

AMOUNT NUMBER;
```

```
BEGIN

WMP_DEL_CAL_AUDIT2(100, 10000, AMOUNT);
DBMS_OUTPUT.PUT_LINE('Finished DEL_CAL_AUDIT2. Deleted total records:' ||
 AMOUNT);

END;

/
```

- Using the **previous** procedure up to (but not including) 01/01/2015:

```
EXEC WMP_DEL_CAL_AUDIT(TO_DATE('01-01-2015 0:0:0', 'DD-MM-YYYY HH24:MI:SS'));

EXIT
```

2. Obtain the Oracle username, password, and other database connection information for WFM Server, and use this information in the next step.
3. Execute the command `sqlplus.exe <user name>/<password>@<Oracle database server alias> @<input SQL script file name from step 1>`.

End of Procedure

Performing Database Cleanup (MSSQL)

Purpose: To remove obsolete data from your MSSQL database.
Prerequisite: Your database is up-to-date and the database tool used to execute SQL statements is available. The `sqlcmd.exe` utility is available in MSSQL Client installation.

> ### Warning
> Double-check your choices before you execute the commands. You cannot retrieve deleted data.

Start of Procedure

1. Add statements to the SQL script file using the required date. For example, to purge Calendar Audit data:
   - Using the **latest** procedure (fast cleanup) up to 100 days back from the current date:

```
DECLARE @amount INT

EXEC WMP_DEL_ALL 100, 10000, @DEL_COUNTER = @amount OUTPUT

PRINT 'Finished WMP_DEL_ALL. Deleted total records: ' + CAST(@amount as
 NVARCHAR(30))

GO
```

   - Using the **previous** procedure up to (but not including) 01/01/2015:

```
1. EXEC WMP_DEL_CAL_AUDIT '2015-01-01 00:00:00'
2. GO
```

2. Obtain the MSSQL username, password, and other database connection information for WFM Server and use this information in the next step.
3. Execute the command `sqlcmd.exe -U <user name> -P <password> -S <MSSQL database server name> -i <input SQL script file name from step 1> -d <MSSQL database name>`

End of Procedure

Database Migration

For migration instructions, see the "Workforce Management Migration Procedures" chapter in the *Workforce Management Migration*.

ETL Database

You can set up an WFM ETL (Extract, Transform and Load) database schema to enable third-party reporting applications to easily create reports, by incorporating WFM data. Previously, the only way to build customer reports was to use the WFM API.

ETL functionality obtains Schedule, Adherence and Performance information from WFM and stores it into a documented relational database schema. For more information about this functionality or to set up an ETL database schema, see Using ETL Database Schema.

Using the Backup-Restore Utility

The WFM Backup-Restore Utility (BRU) is included in the WFM Database Utility (DBU) Installation Package (IP). Unlike the old backup file (.MDB format), which had a maximum 2 Gb size limit, the BRU uses a new backup file format (.DB) and has no file size limit.

This backup file format, which is much faster than DBU format, replaces the backup file format used in previous WFM releases. The BRU can backup and restore MSSQL and Oracle databases to the new backup file (.DB) format, and a backup created from one database type can be restored to a different database type.

Incompatibilities in Database Schema

The BRU is designed to mitigate minor incompatibilities in database and file schema that might occur if the backup file was created with an unofficial (not Generally Available) or minor release of the BRU. The BRU attempts to restore to the database to a non-empty database, while retaining (or updating, if needed) the database version. In this case, the existing data is overwritten. However, in some cases the database is successfully restored. For example, a 7.6 database backup could not be restored to an 8.x non-empty database, because the two schema are very different.

If, for some reason, the BRU backup process is cancelled at the mid-way point, the BRU continues from the latest point after the backup process is restarted.

The backups created by BRU are accepted by Genesys Customer Care.

Command Line and Usage

Use the following command line and usage commands syntax:

```
WFMBRU.exe <command> <data source> -FILE <file name>.db
```

Table: Usage Commands

Option	Description
`-BACKUP`	Backup the WFM database to a backup file.
`-ANONYMIZE_PII`	Personal Identifiable Information (PII) is anonymized. **Note:** This option can be used only with `-BACKUP` command, specified right after the backup argument. For example: `WFMBRU.EXE -BACKUP -ANONYMIZE_PII <rest of the parameters>`
`-ANONYMIZE_FULL`	All PII and all customer-created names, comments, and descriptions are anonymized, making it

Option	Description
	impossible to trace data back to the customer. **Note:** This option can be used only with `-BACKUP` command, specified right after the backup argument. For example: `WFMBRU.EXE -BACKUP -ANONYMIZE_FULL <rest of the parameters>`
`-RESTORE`	Restore the WFM database from the backup file (database is created if it does not exist).
`-UPDATE`	Update the WFM database to the latest schema version (can be combined with `-RESTORE`). Can also be used to create the latest schema on an empty database (the database is created if it does not exist).
`-VERSION`	Retrieve the WFM database version.

Table: Data Source (Connection Strings)

Connection string	Description
`-DSN <OLE DB connection string>`	Enables specification of the OLE DB connection string directly (should not be used with –DB option)
`-DB <Connection String>`	Specifies the connection in simplified syntax that is later translated into OLE DB connection string format. See usage examples in Table: -DB String Format for Various Databases for details.

The DB connection string for the Config Server DAP is extended with optional parameters `CfgBackupHost` and `CfgBackupPort`.

If both the `-DSN` and `-DB` connection strings are specified, the BRU used the `-DSN` string.

> **Tip**
>
> To support secure connections to MS SQL Server, you must install the latest Microsoft OLE DB Driver (SQLOLEDB) and configure the -DSN connection switch differently. For more information, see Secure connections between WFM servers and MS SQL database.

Table: -DB String Format for Various Databases

Database	String format	Example
MSSQL	`"mssql;<server>;<database>;<user>;<password>"`	`mssql;dbhost;dbname;sa;password`
MSSQL (Fast Native Client)	`"mssql++;<server>;<database>;<user>;<password>"`	`mssql++;dbhost;dbname;sa;password`
Oracle	`"oracle;<tnsaddressname>;<user>;<password>"`	`oracle;ORA1;scott;tiger`

> **Tip**
> If you plan to use the MSSQL (Fast Native Client) connection string format (see Table: -DB String Format for Various Databases), ensure the BRU host is preinstalled with a version of the MSSQL Native Client that is the same version as the DBMS.

Examples of Usage Command Lines

To back up the database, follow example 1 or 2:

Backup Oracle database:

1. `WFMBRU.EXE -BACKUP -DB "oracle;<tnsaddressname>;<user>;<password>" -FILE <backup>.db`
2. `WFMBRU.exe -BACKUP -DSN "Provider=OraOLEDB.Oracle;Data Source=<DBMS Name>;User ID=<User Name>;Password=<Password>;" -FILE <backup>.db`

Backup MSSQL database:

1. `WFMBRU.EXE -BACKUP -DB "mssql;<server>;<database>;<user>;<password>" -FILE <backup>.db`
2. `WFMBRU.exe -BACKUP -DSN "Provider=SQLOLEDB;Data Source=<DBMS Name>;Initial Catalog=<Database Name>;User ID=<User Name>;Password=<Password>;" -FILE <backup>.db`

Backup Oracle database with PII anonymization enabled:

1. `WFMBRU.EXE -BACKUP -ANONYMIZE_PII -DB "oracle;<tnsaddressname>;<user>;<password>" -FILE <backup>.db`
2. `WFMBRU.exe -BACKUP -ANONYMIZE_PII -DSN "Provider=OraOLEDB.Oracle;Data Source=<DBMS Name>;User ID=<User Name>;Password=<Password>;" -FILE <backup>.db`

Backup MSSQL database with full anonymization:

1. `WFMBRU.EXE -BACKUP -ANONYMIZE_FULL -DB "mssql;<server>;<database>;<user>;<password>" -FILE <backup>.db`
2. `WFMBRU.exe -BACKUP -ANONYMIZE_FULL -DSN "Provider=SQLOLEDB;Data Source=<DBMS Name>;Initial Catalog=<Database Name>;User ID=<User Name>;Password=<Password>;" -FILE <backup>.db`

Restoring old .MDB Format Backups

BRU can convert old .MDB format backups to the new format by *backing up* the old backup format into the new one. The Microsoft Access Database Engine 64-bit version must be preinstalled so BRU can locate the provider for conversion.

Examples:

```
WFMBRU.exe -BACKUP -DSN "Provider=Microsoft.ACE.OLEDB.12.0;Data Source=<backup>.mdb"
-FILE <backup>.db
WFMBRU.exe -BACKUP -DB "access;<backup>.mdb" -FILE <backup>.db
```

Using ETL Database Schema

Using a WFM ETL (Extract, Transform and Load) database schema enables Genesys Interactive Insights and other third-party reporting applications to easily create reports that incorporate Genesys Workforce Management (WFM) data. Once configured, this functionality can obtain Schedule, Adherence, and Performance information from WFM and store it into a documented relational database schema.

ETL Database Schema and Script

WFM itself does not use the data from ETL storage for any task. ETL stores the data into the designated database schema, for use only by Genesys Interactive Insights or third-party reporting applications. The ETL schema can be part of, and co-exist with the main operational Genesys WFM database. It can be a standalone database or part of any other database. WFM provides the SQL script to create the database schema, but does not specify which physical tablespace, user, or database on which to create it.

The script is included in WFM Database Utility (DBU) IP, but it is not executed automatically. The database administrator must execute the script, by using a third-party SQL interpreter. The script is found in the `\Scripts` folder in WFM Database Utility deployment folder.

For more information about the ETL DB schema, see the *Workforce Management ETL Database Reference*.

Database Tables and Categories

The ETL database contains various types of tables, including Fact tables, Dimension tables, a Service and Control table, and Referred Genesys Info Mart tables.

Dimension tables somewhat correspond to the WFM organization, configuration, and policy objects. The Dimension tables provide sorting, grouping, and filtering capabilities for reports. Fact tables contain adherence, performance, and schedule information and can be sorted, grouped, and filtered by dimensions.

For detailed descriptions of these tables, see the *Workforce Management ETL Database Reference*.

WFM Server's Role in the ETL Process

WFM Server has built-in ETL functionality. However, you must configure some **WFM Server Application** options to enable it (see Enabling ETL Functionality).

In the following two deployment options, you must also create a connection to WFM Server for ETL to function properly:

1. If the ETL schema is created in a database, other than the WFM database, two WFM Server instances are required—one that is connected to the operational WFM database and one connected to the ETL database. In this setup, the WFM Server for ETL instance (with the connection to the ETL database), also connects to the main WFM Server instance (with the connection to WFM database) and obtains data, by using the WFM binary API (also used to generate WFM internal reports). This means, a connection to the main WFM Server must be added to the **WFM Server for ETL Application**. When WFM operational and ETL share the same database, a single WFM Server instance is sufficient to perform both functions—serving WFM API requests and performing ETL data storage.
2. If you set up a dedicated WFM Server for ETL only and the server accesses only the ETL database and not the operational WFM database, you must disable all cache preloaded functions, because the corresponding database tables are not available in the ETL database. The WFM Server IP contains the **WFM Server Application** template WFM_ETL for a dedicated ETL Server. It will create the ETL options, set the default and proper values, and disable cache preloaded functionality and wait list processes. The dedicated WFM Server for ETL generates an error if a reporting client tries to obtain its data, by using the WFM API. To prevent that, do not change the values for the options not described in WFM Server ETL chapter.

To install WFM Server as a dedicated ETL Server, see the installation procedure in Installing and Uninstalling WFM Components.

ETL Process Flow

When the ETL process starts, it synchronizes the WFM operational database with the ETL database. During synchronization, the process first transfers all new Dimension information the WFM operational database to the ETL database. Then, updates all of the Dimension objects that were updated in operational database since the last run of the ETL process. After the Dimension information is synchronized, the process transfers newly updated or modified Fact information in the same way. However, the process does not try to synchronize all Fact information, but only a specified number of days in the past and future. The number of days is specified by setting the configuration options in the **WFM Server for ETL Application** (see below).

Enabling ETL Functionality

You can configure the ETL process by using the following options, which are configured in the **WFM Server for ETL Application**, **Options** tab in the **[ETL]** section:

- DaysAhead—The number of days (from the current day) to look ahead for Fact data.
- DaysBack—The number of days (from the current day) to look back (to the past) for Fact data.
- DayChunk—The number of days that will be processed at a time.
- ETLTimeout—A non-zero value that starts the ETL process within WFM Server. The number represents the timeout interval between executions of the ETL process.

For a detailed description of these configuration options, see the **[ETL]** section in WFM Server for ETL options.

Behavior of WFM Server for ETL at Startup

At startup, WFM Server for ETL waits for a period of time (determined by the value that is set in the ETLTimeout configuration option) before starting the first run of the ETL process.

Updating Your ETL Database

Updating your WFM ETL database is easy when you use the WFM Backup-Restore Utility (BRU). See *Workforce Management Migration* for information and procedures about updating or migrating your database.

For more information about the WFM BRU, see Using the Backup-Restore Utility.

Purging the ETL Database

To purge old data in the ETL Database, configure the following options in the **[ETL]** section of the **WFM Server for ETL Application**:

- PurgeDaysBack
- PurgeDate
- MaxPurgeChunk

[ETL] PurgeDaysBack is the main purge option that enables a rolling data purge. The **[ETL] PurgeDate** option is an optional override that can be used in special cases, when required.

Load Balancing

Use the information in this topic to load balance Workforce Management (WFM) when you have multiple computers available, and one computer alone cannot handle the work load. Use the procedures provided to assist you when configuring the load balancing method you choose for in your environment.

Load Balancing Methods

There are two main methods of load balancing: Processor and Memory. WFM Server supports both types.

Processor Balancing

Processor Balancing support is based on the assignment of a session to the best-qualified processor and is the more common type of balancing required. It is often needed when one computer does not have enough processor power to handle a large number of simultaneous users. WFM accomplishes this method by balancing WFM Server requests between several different WFM Server instances running on different computers. Each server/computer instance is known as a location.

WFM Server's built-in load balancing service is called Locator Service. Every time you open a new user session, Locator Service identifies the location that is best suited to serve the new session. Usually that is the location that is currently handling the fewest requests. From then on, all requests from that particular session are handled exclusively by the assigned location.

To configure the Processor Balancing on a WFM Server, Configuring Process Balancing

Memory Balancing

Memory Balancing support is based on reconfiguring at the site level. As you create multiple WFM Servers, you can assign each to a different site as required.

Here is an example application of Memory Balancing: if your configuration has 50,000 agents, you will likely need more than 2-3 GB of RAM (the limit on 32-bit Windows applications). One computer alone does not have enough memory to handle this huge configuration.

In Memory Balancing, as you start each new session, you associate it with a site. The session is then directed to the WFM Server instance that is assigned to that site. This allows different servers to work with different subsets of data—thereby reducing the amount of memory needed per server.

> **Tip**
> You can also create a configuration that uses both types of load balancing.

To configure Memory Balancing on a WFM Server, Configuring Memory Balancing

WFM Server Configuration

As noted previously, WFM Server's built-in load balancing service is called Locator Service. Normally, one WFM Server instance is designated as Locator.

Any client that wants to open a user session with WFM Server must first ask Locator for the URL of the WFM Server that is best suited to serve the new session, from a load-balancing point of view. Usually that is the location that is currently handling the fewest requests. The URL is obtained and the client opens the new session on that server.

> **Tip**
> All WFM Servers run the Locator Service and any server can act as Locator.

Configuring the Locator Service

Purpose: To configure the Locator Server on a WFM Server.

Start of Procedure

1. Open Genesys Administrator.
2. Open the **WFM Server Application** that will be the Locator.
3. Add all other WFM Servers (except the Locator) to the **Connections** list.
4. Save and close the Locator.
5. Open the **WFM Web Application**.
6. Add the **WFM Server Application** that will be the Locator to the **Connections** list.
7. Save and close the **WFM Web Application**.

End of Procedure

> **Tip**
> Advanced users can add cross-references in the **Connections** lists between all configured WFM Servers, so that any of them could act as Locator. For example, if you are running two instances of WFM Web, you might want to assign a different WFM Server to each WFM Web instance to act as Locator, but still have load balancing enabled.

Configuring Processor Balancing

Purpose: To configure WFM Server processor balancing (the default method of load balancing.)
Prerequisite: You have configure the Locator Service. See Configuring the Locator Service

Start of Procedure

1. Open Genesys Administrator.
2. Open the **Connections** list of the **WFM Server Application** that you have designated to act as Locator.
3. Add a reference to each WFM Server that you want to balance.

End of Procedure

The result: Locator regularly checks the number of open sessions on the servers that it finds in its **Connections** list, and then directs new sessions to the server with the least number of open sessions. In this way, connected users are balanced across the servers.

Configuring Memory Balancing

Purpose: To enable WFM Server memory balancing.
Prerequisites:

- You have configured the Locator Service. See Configuring the Locator Service.
- You have assigned WFM Servers to specific site(s). You have completed this procedure for each site.

Start of Procedure

1. Open WFM Web.
2. Go to **Configuration** > **Organization** > **Sites**.
3. Click **Configuration** and assign a WFM Server to serve that site, by selecting a server from the drop-down list **WFM Server Name**.
   To disable Memory Balancing, select none in the drop-down list WFM Server Name for every site. Otherwise, the Locator will direct sessions to the selected WFM Server, in defiance of Processor Balancing.
4. Open Genesys Administrator.
5. Add all **WFM Servers Applications** to the **Connections** list of the **WFM Servers Applications** that you designate to act as Locator.

End of Procedure

The result: When you open a new session and identify it with a site, the session is automatically directed to the WFM Server that is assigned to that site.

Adding Connections to WFM Server

Purpose: To add multiple WFM Builder connections in the **WFM Server Application** object.
Prerequisites: You have created the **WFM Builder Application** objects.

Start of Procedure

1. In Genesys Administrator, select the **WFM Server Application** that you want to use with multiple **WFM Builder Applications**, and open its **Connections** list.
2. Add a reference to each **WFM Builder Application** object .
3. Click **Save**.

End of Procedure

To find information about all WFM component connections, see Component Connections.

WFM Builder Configuration

If multiple **WFM Builder Applications** are connected to the WFM Server, you can configure WFM Server to select the **WFM Builder Application** with the shortest queue. See step 2 in the procedure Configuring Optional Settings in the *Workforce Management Web for Supervisors Help*.

For each supervisor's request to build a schedule, WFM Web asks WFM Server to locate an instance of WFM Builder. To do so, WFM Web goes to an original locator—although not to the WFM Server in its current session.

WFM Server selects a WFM Builder instance from its Connections list (see Adding Connections in WFM Server). WFM Server periodically polls all of the **WFM Builder Applications** that are specified in its connection list to get information about their current request queue and to make sure the connections remain active. In response to the request from WFM Web to locate a WFM Builder instance, WFM Server returns the active **WFM Builder Application** with the shortest queue.

Selecting a Specific Builder Application

You can select a specific **WFM Builder Application** for a dedicated group of users that would serve all schedule building requests initiated by that group or team. To do so, see step 2 in the procedure Configuring Optional Settings in the *Workforce Management Web for Supervisors Help*.

WFM Statistics: Recommended Settings

This topic provides recommendations or examples of how statistics might be configured for Genesys Stat Server, Voice Interactions, and Genesys eServices (Multimedia) Interactions as they relate to capturing WFM data. These examples are provided, based on the assumption that the user has some knowledge or expertise in routing strategies and is familiar with Interaction Server rules.

This article is not a comprehensive guide to configuring statistics, but provides only basic examples that you can customize to meet the needs of your organization. If you require more information, see the following additional resources:

- *Stat Server User's Guide*—Provides detailed information about statistical type sections, such as Objects, MainMask, Catagory, Subject, and more.
- *Reporting Technical Reference Solution Reporting Templates*—Provides detailed descriptions of statistics.
- *Reporting Technical Reference Customization*—Provides detailed information about configuring statistics (including custom statistics) in Genesys Configuration Manager.
- Interaction Server product page—Includes the complete documentation suite for Interaction Server.

Configuring Stat Server Statistics

You configure the Stat Server statistics that WFM Data Aggregator tracks and records using WFM Web. Therefore, you must configure certain Stat Server settings required by WFM before launching WFM Web and completing the WFM Data Aggregator configuration (see Configuring Data Aggregator).

In addition, you must locate or configure in Genesys Administrator the necessary Stat Server statistics for tracking WFM activities, so they will be available when configuring WFM Data Aggregator statistics in the WFM Web.

> **Warning**
> You must restart Stat Server after configuration changes.

You must configure two parameters in Stat Server: **TimeProfile** and **TimeRange**.

TimeProfile

WFM Data Aggregator uses **TimeProfile** to order statistics for WFM activities from Stat Server based on a specific interval of time. This time interval is configured in Stat Server as **TimeProfile**.

To configure the time profile, check the **TimeProfiles** section on the **Options** tab of the **Stat Server**

Application object. If it does not exist, create this section.

After locating or creating this section, add these options and values:

- **WFMProfile,Growing** = `0:00+0:15`
- **TimeProfileName,Growing** = `0:00+0:15`

TimeProfileName indicates the name of the time profile to be used. The `0:15` parameter indicates that the request statistics are based on 15-minute intervals.

> **Tip**
> A 15-minute interval is the only timestep currently supported.

TimeRange

WFM Data Aggregator uses the **TimeRange** option to request that the service-factor statistics be calculated, based on the specified time interval. Usually, service factor is calculated as `X% of calls answered in Y seconds`. The `Y seconds` must be configured as the **TimeRange** parameter.

After you configure the time range, Stat Server uses it by default and returns the value for any service-factor statistic as `X% of calls answered in [TimeRange] seconds`. To configure the time range, check for the **[TimeRanges]** section of the **Stat Server Application** object. If it does not exist, create this section.

After locating or creating this section, add these options:

- **TimeRange10** = `0-10`
- **TimeRange15** = `0-15`
- **TimeRange20** = `0-20`
- **TimeRange30** = `0-30`
- **TimeRange60** = `0-60`
- **TimeRange90** = `0-90`

In this case, `10`, `15`, `20`, and so on, represent the `Y seconds` portion of the service factor calculation described above.

You can configure multiple time ranges for multiple service-level goals. A Customer Service goal of 80 percent of calls answered in 30 seconds and a Corporate Customer Service goal of 90 percent of calls answered in 10 seconds is configured as follows:

- `CustTimeRange '0-30'`
- `CorpTimeRange '0-10'`

After you configure *TimeRange*' statistic, use this option when configuring the Stat Server request in the WFM Web.

> **Tip**
> After restarting Stat Server, be certain that during initialization the **TimeProfile** and **TimeRange** statistics proceed successfully. See the Stat Server documentation for more details.

Procedures

The following procedures relate to the topics on this page:

Locating Preconfigured Stat Server Statistics in Genesys Administrator

Purpose: To locate preconfigured Stat Server statistics.

Start of Procedure

1. Click the plus sign (+) next to **Environment** in the Genesys Administrator tree view.
2. Click **Applications**.
   The list of available Applications appears in the right-hand pane of the window.
3. Double-click the **Stat Server Application** object.
   The Properties window appears, containing several tabs.
4. Click the **Options** tab.
   The preset statistics are listed on the Options tab.
5. Scroll through the list to determine which statistics (from those discussed in this topic) are already available, and which ones you need to create.

End of Procedure

Next Steps:

- Complete the Creating New Stat Server Statistics for each statistic you need to create.
- Complete the Entering Settings for New Statistics for each new statistic.

Creating New Stat Server Statistics

Purpose: To create new Stat Server statistics.
Prerequisite: The statistics that WFM requires are not in the preset list.

Start of Procedure

1. On the **Stat Server Option** tab, click **Create New Section/Option**.

The Add Statistic window appears.

2. Enter a statistic name from the Stat Server Statistics Settings tables starting with Table 1 .
3. Click **OK**.
   The new statistic appears in the Option tab of the Statistics list.

> **Tip**
> Certain Genesys eServices (Multimedia) statistics require additional configuration. For more details, see Configuring WFM Statistics for eServices (Multimedia) Interactions.

End of Procedure

Next Steps:

- Complete the procedure Entering Settings for New Statistics for each new statistic.

Entering Settings for New Statistics

Purpose: To configure the new statistics just created.
Prerequisite: You have completed the Creating New Stat Server Statistics.

Summary: After you create new statistics, you must configure each to attach the correct properties to each. You can create one or more separate requests for each activity. For example, if an activity named CustomerCare is handled by two different queues, the interaction volume can be obtained by creating a separate request to Stat Server for the **TotalNumberCallsInbound** statistic for each queue. WFM Data Aggregator automatically sums these results to calculate the total number of CustomerCare interactions.

> **Warning**
> Stat Server statistics are used to collect historical data. It is critical that the statistic requests be configured correctly.

Start of Procedure

1. Double-click a new statistic.
   The Properties window appears, but is blank.
2. In the **Properties** window, right-click in the blank area and, from the shortcut menu, select **New**.
   The Edit Option dialog box opens.
3. Enter four option names and values for each new statistic.
4. In the **Option Name** box, enter an option name from the table Interaction Volume.

5. In the **Option Value** box, enter the corresponding option value.
   Enter the option values exactly as shown in the table Interaction Volume.
6. Click **OK**.
   The new settings appear in the Properties window.
7. Repeat Steps 1–5 until you have defined properties for all four options.
8. After entering all the required properties, click **OK**.
9. To create the next statistic, click **Create New Section/Options** again.
10. Continue the procedure until you have created all the recommended statistics.
11. Click **OK**.

End of Procedure

To find more information about Stat Server statistics, see the Stat Server documentation. You can copy-and-paste a generic set of these recommended statistics, in the topic Using Copy and Paste Format for Statistics.

Recommended Stat Server Statistics

Interaction Volume

Item	Description
Statistic Name	TotalNumberCallsEntered
Statistic Configuration **Option/Value pairs**	Objects = Queue, RoutePoint, GroupQueues Category = TotalNumber MainMask = CallEntered Subject = DNAction
Comments	Predefined. Collects the number of interactions that enter the object.

Abandonment Volume

Item	Description
Statistic Name	TotalNumberCallsAband
Statistic Configuration **Option/Value pairs**	Objects = Queue, RoutePoint, GroupQueues Category = TotalNumber MainMask = CallAbandoned Subject = DNAction
Comments	Predefined. Collects the number of interactions abandoned while waiting in the object.
Statistic Name	TotalNumberShortAbandons

Item	Description
Statistic Configuration **Option/Value pairs**	Objects = Queue, RoutePoint, GroupQueues Category = TotalNumberInTimeRange MainMask = CallAbandoned, CallAbandonedFromRinging Subject = DNAction
Comments	Predefined. Collects the number of interactions abandoned while waiting in the object.

Quality of Service

Item	Description
Statistic Name	ServiceFactor1
Statistic Configuration **Option/Value pairs**	Objects = Queue, RoutePoint, GroupQueues Category = ServiceFactor1 MainMask = CallAnswered, CallAbandoned, CallAbandonedFromRinging Subject = DNAction
Comments	Predefined. You must configure a time range to use this statistic. Reports the percentage of interactions answered by agents within the time range. Calculated as interactions answered divided by total interactions (answered + abandoned).
Statistic Name	TotalNumberCallsDistrib
Statistic Configuration **Option/Value pairs**	Objects = Queue, RoutePoint, GroupQueues Category = TotalNumber MainMask = CallDistributed Subject = DNAction
Comments	Predefined. Reports the number of interactions distributed to other objects from the specified object.
Statistic Name	AverTimeBeforeAnswering
Statistic Configuration **Option/Value pairs**	Objects = Queue, RoutePoint, GroupQueues Category = AverageTime MainMask = CallAnswered Subject = DNAction
Comments	Not predefined. Reports the average time an interaction range before being answered. Calculated as a ratio of total wait time for interactions to be answered divided by the number answered. Only interactions answered during the current time interval are counted.

Handle Time

Item	Description
Statistic Name	TotalHandleTime
Statistic Configuration **Option/Value pairs**	Objects = Agent, Place, GroupAgents, GroupPlaces Category = TotalAdjustedTime MainMask = CallInbound, CallOutbound, AfterCallWork Subject = DNAction
Comments	Predefined. Reports the total time an agent spent handling inbound or outbound interactions and doing offline work.
Statistic Name	TotalNumberCallsHandled
Statistic Configuration **Option/Value pairs**	Objects = Agent, Place, GroupAgents, GroupPlaces Category = TotalNumber MainMask = CallInbound, CallOutbound Subject = DNAction
Comments	Not predefined. Reports the number of inbound and outbound interactions that ended during a specific timestep.

To copy-and-paste a generic set of these recommended statistics, see, Using Copy-and-Paste Format for Statistics.

Configuring WFM Statistics for Voice Interactions

You can copy-and-paste a generic set of these recommended statistics, into those described in the topic Using Copy-and-Paste Format for Statistics.

> **Tip**
> Before you begin using these examples, see the first two paragraphs in WFM Statistics: Recommended Settings.

Table 1: Interaction Volume

Item	Description
Statistic Name	TotalNumberCallsEntered or WFMTotalNumberCallsEntered
Statistic Configuration **Option/Value pairs**	Objects = Queue, RoutePoint, GroupQueues Category = TotalNumber MainMask = CallEntered Subject = DNAction
Comments	Predefined. Collects the number of interactions that enter the object.

Table 2: Abandonment Volume

Item	Description
Statistic Name	TotalNumberCallsAband or WFMTotalNumberCallsAband
Statistic Configuration **Option/Value pairs**	Objects = Queue, RoutePoint, GroupQueues Category = TotalNumber MainMask = CallAbandoned Subject = DNAction
Comments	Predefined. Collects the number of interactions abandoned while waiting in the object.

Table 3: Short Abandonment Volume

Item	Description
Statistic Name	TotalNumberShortAbandons
Statistic Configuration **Option/Value pairs**	Objects = Queue, RoutePoint, GroupQueues Category = TotalNumberInTimeRange MainMask = CallAbandoned, CallAbandonedFromRinging Subject = DNAction
Comments	Predefined. Collects the number of interactions abandoned within a configurable time period—typically a few seconds—while waiting in the object. Short Abandons are usually considered to be wrong numbers or similar, and are typically excluded when computing statistics.

Quality of Service

Table 4: Distributed Interactions

Item	Description
Statistic Name	TotalNumberCallsDistrib or WFMTotalNumberCallsDistrib
Statistic Configuration **Option/Value pairs**	Objects = Queue, RoutePoint, GroupQueues Category = TotalNumber MainMask = CallDistributed Subject = DNAction
Comments	Predefined. Reports the number of interactions distributed to other objects from the specified object.

Table 5: Service Factor

Item	Description
Statistic Name	ServiceFactor1 or WFMServiceFactor1
Statistic Configuration **Option/Value pairs**	Objects = Queue, RoutePoint, GroupQueues Category = ServiceFactor1 MainMask = CallAnswered, CallAbandoned,

Item	Description
	CallAbandonedFromRinging Subject = DNAction
Comments	Predefined. You must configure a time range to use this statistic. Reports the percentage of interactions answered by agents within the time range. Calculated as interactions answered divided by total interactions (answered + abandoned).

Table 6: Average Speed of Answer

Item	Description
Statistic Name	AverTimeBeforeAnswering or WFMAverTimeBeforeAnswering
Statistic Configuration **Option/Value pairs**	Objects = Queue, RoutePoint, GroupQueues Category = AverageTime MainMask = CallAnswered RelMask = CallAnswered Subject = DNAction
Comments	Not predefined. Reports the average time an interaction rang before being answered. Calculated as a ratio of total wait time for interactions to be answered divided by the number answered. Only interactions answered during the current time interval are counted.

Handle Time

Table 7: Total Handle Time

Item	Description
Statistic Name	TotalHandleTime or WFMTotalHandleTime
Statistic Configuration **Option/Value pairs**	Objects = Agent, Place, GroupAgents, GroupPlaces Category = TotalAdjustedTime MainMask = CallInbound, CallOutbound, AfterCallWork Subject = DNAction

Item	Description
Comments	Predefined. Reports the total time an agent spent handling inbound or outbound interactions and doing offline work.

Table 8: Interactions Handled

Item	Description
Statistic Name	TotalNumberCallsHandled or WFMTotalNumberCallsHandled
Statistic Configuration **Option/Value pairs**	Objects = Agent, Place, GroupAgents, GroupPlaces Category = TotalNumber MainMask = CallInbound, CallOutbound Subject = DNAction
Comments	Not predefined. Reports the number of inbound and outbound interactions that ended during a specific timestep.

Configuring WFM Statistics for eServices (Multimedia) Interactions

The recommendations in this topic only describe how to configure statistics, based on Interaction Queues. If you want to copy-and-paste a generic set of these recommended statistics, see Using Copy-and-Paste Format for Statistics.

> **Tip**
> Before you begin using these examples, see the first two paragraphs in WFM Statistics: Recommended Settings.

Statistics For Chat Interactions

This section contains recommended statistics for Genesys eServices (Multimedia) statistics for chat interactions.

Table 1: Interaction Volume

Item	Description
WFM statistic object type	Interaction queue
ConfigServer object type	Script
Statistic name	<name is user-definable>
Statistic Configuration **Option/Value pairs**	AggregationType = Total Category = JavaCategory Description = The total number of interactions of the specified media type that entered this staging area during the specified period. JavaSubCategory = eServiceInteractionStat.jar:OMQ Total Entered MediaType = chat Objects = StagingArea
Statistic created by	Must be configured manually.

Table 2: Abandonment Volume

Item	Description
WFM statistic object type	Interaction queue

Item	Description
ConfigServer object type	Script
Statistic name	Chat_Total_Abandoned_From_Queue
Statistic Configuration **Option/Value pairs**	AggregationType = Total Category = JavaCategory Description = The total number of email interactions abandoned. JavaSubCategory = eServiceInteractionStat.jar:OMQ Total Abandoned MediaType = chat Objects = StagingArea
Statistic created by	Must be configured manually.

Quality of Service

Table 3: Average Speed of Answer

Item	Description
WFM statistic object type	Interaction queue
ConfigServer object type	Script
Statistic name	<name is user-definable>
Statistic Configuration **Option/Value pairs**	AggregationType = Total Category = JavaCategory JavaSubCategory = eServiceInteractionStat.jar:OMQ Average Waiting Time MediaType = chat Objects = StagingArea
Statistic created by	Must be configured manually.

Table 4 Distributed Interactions

Item	Description
WFM statistic object type	Interaction queue
ConfigServer object type	Script
Statistic name	<name is user-definable>
Statistic Configuration **Option/Value pairs**	AggregationType = Total Category = JavaCategory JavaSubCategory = eServiceInteractionStat.jar:OMQ Total Distributed MediaType = chat Objects = StagingArea
Statistic created by	Must be configured manually.

Handle Time

Table 5: Total Handle Time

Item	Description
WFM statistic object type	GroupAgents, GroupPlaces
ConfigServer object type	GroupAgents, GroupPlaces
Statistic name	Interactions_Processing_Time
Statistic Configuration **Option/Value pairs**	Category = TotalTime Description = The total amount of time that this resource spent handling interactions during the specified period. MainMask = InteractionHandling Objects = Agent, GroupAgents, GroupPlaces, Place Subject = AgentStatus
Statistic created by	Genesys eServices (Multimedia) Wizard
Filter	<name is user-definable>
Filter configuration	MediaType= chat & PairExists(“Queue”,X)
Filter created by	Must be configured manually. X is the name of the interaction queue.

Table 6: Interactions_Handled

Item	Description
WFM statistic object type	GroupAgents, GroupPlaces
ConfigServer object type	GroupAgents, GroupPlaces
Statistic name	Interactions_Processed
Statistic Configuration **Option/Value pairs**	Category = TotalNumber Description = The total number of interactions that were handled by this resource during the specified period. MainMask = InteractionHandling Objects = Agent, GroupAgents, GroupPlaces, Place Subject = AgentStatus
Statistic created by	Genesys eServices (Multimedia) Wizard
Filter	<name is user-definable>
Filter configuration	MediaType= chat & PairExists(“Queue”,X)
Filter created by	Must be configured manually. X is the name of the interaction queue.

Statistics For E-Mail Interactions

This section contains recommended statistics for Genesys eServices (Multimedia) statistics for email interactions.

Table 7: Interaction Volume

Item	Description
WFM statistic object type	Interaction queue
ConfigServer object type	Script
Statistic name	IxnQueue_Email_Entered
Statistic Configuration **Option/Value pairs**	AggregationType = Total Category = JavaCategory Description = Total number of email interactions that entered the queue. JavaSubCategory = eServiceInteractionStat.jar:EQR Total Entered Objects = StagingArea
Statistic created by	Genesys eServices (Multimedia) Wizard.

Handle Time

Table 8: Total Handle Time

Item	Description
WFM statistic object type	GroupAgents, GroupPlaces
ConfigServer object type	GroupAgents, GroupPlaces
Statistic name	Interactions_Processing_Time
Statistic Configuration **Option/Value pairs**	Category = TotalTime Description = The total amount of time that this resource spent handling interactions during the specified period. MainMask = InteractionHandling Objects = Agent, GroupAgents, GroupPlaces, Place Subject = AgentStatus
Statistic created by	Genesys eServices (Multimedia) Wizard
Filter	<name is user-definable>
Filter configuration	MediaType = E-mail & PairExists(“Queue”,X)
Filter created by	Must be configured manually. X is the name of the interaction queue.

Table 9: Interactions Handled

Item	Description
WFM statistic object type	GroupAgents, GroupPlaces
ConfigServer object type	GroupAgents, GroupPlaces
Statistic name	Interactions_Processed
Statistic Configuration **Option/Value pairs**	Category = TotalNumber Description = The total number of interactions that were

Item	Description
	handled by this resource during the specified period. MainMask = InteractionHandling Objects = Agent, GroupAgents, GroupPlaces, Place Subject = Action
Statistic created by	Genesys eServices (Multimedia) Wizard
Filter	<name is user-definable>
Filter configuration	MediaType = E-mail & PairExists(“Queue”,X)
Filter created by	Must be configured manually. X is the name of the interaction queue.

Backlog

Table 10: E-mails

Item	Description
Statistic name	EmailsWaitingInQueue or WFMEmailsWaitingInQueue
Statistic Configuration **Option/Value pairs**	Objects = StagingArea Category = JavaCategory AggregationType = Current JavaSubCategory = eServiceInteractionStat.jar:OMQ Current Waiting Processing MediaType = email
Comments	Number of email interactions that have been submitted to a queue and are currently awaiting processing.

Statistics For iWD Interactions

This section contains recommended statistics for Genesys eServices (Multimedia) statistics for intelligent Workload Distribution (iWD) interactions.

Table 11: Interaction Volume

Item	Description
ConfigServer object type	Script
Statistic name	<name is user-definable>
Statistic Configuration	AggregationType = Total

Item	Description
Option/Value pairs	Category = JavaCategory Description = The total number of interactions of the specified media type that entered this staging area during the specified period. JavaSubCategory = eServiceInteractionStat.jar:OMQ Total Entered MediaType = MediaX Objects = StagingArea
Statistic created by	Must be configured manually. MediaX is the media type for corresponding intelligent Workload Distribution.

Table 12: Abandonment Volume

Item	Description
WFM statistic object type	Interaction queue
ConfigServer object type	Script
Statistic name	<name is user-definable>
Statistic Configuration **Option/Value pairs**	AggregationType = Total Category = JavaCategory Description = Total number of email interactions abandoned. JavaSubCategory = eServiceInteractionStat.jar:OMQ Total Abandoned MediaType = MediaX Objects = StagingArea
Statistic created by	Must be configured manually. MediaX is the media type for corresponding intelligent Workload Distribution.

Quality of Service

Table 13: Average Speed of Answer

Item	Description
WFM statistic object type	Interaction queue
ConfigServer object type	Script
Statistic name	<name is user-definable>
Statistic Configuration **Option/Value pairs**	AggregationType = Total Category = JavaCategory JavaSubCategory = eServiceInteractionStat.jar:OMQ Average Waiting Time MediaType = MediaX Objects = StagingArea
Statistic created by	Must be configured manually. MediaX is the media type for corresponding intelligent Workload Distribution.

Table 14: Distributed Interactions

Item	Description
WFM statistic object type	Interaction queue
ConfigServer object type	Script
Statistic name	<name is user-definable>
Statistic Configuration **Option/Value pairs**	AggregationType = Total Category = JavaCategory JavaSubCategory = eServiceInteractionStat.jar:OMQ Total Distributed MediaType = MediaX Objects = StagingArea
Statistic created by	Must be configured manually. MediaX is the media type for corresponding intelligent Workload Distribution.

Handle Time

Table 15: Total Handle Time

Item	Description
WFM statistic object type	GroupAgents, GroupPlaces
ConfigServer object type	GroupAgents, GroupPlaces
Statistic name	Interactions_Processing_Time
Statistic Configuration **Option/Value pairs**	Category = TotalTime Description = The total amount of time that this resource spent handling interactions during the specified period. MainMask = InteractionHandling Objects = Agent, GroupAgents, GroupPlaces, Place Subject = AgentStatus
Statistic created by	Genesys eServices (Multimedia) Wizard
Filter	<name is user-definable>
Filter configuration	MediaType = MediaX
Filter created by	Must be configured manually. X is the name of the interaction queue.

Table 16: Interactions_Handled

Item	Description
WFM statistic object type	GroupAgents, GroupPlaces
ConfigServer object type	GroupAgents, GroupPlaces
Statistic name	Interactions_Processed
Statistic Configuration	Category = TotalNumber

Item	Description
Option/Value pairs	Description = The total number of interactions that were handled by this resource during the specified period. MainMask = InteractionHandling Objects = Agent, GroupAgents, GroupPlaces, Place Subject = AgentStatus
Statistic created by	Genesys eServices (Multimedia) Wizard
Filter	<name is user-definable>
Filter configuration	MediaType = MediaX
Filter created by	Must be configured manually. X is the name of the interaction queue.

Troubleshooting WFM

In this topic find troubleshooting tips, steps to verify your configuration, and solutions for common problems. You will find:

- Architectural issues, such as configuration of the WFM components and the connections between them
- Configuration conflicts in WFM that result in forecasting and scheduling errors
- Information about when to use log files for error tracking

After working through the suggestions in this chapter, if your configuration appears to be correct but WFM still does not function properly, contact Genesys Customer Care for further assistance.

Click these troubleshooting topics to learn about issues or scenarios that might be helpful to you:

- Troubleshooting WFM Components and Connections
- Troubleshooting Your WFM Configuration
- Using Log Files to Troubleshoot WFM
- Using WFM Prometheus metrics for monitoring & troubleshooting

Troubleshooting WFM Components and Connections

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> **Important**
> Issues addressed in this section can also affect WFM Web functionality such as forecasting and scheduling. Be sure to review all possible sources of errors during your troubleshooting process.

To troubleshoot your Workforce Management components and connections, use the topics on this page to find suggestions for resolutions to specific issues.

See also:

- Troubleshooting Your WFM Configuration
- Using Log Files to Troubleshoot WFM

Expired Digital Signature or Security Certificates

Even if you set up Genesys (or Sun) as a trusted publisher in your browser, you might see one of the following messages:

The digital signature was generated with a trusted certificate but has expired or is not yet valid.
The security certificate has expired or is not yet valid.

As a common practice, Genesys renews its certificates once a year. Sun does not provide certificate renewal for JavaHelp, so it expired in 2004.

Here is how to respond to that warning message:

- During your first access of WFM Web, check the always trust option in both warning messages. This will mark certificates as trusted and the user will not see these warnings again.
- Import the certificates to the Java plug-in manually for each new user. Certificates for import could be exported from any workstation where WFM Web has been already accessed and certificates where confirmed with the always trust option check.

An applet that is signed with a certificate that has expired is still safe to download or use, but only if the applet was signed when the certificate that was issued by the Certificate Authority (CA) was still valid. If it was, then according to the specification for signing Java applets, the applet is valid. Also,

according to the specification, it is the responsibility of the JVM to warn the user if an applet has been modified after it was digitally signed with a certificate issued by a CA.

As long as the JVM does not return an error stating that the applet has been modified since it was signed, the applet is still valid and safe to run.

Blank Screen When Attempt to Access WFM Web

If you are using Tomcat and this issue occurs, it might be because you only have the Java Runtime Environment (JRE) installed and not Sun's Java Developers Kit (JDK) software. Tomcat 5.0.x requires the JDK. If you look at the Tomcat logs, you will see an error saying that java compiler was not found. If you don't want to install the JDK, then the other option is to use Tomcat 5.5.x, which only requires the JRE.

Unable to Connect to Data Source

If you cannot connect to your database, verify the following:

- That the correct versions of Microsoft Data Access Components (MDAC) and Jet are installed on your computer. See Determine the MDAC Version.
- You have added the Database Access Point (DAP) on the Connections tab of the Application object of the component you are using.
- You have configured the DAP correctly.
- Your database is set to be case insensitive.

Determine the MDAC Version

Microsoft supplies a free diagnostic program, MDAC Configuration Checker, that scans your computer to determine whether or not you are running the correct version of MDAC. You can download the program from the Microsoft web site. See *Supported Operating Environment Reference Manual* for the current MDAC requirements.

"DA Server Not Found" Error

Data Aggregator is not running. Start it manually, under Windows Services.

"Host Not Found" Error

The host names you configure in Configuration Manager are case sensitive and must be lowercase.

- Rename the host and try the procedure again.

WFM Data Aggregator Does Not Start

When WFM Data Aggregator is running as a Windows Service on a host computer and the host is shut down and restarted, Data Aggregator leaves an open connection to Configuration Server. This causes Data Aggregator to fail to start after rebooting. In particular, Service Manager indicates a status of `Starting` for the WFM Data Aggregator service for a long time after you try to start it.

In this situation, use the Closing an Incorrect Connection Between Data Aggregator and Configuration Server to restart WFM Data Aggregator.

WFM Web Does Not Open

Pop-up blockers interfere with WFM Web for Supervisors operation. If you are running a pop-up blocker on your computer, disable it before trying to open WFM Web for Supervisors.

Applets Do Not Load in WFM Web

WFM Web uses Java Server Pages (JSPs) to create its dynamic web pages. To use WFM Web, your browser must have Java support. If the necessary plug-in was not installed with the browser, you can download the plug-in from www.oracle.com. To learn which version of Java is required, consult the WFM section at the end of the “Product Prerequisites” table in the *Supported Operating Environment Reference Manual*.

On Supervisors’ workstations, WFM Web uses Java applets that are run by Sun’s Java Plug-in. On Windows operating systems the Java Plug-in is running as ActiveX, which means that supervisors must have rights to run ActiveX controls.

Cannot Log In to WFM Web

The `ConfigServer.properties` file might be configured incorrectly. This could happen if you installed WFM Web without being connected to Configuration Server or if you manually entered incorrect values when you were configuring the WFM Web Application object.

In this situation, correct the configuration by completing the Correcting the ConfigServer.properties File.

"WFM Server Cannot be Reached" Error

There are two different issues that might be responsible for this error message. If you receive this message sporadically, you might have too few TCP sockets (see Scenario 1). If it occurs every time you open WFM Web, it is probably because it is not correctly configuration (see Scenario 2).

Scenario 1

This error message may occur because there are too few TCP sockets for the number of WFM Web for Supervisors connections you are trying to establish. To improve performance:

- Install WFM Web on a separate computer.
- Increase the refresh rate from the default value (2 seconds) to 5 seconds. This should increase the number of supervisors that are able to simultaneously access the **Adherence** views by approximately 100 percent.

Scenario 2

You might have specified the wrong application type when you installed WFM Web. If so, uninstall and reinstall WFM Web, entering the correct values in the Installation Wizard screens.

- If you are running WFM in a Framework 6.x environment, the WFM Web application type must be **ThirdPartyServer**.
- If you are running in a 7.x environment, the application type should be **WFM Web**.

The Agent Weekly Preference View Does Not Display 24-Hour Graphical Data

> **Tip**
> This resolution applies to UNIX environments only.

If your Unix server does not have an X Server installed or you have not set the **DISPLAY** environment variable, the WFM Web **Agent Weekly Preferences** window is presented without 24-hour graphical information.

For non-Windows environments (such as Unix and Linux), you must have X or some form of X (X11 Server or X Windows server) running and point the **DISPLAY** environment variable to the machine running X.

Synchronization with the Configuration Database Takes an Unreasonably Long Time

If you are using Microsoft SQL, to reduce synchronization time, make sure that the database **AutoShrink** feature is turned on.

Procedures

The procedures in this section relate to the topics on this page.

Closing an Incorrect Connection Between Data Aggregator and Configuration Server

Purpose: To enable WFM Data Aggregator to restart

Start of Procedure

1. In Genesys Administrator, rename the WFM Data Aggregator Application object, and then click **OK** to close the **Properties** window.
2. Reopen the **Properties** window and change the Application object name back to the original and then click **OK** again. Doing this clears the connection.

> **Tip**
> After this, WFM Data Aggregator should immediately connect to Configuration Server. To prevent this issue from happening again, before shutting down and/or rebooting the host computer, use the **Services** window to stop the WFM Data Aggregator Service. If WFM Data Aggregator fails to start, it writes a message to the `daerror.log` file, which is located in the WFM Data Aggregator working directory. Use this log file to diagnose the issue that is preventing WFM Data Aggregator from starting correctly.

End of Procedure

Correcting the ConfigServer.properties File

Purpose: To correctly configure the `ConfigServer.properties` file.

Start of Procedure

1. Remove the incorrectly configured application from the servlet runner.
2. Reinstall WFM Web, providing correct values during the installation.
3. Deploy the newly installed application.
4. If reinstalling WFM Web does not resolve the issue, check that you have entered the correct URL for WFM Web, remembering these points:
   - The URL is case sensitive.
   - Do not include `login.asp` or `login.jsp` in the URL. The URL should simply point to the application virtual directory.

End of Procedure

Troubleshooting Your WFM Configuration

To troubleshoot your Workforce Management configuration, use the topics on this page to find suggestions for resolutions to specific issues.

See also:

- Troubleshooting WFM Components and Connections
- Using Log Files to Troubleshoot WFM

Inaccurate Actual Headcount for Multi-Site Activities and Activity Groups

The algorithms used in the Performance subsystem, Daily Average Actual Headcount for Multi-Site Activities (MSA), Activity Group (AG), and Site Activities have changed from the algorithm used in WFM 8.0 and earlier releases.

Function of the Algorithm

In prior releases, the Actual Headcount algorithm for MSA and AG levels tended to produce inaccurate Actual Headcount in configurations that included multi-skilled agents, or schedules and MSA or AG configured for more than one Associated Activity from the same site.

This issue is resolved by using the new algorithm (introduced in 8.1), that produces accurate Actual Headcount for MSA and Activity Groups. It includes the following important changes to the Actual Headcount timestep and Daily Average algorithms:

1. Dedicated for MSA and AG levels, Data Aggregator aggregates the Actual Headcount separate from the Associated Activities Actual Headcount.
2. MSA level Daily Average Actual Headcount algorithm takes into account the MSA and Associated Activities open hours.
3. Site Activity level Average Actual Headcount algorithm takes into account the Activity open hours.
4. Agent Minutes (<agent adherent minutes> divided by 15) Headcount algorithm is used instead of LoggedIn Agents Headcount.
   Example: If 1 agent is logged in (adherent), but works only 14 minutes per-timestep, the Actual Headcount in Agent Minutes equals 14/15 = 0.93.

Calculations Model for Multi-Site Activities Level

In the WFM Performance subsystem, Multi-Site Activity (MSA) Actual Headcount Daily Average is calculated in the following ways, depending on the state of the Multi-Site Activities button:

When the Use Multi-Site Activities button is set to ON:

- The Actual Headcount Daily Average is calculated by using MSA open hours and MSA per-timestep Actual Headcount data.
- If any timesteps outside MSA open hours contain non-zero values, WFM includes the values for these timesteps in the Actual Headcount Daily Average calculations.
- The Actual Headcount is calculated by using the Agents Minutes algorithm (see item 4 above).

When the Use Multi-Site Activities button is set to OFF:

- The Actual Headcount Daily Average is calculated, by using the Associated Activities open hours and the sum of the Associated Activities per-timestep Actual Headcount data.
- If any timesteps outside the Associated Activities open hours contain non-zero values, WFM includes the values for these timesteps in the Multi-Site Activity Actual Headcount Daily Average calculations.
- The Actual Headcount is calculated, by using the Agents Minutes algorithm (see item 4 above).

Calculations for Activity Group Level

In the WFM Performance subsystem, Activity Group Actual Headcount Daily Average is calculated in the following way:

- The Actual Headcount Daily Average is calculated, by using the Associated Activities Actual Headcount data per-timestep for entire day.
- The Actual Headcount is calculated by using the Agents Minutes algorithm (see item 4 above).

Calculations for Site Activity Level

In the WFM Performance subsystem, Site Activity Actual Headcount Daily Average is calculated in the following way:

- The Actual Headcount Daily Average is calculated, by using Activity open hours and the Activity per-timestep Actual Headcount data.
- If any timesteps outside of the Activity open hours contain non-zero values, WFM includes the values for these timesteps in the Activity Actual Headcount Daily Average algorithms.
- The Actual Headcount is calculated by using the Agents Minutes algorithm (see item 4 in Overview).

> ### Tip
> In releases prior to 8.1, open hours were not taken into account for MSA and Site Activities Daily Average algorithms. WFM used the Associated Activities Actual Headcount data from timesteps for the entire day for Multi-Site Activity Actual Headcount Daily Average algorithms, whether or not the Use Multi-Site Activities button was set to ON or OFF.

Performance Reports

Performance reports (by default) show the Actual Headcount, based on the LoggedIn Agents that are collected by Data Aggregator, while Performance Intra-Day displays the Actual Headcount, based on Agents Minutes (see item 4 above).

To change the Performance reports Actual Headcount calculation to Agent Minutes (to match Performance Intra-Day calculation), the WFM Web Application option **[Reports] ShowActualHeadcount** must be set to `true`.

Performance Shows No Intra-Day Statistics

If the WFM Web Performance subsystem does not display statistics for Interaction Volume, Average Handling Time, Service Level, and other key Intra-Day statistics, verify that:

- WFM Data Aggregator has initialized successfully; has made successful connections to Configuration Server, Stat Server, and the WFM database; and has been running for 30 minutes.
- A schedule has been published for the current time interval.
- The correct Stat Server name appears in the **Configuration > Organization > Sites > Configuration** pane in WFM Web for Supervisors.
- The necessary statistics are configured in the **Configuration > Activities > Statistics** in WFM Web for Supervisors.
- Time zones are configured correctly for the business unit or site.
- The statistics are monitoring the correct Genesys objects, such as queues, routing points, and so on.
- The **TimeProfile** parameter is correctly configured in Stat Server.

Headings Do Not Match Columns in Exported Reports

When you export the reports, select the `MS Excel Tabular` option.

Real-Time Agent Adherence Is Not Working Correctly

If the **Real-Time Agent Adherence** window is empty, then verify that:

- A schedule has been published for the current time interval.
- You have associated the correct WFM Data Aggregator name with the site that contains the agents you are looking at in the WFM Web for Supervisors.
- You have configured a connection to the appropriate Stat Server in the WFM Data Aggregator

Application object.

- Your WFM Data Aggregator Application object specifies a connection to your WFM Server on the Connections tab.
- T-Server, Stat Server, and WFM Data Aggregator are running properly.
- Stat Server is configured to connect to the appropriate T-Server.

> **Tip**
> If there are no agent names visible in the **Real-Time Agent Adherence** window, publish a schedule for the current day.

Agents Are Not Being Scheduled

Verify that:

- The agents' hire dates are not the same as the current date and come before the start of the schedule period.
- The agents are associated with a Contract that can be scheduled.
- The agents' Contract is not associated with shifts that are incorrectly configured, preventing the agents who is in that Contract from being given any shifts.
- The agents have skills configured.
- The agents have skills that qualify for at least one of the activities you are scheduling.

Calculation of Average Handling Time Based on the TotalTime Statistics

Average Handling Time (AHT) is calculated by taking the total duration of all interactions that are completed during a timestep, divided by the total number of interactions handled during that timestep.

In cases where Total Handle Time is collected for an interval, but no interactions have been handled in that interval, WFM can optionally associate the Handle Time with the previous interval. To enable this feature, use the WFM Data Aggregator Application **[Options]** HandleTimeWriteBack configuration option.

Cannot Find Agents or Sites

Verify that:

- WFM is synchronized with Configuration Server.
- The WFM user experiencing this issue has permission to view the site, agents, and logins for the missing sites and/or agents.

Errors or Warnings When Creating a Schedule

In most cases, when schedule results are not as expected, a configuration error is the cause. With a valid configuration, you rarely see errors.

If the configuration settings lead to a disparity between the staffing requirements and the actual schedule, the **Schedule Validation** view records the problems. Sometimes it indicates which parameters you must change to correct the disparity.

When schedule validation warnings appear, it is essential to begin narrowing down the scope of the scheduling problem by isolating a single agent, team, contract, shift, or other object until the problematic configuration point is identified and resolved. The most frequent causes of schedule errors and warnings include:

- Incompatibility between day-off constraints and constraints set for weekly hours or schedule planning period hours.
- Incorrectly configured meal and shifts constraints.
- Exceptions inconsistent with contract or rotating pattern constraints.

If you are unsure how to troubleshoot the schedule results or are reluctant to change WFM configuration data, contact Genesys Customer Care.

Data on Active Interactions Disappears

If you close WFM Data Aggregator using the Windows NT Task Manager, you will lose all data on currently active interactions, because Windows NT does not allow enough time for WFM Data Aggregator to save the active data.

Forecast Appears Inaccurate

Verify that:

- The statistics being used to collect data for each activity are appropriate.
- The Genesys objects (queues, routing points, and so on) used to monitor statistics are appropriate.
- The Genesys objects are not combining data for interactions that should be associated with different activities. For example, if multiple interaction types are coming through a single routing point, then attached data must be used to filter statistics by interaction type.
- There is no historical data with `null` values in the WFM historical data table `wm_perf_activities.wm_callvol`. You can verify this by exporting the historical data to a local file using WFM Web for Supervisors.
- You have a sufficient quantity of historical data for the forecasting method you are using. The Expert Average Engine requires one full week of historical data and the Universal Modeling Engine requires at least one year of historical data.

Schedules Are Highly Over- or Understaffed

Verify that:

- The schedule was built after a forecast was published.
- There is sufficient flexibility in the working hours constraints for the agents' weekly and schedule-planning periods, configured in the **Contracts** module.
- There is sufficient flexibility in the working days constraints.
- There is sufficient flexibility in the weekend day-off rules for the schedule-planning period.
- The agents' contract availability is flexible enough to cover the open hours for the desired activities.
- Team constraints are not enabled or are configured with enough flexibility to adequately cover the entire day's interaction volumes.
- All shifts have valid configurations.
- All scheduled agents have received the correct number of weekly and/or schedule-planning period hours. If they haven't, this indicates a configuration error.

Using Structured Logs and Distributed Tracing to Troubleshoot WFM

Workforce Management log files are intended to be used for diagnosis of configuration and program errors. They should not be used in normal day-to-day operation because they slow WFM performance.

If you contact Genesys Customer Care for assistance with WFM, you might be instructed to turn on logging and attempt to re-create the problem. The logs can provide Technical Support with important information on the nature of the malfunction.

Each component of WFM uses its own log file, which you can view with any ASCII viewer, such as Notepad. By default, the WFM log files are stored in `\\<Workforce Management directory>\Logs`. For information about configuring logs, see the Log option information for each component's **Options** tab.

If WFM Data Aggregator fails to start, it writes a message to the `daerror.log` file, which is located in the WFM Data Aggregator working directory. Use this log file to diagnose the problem that prevented WFM Data Aggregator from starting correctly.

In addition, WFM now supports structured logging to the file containing one-line log records formatted in JSON format. This facilitates easy integration with the centralized log aggregation and viewing systems, like Grafana/Loki.

The JSON log can optionally be enabled by setting up a new x-json-log configuration application options under the Log section. For details about JSON logging, refer to the Log section of WFM Components configuration options.

WFM also fully supports distributed tracing of the HTTP requests using Open Telemetry protocol (OTLP). All HTTP requests now propagate OTLP tracing headers. The corresponding request trace_id and span_id are also logged in the logs for tracking and integration purposes. All WFM backend servers can also be configured to export traces via OTLP gRPC exporter. This facilitates easy integration with the distributed tracing collection and visualization systems, like Grafana/Tempo. Refer to the trace section for the details.

See also:

- Troubleshooting WFM Components and Connections
- Troubleshooting Your WFM Configuration

Using WFM Prometheus metrics for monitoring & troubleshooting

To support additional resiliency and observability capabilities for (but not limited to) cloud based environment and deployment, the backend components of Genesys Workforce Management solution are modified to support Prometheus based metrics, available via http endpoints for engage on premise platform.

Use the below URL for WFM Prometheus based metrics:
`http://<server-host>:<port>/metrics`

Where:
`<server-host>` - Host on which WFM backend component running (WFM Server, Builder, Data Aggregator or Daemon)
`<port>` - Port on which WFM backend component (WFM Server, Builder, Data Aggregator or Daemon) accepting client requests. This <port> can either be the default server listening port or a dedicated management port that need to be enabled with the management-port option:
`management-port = <port>`

For more information, see the the following URLS:

Prometheus models: https://prometheus.io/docs/concepts/data_model/
Prometheus supported metrics types: https://prometheus.io/docs/concepts/metric_types/
Grafana dashboards: https://prometheus.io/docs/visualization/grafana/ (WFM backend components now supports wide list of metrics which will be defined later in this chapter. These metrics can be called and used to build Grafana like dashboards for solution monitoring.)

Following tables describes all supported and available metrics that can be used to build dashboards, reports, alerts and gives you opportunity to monitor solution heath.

System

Name	Type	Description	Labels
wfm_system_start_time_seconds	Gauge	Start time as epoch time, in seconds	[app_name, component, host, version]
wfm_system_uptime_seconds	Gauge	System uptime, in seconds	[component, host]
wfm_system_leader	Gauge	Leader indicator 0/1	[component, host]
wfm_system_cpu_count	Gauge	System CPU count	[component, host]
wfm_system_process_private_bytes	Gauge	Process private bytes	[component, host]
wfm_system_process_virtual_bytes	Gauge	Process virtual bytes	[component, host]
wfm_system_process_cpu_time_ratio	Gauge	Process CPU time %	[component, host]
wfm_system_total_cpu_time_ratio	Gauge	Total system CPU time %	[component, host]
wfm_system_total_committed_bytes	Gauge	Total system committed	[component, host]

Name	Type	Description	Labels
		bytes	
wfm_system_total_commit_limit	Gauge	Total system memory limit, in bytes	[component, host]
wfm_system_total_physical_memory_bytes	Gauge	Total system physical memory, in bytes	[component, host]
wfm_system_total_virtual_memory_bytes	Gauge	Total system virtual memory, in bytes	[component, host]
wfm_system_available_physical_memory_bytes	Gauge	Available physical memory, in bytes	[component, host]
wfm_system_physical_memory_load_ratio	Gauge	Physical memory load %	[component, host]

Session

Name	Type	Description	Labels
wfm_session_count	Gauge	Current session count labeled by the session scope, which can be ‘agent’, ‘user’, ‘user agent’ or ‘system’	[component, host, scope]

Socket Connections

Name	Type	Description	Labels
wfm_connection_total	Counter	Total connections	[component, host]
wfm_connection_refused_total	Counter	Refused connections	[component, host]
wfm_connection_open	Gauge	Open connections	[component, host]
wfm_connection_idle	Gauge	Idle connections	[component, host]
wfm_connection_queued	Gauge	Queued connections	[component, host, direction]
wfm_connection_threads	Gauge	Connection thread count	[component, host, direction]
wfm_connection_threads_limit	Gauge	Connection thread count limit	[component, host, direction]

HTTP

Name	Type	Description	Labels
wfm_http_request_total	Counter	Total requests	[component, host]
wfm_http_request_failed_total	Counter	Total failed requests	[component, host]
wfm_http_request_duration_seconds	Histogram	Successful requests duration, in seconds	[component, host]
wfm_http_request_failed_duration_seconds	Histogram	Failed requests duration, in seconds	[component, host]

Name	Type	Description	Labels
wfm_http_request_latency_seconds	Summary	Successful requests latency over the rolling time window, in seconds	[component, host]
wfm_http_request_failed_latency_seconds	Summary	Failed requests latency over the rolling time window, in seconds	[component, host]
wfm_http_request_failed_ratio	Summary	Failed requests ratio over the rolling time window	[component, host]
wfm_http_request_rps	Summary	Requests per second (RPS) over the rolling time window	[component, host]
wfm_http_request_active	Gauge	Active requests	[component, host, operation, uri]
wfm_http_request_read_time_seconds	Histogram	Request read time, in seconds	[component, host, operation, uri]
wfm_http_request_read_bytes	Counter	Request read bytes	[component, host, operation, uri]
wfm_http_request_write_time_seconds	Histogram	Request write time, in seconds	[component, host, operation, uri]
wfm_http_request_written_bytes	Counter	Request written bytes	[component, host, operation, uri]
wfm_http_response_total	Counter	Total responses	[component, host, code, operation, error, uri]
wfm_http_response_time_seconds	Histogram	Response time, in seconds	[component, host, code, operation, error, uri]
wfm_http_response_latency_seconds	Summary	Successful response latency over the rolling time window, in seconds	[component, host, code, operation, error, uri]
wfm_http_response_failed_latency_seconds	Summary	Failed response latency over the rolling time window, in seconds	[component, host, code, operation, error, uri]

Task

Name	Type	Description	Labels
wfm_task_total	Counter	Total tasks	[component, host, task]
wfm_task_refused_total	Counter	Total refused tasks	[component, host, task]
wfm_task_cancelled_total	Counter	Total cancelled tasks	[component, host, task]
wfm_task_failed_total	Counter	Total failed tasks	[component, host, task]
wfm_task_active	Gauge	Active tasks	[component, host, task]
wfm_task_active_max	Gauge	Maximum active tasks over the rolling time window	[component, host, task]
wfm_task_active_limit	Gauge	Active tasks limit	[component, host, task]

Name	Type	Description	Labels
wfm_task_queued	Gauge	Queued tasks	[component, host, task]
wfm_task_queued_max	Gauge	Maximum queued tasks over the rolling time window	[component, host, task]
wfm_task_queued_limit	Gauge	Queued tasks limit	[component, host, task]
wfm_task_queued_time_seconds	Histogram	Task time in the queue, in seconds	[component, host, task]
wfm_task_handle_time_seconds	Histogram	Task handle time, in seconds	[component, host, task]
wfm_task_duration_seconds	Histogram	Task duration, in seconds	[component, host, task]
wfm_task_latency_seconds	Summary	Task latency over the rolling time window, in seconds	[component, host, task]
wfm_task_all_threads	Gauge	Task thread pool size	[component, host]
wfm_task_all_active	Gauge	Active tasks	[component, host]
wfm_task_all_active_max	Gauge	Maximum number of active tasks since last restart	[component, host]
wfm_task_all_active_limit	Gauge	Active task limit	[component, host]
wfm_task_all_queued	Gauge	Queued tasks	[component, host]
wfm_task_all_queued_max	Gauge	Maximum number of queued tasks since last restart	[component, host]
wfm_task_all_queued_limit	Gauge	Queued task limit	[component, host]
wfm_task_all_throttled	Gauge	Throttled tasks	[component, host]
wfm_task_all_throttled_max	Gauge	Maximum number of throttled tasks since last restart	[component, host]

Database

Name	Type	Description	Labels
wfm_db_connection_total	Counter	Total database connections	[component, host]
wfm_db_connection_failed_total	Counter	Total failed database connections	[component, host]
wfm_db_connections	Gauge	Current database connections	[component, host]
wfm_db_connection_time_seconds	Histogram	Time to establish database connection, in seconds	[component, host]
wfm_db_command_total	Counter	Total number of database commands	[component, host, task]

Name	Type	Description	Labels
		executed	
wfm_db_command_failed_total	Counter	Total number of failed database commands	[component, host, task]
wfm_db_command_duration_seconds	Histogram	Database command duration, in seconds	[component, host, task]
wfm_db_fetch_total	Counter	Total number of database fetches	[component, host, task]
wfm_db_fetch_duration_seconds	Histogram	Database fetch duration, in seconds	[component, host, task]
wfm_db_deadlock_total	Counter	Total number of database deadlocks detected	[component, host, task]

Cache

Name	Type	Description	Labels
wfm_cache_size_bytes	Gauge	Cache size, in bytes, labeled by cache type	[component, host, cache]
wfm_cache_hit_count	Counter	Cache hit count, labeled by cache type	[component, host, cache]
wfm_cache_miss_count	Counter	Cache miss count, labeled by cache type	[component, host, cache]
wfm_cache_hit_ratio	Summary	Cache hit ratio over the rolling time window	[component, host, cache]

Memory Allocations

Name	Type	Description	Labels
wfm_alloc_objects	Gauge	Allocated object count, labeled by object type	[component, host, object]
wfm_alloc_object_size_bytes	Gauge	Object allocation size, in bytes, labeled by object type	[component, host, object]

ETL

Name	Type	Description	Labels
wfm_etl_run_total	Counter	Total ETL runs	[component, host]
wfm_etl_run_failed_total	Counter	Total failed ETL runs	[component, host]
wfm_etl_run_cancelled_total	Counter	Total cancelled ETL runs	[component, host]
wfm_etl_run_progress_pct	Gauge	Last ETL run progress %	[component, host]
wfm_etl_run_start_time_seconds	Gauge	Last ETL run start time as epoch time, in seconds	[component, host]

Name	Type	Description	Labels
		seconds	
wfm_etl_run_end_time_seconds	Gauge	Last ETL run end time as epoch time, in seconds	[component, host]
wfm_etl_run_outcome	Gauge	Last ETL run outcome: 0 - complete, 1 - cancelled, 2 - failed	[component, host]
wfm_etl_record_total	Counter	Total ETL records transferred by subsystem: ‘configuration’, ‘adherence’, ‘schedule’, ‘performance’	[component, host, subsystem]

Data Aggregator (DA)

Name	Type	Description	Labels
wfm_da_writes_db_total	Counter	Total number of DA database record writes	[component, host, record_type]
wfm_da_writes_db_failed_total	Counter	Total number of failed DA database record writes	[component, host, record_type]
wfm_da_writes_db_retried_total	Counter	Total number of retried DA database record writes	[component, host, record_type]
wfm_da_writes_db_queued_time_seconds	Histogram	DA database record time in queue, in seconds	[component, host, record_type]
wfm_da_writes_db_write_time_seconds	Histogram	DA database record write time, in seconds	[component, host, record_type]
wfm_da_writes_db_duration_seconds	Histogram	DA database record write duration, in seconds	[component, host, record_type]
wfm_da_writes_file_total	Counter	Total number of DA dump file data writes	[component, host]
wfm_da_writes_file_failed_total	Counter	Total number of DA dump failed file data writes	[component, host]
wfm_da_writes_queue_size	Gauge	DA database writer queue size	[component, host]
wfm_da_statserver_event_total	Counter	Total number of events received from StatServer, labeled by event type	[component, host, event]
wfm_da_statserver_error_total	Counter	Total number of errors received from StatServer, labeled by	[component, host, event]

Name	Type	Description	Labels
		event type	

Builder

Name	Type	Description	Labels
wfm_builder_job_total	Counter	Total schedule build jobs	[component, host]
wfm_builder_job_failed_total	Counter	Total failed schedule build jobs labeled by error type. Possible 'error' label values: 'internal', 'data', 'network', 'wfmserver', 'cfgserver', 'system'.	[component, host, error]
wfm_builder_job_cancelled_total	Counter	Total cancelled schedule build jobs	[component, host]
wfm_builder_job_active	Gauge	Active schedule build jobs	[component, host]
wfm_builder_job_active_limit	Gauge	Maximum allowed number of active concurrent schedule build jobs	[component, host]
wfm_builder_job_queued	Gauge	Queued schedule build jobs	[component, host]
wfm_builder_job_reading	Gauge	Schedule build jobs reading input data	[component, host]
wfm_builder_job_writing	Gauge	Schedule build jobs saving the results	[component, host]
wfm_builder_job_queue_time_seconds	Histogram	Schedule build jobs time in queue, in seconds	[component, host]
wfm_builder_job_queued_latency	Summary	Job time in queue over the rolling time window, in seconds	[component, host]
wfm_builder_job_read_time_seconds	Histogram	Schedule build jobs reading input data time, in seconds	[component, host]
wfm_builder_job_build_time_seconds	Histogram	Schedule build jobs scheduling time, in seconds	[component, host]
wfm_builder_job_write_time_seconds	Histogram	Schedule build results saving time, in seconds	[component, host]
wfm_builder_job_duration_seconds	Histogram	Schedule build jobs duration, in seconds	[component, host]
wfm_builder_job_sites	Histogram	Schedule build site count	[component, host]
wfm_builder_job_agents	Histogram	Schedule build agent count	[component, host]

Name	Type	Description	Labels
wfm_builder_job_days	Histogram	Schedule build day count	[component, host]
wfm_builder_task_active	Gauge	Active scheduling tasks	[component, host]
wfm_builder_task_active_limit	Gauge	Maximum allowed number of active concurrent scheduling tasks	[component, host]
wfm_builder_task_active_ratio	Summary	Active task ratio (task_active / task_active_limit) over the rolling time window	[component, host]
wfm_builder_task_queued	Gauge	Queued scheduling tasks	[component, host]

Golden Metrics

Name	Type	Description	Labels
golden_signals:traffic	Gauge	Traffic normalized in the range from 0 to 1	[component, host]
golden_signals:latency	Gauge	Latency normalized in the range from 0 to 1	[component, host]
golden_signals:errors	Gauge	Errors ratio	[component, host]
golden_signals:saturation	Gauge	Saturation normalized in the range from 0 to 1	[component, host]

Health

Name	Type	Description	Labels
wfm_health_status	Gauge	Component health status: 0 - green, 1 - yellow, 2 – red includes component’s dependencies and their health statuses	[component, host, dependency]

WFM Localization

Genesys localizes (translates) Workforce Management (WFM) into a number of languages. You can localize WFM components by using Genesys localization software or by using the self-localization method.

If Genesys localizes into your language, you can use the Genesys-provided localization software to localize WFM Daemon, Server, Builder, Data Aggregator, and Web. Otherwise, you can use the self-localization method to localize WFM Web Supervisor and Agent. Contact your Genesys sales representative to inquire about specific localized versions.

The two methods of localization are described in detail in the following topics.

- Using Genesys Localization Software
- Using Self-Localization

Legal Notice:

Customer-enabled language translation functionality is provided on an as-is basis for internal use only. Outside distribution of this functionality and/or any translation(s) created using such functionality is not permitted except under a separate agreement negotiated with Genesys specifically for the purpose of distributing Genesys-related translations.

Partners who intend to redistribute translated versions must first sign the GENESYS PARTICIPANT ENABLED LANGUAGE TRANSLATION AGREEMENT consistent with the "Participant Enabled Language Translation Distribution License".

> **Tip**
>
> This does not imply or ensure that all preferred elements of localization within the product for any possible locale are done. For example, right to left mirroring (Arabic) or vertical text presentation (some Chinese).

Using Genesys Localization Software

This topic describes how to use the Genesys localization software or *Language Packs* (LP) to localize Workforce Management (WFM). Localized software displays the WFM interface, controls, and dialogs in the language of the installed LP. If you are deploying WFM and want to localize it, contact a Genesys representative to obtain localized software.

WFM uses Language Packs to provide localized resources for the end user. The Language Pack is a separate IP that is installed over the component IP. It contains only localized resources that replace the resources in the original product IP. The Language Pack contains resources for a single language. Each language requires a separate LP. If you are installing more than one LP, you must install them one at a time. Each component IP can use only one Language Pack at a time.

WFM has LPs for the following components:

- WFM Web
- WFM Daemon
- WFM Server
- WFM Data Aggregator
- WFM Builder

> **Important**
> WFM Configuration Utility is discontinued and no longer in use. Functionality, previously found in Configuration Utility is now in WFM Web.

Context Information in Localization Kits

WFM localization kits now include context information. The kits contain resources for translation that appear in the product. The information about how the resource is used by the product can be used to improve translation. In addition, context information simplifies verification testing, enabling the tester to easily find and check the effects of translated content.

User and System Locales on Windows

The WFM server (Server, Builder, and Data Aggregator) services choose the installed Language Pack according to the locale. It uses the exact language match or, if it is unavailable, the Language Pack for the same *language group*.

WFM servers check the user or system account locale of the operating system on which it is running. By default, it is either the user account (Windows 2003) or system account (Windows 2008). To adjust

the user and system account settings, see the procedures Adjusting the System Account Locale (Windows 2008), Adjusting the User Account Locale (Windows 2003), and Verifying the Locale in the Windows Registry.

After checking the locale, WFM servers attempt to load a Language Pack whose language (or language group) matches this locale. For example, if the user account locale or system account locale is French (Canada) and the French (Canada) Language Pack is not installed, then the French (France) Language Pack is used. If the process is run as a service (which is usually the case), then the system account locale must be adjusted.

Language Settings in the Web Browser

You must change the language settings in the browser to view WFM Web in your preferred language. The location and type of settings will differ, depending on the browser and browser version you are using (for example, Internet Explorer, FireFox, or Chrome). For more information about these settings, check the appropriate vendor website or Help. Also, see Changing the Preferred Language in the Web Browser

Important Information About Changing Locales on Windows with Java Applications Installed

An incompatibility relating to the rules that govern locale settings was detected when WFM Web and Daemon applications are running on Windows operating systems with Java 7. (See article #4700857 on the vendor website www.oracle.com.)

Changes to the WFM local settings are made in different locations depending on which Java version you are using. In Java 7, the **Display** language settings determine the locale settings. In Java 6, the **Regional Settings** dialog in **Control Panel** determine the locale settings.

Also, if you are installing WFM on Windows versions earlier than Windows Vista such as Windows 2003 or Windows XP, you cannot set the display language because these operating systems always use the language selected during installation and the locale settings cannot be changed.

You can use one of two workarounds to set a different locale setting for WFM applications:

1. Select the appropriate display language that contains the locale settings you want to use.
2. If step 1 cannot be done, complete one or both of following steps:
   - Revert Java 7 to Java 6 behavior—Set the **-Dsun.locale.formatasdefault** Java 7 option to `true` and then, set the locale settings in the **Regional Settings** in **Control Panel** to the locale you want to use.
   - On any version of Java—Explicitly override the locale setting for the JVM by changing the **-Duser.language**, **-Duser.region**, and **-Duser.country** Java options.

Preparing WFM for Genesys Localization

The following information and procedures will help you prepare WFM for localization. Complete only as many procedures as are required for you to complete your WFM localization.

Task Summary: Preparing WFM for Genesys Localization

Task	Procedures
Adjust and verify the system account locale.	• Adjusting the System Account Locale in (Windows 2008) • Verifying the Locale for the System Account
Adjust the user account locale.	Adjusting the User Account Locale (Windows 2003)
Change the date format in WFM email notifications.	Changing the Date Format in E–mail Notifications
Adjust WFM Web to display the weekday in the correct language.	Adjusting WFM Web to Display Weekday in the Correct Language
Read about how to prepare the Web interfaces.	Preparing the WFM Web Interfaces
Configure the date/time format and your language preference in the WFM Web interfaces.	• Changing the Preferred Language Settings in the Web Browser • Changing the Date and Time Format in the Web Agent Interface (Solaris) • Overriding the User Account Locale (Windows • Overriding the User Account Locale (Solaris)

> **Tip**
> After you have completed the procedures in the Task Summary: Preparing WFM for Genesys Localization (above), complete the procedures in Installing the WFM Language Packs.

Procedures

The procedures in this section will help you to install the Language Packs for each of the WFM components. Complete all of the procedures to localize your WFM deployment.

Installing the Web Language Pack

Purpose: To localize WFM Web by installing the Web Language Pack.
Prerequisite: The WFM Web IP is installed on the host.

Start of Procedure

1. Start the Web Language Pack IP for the language you are installing and follow the steps in the Installation Wizard.

2. If WFM Web is already deployed in the servlet container, undeploy it using the servlet container-specific instructions.
   You must undeploy WFM Web from the servlet container, but do not uninstall it from system.
3. Deploy the WFM Web `wfm.war` file that was updated by the Language Pack IP, by using the servlet container specific instructions.
   WFM Web uses localized resources from the Language Pack.

End of Procedure

Installing the Daemon Language Pack

Purpose: To localize WFM Daemon by installing the Daemon Language Pack.
Prerequisite: The WFM Daemon IP is installed on the host.

Start of Procedure

1. Stop the WFM Daemon process.
2. Start the WFM Daemon Language Pack IP for the language you are installing and follow the steps in the Installation Wizard.
3. Start the WFM Daemon process.
   The WFM Daemon uses localized resources from the Language Pack.

End of Procedure

Installing the Server, Builder, and Data Aggregator Language Pack

Purpose: To localize WFM Server, Builder, or Data Aggregator by installing the associated Language Pack.
Prerequisite:

- The WFM Server, Builder, or Data Aggregator IP is installed on the host.
- The user account locale is adjusted to match the Language Pack that is being installed. See Adjusting the User Account Locale (Windows 2003) or Adjusting the System Account Locale (Windows 2008).

Start of Procedure

1. Stop the WFM Server, Builder, or Data Aggregator process.
2. Start the WFM Server, Builder, or Data Aggregator Language Pack IP for the language you are installing and follow the steps in the Installation Wizard.
3. Start the WFM Server, Builder, or Data Aggregator process.

End of Procedure

Preparing for Genesys Localization

> **Tip**
> After you have completed these procedures, go to Installing the Language Packs.

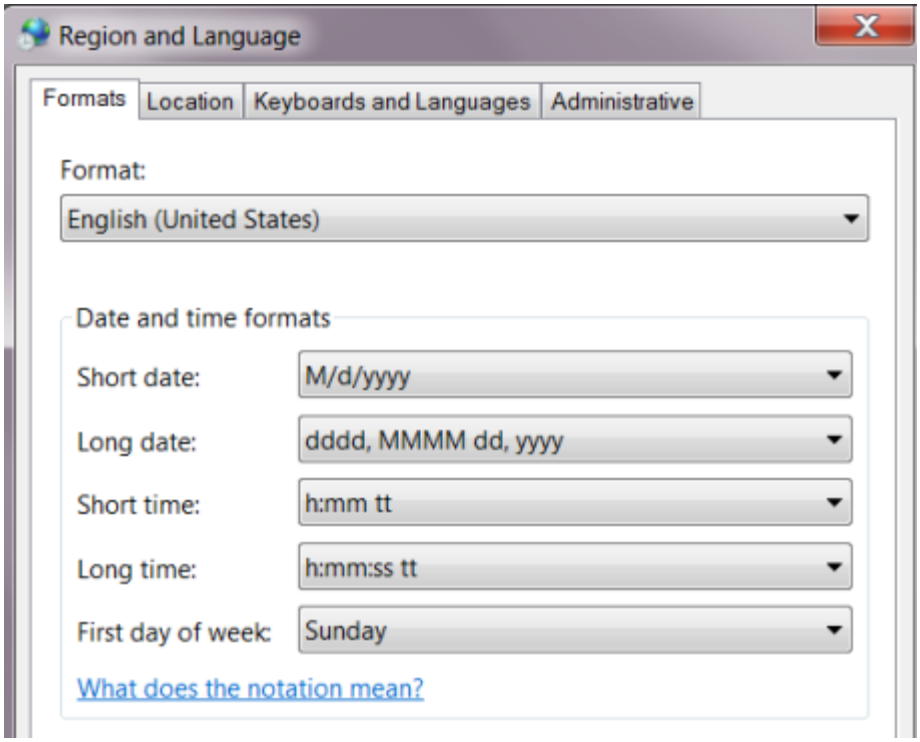
Adjusting the System Account Locale (Windows 2008)

Purpose: To adjust the system account locale on the WFM server (Server, Builder, and Data Aggregator) to match the language in a specific Language Pack.

> **Important**
> Before you install any WFM Language Pack, complete the procedures below on the Windows 2008 host.

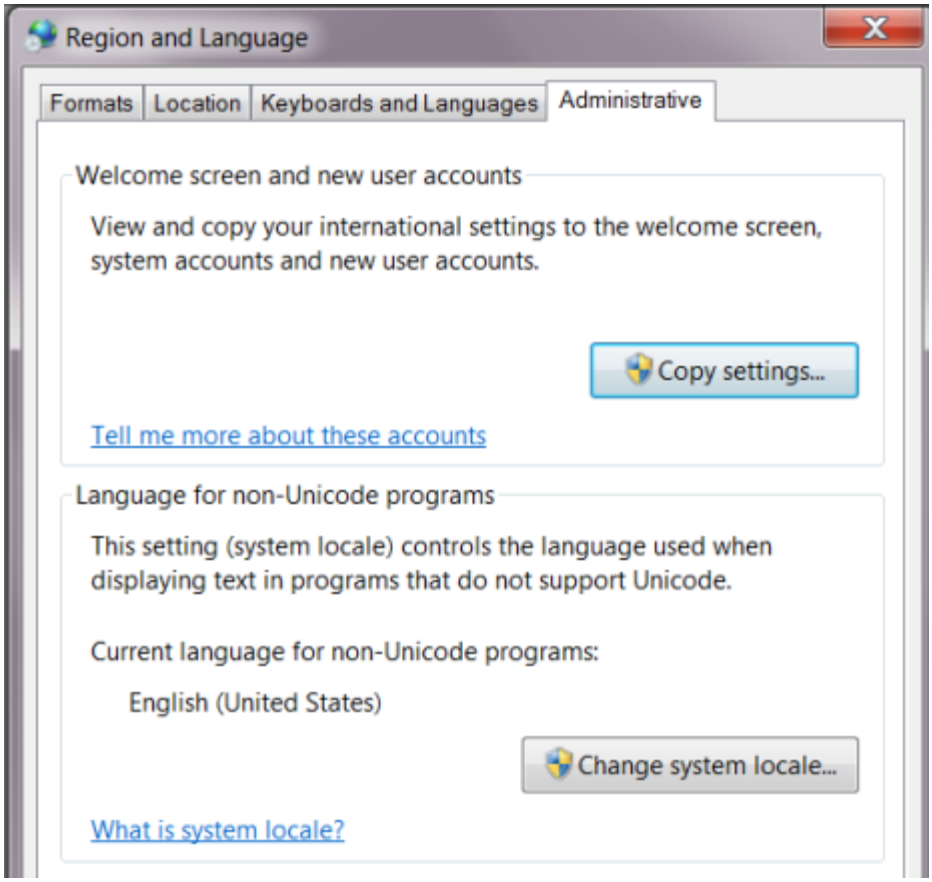
Start of Procedure

1. On the host, go to **Control Panel** > **Regional and Language Options**.
2. On the **Formats** tab, in the **Formats** section, select the language/region that matches the Language Pack you will be installing later and click **Apply**.



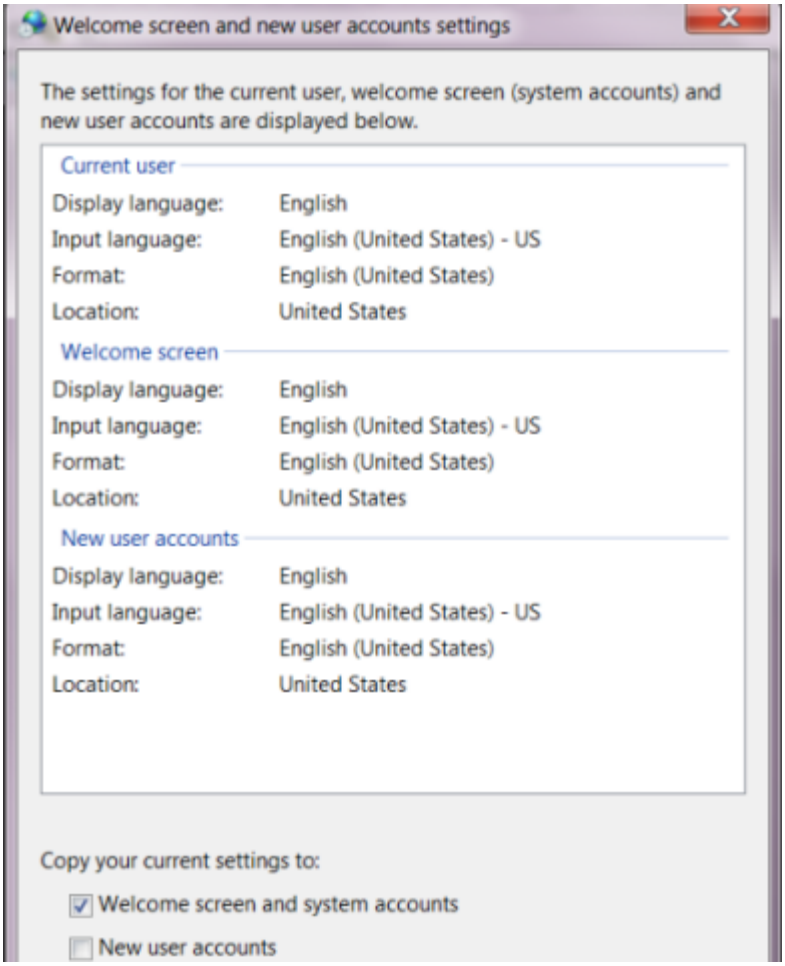
Formats—Region and Language Settings (Windows 2008)

3. On the **Administrative** tab, click **Copy Settings....**



Administrative—Region and Language Settings (Windows 2008)

4. In the **Copy your current settings to:** section, check the **Welcome screen and system accounts** check box.



Welcome—Region and Language Settings (Windows 2008)

5. To save the settings, click **OK** and/or **Apply** on each tab before closing.
6. Reboot the system.

End of Procedure

Next Steps:

- Complete the Verifying the System Account Locale in the Windows Registry to verify that the correct locale is configured for the local system account.

Verifying the System Account Locale in the Windows Registry

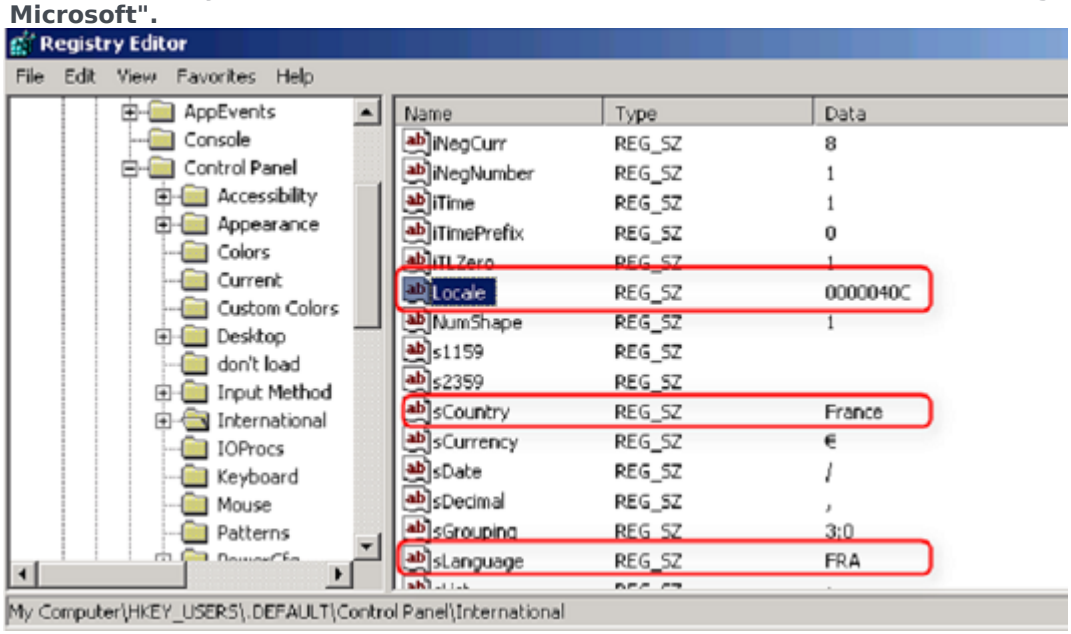
Purpose: To adjust the user account locale on the WFM server (Server, Builder, and Data Aggregator) to match the language in a specific Language Pack. **Prerequisite:** The system account locale or user account locale is adjusted to match the language in the installed LP. See the procedure Adjusting the System Account Locale (Windows 2008) or Adjusting the User Account Locale (Windows

2003).

Start of Procedure

1. On the WFM server (Server, Builder, and Data Aggregator), in the Windows Registry Editor, open the following hive:
   HKEY_USERS\.DEFAULT\Control Panel\International
2. Check the following locale-related keys (see figure below):
   - `Locale`
   - `sCountry`
   - `sLanguage`

   To interpret any specific locale ID, see the Microsoft article, "Locale IDs Assigned by Microsoft".



Verify Locale in the Windows Registry

3. Save and close the registry.

End of Procedure

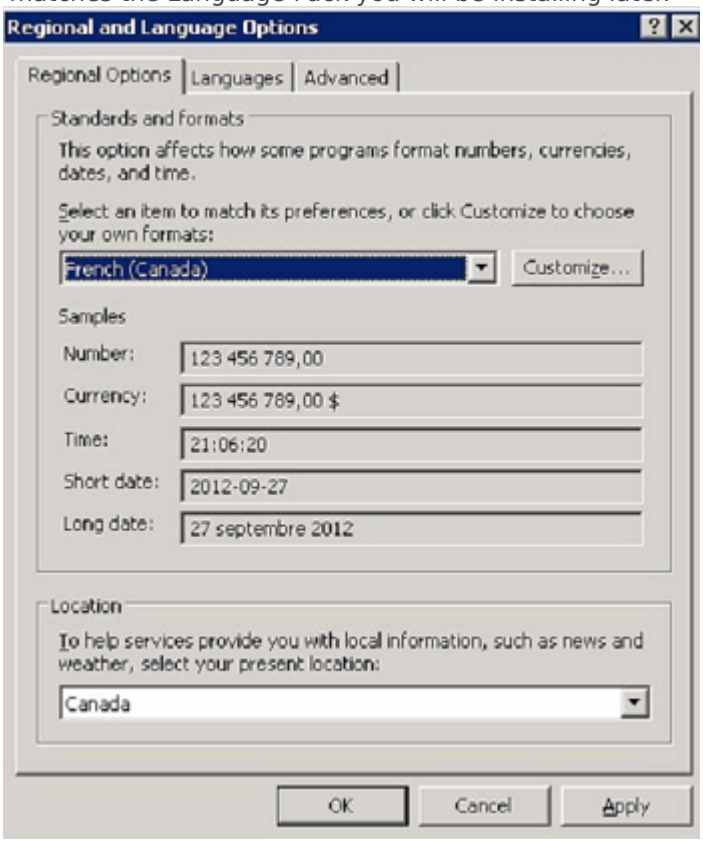
Adjusting the User Account Locale (Windows 2003)

Purpose: To adjust the user account locale on the WFM server (Server, Builder, and Data Aggregator) to match the language in a specific Language Pack.

> **Important**
>
> Before you install any WFM Language Pack, complete the procedures below on the Windows 2003 host.

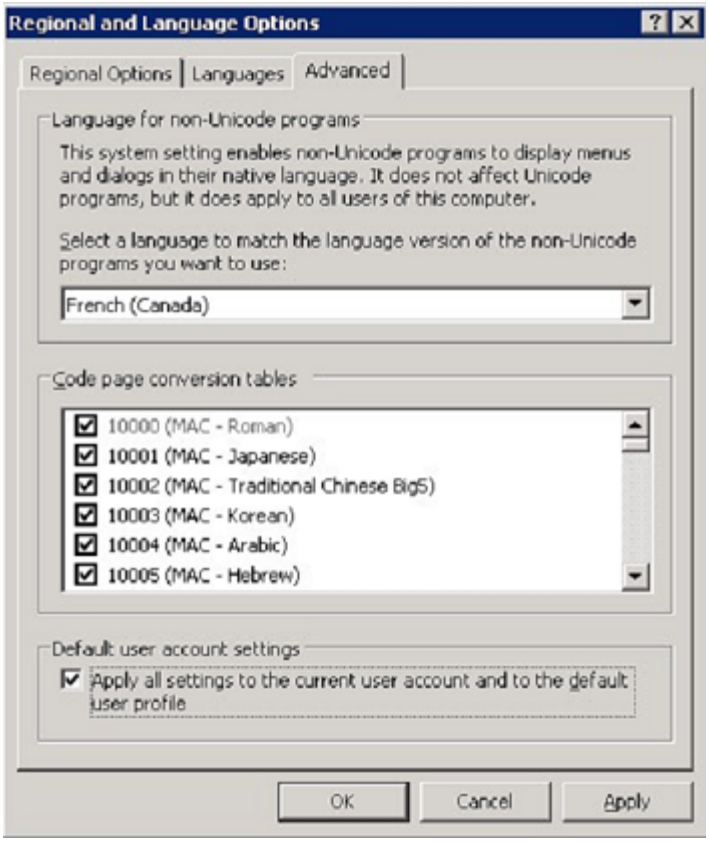
Start of Procedure

1. On the host, go to **Control Panel > Regional and Language Options**.
2. On the **Regional Options** tab, in the **Standards and formats** section, select the language/region that matches the Language Pack you will be installing later.



Regional Options—Region and Language Settings (Windows 2003)

3. On the **Advanced** tab, copy the regional settings to the local system or default account, by adding a check mark to the **Default user account settings** check box.



Advanced—Region and Language Settings (Windows 2003)

4. To save the settings, click **Apply** and/or **OK**.
5. Reboot the system.

End of Procedure

Changing the Date Format in E–mail Notifications

The WFM Daemon service, which uses the operating system account locale to provide the date format, dictates the format for WFM email notifications. By default, WFM Daemon is installed under the system account and therefore, it uses the system user (or default user) locale. You can change the date format in email notification sent by WFM Daemon by changing the locale settings for the system user account and set the language (country) to match the desired date format. See the figure Region and Language Settings (Windows 2003) above.

If changing the system account locale is not an option (for example, if other services are using the locale settings), you can instruct WFM Daemon to override the service user account locale settings. See the procedure below.

Purpose: To change the date format in email notifications by overriding the WFM Daemon service user account locale settings.

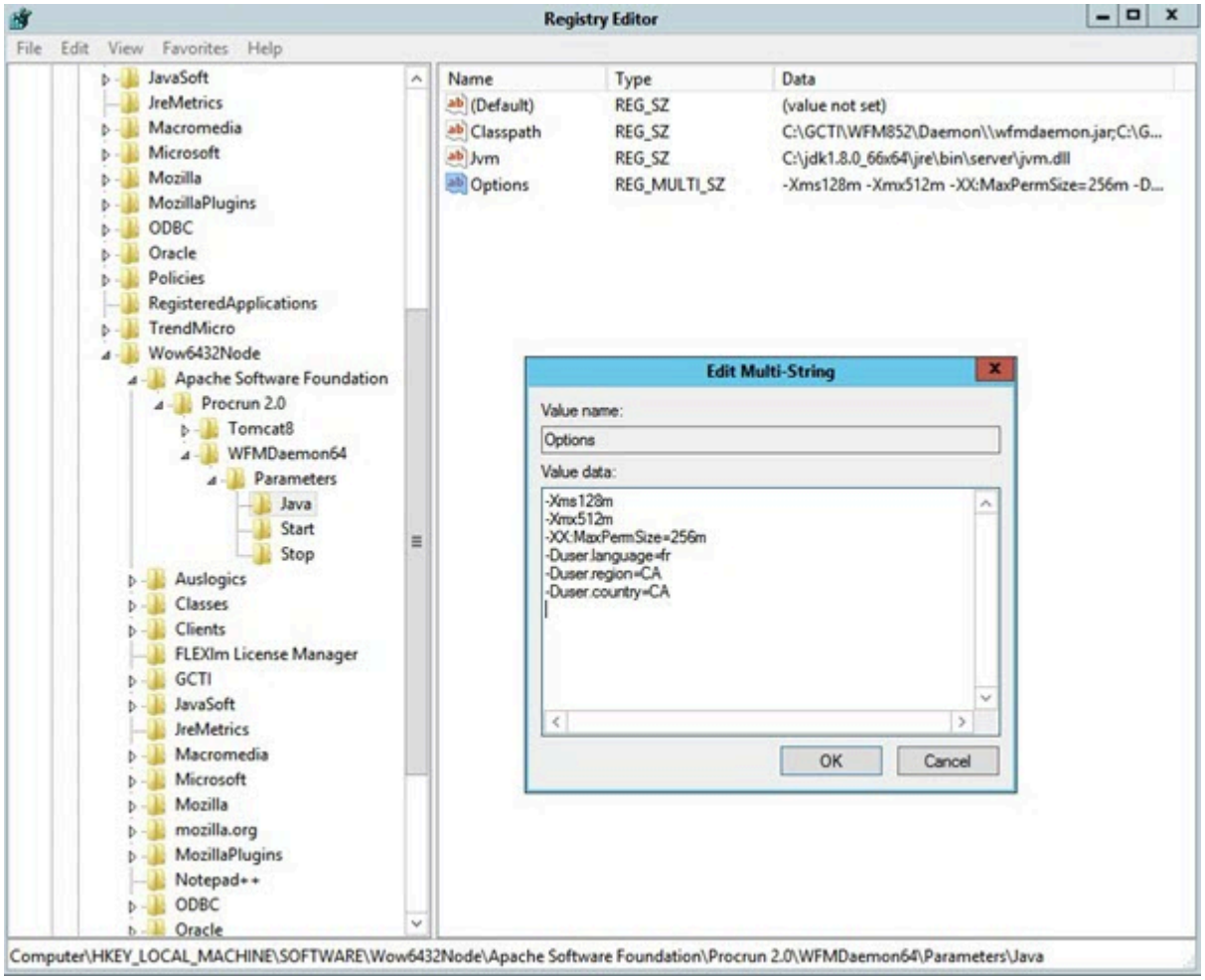
Start of Procedure

1. Verify the WFM Daemon service name (by default, **WFMDaemon64**).
2. Stop the WFM Daemon service.

3. Open the Windows Registry Editor and navigate to the following registry key:
   HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Apache Software Foundation\Procrun2.0\<WFM Daemon service name>\Parameters\Java
   Where, <WFM Daemon service name> is the name of the WFM Daemon service. For example, the default key path is

   HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Apache Software Foundation\Procrun 2.0\WFMDaemon64\Parameters\Java

4. Open the **Option** value and add the Java language, region, and country options using the following syntax (see figure below):
   - **-Duser.language** = `fr`
   - **-Duser.region** = `CA`
   - **-Duser.country** = `CA`



Windows Registry Editor—Changing the Date/Time Format

5. Press **Enter** to add a new line.
   You must add a new line after the last option, otherwise the option is not parsed.
6. Click **OK** to apply the changes, and close the Registry Editor.

7. Start the WFM Daemon process and check the email notifications date format.

End of Procedure

Adjusting WFM Web to Display Weekday in the Correct Language

To correctly display the weekday in certain language character sets, you must modify a configuration option in the WFM Web Application.

Purpose: To configure the WFM Web Application to display the weekday in in certain language character sets (or in the correct language you prefer).

Start of Procedure

1. In the **WFM Web Application** properties, click the **Options** tab.
2. In the **[Options]** section, select the PageCharSet configuration option and set the value to the code page that specifies the language you want to use.
   For example, to correctly display the weekday in the French language, the set the option value as follows

   PageCharSet **= windows-1252**

End of Procedure

Preparing the WFM Web Interfaces

Sometimes the date and time format in the WFM Web Applications have a different format than the required company standard. This section contains information about the date and time formats and includes procedures that describes how to change the format in each WFM Web Interface.

Generally, date and time format in the Web Applications are determined by the operating system's locale settings. For example, the Language (Country) locale is read from the operating system and the Java Runtime Environment (JRE) sets the appropriate date and time format accordingly. However, some WFM Web Application interface date and time formats are determined by locale settings on other hosts.

> **Tip**
> The JRE does not take into consideration any custom formatting on the Windows platform. It simply reads the Language (Country) format from the locale settings and sets date and time format accordingly. For example, if the date and time format is English (Canada), the time format is always AM/PM whether the Windows settings have been customized or not, because that is the default for this country.

Therefore, to use the 24h time format in the WFM Web Applications, you must select the relevant language (country) for which the 24h format is the default. For the English language, it could be either English (United Kingdom) or English (Ireland).

The date and time format for each of the three WFM Web Application interfaces—Supervisor, Agent, and Reports—is determined by the language preference that is configured in the browser that is being used.

Web Supervisor

The WFM Web Supervisor interface date and time format is determined by the language preference that is configured in the browser that is being used. This enables each supervisor to choose the date and time format for their own workstation. See Changing the Preferred Language Settings in the Web Browser.

To configure the date and time format for WFM Web Supervisor on a Windows host, complete Steps 1 and 2 in the Adjusting the User Account Locale (Windows 2003).

Web Agent

The WFM Web Agent interface date and time format is determined by the Web Server host and

Server service user account locale. This enables a unified Web Agent view of the date and time format for all agents.

There are two ways to change the date and time format in the WFM Web Agent interface:

1. Change Web Server (Tomcat) service operating system user account locale. By default, the Tomcat service is installed under the Local System account (or `default` account) like most of the services.
   - To change the date and time format in the Web Agent interface on Windows, see in the Adjusting the System Account Locale (Windows 2008) or Adjusting the User Account Locale (Windows 2003).
   - To change the date and time format in the Web Agent interface on Solaris, see the Changing the Date and Time Format in the WFM Web Agent Interface (Solaris).
2. Set Tomcat JVM locale options to override operating system user account locale. If, for any reason, you cannot change the locale settings for the System Local account to change the Java date and time format, you can override the locale settings for only the Tomcat environment, by using the **-Duser.language** and **-Duser.country** Java options
   - To configure these options on Windows, see the Overriding the User Account Locale by Setting the Tomcat JVM Locale Options (Windows).
   - To configure these options on Solaris, see the Overriding the User Account Locale by Setting the Tomcat JVM Locale Options (Solaris).

Web Reports

The WFM Web Reports date and time format is determined by the Web Server host or Web Server service user account locale that is executing Reports. If there is one WFM Web instance or several Web instances, without a dedicated WFM Web for the Reports instance, the date and time format is taken from the Web Server host that is hosting WFM Web. If there is a dedicated WFM Web for the Reports instance, the Reports date and time format is obtained from the Web Server host for the Reports or Web Server service user account locale.

To change the date and time format for Reports, complete the same procedures as those used for WFM Web Agent on the WFM Web for Reports host or Tomcat instance. See Web Agent. If it is the same instance as WFM Web Agent, the settings will affect both the Web Agent and Web Reports date and time formats.

Procedures

The procedures in this section relate to the topics on this page.

Changing the Preferred Language Settings in the Web Browser

Purpose: To change the preferred language settings in the web browser.

> **Tip**
> This procedure describes the steps to change the language settings in Internet Explorer. However, language preference settings might be in different locations for each vendor's browser (for example, FireFox or Chrome), and even different versions of the browser. For information about how to change the settings in the browser you are using, Genesys recommends you check the vendor's web site or Help.

Start of Procedure

1. In Internet Explorer, go to **Tools** > **Internet Options**.
2. On the **General** tab click **Languages**.
3. In the **Language Preferences** dialog, click **Add**.
4. In the **Add Language** dialog, select the language you want to use and click **OK**.
   Ensure the language you select is the first language in the list. If there is more than one language in the list, highlight your selection and then click Move Up until your language preference is at the top of the list.
5. Click **OK** twice to save the settings and close the **Internet Options** dialog.

End of Procedure

Changing the Date and Time Format in the Web Agent Interface (Solaris)

Purpose: To change the date and time format in the Web Agent interface to match the LP language.

Summary: In Solaris, the Java Virtual Machine (JVM) obtains the default locale from the current user environment.

Start of Procedure

1. Type **locale** at the command prompt to determine the current locale setting.
2. Set the **LANG** environment variable to set the **change locale** parameter. For example:
   ```
   > export LANG=en_GB
   ```
3. To verify that the locale is changed, type **locale** at the command prompt again. The following output is displayed:
   ```
   > locale
   LANG=en_GB
   LC_CTYPE="en_GB"
   LC_NUMERIC="en_GB"
   LC_TIME="en_GB"
   LC_COLLATE="en_GB"
   LC_MONETARY="en_GB"
   LC_MESSAGES="en_GB"
   LC_ALL=
   ```
4. Restart Tomcat.

For more information about Solaris locale values and how to change them, see the Sun Solaris documentation on the vendor web site.

End of Procedure

Overriding the User Account Locale (Windows)

Purpose: To override the user account locale by using Tomcat JVM locale options on Windows.

Start of Procedure

1. Open the Apache Tomcat Properties window.
2. Select the **Java** tab.
3. To set the locale settings for the Tomcat JVM, in the Java Options text box, add the **-Duser.language** and **-Duser.country** (or **-Duser.region**) options.
   Examples:
   To have English weekday names and UK date format `dd/mm/yy @HH:MM`, add
   - **`-Duser.language = en`**
   - **`-Duser.region = GB`**
   - **`-Duser.country = GB`**

   To have English weekday names and US date format `mm/dd/yy @hh:mm AM/PM`, add
   - **`-Duser.language = en`**
   - **`-Duser.region = US`**
   - **`-Duser.country = US`**

   To have French weekday names and CA date format `yy-mm-dd @HH:MM`, add

- **-Duser.language = fr**
- **-Duser.region = CA**
- **-Duser.country = CA**

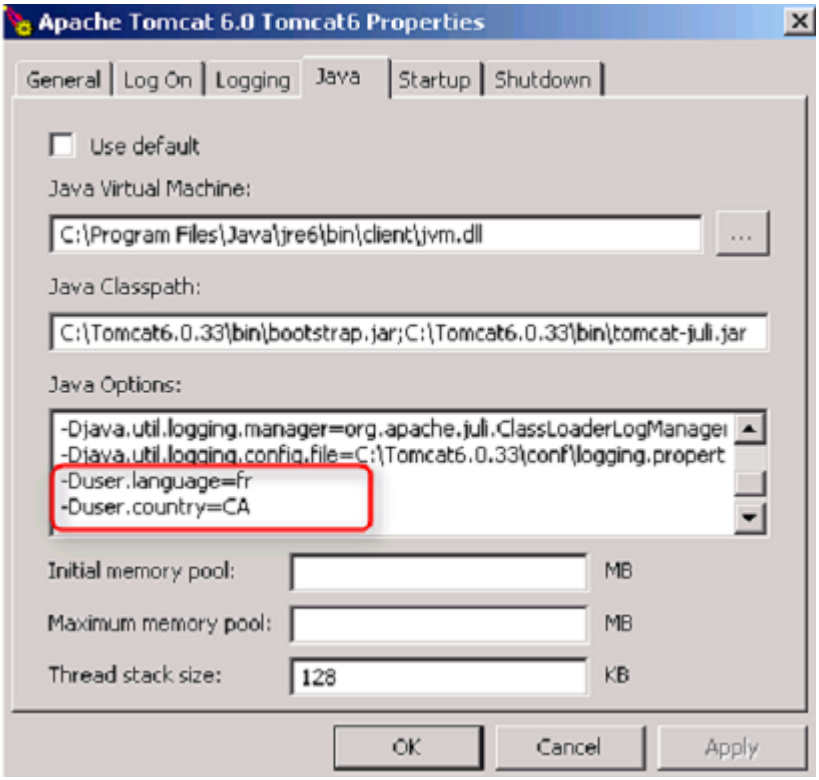


Figure: Java Options—Apache Tomcat Properties

4. Restart Tomcat.

End of Procedure

Overriding the User Account Locale (Solaris)

Purpose: To override the user account locale by using Tomcat JVM locale options on Solaris.

Start of Procedure

1. In the JRE, update the **JAVA_OPTS** environment variable with the **-Duser.language**, **-Duser.region**, and **-Duser.country** options.
   For example, see the following options string

   ```
   JAVA_OPTS="$CATALINA_OPTS -server -Xms128m -Xmx256m -Djava.awt.headless=true
   -Duser.language = en
   -Duser.region = GB
   -Duser.country = GB
   ```

2. Restart Tomcat.

> **Tip**
> The options in the example might be different in an actual Java environment. These options were used as an example only.

End of Procedure

Using Self-Localization

You can localize the GUIs for WFM Web Supervisor and WFM Web Agent without having to obtain localized software from Genesys. This enables Genesys partners and customers to deploy translated versions of these user interfaces, when Genesys does not provide localized versions of WFM.

The WFM Agent and Supervisor components each draw their GUI text from a properties file, which you can modify. You can localize WFM to any language that you wish, by translating the text in these files.

Perform this localization carefully, by making backups that you can use to undo mistakes and by using text that has the precise meaning of the words and phrases that you are translating. Genesys assumes no responsibility for work performed by anyone, other than a Genesys employee.

> **Important**
> Self-localization does not affect all text in WFM Web. The text of some messages (such as the resolution of Calendar items, Schedule Build Validation messages, and others) do not reside in the `wfm.war` properties files, and are therefore, not localized.

Requirements

Ensure the JDK (the Java Development Kit, same version as required by WFM Web) is located in the path `JAVA_HOME`.

Using localization.bat

The `localization.bat` batch file is installed in the same directory where WFM Web was initially installed. Use this file to:

- Extract the `agent.properties`, `agent800.properties`, `agentNew.properties` and `supervisor.properties` files from the `wfm.war` file.
- Update the `wfm.war` file by reinserting the four WFM Properties files. Run the `localization.bat` file from the Windows command line interface.

For example, to display the help message, which summarizes all functionality, enter:
`C:\Program Files\GCTI\WFM76\Web>localization -h`

```
USAGE:

  localization -{xu} [wfm-war-file] OR -{eh}
```

```
  [-a OR -a8 OR an [agent-properties-file]]
  [-s [supervisor-properties-file]]
```

```
Options:
  -x     extract properties from WFM war
  -u     update WFM war with new properties
  -a     define path to agent properties file
  -a8    define path to agent800 properties file
  -an    define path to new agent properties file
  -s     define path to supervisor properties file
  -e     show examples
  -h,/?  show this message
```

```
Parameters:
  [wfm-war-file] path to WFM war
  [agent-properties-file] path to agent properties file
  [supervisor-properties-file] path to supervisor properties file
```

Additional Info:
If you do not define the file name the default name will be used. In the current folder:

- For war it is `wfm.war`
- For agent it is `agent.properties`
- For agent800 it is `agent800.properties`
- For new agent it is `agentNew.properties`
- For supervisor it is `supervisor.properties`

> **Important**
> Backup the original properties to a safe place immediately after extraction. Use them to restore the properties if something goes wrong.

Precautions

Before localizing your WFM deployment, ensure you take the following precautions:

- Back up wfm.war before you make your changes. You may need to replace the modified file if your changes have unexpected results.
- Back up the properties files before you make your changes, for the same reason that you back up `wfm.war`.
- Back up `wfm.war`, as well as the properties files, after you make your changes. When you install a WFM Web patch, you also install a new (non-localized) `wfm.war` file. The backup allows you to restore your changes accurately and with a minimum of effort.
- Wait for the extraction and updating processes to finish; they do not display status.

Task Summary: WFM Localization Process

Task Summary
1. Extract the properties files from inside `wfm.war`
2. Localize the properties files. See Localizing WFM the First Time.
3. Convert all locale specific symbols to their unicode representation using the native2ascii utility found in the Java SDK.
4. Update `wfm.war` with the translated string resources (from task 3).
5. Deploy the new `wfm.war` on the web application server.

> **Tip**
> Before you begin the self-localization process, read this entire section, especially the Precautions and Requirements sections.

Initial and Subsequent Localization

You will use different procedures for the initial and subsequent localization of WFM.

Initial Localization

The first time you localize WFM, you must follow the steps in the Localizing WFM the First Time. When you localize the text in your WFM web archive, you are modifying the program's software—the messages, menus and other elements of the screen display. By doing this yourself, you must accept responsibility for any possible errors you might make and ensure that you can recover from any possible errors. Therefore:

- Accept responsibility by following these instructions closely. Do not take shortcuts.
- Ensure error recovery by backing up your files before and after every change.

Subsequent Localization

In the future, if there is an updated version of WFM Web that you need to deploy (for example, a patch or software update) and you have already localized WFM, follow the steps in the Localizing WFM the Next Time (Subsequently).

Localizing WFM the First Time

Purpose: To localize WFM for the first time (the initial process).

> **Important**
>
> You must make a backup of the `wfm.war` file before *and after* you make changes so that you can update the new, non-localized `wfm.war` file that arrives with any new patches that are released. In a worst-case scenario, you can always reinstall WFM Web from the original software release disk or FTP download that you received from Genesys.

Start of Procedure

1. Make a backup copy of the existing `wfm.war` file and save it in a safe place (in a different directory, with a different name, or both).
   The `wfm.war` file is an important WFM software component, and you might need to replace a broken version.
2. Extract the `agent.properties`, `agent800.properties`, `agentNew.properties`, and `supervisor.properties` files from the `wfm.war` file, by using the software tool `localization.bat`.
   - Click Start > Run to open a command window and then, enter: `localization -x`.
     ...where `-x` extracts the properties files. See Using localization.bat for ways to specify file names and locations.
3. Make a backup copy of the properties files before you change them, rename them with a descriptive name (for example, `agent.properties.english.v8.1.000.10`), and then store them in a safe place.
   You will need these in the future to compare with newer properties files when software updates to WFM Web are released.
4. Using a text editor, update the four properties files by changing the English text strings to the language you want to use.
   The properties files contain strings in the format `<string_id>=<string_to_be_translated>`.
   ...where `<string_id>` is the identifier of the string and `<string_to_be_translated>` is string itself.
   Translate only the right side of string (after the equal sign). Do not translate or change anything on the left side.
   To help identify the text strings in context, you might want to run WFM in another window while you do this work.
5. Make a backup copy of these localized properties files, rename them with a descriptive name (for example, `agent.properties.czech.v8.1.000.10`) and then store them in a safe place.

6. After everything is translated, use the native2ascii utility found in the Java SDK to convert all locale-specific symbols to their unicode representation.
   This utility is usually located in bin directory under the Java SDK installation root.
   Do not skip this step. If you do, the application might not function and the locale-specific symbols will not display correctly.
7. Update the `wfm.war` file by using the `localization -u` option.
8. Deploy the `wfm.war` file to the WFM Web server, by completing the following steps:
   - Stop Tomcat.
   - Copy the edited `wfm.war` file and then paste it into the Tomcat folder.
   - Start Tomcat.

End of Procedure

Localizing WFM Subsequently

Purpose: To localize WFM after an updated version has been deployed (subsequent to the initial localization).
Prerequisite: Your WFM deployment has been localized at least once before. See Initial Localization.

Start of Procedure

1. Use the `localization.bat` file to extract the four properties files (three for the WFM Web for Agents GUI and one for the WFM Web for Supervisors GUI) from the `wfm.war` file. (See step 2 in the Localizing WFM the First Time.)
2. Compare the new versions of the properties files with the original ones, by using the `windiff` tool (or any text editor that provides comparison capabilities) to identify any new or changed strings that require localization.
3. Using the text editor, update the four localized properties files that you created in step 4 in Localizing WFM the First Time, adding any new string resources in the appropriate place.
   Make a new backup copy of the properties files; if you make a mistake, you can continue to work, by using the backup you created in step 5 in Localizing WFM the First Time.
4. Update the `wfm.war` file by using the `localization -u` option (steps 6 and 7 in Localizing WFM the First Time).
5. Deploy the updated `wfm.war` file on the Web application server.
   See instructions for updating the `.war` file in Tomcat (step 8 in Localizing WFM the First Time).

End of Procedure

Tools and File Descriptions

Use the tools specified in the table below to localize your installation of WFM.

Tool	Description
localization.bat	Use this batch file to extract and update the properties files from wfm.war. See Using localization.bat.
wfm.war	This Web archive file contains the WFM properties files agent.properties, agent800.properties, agentNew.properties, and supervisor.properties.
agent.properties	Edit the text inside this properties file, to localize the WFM Web for Agents GUI.
agent800.properties	Edit the text inside this properties file, to localize parts of the WFM Web for Agents (Classic) GUI.
agentNew.properties	Edit the text inside this properties file, to localize parts of the latest WFM Web for Agents GUI.
supervisor.properties	Edit the text inside this properties file, to localize the WFM Web for Supervisors GUI.
Text editor	Use a non-formatting text editor (such as Notepad or WordPad) to edit the properties files.
Windows system tools	Use the appropriate system tools to stop and restart the web application server, and to copy the localized wfm.war to its appropriate location.
Web Application Server	This appendix uses Tomcat as the default device that enables access to WFM.

Applying the localization.bat File Options

This section describes how to use the options in the localization.bat file and provides examples.

Specifying the Defaults

Each file used by the localization.bat file has a default name and a default location. To use these defaults, enter the command line in its simplest format:

- `localization -x`
  This command line applies all the defaults
  - The web archive is named `wfm.war` and is located in the current directory.
  - The properties files that are extracted from `wfm.war` are named `agent.properties`, `agent800.properties`, `agentNew.properties`, and `supervisor.properties` and are saved to the current directory.
- `localization -u`
  This command line applies all the defaults.

Specifying Directories

You can specify absolute paths or relative paths to the directories that hold the files.

- `localization -x “C:\Program Files\GCTI\WFM76\Web\wfm.war”`
  `wfm.war` is in the absolute directory `C:\Program Files\GCTI\WFM76\Web\`.
  You can also specify absolute directories for the properties files. For example
  - `localization -u -a “C:\Program Files\GCTI\WFM76\Web\propfiles\agent.properties”`
  - `localization -x -s “C:\Program Files\GCTI\WFM76\Web\propfiles\supervisor.properties”`
- `localization -x “.\safe\wfm.war”`
  `wfm.war` is in the directory `\safe\`, whose position is relative to the current directory (they share the same parent directory).
  You can also specify relative directories for the properties files. For example
  - `localization -x -a “.\propfiles\agent.properties”`
  - `localization -x -a8 “.\propfiles\agent800.properties”`
  - `localization -x -an “.\propfiles\agentNew.properties”`
  - `localization -u -s “.\propfiles\supervisor.properties”`

Specifying Filenames

You can specify different filenames for any of the files.

- `localization -u “wfmLOCALIZED.war”`
  The web archive is named `wfmLOCALIZED.war`.
  You can specify names for the properties files. For example
  - `localization -x -a “agentORIGINAL.txt”`
  - `localization -u -s “supervisorREVISED.txt”`

Combining Options

You can combine any or all of these options. This example occupies a single command line, and has been wrapped in arbitrary places for readability:

- `localization -u “C:\Program Files\GCTI\WFM76\Web\wfmLOCALIZED.war”`
  - `-a “C:\Program Files\GCTI\WFM76\Web\propfiles\agentORIGINAL.txt”`

- `-s “C:\Program Files\GCTI\WFM76\Web\propfiles\supervisorREVISED.txt”`

Help

To see usage examples, enter this command line: `localization -e`

WFM Metrics

Find everything you need to know about Workforce Management (WFM) metrics, by clicking on these topic links.

> **Tip**
> A period in these metrics refers to the specific granularity of the report being run. For *Intra-day* granularity a period is 15 minutes; for *Daily* granularity a period is 1 day; and so on.

Schedule Summary Report

In this topic, find information about the Workforce Management Schedule Summary reporting metrics. To go directly to a specific metric, click any link in the tables below.

• AHT – Difference • AHT – Forecasted • AHT – Scheduled	• ASA – Difference • ASA – Forecasted • ASA – Scheduled	• Budget – Difference • Budget – Forecasted • Budget – Scheduled	• Coverage – Difference • Coverage – Published • Coverage – Scheduled	• Difference – Calculated • Difference – Required
• Interaction Volume – Difference • Interaction Volume – Forecasted • Interaction Volume – Scheduled	• Number of Agents	• Occupancy – Difference • Occupancy – Forecasted • Occupancy – Scheduled	• Service Level – Difference • Service Level – Forecasted • Service Level – Scheduled	• Staffing – Calculated • Staffing – Required

> **Tip**
> A period in these metrics refers to the specific granularity of the report being run. For *Intra-day* granularity a period is 15 minutes; for *Daily* granularity a period is 1 day; and so on.

See Other Metrics Topics:

- Contact Center Performance Report Metrics
- Agent Adherence Report Metrics
- Endnotes (for Metrics)

Number of Agents

Number of Agents is also called *Headcount* or *Agents in Seats*. If an agent is multi-skilled and is scheduled for more than one activity for a given period, he will actually count as 1 headcount for *each* of the activities for which he is scheduled. Therefore, in comparison with Coverage, Headcount can *double count* an agent if he is multi-skilled and is scheduled for more than one activity during a particular period.

For example, if an agent is scheduled for two activities in a particular 15-minute timestep, he might count as 0.5 towards the Coverage of each of those activities, but he would count as 1 Headcount towards each of those activities. Unlike Coverage, where an agent could count towards partial coverage if he's scheduled for something other than activity work for part of a 15-minute timestep, for Headcount it is *all or nothing*. This means that as long as an agent is scheduled for at least 1 minute of work on an activity during a given 15-minute timestep, he will count as 1 Headcount towards that activity.

How the Total / Average is Calculated

The value for Headcount in the totals/averages row at the top of this view (or bottom of the report) is a simple average of all the values for all the timesteps of the selected time period (which can be: Intra-day, Daily, nWeeks, or Monthly).

Service Level – Scheduled

The Service Level that you should achieve on this activity, with the number of agents currently scheduled for this activity. Due to agent rounding, this value may differ from the original service level objective that was stated when the staffing forecast was built.

For example, WFM might forecast a staffing requirement of 12 agents to meet a service level objective of 80% of interactions answered within 20 seconds. But a Service Level Percentage Forecast may report a higher number, such as 83.48%. This is because 12 was the minimum number of agents required to meet the 80% service level objective but, with that number of agents, the contact center can be expected to achieve a slightly better service level than 80%. With one less agent (11 agents), the contact center would not be expected to achieve the 80% service level.

How the Total / Average is Calculated

A weighted average, calculated across the open hours:

$$\text{AVG SL Scheduled} = \sum(\textit{Scheduled } SL_i * \textit{Forecasted } IV_i) \,/\, \sum(\textit{Forecasted } IV_i)$$

Where:

$\textit{Scheduled } SL_i$ = Calculated Service Level based on the number of scheduled agents for $\textit{timestep}_i$
$\textit{Forecasted } IV_i$ = Forecasted Interaction Volume for $\textit{timestep}_i$
$\textit{timestep}_i$ = timestep number over the open hours

Service Level—Forecasted

The Service Level Percentage objective that you should be able to achieve when staffing with the number of agents from the staffing forecast (also known as Budget – Difference).

How the Total / Average is Calculated

A weighted average, weighted by Forecasted IV:

$$\text{AVG SL Forecasted} = \Sigma\ (\textit{Forecasted } SL_i * \textit{Forecasted } IV_i) \ / \ \Sigma\ (\textit{Forecasted } IV_i)$$

Where:

$\textit{Forecasted } SL_i$= Forecasted Service Level for $\textit{timestep}_i$
$\textit{Forecasted } IV_i$= Forecasted Interaction Volume for $\textit{timestep}_i$
$\textit{timestep}_i$= timestep number over the open hours

Service Level – Difference

Service Level – Scheduled minus Service Level – Forecasted.

Interaction Volume – Scheduled

The number of interactions that can be handled based on the schedule coverage. Calculated by using the inverse of the WFM's staffing forecast algorithm.

WFM uses a *modified Erlang* algorithm to derive Calculated Staffing based on the IV, the AHT, and service objectives stated when building the forecast. Therefore, to calculate the scheduled interaction volume, WFM uses that formula *in reverse*.

How the Total / Average is Calculated

The sum is across the entire report time range.

Interaction Volume – Forecasted

The interaction volume taken from the Master Forecast.

How the Total / Average is Calculated

The sum across the entire report time range.

Interaction Volume – Difference

Interaction Volume – Scheduled minus Interaction Volume – Forecasted.

AHT – Scheduled

The Average Handling Time (AHT) per interaction that you should achieve, based on the schedule coverage. Calculated by using the *inverse* of the WFM's staffing forecast algorithm.

WFM uses a *modified Erlang* algorithm to derive Calculated Staffing, based on the IV, AHT, and service objectives stated when building the forecast. Therefore, to calculated the scheduled AHT, it uses that formula *in reverse*.

How the Total / Average is Calculated

A weighted average, weighted by Forecasted IV:

$$\text{AVG AHT Scheduled} = \Sigma\ (\textit{Scheduled AHT}_i * \textit{Forecasted IV}_i) / \Sigma\ (\textit{Forecasted IV}_i)$$

Where:

$\textit{Scheduled AHT}_i$= Scheduled Average Handling Time for $\textit{timestep}_i$
$\textit{Forecasted IV}_i$= Forecasted Interaction Volume for $\textit{timestep}_i$
$\textit{timestep}_i$= timestep number over the open hours

AHT – Forecasted

Average Handling Time of interactions, taken from the Master Forecast.

How the Total / Average is Calculated

A weighted average, weighted by Forecasted IV:

$$\text{AVG AHT Forecasted} = \Sigma\ (\textit{Forecasted AHT}_i * \textit{Forecasted IV}_i) / \Sigma\ (\textit{Forecasted IV}_i)$$

Where:

$\textit{Forecasted AHT}_i$= Forecasted Average Handling Time for $\textit{timestep}_i$
$\textit{Forecasted IV}_i$= Forecasted Interaction Volume for $\textit{timestep}_i$
$\textit{timestep}_i$= timestep number over the open hours

AHT – Difference

AHT – Scheduled minus AHT – Forecasted.

Budget – Scheduled

The budget for this schedule based on the number of agents from the Coverage – Scheduled column. The calculation is based on a full-time equivalent's hourly wage, as well as on the Planned Overhead % and Unplanned Overhead % (which were specified when the staffing forecast was built).

For a 15-minute timestep, the formula is:

```
(Coverage/4)*((100/(100-Planned Overhead))*(100/100-Unplanned Overhead)* Hourly Wage)
```

The unit of measure is in whatever monetary unit was used when the `Hourly Wage` was specified while building the forecast.

How the Total / Average is Calculated

This figure is in the sum across the entire report time range.

Budget – Forecasted

The budget for the schedule based on the number of agents from the "Staffing – Calculated" column, based on a full-time equivalent's hourly wage, as well as the Planned Overhead % and Unplanned Overhead % (specified when the staffing forecast was built).

For a 15-minute timestep, the formula is:

```
(Staffing/4)*((100/(100-Planned Overhead))*(100/100-Unplanned Overhead)* Hourly Wage)
```

The unit of measure is in whatever monetary unit was used when the `Hourly Wage` was specified when building the forecast.

How the Total / Average is Calculated

This figure is in the sum across the entire report time range.

Budget – Difference

Budget – Scheduled minus Budget – Forecasted.

Staffing – Calculated

A value taken directly from the staffing forecast, for the particular timestep.

How the Total / Average is Calculated

The value in the column footer is calculated based on the same approach as what is described for Coverage – Scheduled.

Staffing – Required

A value taken directly from the staffing forecast, for the particular timestep. It will be populated only if you put some values in the optional `Required Staffing` column in your staffing forecast.

How the Total / Average is Calculated

The value in the column footer is calculated based on the same approach as what is described for Coverage – Scheduled.

Difference – Calculated

Coverage – Scheduled minus Staffing – Calculated.

How the Total / Average is Calculated

The value in the column footer is calculated based on the same approach as what is described for Coverage – Scheduled.

Difference – Required

Coverage – Scheduled minus Staffing – Required.

Coverage – Scheduled

The actual amount of time that an agent should count towards coverage of the work in this time period. If an agent is multi-skilled and is scheduled for multiple activities during a given period, he may count fractionally towards the coverage of each activity (for example, as 0.5 toward each of two activities for which he's scheduled).

If an agent has something other than activity work scheduled for part of a period, that will be subtracted from the amount of time he's counted towards the coverage of that activity work. For example, an agent who is scheduled for an activity for a given 15-minute timestep but has a break for the first 5 minutes of that timestep, would count as 0.67 towards the coverage of that activity for that period.

How the Total / Average is Calculated

This figure is in FTEs. For the calculation, see Endnote 1.

The value in the totals/averages row at the top of this view (or bottom of the report) is calculated as follows:

1. WFM calculates the sum of the agents which are covering this activity within each timestep during the day.
2. The value calculated in step 1 is multiplied by 15 minutes in order to get the total time of activity work.
3. The value calculated in step 2 is divided by the value set for `Paid Hours a Day`, which was entered while building staffing forecast for this activity.

Coverage – Published

The original values from the Coverage – Scheduled column the last time a schedule scenario was published to the Master Schedule.

How the Total / Average is Calculated

The value in the column footer is calculated based on the same approach as what is described for Coverage – Scheduled.

Coverage – Difference

Coverage – Scheduled minus Coverage – Published.

ASA – Scheduled

The Average Speed of Answer that you should achieve on this activity, with the number of agents currently scheduled for this activity.

The totals/average row for ASA Scheduled reports a weighted average, calculated across the open hours and weighted by Forecasted IV (exactly as for Service Level – Scheduled):

A weighted average, weighted by Forecasted IV:

$$\text{AVG ASA Scheduled} = S\ (\textit{Scheduled ASA}_i * \textit{Forecasted IV}_i) \ /\ S\ (\textit{Forecasted IV}_i)$$

Where:

$\textit{Scheduled ASA}_i$= Calculated Average Speed of Answer based on the number of scheduled agents for $\textit{timestep}_i$
$\textit{Forecasted IV}_i$= Forecasted Interaction Volume for $\textit{timestep}_i$
$\textit{timestep}_i$= timestep number over the open hours

ASA – Forecasted

The totals/average row for ASA Forecasted reports a weighted average, calculated across the open hours and weighted by Forecasted IV (exactly like for Service Level – Forecasted):

A weighted average, weighted by Forecasted IV:

$$\text{AVG ASA Forecasted} = S\ (\textit{Forecasted ASA}_i * \textit{Forecasted IV}_i) \ /\ S\ (\textit{Forecasted IV}_i)$$

Where:

$\textit{Forecasted ASA}_i$= Calculated Average Speed of Answer based on the number of scheduled agents for $\textit{timestep}_i$
$\textit{Forecasted IV}_i$= Forecasted Interaction Volume for $\textit{timestep}_i$
$\textit{timestep}_i$= timestep number over the open hours

ASA – Difference

ASA – Scheduled minus ASA – Forecasted.

Occupancy – Scheduled

The Occupancy that you *should achieve* on this activity, with the number of agents currently scheduled.

How the Total / Average is Calculated

The totals/average row for Occupancy reports a weighted average, calculated across the open hours and weighted by Forecasted IV (exactly as for Service Level – Scheduled:

A weighted average, calculated across the open hours and weighted by Forecasted IV:

$$\text{AVG Occupancy Scheduled} = \sum(\textit{Scheduled Occ}_i * \textit{Forecasted IV}_i) / \sum(\textit{Forecasted IV}_i)$$

Where:

$\textit{Scheduled Occ}_i$= Calculated Occupancy based on the number of scheduled agents for $\textit{timestep}_i$
$\textit{Forecasted IV}_i$= Forecasted Interaction Volume for $\textit{timestep}_i$
$\textit{timestep}_i$= timestep number over the open hours

Occupancy – Forecasted

The Occupancy objective that you *should be able to achieve* when staffing with the number of agents from the staffing forecast (Staffing – Calculated).

How the Total / Average is Calculated

The totals/average row for Occupancy reports a weighted average, calculated across the open hours and weighted by Forecasted IV (exactly as for Service Level – Forecasted):

A weighted average, weighted by Forecasted IV:

$$\text{AVG Occupancy Forecasted} = \sum(\textit{Forecasted Occ}_i * \textit{Forecasted IV}_i) / \sum(\textit{Forecasted IV}_i)$$

Where:

$\textit{Forecasted Occ}_i$= Forecasted Occupancy for $\textit{timestep}_i$
$\textit{Forecasted IV}_i$= Forecasted Interaction Volume for $\textit{timestep}_i$
$\textit{timestep}_i$= timestep number over the open hours

Occupancy – Difference

Occupancy – Scheduled minus Occupancy – Forecasted.

Contact Center Performance Reporting Metrics

In this topic, find information about the Workforce Management Contact Center Performance reporting metrics. Click any link in the Contents to go directly to a specific metric.

> **Tip**
>
> A period in these metrics refers to the specific granularity of the report being run. For *Intra-day* granularity a period is 15 minutes; for *Daily* granularity a period is 1 day; and so on.

See Other Metrics Topics:

- Schedule Summary Report Metrics
- Agent Adherence Report Metrics
- Endnotes (for Metrics)

> **Important**
>
> The *Difference* calculation is controlled by the `WFM Web Application` option `RevertDiffCalculation` in Genesys Administrator.

> `false (default): Scheduled or Forecasted minus Actual`
> `true: Actual minus Scheduled or Forecasted`
>
> This document uses the default value.

Coverage – Scheduled

The actual amount of time that an agent should count toward coverage of the work in this time period. If an agent is multi-skilled and is scheduled for multiple activities during a given period, he may count fractional amounts of time toward the coverage of each activity (for example, 0.5 toward each of two activities for which he is scheduled).

If an agent has something other than activity work scheduled for part of a period, that will be subtracted from the amount of time counted toward the coverage of that activity work. For example, an agent who is scheduled for an activity for a given 15-minute timestep, but who has a break for the first five minutes of that timestep, would count as 0.67 toward the coverage of that activity for that period.

How the Total / Average Is Calculated

This figure is in FTEs. For the calculation, see Endnote 1.

The value in the totals/averages row at the top of this view (or at the bottom of the report) is calculated as follows:

1. WFM calculates the sum of the agents who are covering this activity within each timestep during the day.
2. The value calculated in Step 1 is multiplied by 15 minutes in order to get the total time of activity work.
3. The value calculated in Step 2 is divided by the value set for `Paid Hours a Day`, which was entered while building the staffing forecast for this activity.

Coverage – Optimal

The coverage that would have been required in order to meet the original service objectives, based on the actual IV and AHT.

Coverage – Difference

Coverage – Optimal minus Coverage – Scheduled.

Coverage – Percentage

Coverage – Optimal
———————————————————————————————
Coverage – Optimal minus Coverage – Scheduled
in concept: Optimal / (Optimal – Scheduled)

Number of Agents – Scheduled

The number of agents scheduled for this period, also known as *headcount*.

How the Total / Average is Calculated

A simple average of the number of timesteps when the activity is open. If the activity is only open for a portion of the day and this report is run for an intra-day period, the average is calculated using open timesteps only.

Number of Agents – Actual

The number of agents who were actually adherent during this period, also known as *headcount*.

How the Total / Average is Calculated

A simple average of the number of time steps when agents were logged in.

Σ ($Agents_i$) / Number of time steps

Where

$Agents_i$ is the number of agents logged in (as reported by Stat Server) during $timestep_i$

Number of Agents – Difference

Number of Agents – Scheduled minus Number of Agents – Actual.

Number of Agents – Percentage of Difference

(Number of Agents – Scheduled minus Number of Agents – Actual)
———————————————————————————————
Number of Agents – Scheduled
in concept: (Scheduled – Actual) / Scheduled

Interaction Volume – Forecasted

The number of interactions forecasted for this period (taken directly from the Master Forecast).

How the Total / Average is Calculated

This Sum is spread across the entire report time range.

Interaction Volume – Actual

The number of interactions actually received. The exact nature of this metric will depend on what Stat Server statistic is configured for Interaction Volume.

For example, for voice interactions, normally this is based on Number of Calls Entered.

How the Total / Average is Calculated

The sum is of Interaction Volume for each time step within the report time range.

$\Sigma\ (IV_i)$

Where:

IV_i is the Interaction Volume recorded by Stat Server during $timestep_i$

Interaction Volume – Difference

Interaction Volume – Forecasted minus Interaction Volume – Actual.

Interaction Volume – Percentage

$$\frac{\text{(Interaction Volume – Forecasted minus Interaction Volume – Actual)}}{\text{Interaction Volume – Forecasted}}$$

in concept: (Forecasted - Actual) / Forecasted

AHT – Forecasted

Forecasted Average Handling Time for this period (taken directly from the Master Forecast)

How the Total / Average is Calculated

A weighted average, weighted by Forecasted IV:

$$\text{AVG AHT Forecasted} = \Sigma\ (\textit{Forecasted AHT}_i * \textit{Forecasted IV}_i) \ /\ \Sigma\ (\textit{Forecasted IV}_i)$$

Where:

$\textit{Forecasted AHT}_i$ = Forecasted Average Handling Time for $\textit{timestep}_i$
$\textit{Forecasted IV}_i$ = Forecasted Interaction Volume for $\textit{timestep}_i$
$\textit{timestep}_i$ = timestep number over the open hours

AHT – Actual

Actual Average Handling Time for calls handled during this period. This metric is based on what Stat Server statistics are configured for Total Handle Time and Number of Calls Handled.

How the Total / Average is Calculated

A weighted average, weighted by Number of Calls Handled:

$$\Sigma\ (\textit{AHT}_i * \textit{CallsHandled}_i) \ /\ \Sigma\ (\textit{CallsHandled}_i)$$

Where:

$\textit{AHT}_i$ = AHT recorded by Stat Server for $\textit{timestep}_i$
$\textit{CallsHandled}_i$ = Number of interactions handled during timestep_i as recorded by Stat Server.

AHT – Difference

AHT – Forecasted minus AHT – Actual.

AHT – Percentage

$$\frac{\text{(AHT – Forecasted minus AHT – Actual)}}{\text{AHT – Forecasted}}$$

in concept: (Forecasted - Actual) / Forecasted

Service Level – Scheduled

The Service Level that was scheduled to be achieved, based on the scheduled number of agents.

How the Total / Average is Calculated

A weighted average, weighted by Forecasted IV:

$$\text{AVG SL Scheduled} = \Sigma\ (Scheduled\ SL_i * Forecasted\ IV_i) / \Sigma\ (Forecasted\ IV_i)$$

Where:

$Scheduled\ SL_i$ = Calculated Service Level based on the number of scheduled agents for $timestep_i$
$Forecasted\ IV_i$ = Forecasted Interaction Volume for $timestep_i$
$timestep_i$ = timestep number over the open hours

Service Level – Actual

The Service Level that was actually achieved. This metric is based on what Stat Server statistics are configured for Service Factor, Number of Calls Distributed, Average Speed of Answer, and Time Range.

How the Total / Average is Calculated

A weighted average, weighted by Number of Calls Distributed:

$$\Sigma\ (SFi * CallsDistributed_i) / \Sigma\ (CallsDistributed_i)$$

Where:

SF_i= Service Factor recorded by Stat Server for $timestep_i$
$CallsDistributed_i$= Number of calls distributed during $timestep_i$ as recorded by Stat Server.

(This value does not appear in the report but is recorded by Stat Server. For more details, see Endnote 2.)

ASA – Scheduled

The Average Speed of Answer that was scheduled to be achieved, based on the scheduled number of agents. Calculated by using the *inverse* of the WFM's staffing forecast algorithm.

WFM uses a *modified Erlang* algorithm to derive Calculated Staffing, based on the IV, AHT, and service objectives such as ASA that were stated when building the forecast. Therefore, to calculated the Scheduled ASA it uses that formula *in reverse*.

How the Total / Average is Calculated

A weighted average, weighted by Forecasted IV:

$$\text{AVG ASA Scheduled} = \Sigma\ (Scheduled\ ASA_i * Forecasted\ IV_i) / \Sigma\ (Forecasted\ IV_i)$$

Where:

$Scheduled\ ASA_i$ = Calculated ASA based on the number of scheduled agents for $timestep_i$
$Forecasted\ IV_i$ = Forecasted Interaction Volume for $timestep_i$
$timestep_i$ = timestep number over the open hours

ASA – Actual

The Average Speed of Answer that was actually achieved. This metric is based on what Stat Server statistics are configured for ASA.

How the Total / Average is Calculated

A weighted average, weighted by Number of Calls Distributed:

$$\Sigma\ (ASA_i \times CallsDistributed_i) / \Sigma\ (CallsDistributed_i)$$

Where:

ASA_i = Average Speed of Answer for $timestep_i$ as recorded by Stat Server
$CallsDistributed_i$ = Number of calls distributed during $timestep_i$ as recorded by Stat Server

Abandons Factor – Scheduled

The expected number of abandoned interactions based on the scheduled number of agents. Calculated by using the *inverse* of the WFM's staffing forecast algorithm.

WFM uses a *modified Erlang* algorithm to derive Calculated Staffing, based on the IV, AHT, and service objectives such as Abandonment percentage that were stated when building the forecast. Therefore, to calculate the Scheduled Abandons, WFM uses that formula *in reverse*.

How the Total / Average is Calculated

A weighted average, weighted by Forecasted IV:

$$\text{AVG AF Scheduled} = \Sigma\ (Scheduled\ AF_i * Forecasted\ IV_i) / \Sigma\ (Forecasted\ IV_i)$$

Where:

$Scheduled\ AF_i$ = Calculated Abandon Factor based on the number of scheduled agents for $timestep_i$
$Forecasted\ IV_i$ = Forecasted Interaction Volume for $timestep_i$
$timestep_i$ = timestep number over the open hours

Abandons Factor – Actual

The actual number of abandoned interactions during a specific period, based on which Stat Server statistics are configured for Abandoned Interactions.

How the Total / Average is Calculated

A weighted average, weighted by Number of Calls Distributed:

$\Sigma\ (Abandons_i * CallsDistributed_i) / \Sigma\ (CallsDistributed_i)$

Where:

$Abandons_i$ = Number of calls abandoned during $timestep_i$ as recorded by Stat Server
$CallsDistributed_i$ = Number of calls distributed during $timestep_i$, as recorded by Stat Server

Abandoned Interactions Percentage – Scheduled

The scheduled abandoned interactions percentage value calculated by WFM based on Abandons Factor Scheduled and Interaction Volume Forecasted in that timestep.

How the Total / Average is Calculated

A weighted average, weighted by Number of Forecasted Interaction Volume:

$\Sigma\ (Abandons_i * IV_i) / \Sigma\ (IV_i)$

Where:

$Abandons_i$ = Scheduled abandoned interactions percentage value during $timestep_i$.
$Actual\ IV_i$ = Number of Forecasted Interaction Volume for $timestep_i$.

Abandoned Interactions Percentage – Actual

The actual abandoned interactions percentage value calculated by WFM based on Abandons Factor Actual and Interaction Volume Actual in that timestep.

How the Total / Average is Calculated

A weighted average, weighted by Number of Actual Interaction Volume:

$\Sigma\ (Abandons_i * IV_i) / \Sigma\ (IV_i)$

Where:

$Abandons_i$ = Actual abandoned interactions percentage value during $timestep_i$.

$Actual\ IV_i$ = Number of Actual Interaction Volume for $timestep_i$.

Agent Adherence Reporting Metrics and End Notes

In this topic, find information about Workforce Management Agent Adherence reporting metrics and endnotes.

See Other Topics About WFM Metrics:

- Schedule Summary Report Metrics
- Contact Center Performance Report Metrics

Agent Adherence Report

There is only one Adherence reporting metric.

Percentage Adherence Per Day

The percentage of the day during which the agent was adherent to his or her scheduled state.

How the Percentage is Calculated

```
100 - ((NC+UNC)*100/(ST+UNC))
```

Where:

```
 NC = Noncompliant time
UNC = Noncompliant time outside of scheduled time
 ST = Scheduled time
```

Endnotes

This secton contains detailed descriptions and definitions for formula symbols that are used to calculate WFM metrics.

Endnote 1

The Formula for FTEs:

$$FTEs = \sum_{i=1}^{n} (staffing_i \div stepsHr \div paidHrs_i \times (100 \div (100 - {}_pOverheadHrs_i)))$$

Where:

n = Number of time steps in a day (96)
i = Current time step
$staffing$ = Calculated staffing requirements
$stepsHr$ = Time steps in one hour (4)
$paidHrs$ = Paid Hours in a Day as specified in staffing forecast
${}_pOverhead$ = Planned Overhead percentage as specified in staffing forecast

Endnote 2

The Total/Average value of Service Level in the Contact Center Performance report is calculated as a weighted average, where for the weight coefficient we use the TotalNumberCallsDistributed configuration option.

That is, for an Activity when we define the Quality of Service Statistic type in the WFM Web, we are required to specify three statistics:

1. Service Factor
2. Distributed Interactions
3. Average Speed of Answer

(plus two time ranges required for Service Factor statistic calculation)

The Number of Distributed Interactions statistic (or TotalNumberCallsDistributed) plays the role of the weight coefficient in order to calculate the weighted average value of Service Level per:

Timestep	If we calculate Service Level for the same activity several objects (for example, across some Queues) this gives us the possibility to get an accurate result rather then a simple average.
Day	A weighted average gives a very accurate result in comparison with simple average.

So the calculation of Total Service Level per day is done by the formula:

$$\text{Service Level Total} = \frac{\text{SUM } (SL_i \times TNCD_i)}{\text{SUM } (TNCD_i)}$$

Where:

i = 1 ... 96 (intra-day 15 minute timesteps from 00:00 through 23:45)
SL_i = Service Level value for the timestep$_i$
$TNCD_i$ = TotalNumberCallsDistributed value for the timestep$_i$

Here is a simple example of the calculation, using this data:

Timestep	SL	TNCD	TNCD*x*SL
10:45 am	60.00	20	1200
11:00 am	90.00	1	90
11:15 am	20.00	150	3000
11:30 am	65.00	35	2275

If we assume that during the day we have only 4 timesteps of historical data, our Total Service Level will be:

$$\text{SL weighted} = \frac{60x20 + 90x1 + 20x150 + 65x35}{20+1+150+35} = \frac{6565}{206} = 31.87$$

Here an example of calculating a simple average:

$$\text{SL simple average} = \frac{60+90+20+65}{4} = 58.7$$

This example shows that a timestep with Service Level=90 where only one call has been processed should have minimal impact on the overall Service Level for the day, in comparison with a timestep where SL=20 and 150 calls have been processed. This is the reason the calculation is done in this way.

The user won't be able to see `TotalNumberCallsDistributed` in the report, as this value is stored in the WFM database for internal purposes only (in the table `WM_perf_activities` in the field `WM_distrib_calls`, for each activity and for each timestep).

Also keep in mind that `TotalNumberCallsDistributed` is not the same as Interaction Volume, since in general Interaction Volume is configured as `TotalNumberCallsEntered` (`Answered + Abandoned`), while `TotalNumberCallsDistributed` is the number of calls which are being distributed from the queue.

WFM Primers

Workforce Management (WFM) primers provide detailed information about certain WFM functions and features and suggest ways in which you might use them in your deployment to optimize the efficiency of your contact center.

Primers contain suggestions and example, which may or may not be applicable to your environment, but the information is provided to help you to make the best choice, based on these recommended uses and applications.

Primers are provided for these important WFM features:

- Multi-Forecasting
- Time Off
- Overlays

Time-Off Primer

Use the information in this topic to learn how WFM processes time off and how to configure it to suit the needs of your workforce and contact center. For more information about the Time Off feature, see the *Workforce Management Web for Supervisors Help* and *Workforce Management Web for Agents Help*.

Time-Off Types and Rules

You must understand the basics of the time-off features in WFM to use them correctly and efficiently. Before you can use time off, you must configure time-off types and time-off rules.

Time-Off Types

Time-off types are probably the simpler of the two objects, because each one is simply a container. You add time off to, or remove time off from, each container. You can create and arbitrarily name an unlimited number of time-off types.

You create time-off types for each individual site. You can use time off to track an agent request or maintain a balance of requests on a regular basis. Time-off types include vacation, personal time off, flexible time off, paid sick days, floating holidays, and more.

Time-Off Rules

You can configure a time-off rule for a one or multiple time-off types. When you configure multiple time-off types for the same rule, the time-off balance is calculated and accrued for all time-off types associated with that rule. This configuration enables multiple time-off types to share the same time-off balance.

Time-off rules define:

- The rate at which time off is accumulated for an agent, and how and when an agent can request time off.
- Whether or not a time-off request will be manually approved, or auto-approved by the WFM system.

You assign time-off type/time-off rule combinations to agents by using the **Configuration > Agents > Time Off** or **Policies > Time-Off Rules > Assignments** pane in WFM Web for Supervisors.

> **Tip**
> Time-off types are configured on a per site basis. Therefore, if an agent has outstanding time-off requests and is moved to a different site, the requests are

hidden, because WFM tracks them only at the initial site. The default time-off type Vacation is the only exception. Vacation is considered valid for all sites in the system, and time-off requests for vacation are retained in the system even after the agent moves from site-to-site. In addition, WFM recalculates the agent's time-off balance(s) when the agent moves from one site to another, based on the change in time-off rules. Moving an agent to a different site does not affect his/her time-off status.

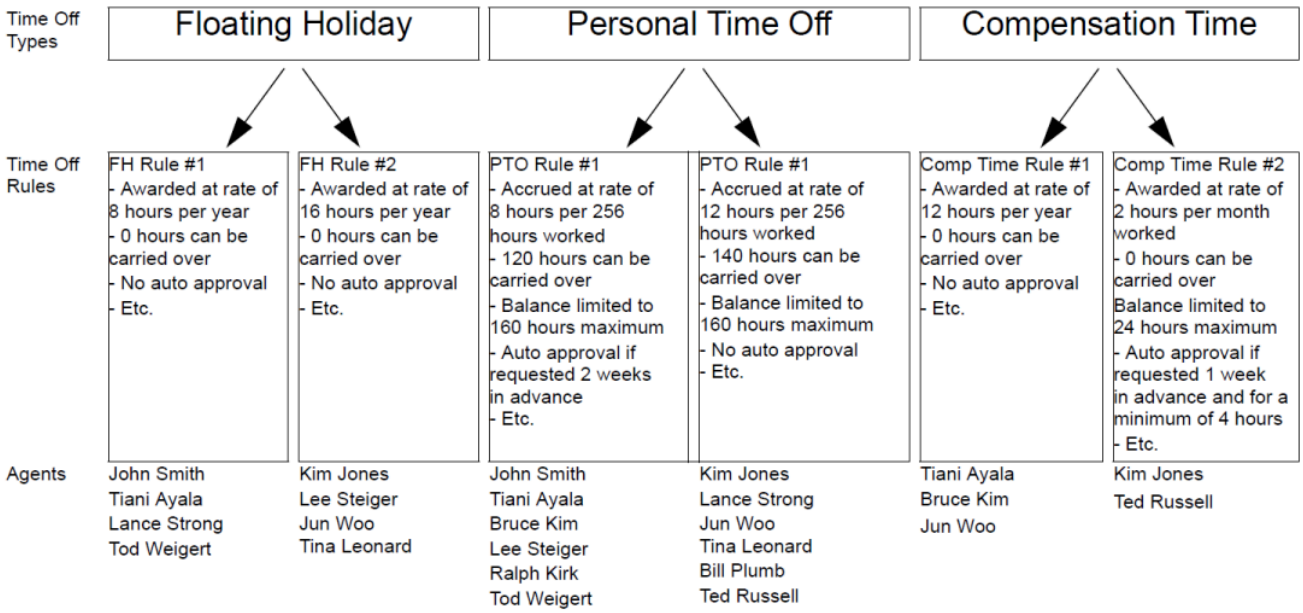


Figure: Relationship Between Time-Off Types, Time-Off Rules, and the Agents Assigned to Them

Notes About the Figure Above

- Agents are assigned to time-off rules, not directly to time-off types.
- The association of time-off rules to time-off types is many-to-one, because for a single time-off type (for example, personal time off), different agents might be given this type of time off at different rates—perhaps based on seniority. For example, you might want requests from a certain type of agent for paid sick days to be auto-granted by the system, but for another type of agent you might want the same requests to be manually reviewed.
- When you create a time-off rule, you define whether it is a rule of the type award (a fixed number of hours) or accrual (a number of hours that accumulates during the year). In the figure below, Floating Holiday time off is awarded and Personal Time Off is accrued. Compensation Time can be either awarded or accrued, depending on an Agent's assigned time-off rule.

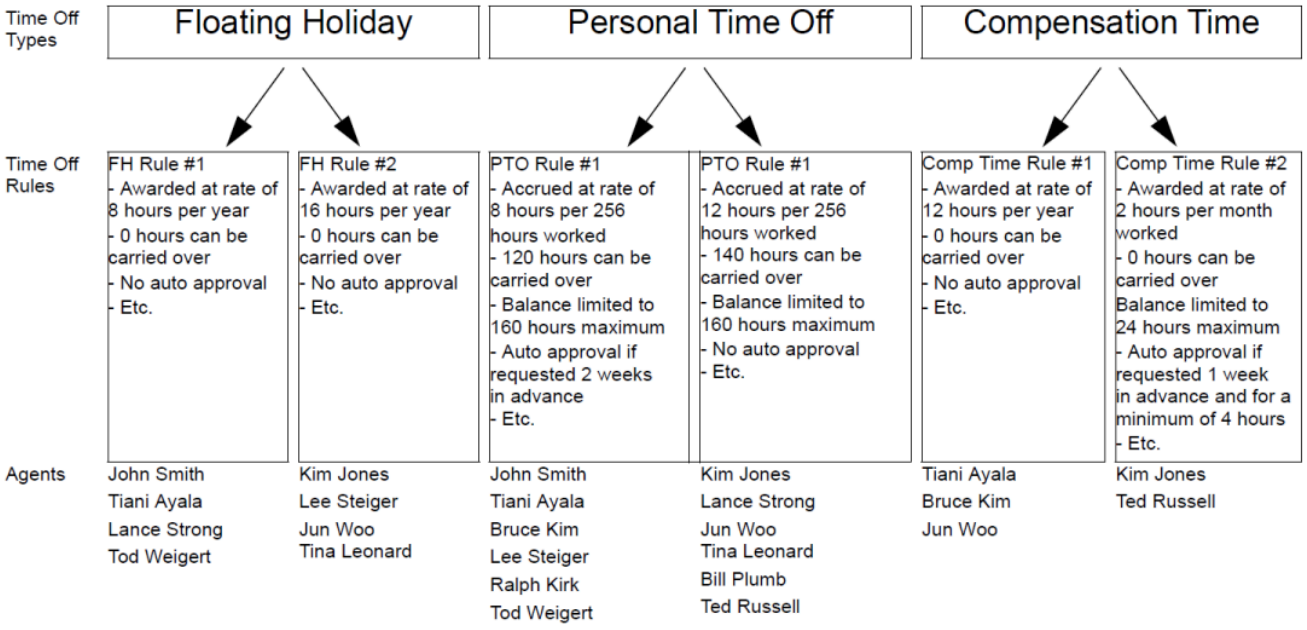


Figure: Awarded versus Accrued Time Off

Notes About the Figure Above

- An agent can be assigned to mulitiple time-off rules.
  Example 1: Jun Woo has three time-off rules assigned to him. One rule defines how he will be awarded a Floating Holiday each year and when he can use that time off. The second rule defines the rate at which he will accrue Personal Time Off, how much balance he can have, and when he can use it. The third rule defines how he will be awarded Compensation Time each year.
- Not all agents need to be assigned to a rule for each time-off type.
  Example 2: John Smith has a Floating Holiday award rule and a Personal Time Off accrual rule. However, he has no time-off rule defining how he can accrue or be awarded Compensation Time. Therefore, he will have no balance of this time-off type and will not be able to request it.

Exceptions Used as Time Off

When you configure an exception type in WFM Web, you can use the option **Exception is used as Time Off** to designate the exception as time off. This is a legacy feature from earlier versions of WFM, which supported only one type of time off. WFM now supports an unlimited number of time-off types, which means agents and supervisors can request both full-day and partial-day time off. Therefore, Genesys recommends that you *do not* use exceptions to represent time off.

When Time-Off Types No Longer Apply

A combo box in the upper-left corner of an agent's **Time-Off Planner** displays all the time-off types that are configured for that agent's site. Some of these might not relevant for the agent. (Agents are assigned to time-off rules, which in turn are associated with time-off types.)

An agent can create, edit, delete, or recall time-off requests only for those types correspond to a

time-off rule that is assigned to that agent. Therefore, an agent might be able to view time-off types corresponding to time-off rules are no longer assigned to him or her. The agent can see these “old” time-off types, but he or she cannot interact with them. They appear below the **Others** legend in the combo box.

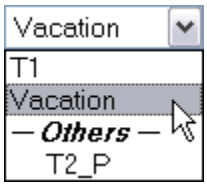


Figure: Time-Off Types Combo Box

Time-off types that the agent can use appear above the **Others** legend.

WFM enables an agent to select a time-off type from below the **Others** legend in the combo box; however, the agent cannot perform any functions with it (such as requesting time off or viewing his or her time-off balance).

Time-Off Limits

Before giving your agents the ability to request time off, you should configure time-off limits. To do so, use the **Calendar** module in WFM Web Supervisor.

If you have the correct permissions, you can configure the maximum number of agents who can take time off for each 15-minute interval of each calendar day.

For example, you could configure that from midnight to 8 a.m. on March 3, 2007, 5 agents can be allowed to take time off, whereas from 8 a.m. to 4 p.m., only 3 agents can be take time off. You can set time-off limits either for an absolute number of agents, or for a maximum percentage of agents.

Additionally, you can set time-off limits at three levels: Site, Team, and Activity.

> ### Tip
> You can set different time-off limits for different time-off types.

Requests and Approvals Process

There are two different processes for scheduling time off for agents. The process that is used depends on whether the user is planning for a future schedule period (see Planning for Time Off in the Future) or working within a schedule period that is already published to the Master Schedule (see Planning for Time Off for the Current Schedule Period).

Planning for the Future

For future time periods (schedule days that are not yet published to the Master Schedule), the process works as shown in the figure below.

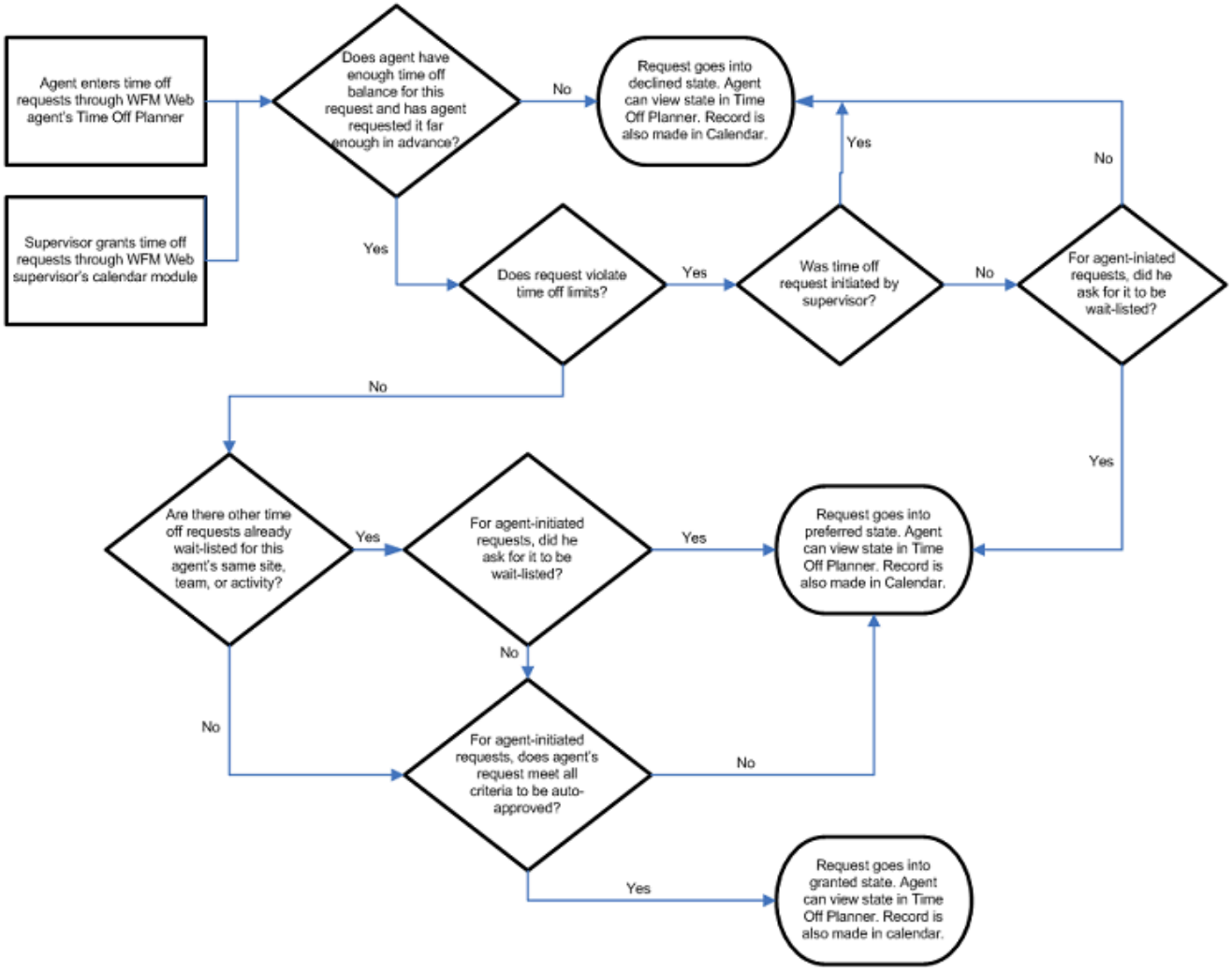


Figure: Future Time Periods Process

The Time-Off Planner (in WFM Web for Agents) and the **Calendar** (in WFM Web for Supervisors) are really two different ways to input the same information. The Time-Off Planner is the agent's method of entering Calendar items. It allows the agent to enter time off, but that is all.

The Web for Supervisors **Calendar** module has much more power: the supervisor can enter all types of **Calendar** items, including shifts, working hours, exceptions, days off, and time off.

Both of these schedule-building input tools have the same result: the time-off items are recorded in the WFM Calendar.

Granted Time Off versus Preferred Time Off

When building a schedule scenario, WFM considers only time-off items that have **Granted** status. It does not include time-off items with **Preferred** status.

> **Tip**
> WFM enables a supervisor to consider agent preferences when building schedules. These preferences include: day off, availability, and shift preferences; but not time-off preferences.

Time-Off Items in the Calendar Hierarchy

When you enter multiple types of Calendar items for the same agent on the same day, WFM uses its internal hierarchy to resolve their status:

- **Example 1: Full-Day Time Off versus Rotating Schedule Day In**—An agent is assigned a Rotating Pattern for the week starting September 17, 2006, and for the date of September 19 his Rotating Pattern assignment states he should be on a *Day In*. But a supervisor grants full-day time off for September 19. Now, the agent has two conflicting Calendar items for the same day: a working day according to the Rotating Pattern assignment, and a full-day time off according to the Calendar. The Calendar hierarchy specifies that the full-day time-off item should be granted and this should cause the Rotating Pattern assignment for that day to be declined. The statuses are reflected in the Calendar and the supervisor can read the reasons there. Some items in the Calendar do have a higher priority than full-day time-off items.
- **Example 2: Full-Day Exception versus Full-Day Time Off**—A full-day exception is granted for an agent in the Calendar for the same day as a full-day time off. The Calendar hierarchy specifies that the full-day exception should take priority and the full-fay time-off item should be declined.

The hierarchy of the WFM Calendar is described in the *Workforce Management Web for Supervisors Help*. See Calendar Items.

Using the Calendar to Understand Time-Off Statuses

You can view the actual status of any item in the Calendar; a status of **Granted**, **Preferred**, or **Declined** confirms that no schedule has been published for this agent for this date. In a built and published schedule, the actual status of an item will be either **Scheduled** or **Not Scheduled**. If a Calendar item was not scheduled, you can view a **Reason** field that describes why it was not scheduled (in the **Reason** column).

Planning for the Current Schedule Period

To enter agent time-off items for days that are already published to the Master Schedule, use either of these methods:

1. Enter time off directly into the Master Schedule.

> **Tip**
>
> Agents can view this time-off entry in their schedule by logging in to the WFM Web for Agents application. They can also see any changes to their time-off balance in WFM Web for Agents' Time-Off Planner and they can see that time off for this day is scheduled, when they view their Time-Off Planner. However, no entry for this time off will be made in the WFM Calendar, because it is a planning tool and is meant for entering items, such as exceptions, time off, days off, etc., that are considered when WFM builds a schedule scenario.

2. Enter the granted time-off request into the WFM Calendar.
3. Click **Update Schedule**.

WFM has now automatically updated the Master Schedule with the agent's **Granted** time off.

Using **Update Schedule** from within the Calendar updates the Master Schedule from the Calendar for the agent's time-off request, which streamlines the review and approval process and eliminates the need to manually rebuild the schedule.

> **Tip**
>
> From within the **Calendar** module, users can update the Master Schedule with **Granted** time-off items for any agent on any date for which the agent has a schedule published, and the time-off request is compatible with the agent's existing schedule. For more details, see Calendar Items and Update Schedule Options in the *WFM Web for Supervisors Help*.

Agent Time-Off Planner

Agents request time off and see the status of these requests in the WFM Web for Agents Time-Off Planner. If you do not want your agents to have access to the Time-Off Planner, you can disable this through the **Time-Off Planner Enabled** setting. In Genesys Administrator, find your **WFM Web Application** object, open **Options > AgentTimeOff**, and set the variable **AllowTimeOffPlanner** to `false`.

Time-Off Balances in the Agent’s Planner

The Time-Off Planner displays the balances for an agent's time off, in this way: the agent selects a time-off type and clicks on a date in the yearly planning calendar to view balances for that type, up to that date.

The agent can also view the types of time-off hours prior to the selected date: already Granted, Preferred, Declined and Scheduled, Bonus, Advance, and Carried-Over.

When an agent’s time-off rule is changed, his time off is recalculated, based on the new rules. For example:

- If a time-off rule is assigned to an agent and you change any of the rule's properties.
- If a time-off rule is assigned to an agent and you use the **Time Off** tab under **Configuration** > **Organization** > **Agents** > **Properties** to change the rule.
- If a time-off rule is assigned to an agent and you use the **Assignments** tab under **Policies** > **Time-Off Rules** > **Properties** to remove the assignment.

In each case, the user is asked to approve the calculation before it is performed.

> ### Warning
> Moving agents to different sites can affect their time-off balances. After the move, they might appear to have lost a portion of their time-off balance since WFM tracks that time off only at the old site. To preserve the time-off hours that the agent earned at the previous site, her supervisor must enter these hours as a bonus to the new **Agent Rule** under the new site. For details, see Time-Off Bonuses in the *WFM Web for Supervisors Help*.

Recalling Requests

An agent can recall a time-off request that is in **Preferred** or **Granted** status, as long as the time-off item has not been scheduled. See Recalling time-off requests in the *Workforce Management Agent Help*.

After an agent's time-off request has been granted, scheduled, and published to the Master Schedule, the agent cannot recall the time off. Only the supervisor can do that, by manually changing the agent's schedule for that date, through the Master Schedule; and only the supervisor can schedule a different activity for the agent for that date, in lieu of the time off.

Wait-Listing Requests

Wait-listing means that if a time-off request is denied because the time-off limits have been reached, the request stays in a **Preferred** status in case an opening becomes available. The request could eventually be granted by a supervisor, although this is not guaranteed.

In detail, this means that if the time-off request would be declined because the time-off limits have already been reached, wait-listing gives it a **Preferred** status. If some time-off slots become available for certain dates due to cancellations, or if the supervisor decides to raise the time-off limits for a certain date, the supervisor can review all of these Preferred time-off items in the Calendar and grant some of them. If the time slot becomes available agents' time-off requests may be automatically pulled from this wait list and auto granted accordingly to the first-come, first served order.

Viewing Request Statuses

Agents can view the status of any time-off request, for any calendar date, with some limitations. If an agent requests time off for a date on a schedule that is already been published to the Master Schedule:

- This request will not be scheduled.
- The agent can view the reason it was not scheduled, in the **Reason** column.
- The request, with the same status and reason, will appear in the WFM Calendar, where supervisors can see it.

However, the supervisor will not know to look for the request unless the agent tells him to look for it. Therefore, if an agent sees time-off requests with status **Not Scheduled** in the **Time-Off Planner**, she should alert her supervisor.

The supervisor can then do one of two things:

1. Grant the time off through the WFM Calendar and rebuild/republish the agent's schedule for the affected date(s).
2. Manually add the time off to the Master Schedule.

The Time-Off Planner gives agents a limited view into their time-off status in the WFM Calendar. Therefore, when a supervisor adds or deletes time off in the WFM Calendar, he must rebuild and republish the schedule for the affected date(s).

Overlays Primer

Workforce Management Overlays are events designed to indicate the abnormalities in historical data or anticipated ones in the future. Abnormalities, such as fluctuation of interaction volumes, AHT (other than the usual, seasonal fluctuation), or intra-week and intra-day trends. If events occur that highlight an abnormality, of the type that happens multiple times or can happen in again in the future, you can arrange these overlay events (or *Overlays*) into overlay groups. Some examples are billing, promotion, or catalog drops.

Impact of Overlay Events on Prediction Data

Overlays impact prediction data directly when a specific overlay event occurs over a prediction interval.

Two types of overlays exist, based on how the impact on prediction data is calculated:

- **Multiplicative**—Increase (or decrease) every step of predicted data by a percentage. The percentage is defined by overlay impact distribution, multiplied by the *strength* of the event. The duration of the interval is affected by event changes.
- **Overriding**—Re-distribute (but does not change) the volume of an event's interval. The total volume does not change, but it might be moved from one event-step to another.

Multiplicative Overlays

This type of overlay factor has existed in WFM since early versions and was called Factor. Each step (daily or hourly) of prediction data covered by the event is adjusted by a certain percentage, which is also multiplied by event strength.

Overriding Overlays

This type of overlay is designed to keep the predicted total of the affected period and adjust the distribution of the volumes within that period. WFM applies the events of this overlay type as the last step of the prediction. It applies the seasonal components (intra-day, daily, or yearly) and multiplicative overlays before the overriding overlays are calculated.

The overriding overlay distributes the volumes according to the weight (or the percentage) of each event-step (daily or hourly). It adjusts the volume of each event-step, so the event-step receives its portion of the total of the entire event period, according to its weight.

For example, an overriding overlay has 3 event-steps with the following weights: 20, 30, 50. If the predicted total of the entire interval is 1000, then the first event step receives 200, the second 300, and the last one 500.

> **Tip**
> The initial predicted total of the event-step is not considered when the impact of this overlay type is calculated. The weight of the event-step is determined by the overlay itself, and the predicted total of the entire interval that is affected by the event, is considered.

When the event-step (daily or hourly) is calculated, its total is distributed proportionally to 15-minute timesteps to a volume of each timestep before the event was applied. So, the intra-day or intra-hour pattern is preserved.

The overriding overlay event type cannot be calculated when it overlaps with other events of the same type, even if both events belong to different overlays. However, it can overlap with events of multiplicative overlays.

Event Impact Distribution

There are three ways to determine the impact of each event-step:

1. By using start-end.
2. By keeping the entire detailed distribution.
3. By performing the calculation for each event-step during the prediction.

These three methods of determining impact distribution are applicable to both multiplicative and overriding overlay type. WFM specifies how each overlay's impact distribution will be determined and applies it to all of the overlay's events.

Start-end

WFM determines the overlay's impact distribution by specifying start and end impact values. It gradually changes the impact by the same amount every event-step from start value to end value. For example, if the start value is 100 and the end value is 200 and it is a daily overlay with a length of 6 days, then the impact on the first day is 100, on the second day it is 120, then 140, 160, 180 and 200 on the last day.

Distribution

The overlay saves the impact of each event-step separately. You can either determine the impact by precalculating it, by entering it manually, or by using a combination of both methods.

Always Calculating

The overlay impact is always calculated during the prediction. To ensure the calculation is successful, the historical period must have one or more events for the same overlay. The impact of the overlay is determined by the prediction algorithm according to the historical data, and it is then used in the prediction.

Impact of Overlay Events on Historical Data

Events within any overlay type can have a *ignore historical data* flag. If this flag is set for an event, the historical data interval data covered by the event is not used in the calculation of either volume prediction or impact of overlays (see Calculating an Overlay's Impact).

If an event does not have the ignore historical data flag set, the the data covered by the event is considered for prediction.

> **Tip**
> In 7.6.1, WFM does not do perform any additional processing of historical data that is affected by the event. WFM simply uses it or ignores it.

Calculating an Overlay's Impact

You can determine the impact of overlay by analyzing the historical data and using a prediction algorithm. The algorithm analyzes the period of historical data, which contains one or more overlay events to be calculated.

You can pre-calculated Overlays before starting volume forecasting or during volume forecasting (see, Event Impact Distribution). If the historical data and method used are the same, the results will be identical.

Impact of Multiplicative Overlays

WFM calculates Multiplicative overlays by separating seasonal component (yearly, daily, intra-day) from the event impact for each event of the overlay in the given historical data. The impact is divided by the *strength* of the event and then averaged.

When the impact of an event is applied to the prediction interval, it is multiplied by the *strength* of that event.

Impact of Overriding Overlays

The percentage of each event-step in the total of the whole event period is calculated for each event and then averaged. For example, a historical period has two daily overlay events that are 3 days long. The 3 days of the first event are: 150, 200, 150 (that is 30%. 40%, 30% of the total respectively) and the 3 days of the second event are: 150, 150, 200. In this example, the overlay is calculated as 30%, 35%, 35%.

Multi Forecasting Primer

In this topic, find information about the Workforce Management approach to multi-site forecasting in a networked contact center, where some call types and activities are distributed to agents working across multiple sites. It also describes the Genesys approach to multi-skill forecasting, where agents with multiple skills can increase the center's efficiency by performing multiple tasks within a single timestep.

Multi-Site Forecasting

A contact center analyst can use Genesys WFM to model a networked contact center, where some call types and activities are distributed to agents working across multiple sites. To model a multi-site environment, follow the steps and guidelines outlined in these sections:

Set Up Multi-Site Activities

These multi-site activities are work activities that are handled at the site (child) level, and in the object tree they appear higher in the hierarchy.

Determine the Total Demand

To configure Multi-Site Forecasting (MSF) properly, you need data to inform your choices. To gather that data, you can configure WFM to collect:

- Historical Interaction Volume (IV) and Average Handle Times (AHT) for multi-site activities
- Historical average handle times at the child level

After you build a volume forecast at the multi-site activity level and understand the total demand for this call type across all sites, you can configure MSF for two scenarios:

Option A: Contact centers that do a percentage allocation across their sites

To configure for this scenario, perform these steps:

1. Split the volume of the multi-site activity to the site level.
2. Build staffing forecasts at the site level for each child activity.

Option B: Virtual contact centers that do routing based on resource availability, open hours, etc.

To configure for this scenario, perform these steps:

1. Split the volume of the multi-site activity to the site level.

2. Build a staffing forecast at the multi-site activity level. (See the figure Comparing Two Multi-Site Scenarios.)
3. Split the staffing forecast to each child activity.

> **Tip**
> The volume split is the required first step, so that the staffing splitting algorithm understands the demand at each site.

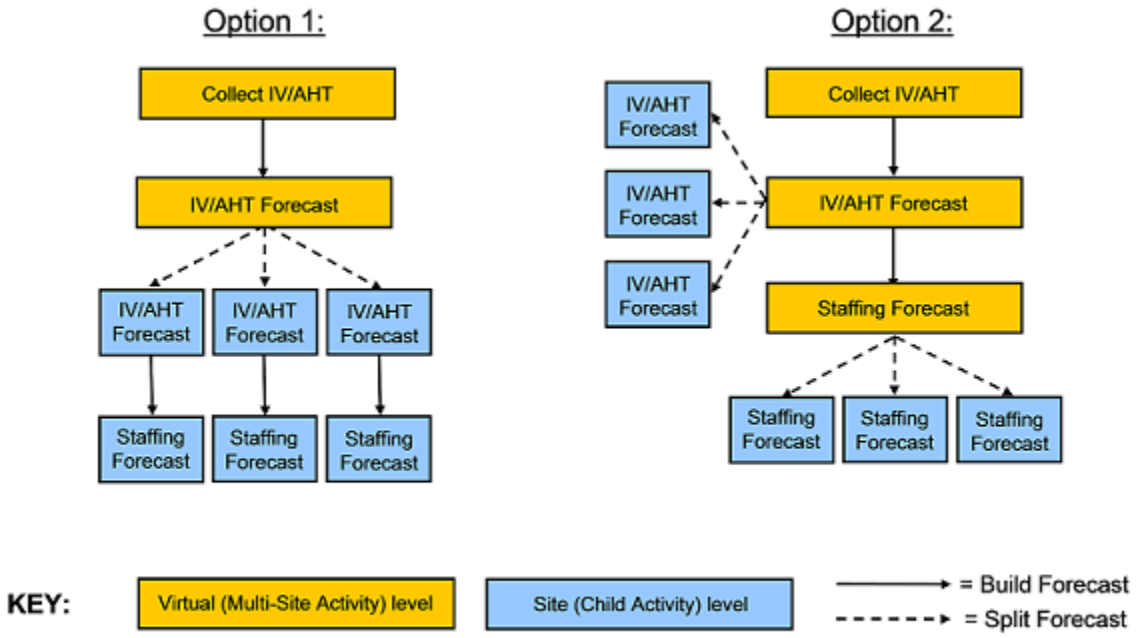


Figure: Comparing Two Multi-Site Scenarios

Volume Splitting

In a multi-site enterprise, when you split the volume of multi-site activity interaction to the child sites, you must decide which Average Handling Time (AHT) to use:

- AHT collected at the multi-site activity level
- AHT collected at the child activity level

To inform your decision, determine if there is a measurable difference in AHT at the various sites in the enterprise. For example, if one site consists of many less-skilled agents (perhaps they are new to their jobs), you may expect to see a longer AHT at this site for some activities. In this case, you would do well to use the child AHT rather than the multi-site AHT.

After you split the volume to the child sites, decide if you want to:

- Build staffing forecasts for each activity, at the site level
- Build staffing forecast at the multi-site activity level and then split that forecast to the site level

Be aware, when WFM splits the interaction volume to the child sites, the forecast splitting algorithm considers:

- Agent skills
- Contract availability
- Activity open hours
- Time zones
- Agent hire/termination dates
- Granted, pre-planned items from the WFM Calendar (days off, time off, shifts, working hours, availability, exceptions, and rotating patterns)

In the figure Model of Contact Center Environment Used by WFM, you can see model of the contact center environment that WFM uses when splitting volumes from the multi-site activity level to the site (child) activity level.

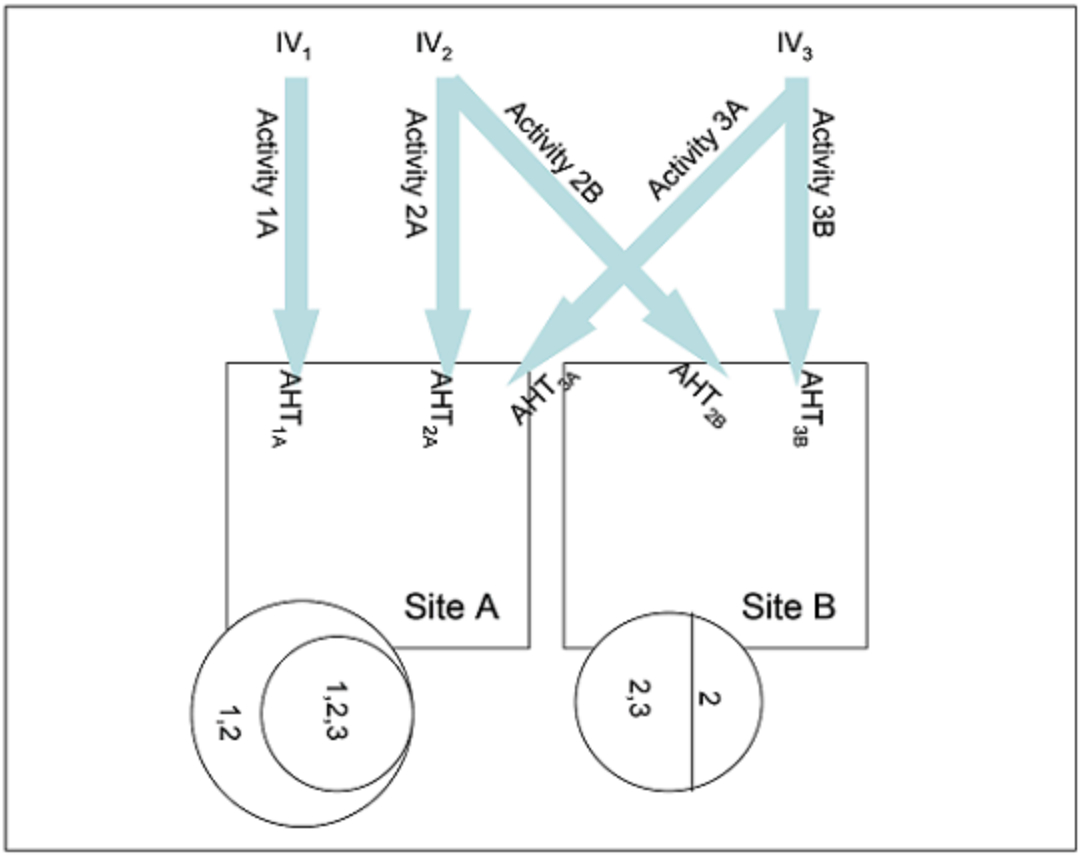


Figure: Model of Contact Center Environment Used by WFM

Key to Figure: Model of the Contact Center Environment

IV—Interaction Volume at the multi-site activity level. There is a separate IV for each of three MSAs (1, 2, 3)

Arrows—The distribution of the activity work from the multi-site activity level to the site level.

1, 2, 3—These numbers represent MSAs.

AHT$_{subscript}$—Average Handle Time. When each MSA is split to the site level, there is a separate set of AHT values for each activity/site combination. As described above, this is an option. The user might also choose to use the AHT collected at the multi-site level, in which case, for example, AHT$_{3A}$ and AHT$_{3B}$ would be equivalent.

Circles—The agent pool at each site. At site A, there are two sets of agents. One set of agents has skills that qualify them to work on activities 1 and 2. The other set of agents has skills that qualify them to work on MSAs 1, 2, and 3. At site B, there are also two sets of agents. One set can only work on activity 2, and the other set can work on either MSA 2 or 3.

Model of the Contact Center Environment Explained

As the activity work is distributed from the multi-site level to the site level, WFM must estimate (for each timestep) the percentage of time that an agent will be handling each type of activity for which she is skilled. In some cases, there is only one choice.

For MSA 1: No agents at site B are skilled to handle that activity. Thus, all the workload must be distributed to site A.

For MSA 3: Agents at both site A and site B who can handle this activity. But the diagram shows other factors to consider in distributing activity 3 work:

- Not every agent at every site can handle activity 3.
- Some of the agents who can handle activity 3 can also handle other activities.

Therefore, when WFM estimates for each agent how much of each timestep should be allocated to a certain type of work, WFM will consider:

- The demand for the activity
- The number of agents who can handle that activity across all sites
- The work allocation of these other agents

Volume Splitting Using Percentages

You can specify a percentage to allocate volumes from a multi-site activity to each Child (site) activity or apply a template. The interval can be the entire forecast scenario, weekday, or timestep.

For more information about this feature, see the *Web for Supervisor Help* topic **Forecast > Forecast Scenarios > Volume Split Wizard**.

Staffing Splitting

As described above in Scenario B, for virtual contact centers, you can build a staffing forecast at the multi-site activity level and then split that staffing forecast across the child activities. This allows the enterprise to more accurately model a virtual routing environment where there is an efficiency gain in the way that calls are handled. WFM recalculates service objectives at this multi-site level and makes these calculations available in the Performance and Schedule views, and in reports.

When building the staffing forecast at the MSA level, you may specify the indirectly occupied time (IOT) and service objectives.

However, you cannot specify the hourly wage or paid hours a day when building the MSA staffing forecast. Instead, you specify those values during the splitting process, when you split the calculated staffing from the MSA level to the child activity level.

> **Tip**
> Before you split the staffing forecast from the MSA level to the child activity level, you

must first split the volume forecast so that the staffing splitting algorithm knows the resource demand at each site. The staffing splitting wizard gives you the option to consider the AHT values of the child activities. You can use it to better estimate how to distribute staffing requirements across child activities. Although the staffing splitting wizard splits calculated staffing by default, it offers you the option to split required staffing.

After the staffing split is accomplished, you can view results data for calculated staffing (and optionally, required staffing) at the child activity level.

You can examine this data at the MSA level or as the sum or weighted average of the child activities, in these views:

- Schedule Coverage
- Intra-Day Schedule
- Schedule Summary
- Performance views

You can manipulate the MSA staffing results in the same way that you can manipulate child activity staffing. Forecast graphs are also available for MSA staffing.

Multi-Skill Forecasting

A multi-skilled contact center presents an opportunity for increased productivity.

An agent might be idle in a single-skill environment because she cannot answer calls that are queuing for an activity/skill which she may posses—but a skill that the schedule prevents her from using.

In a multi-skilled environment, she can use her additional skills to answer those calls.

Tip

A *high-load environment* does not present much opportunity for increased efficiency, because the agents have very little idle time. However, in an *overstaffed environment*, agents have more idle time and can use their multiple skills to increase efficiency.

How WFM Supports Multi-Skilled Agents

A multi-skilled agent is qualified to work on multiple activities, and therefore may perform different types of work during a shift.

In a multi-skill environment, an agent might be available for multiple activities during any timestep. That agent can be scheduled to work for an activity for only part of a time interval, and only the fraction of the time period during which she or he works is counted.

Because of this, the value for staffing can be expressed as a fraction. Consider the following example of a 15-minute timestep:

Example: An agent is scheduled to work on Activity A for 10 minutes and for 5 minutes on Activity B. She is counted as 2/3 (or .667) of an agent for Activity A, and as 1/3 (or .333) of an agent for Activity B.

Enabling Multi-Skill Support

To enable multi-skill support, follow these steps:

1. Open Genesys Administrator.
2. Open the **WFM Server Application**.
3. From the **Options** tab, open the section **[ScheduleService]**.
4. Create a new option named SplitMS and set the value to `true`. (See the figure Enable Multi-Skill Support.)

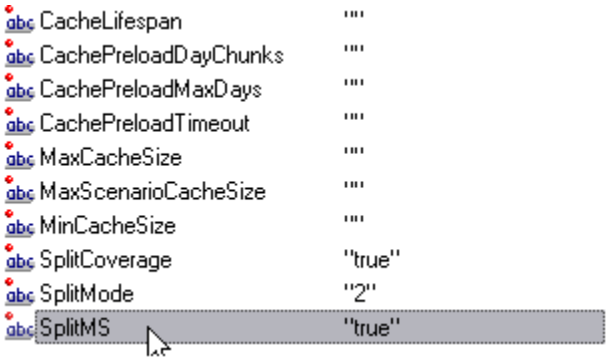


Figure: Enable Multi-Skill Support

Calculating Multi-Skill Equivalents

Consider the comparison of Single Skill Equivalents (SSE) to Multi-Skill Equivalents (MSE) in the figure Comparing Multi-Skill and Single-Skill Equivalents.

The Multi-Skilled forecasting algorithm takes into account how many agents (with their various skill sets) could be available to work on each Activity, as well as how the occupancy of an average agent would be divided among this Activity and the other Activities on which the agent could work.

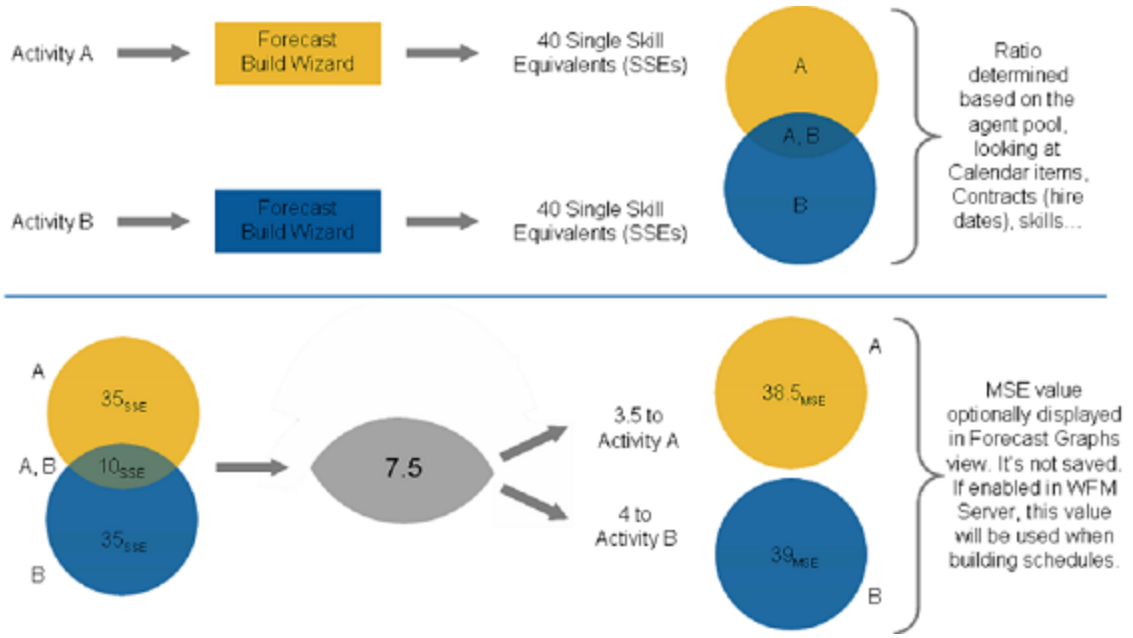


Figure: Comparing Multi-Skill and Single-Skill Equivalents

When building a schedule, WFM can optionally use the staffing forecast in Multi-Skilled Equivalents (MSE) while taking into account agents that the schedule is being built for, as well as agents for whom schedules have already been built.

If the **Multi-Skilled Equivalents** option is set, in the **Performance** views/reports and **Schedule** views/reports, coverage for an Activity is based on MSEs, calculated from actual agent schedules. See the figure Multi-Skill Gains, which depicts multi-skill gains.

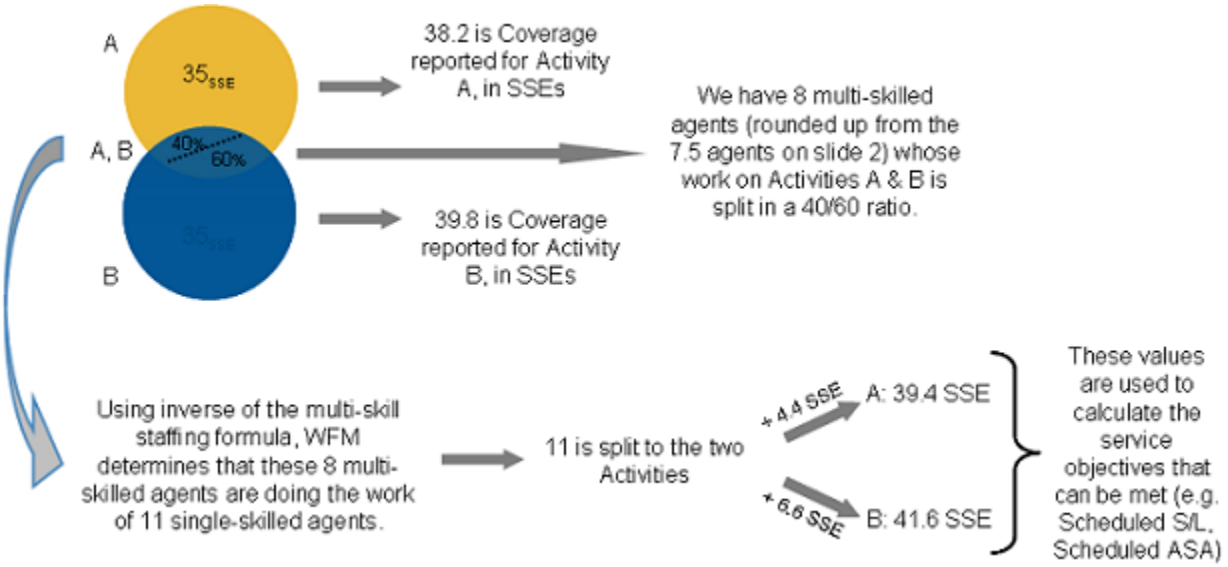


Figure: Multi-Skill Gains

Schedule Validation Errors and Warnings

When Workforce Management (WFM) is building or validating schedules, you might see one or more of the following Error or Warning messages. The descriptions in this topic will help you to understand what causes these messages to occur and (in some cases) what you can do to resolve them.

When WFM generates these messages, the variable text shown in braces { } is replaced with the actual value.

Error Messages

Error[4]	Schedule build was canceled by user.
Error[6]	Wrong scheduling start date {A} and/or end date {B}.
Error[8]	0 is not a valid value for minimal daily workload in contract {A}.
Error[9]	The minimum/maximum constraints for contract {A} make it impossible to schedule.
Error[10]	The minimum weekly workload cannot be reached for contract {A}.
Error[11]	The minimum planning period workload cannot be reached for contract {A}.
Error[12]	The specified day {A} is not in the schedule scenario.
Error[13]	An unknown activity {B} on day {A} was found. WFM cannot update the staffing requirement.
Error[15]	The staffing requirement for activity {B} on day {A} has an invalid number of elements.
Error[16]	An incorrect contract index {A} was specified for the agent {B}.
Error[21]	Invalid agent index: {A}.
Error[28]	Invalid shift index: {A}.
Error[29]	Invalid meal index: {A}.
Error[32]	An invalid day-of-the-week index {A} was specified for shift {B}.
Error[34]	Too many activities configured: {A} is the maximum number of activities. Configured {B}.
Error[36]	WFM cannot overwrite shift for agent {A} on {B}. Not enough availability to schedule the shift.
Error[38]	Invalid open hours {A} - {B} for activity {C}.
Error[43]	Too many shifts configured: {A} is the maximum

	number of shifts.
Error[45]	Invalid availability time window {A} - {B} on {D} for agent {C}.
Error[46]	Rescheduling data of agent {A} on day {B} is inconsistent with the current meal definition.
Error[47]	Internal error. The number of time windows for a meeting between dates {A} and {B} is incorrect.
Error[50]	Weekly paid hours constraint for agent {A} has invalid dates {B} and {C}.
Error[52]	Invalid break index: {A}
Error[53]	Invalid activity index: {A}
Error[55]	Activity {A} already belongs to activity set {B} and therefore, cannot be included in activity set {C}.
Error[56]	Invalid break sequence {A}: All alternatives of the combine list must share the same unpaid length.
Error[58]	Invalid task sequence {A}: Mismatched start/end anchors.
Error[60]	No agent has been defined: solve aborted.
Error[62]	The shortest shift item sequence for shift {A} has a minimum duration of {B}. A sequence, covering minimum shift duration, is required.
Error[63]	The shift {A} item sequence for the longer shift contains less unpaid time ({B} minutes) than the shorter sequence.
Error[64]	The added item sequence number is incorrect. Specified {A} when {B} is expected.
Error[65]	Schedule build was canceled due to scheduling error from another site in the scenario.
Error[66]	Internal scheduling engine error.
Error[1000]	The schedule scenario failed to load. Scenario ID={A}
Error[1001]	The loaded schedule scenario does not contain the required site. Scenario ID={A}, site ID={B}.
Error[1002]	The specified schedule interval is {A} days. At least one week is required.
Error[1003]	The specified schedule interval is {A} days long. The schedule period cannot be longer than 6 weeks.
Error[1004]	The specified schedule interval is {A} days long. The schedule period must contain the exact number of weeks.
Error[1005]	An invalid long period type={A} is detected (more than 6 weeks or less than 0) for site {B}.
Error[1006]	WFM Server returned 0 sites.
Error[1007]	Site to be scheduled was not found in database. Site ID={A}.

Error[1008]	Activities not found in the database for site {B}.
Error[1009]	Activity {B} belongs to unknown activity set. Set ID={A}.
Error[1011]	The task anchor value {A} is incorrect for the sequence {B} task index={A}.
Error[1012]	An unknown break ID={A} was assigned to shift {B}.
Error[1013]	An unknown meal ID={A} was assigned to shift {B}.
Error[1014]	Meal ID={A} is in the combined list but was not assigned to shift {B}.
Error[1015]	Break ID={A} is in the combined list but was not assigned to shift {B}.
Error[1016]	WFM cannot create the schedule. The schedule scenario or configuration is not valid.
Error[1017]	The synchronized work start threshold value {A} is out of range [-1, 6]—for site {B}.
Error[1018]	WFM cannot schedule the task sequences in single-skill scheduling mode. Use multi-skill scheduling instead.
Error[1020]	An unknown calendar item Exception type ID={A} was assigned to agent {B} on day {C}.
Error[1021]	There are no activities configured for scheduling. Check schedule scenario and configuration.
Error[1022]	There are no contracts configured for scheduling. Check schedule scenario and configuration.
Error[1023]	There are no shifts configured for scheduling. Check schedule scenario and configuration.
Error[1024]	There are no agents configured for scheduling. Check schedule scenario and configuration.
Error[1025]	A long period start date is not defined for site {A}.
Error[1035]	There are no daily agent schedules available for schedule re-optimization.
Error[1036]	There are no profiles configured for scheduling for site {A}. Check the schedule scenario and configuration.
Error[1037]	The estimated number of profile agents is zero.
Error[1038]	The time zone with specified ID={A} was not found.
Error[1039]	There are sites from different business units specified in the scheduling request.
Error[1040]	Internal error. WFM cannot load the configuration of some of sites in the schedule request.
Error[1041]	Internal error. Some sites in the schedule request do not exist in the schedule scenario.
Error[1066]	Internal error.

Error[1068]	WFM Builder failed to save the schedule.
Error[1069]	WFM Server communication problem: {A}.
Error[1070]	WFM Server communication problem.
Error[1071]	Configuration Server communication problem: {A}.
Error[1072]	There is more than one WFM Server specified in the WFM Builder connections.
Error[1073]	WFM Server is not specified in the application connections.
Error[1074]	WFM failed to retrieve WFM Server {A} information.
Error[1075]	WFM failed to retrieve business unit ID={A}.

Warning Messages

Warning[4]	More days off have been assigned for agent {A} on week with first day {B} than are permitted by the agent's constraints. The user has assigned more days off to an agent in the specified week than are permitted by the agent's constraints. Contract weekend and/or day-off rules limit the number of days off allowed.
Warning[8]	No shifts match the constraints for agent {A} on day {B}; agent assigned a day off. Scheduler is forced to schedule a day off for {A} agent because there are no shifts matching the agent's contract constraints for this day {B}. If a shift is configured to be available on this day, then this warning signals a bad configuration of either the shift or an associated meal. Verify that the duration for the shift and meal are valid.
Warning[16]	The specified starting timestep value {A} for meal {B} is invalid. It must be positive number greater than 0.
Warning[28]	Forced day off for agent {A} on day {B} lowered weekly/monthly goals by {C} hours. Conflicting contract constraints will force the agent {A} to have the day off on {B}. This is possibly due to a combination of min/max/consecutive day-off and weekend day-off rules. It can also be caused by shift rejections.
Warning[31]	Failed to satisfy constraint of type {A} for agent {B}. Scheduler was unable to assign the schedule items for the agent required by the specified constraint. Usually, this is due to a conflicting combination of constraints.
Warning[34]	The start-step constraint {A} is not satisfied for

	initial values of shift {B}. Check that the shift start time is compatible with the timestep requested.
Warning[43]	Planning period work constraint for the dates {A} - {B} for agent {C} cannot be satisfied. The workload constraints for this agent cannot be fulfilled for the specified days due to conflicts in Planning Period constraints settings.
Warning[44]	The specified agent's {A} schedule cannot be given to any other agent, because it contains fixed elements that cannot be exchanged.
Warning[49]	A part-day paid exception {C} request that was violating shift settings was removed, so that Scheduler could assign agent {B} a shift on {A}.
Warning[50]	A part-day paid time-off {C} request that was violating shift settings was removed, so that Scheduler could assign agent {B} a shift on {A}.
Warning[53]	There are no shifts of {A} contract that can match preferences on {B}.
Warning[55]	Meal {A} does not fit in to shift {B}. The shift cannot be scheduled.
Warning[56]	The time-window for day {A} of agent {B} is reduced to [{C},{D}] to match activity open hours.
Warning[57]	the break and meal sequence for [{A},{B}] duration of shift {C} was ignored as infeasible. Sequence: {D}
Warning[61]	The planning period paid hours limit granted preferences to {A} for agent {B}. Decreasing quotas to {C}.
Warning[63]	Single-skill mode cannot be used when task sequences are defined. Changing to multi-skill mode.
Warning[64]	The {A} constraint for agent {D} cannot be satisfied for the specified date range {B}-{C}. The specified constraint for this agent cannot be satisfied for the specified date range.
Warning[65]	Some breaks could not be scheduled for agent {A} on {B}.
Warning[66]	The maximum shift item distance constraint could not be satisfied for agent {A} on {B}.
Warning[67]	The minimum shift item distance constraint could not be satisfied for agent {A} on {B}.
Warning[68]	Shift items could not be scheduled at configured time intervals for agent {A} on {B}.
Warning[69]	Team/shared transport shift item synchronization ignored for agent {A} since contract shift item

	synchronization is enabled.
Warning[70]	Shift items could not be synchronized with other agents of the team/shared transport for agent {A} on {B}.
Warning[71]	{A} constraint cannot be satisfied for team/shared transport {D} starting at {B} and ending at {C}.
Warning[77]	Failed to satisfy constraint of type {B} for agent {A} on {C}.
Warning[78]	{A} constraint cannot be satisfied for team/shared transport {B} on {C}.
Warning[79]	{A} constraint cannot be satisfied for team/shared transport {D} with contract {E} starting at {B} and ending at {C}.
Warning[81]	Contracts with different weekend start days were assigned for agent {A} during the scheduling period {B} - {C}.
Warning[82]	Contracts with different maximum consecutive work days were assigned for agent {A}. Value configured on the first day of scenario will be used.
Warning[83]	Contracts with different minimum consecutive work days were assigned for agent {A}. Value configured on the first day of scenario will be used.
Warning[90]	Meeting {A} for agent {B} could not be scheduled.
Warning[91]	Meeting {A} for agent {B} could not be scheduled on {C}.
Warning[92]	Meeting {A} for agent {B} could not be scheduled during {C} - {D}.
Warning[93]	The parameters of multi-site meeting {A} are invalid. The min/max group size cannot be satisfied with current number of agents and number of instances.
Warning[94]	The parameters of the meeting {A} are invalid. The min/max group size cannot be satisfied with current number of agents and number of instances.
Warning[95]	Multi-site meeting {A} was not scheduled. Could not find enough agents for one instance of the meeting.
Warning[96]	Meeting {A} was not scheduled. Could not find enough agents for one instance of the meeting.
Warning[97]	Multi-site meeting {A} could not be scheduled.
Warning[98]	Meeting {A} could not be scheduled.
Warning[99]	The parameters of multi-site meeting {A} on {B} are invalid. The min/max group size cannot be satisfied with current number of agents and number of instances.
Warning[100]	The parameters of meeting {A} on {B} are invalid. The min/max group size cannot be satisfied with current number of agents and number of instances.

Warning[101]	The parameters of multi-site meeting {A} during {B} - {C} are invalid. The min/max group size cannot be satisfied with current number of agents and number of instances.
Warning[102]	The parameters of meeting {A} during {B} - {C} are invalid. The min/max group size cannot be satisfied with current number of agents and number of instances.
Warning[103]	Multi-site meeting {A} on {B} was not scheduled. Could not find enough agents for one instance of the meeting.
Warning[104]	Meeting {A} on {B} was not scheduled. Could not find enough agents for one instance of the meeting.
Warning[105]	Multi-site meeting {A} on {B} was not scheduled. Could not find enough agents for one instance of the meeting.
Warning[106]	Meeting {A} on {B} was not scheduled. Could not find enough agents for one instance of the meeting.
Warning[107]	Multi-site meeting {A} could not be scheduled on {B}.
Warning[108]	Meeting {A} could not be scheduled on {B}.
Warning[109]	Multi-site meeting {A} could not be scheduled during {B} - {C}.
Warning[110]	Meeting {A} could not be scheduled during {B} - {C}.
Warning[111]	{B} out of {C} instances of multi-site meeting {A} could not be scheduled.
Warning[112]	{B} out of {C} instances of the meeting {A} could not be scheduled.
Warning[1000]	The Calendar item containing invalid shift ID={A} was assigned to agent {B} on day {C}.
Warning[1001]	The Exception will be ignored for overnight shift on day {A} for agent {B}. The strict work time cannot accommodate the partially covered Exception.
Warning[1002]	The schedule start date weekday is not the same as the long period start day. Moving the long period back {A} days.
Warning[1003]	Task sequence {A} was removed either because it contains activity set {B} with no activities, or the assigned activities are not present in schedule scenario.
Warning[1005]	Neither the break and meal are null elements in the break/meal list of shift {A}.
Warning[1006]	Shift {A} task sequence ID={B} was not found.
Warning[1007]	Agent {A} has no assigned contract. The agent will not be scheduled.

Warning[1008]	The contract ID={A} assigned to agent {A} is unknown at site {B}.
Warning[1009]	Agent {A} has an accrual rule ID={B} that is not known to WFM Server.
Warning[1010]	The team ID={A} of agent {B} does not exist at site {C}.
Warning[1012]	Removed activity set {A} with no activities. Activities are either not present in schedule scenario or not configured properly.
Warning[1013]	Removed task sequence {A} ID={B} since it contains invalid activity sets. Check prior warnings for activity set configuration problems.
Warning[1014]	Removed agent {A} with no activities. Activities are either not assigned to this agent, missing in schedule scenario, or not configured properly.
Warning[1015]	The minimum shift {A}'s paid duration is not covered by the combined list. The minimum shift paid time was changed to {B} hours {C} minutes.
Warning[1016]	Task sequence ID={A} was removed from shift {B}. The task sequence may be misconfigured or contain an unavailable activity set.
Warning[1017]	Shift {A} was removed since it has no assigned mandatory task sequences.
Warning[1018]	One or more shifts assigned to contract {A} could not be used due to configuration problems. Not all shifts that were assigned to the contract could be used for scheduling. This warning usually is issued after more detailed shift configuration warnings.
Warning[1019]	Agent {A} will not be scheduled. Scenario activities cannot be used in any of the task sequences in the contract shifts. The Schedule scenario does not contain activities that are required to schedule shifts with mandatory task sequences.
Warning[1020]	Activity sets will be used for scheduling even though task sequences exist in the site. Task sequences exist in the database but are not assigned to the shifts.
Warning[1021]	Contract {A} was removed. Shifts assigned to this contract are not configured properly. The contract has no usable shifts and therefore, is removed from scheduling. Shift configuration problems are described in other warnings.
Warning[1022]	Agent {A} was removed with a contract that was not correctly configured. The contract that was assigned to the agent cannot be used. This warning usually follows Warning[1021].

Warning[1023]	Agent {A}'s schedule was not reoptimized. During Intra-Day scheduling, the agent's schedule for a particular day could not be modified, because the current configuration prevents scheduling of a valid shift on that day.
Warning[1024]	Weekly rotating paid hours {A}:{B} - {A}:{B} for agent {C} on week {C} - {C} are not compatible with the contract on this week.
Warning[1025]	The Calendar item for agent '{A} on the last day of the schedule overlaps the shift on the next day.
Warning[1026]	Profile {A} was removed because it has no activities. Activities are either not assigned to the profile, missing in schedule scenario, or not configured properly.
Warning[1027]	Profile {A} was removed because it contract is incorrectly configured.
Warning[1028]	Profile {A} will not be scheduled. Scenario activities cannot be used in any of the task sequences of the contract shifts.
Warning[1029]	Contract ID={A}, that is assigned to profile {B}, is unknown at site {C}.
Warning[1030]	The understaffing limit could not be reached during profile optimization scheduling.
Warning[1031]	Meeting {A} cannot be scheduled after time zone conversion.
Warning[1032]	Meeting {A} time zone cannot be determined.
Warning[1033]	Meeting {A} cannot be scheduled at site {B} due to an inaccessible Exception type.
Warning[1034]	No activities are available for agent {A} on {B}. The agent is assigned a day off.
Warning[1035]	No contract is assigned for agent {A} on {B}. The agent is assigned a day off.
Warning[1036]	Meeting {A}'s start or end date is not specified. WFM cannot schedule this meeting.

Using Copy and Paste Format for Statistics

This topic contains four examples of the statistics defined in WFM Statistics: Recommended Settings. Use these examples only as generic starting points for your configuration, making the modifications necessary to ensure they function properly within your environment.

These statistics do not include any of the required filters or timeranges; those items are specific to your installation. Add these filters only if they are missing from the relevant section(s) of your configuration.

Using the Copy and Paste Format

All of the statistics in this topic appear in this format:

```
[WFMTotalNumberCallsEntered]
Category=TotalNumber
MainMask=CallEntered
Description=The total number of interactions
Subject=DNAction
Objects=Queue,RoutePoint,GroupQueues
```

You can amend the text within the square brackets (use underscores rather than spaces) and the description line. For example, you could change the above example to this:

```
[Special_Call_Entered_Stat_4_Steve]
Category=TotalNumber
MainMask=CallEntered
Description=This reflects the number of inbound calls received
through a queue
Subject=DNAction
Objects=Queue,RoutePoint,GroupQueues
```

Multimedia Statistics for E-mail Interactions

```
[WFM_Email_Entered]
AggregationType=Total
Category=JavaCategory
Description=The total number of interactions
JavaSubCategory=eServiceInteractionStat.jar:EQR Total Entered
Objects=StagingArea
[WFM_Email_Handle_Time]
Category=TotalTime
MainMask=InteractionHandling
Description=Total time spent handling interactions
```

```
Objects=Agent,GroupAgents,GroupPlaces,Place
Subject=AgentStatus
[WFM_Email_Handled]
Category=TotalNumber
MainMask=InteractionHandling
Description=Total number of interactions handled
Objects=Agent,GroupAgents,GroupPlaces,Place
Subject=DNAction
```

Statistics for Chat Interactions

```
[WFM_Chat_Entered]
AggregationType=Total
Category=JavaCategory
Description=The total number of interactions
JavaSubCategory=eServiceInteractionStat.jar:OMQ Total Entered
Objects=StagingArea
MediaType=chat
[WFM_Chat_Abandoned]
AggregationType=Total
Category=JavaCategory
Description=The total abandoned from queue
JavaSubCategory=eServiceInteractionStat.jar:OMQ Total Abandoned
Objects=StagingArea
MediaType=chat
[WFM_Chat_Average_Speed_Answer]
AggregationType=Total
Category=JavaCategory
Description=Average time taken to answer
JavaSubCategory=eServiceInteractionStat.jar:OMQ Average Waiting Time
Objects=StagingArea
MediaType=chat
[WFM_Chat_Total_Distributed]
AggregationType=Total
Category=JavaCategory
Description=Total Distributed
JavaSubCategory=eServiceInteractionStat.jar:OMQ Total Distributed
Objects=StagingArea
MediaType=chat
[WFM_Chat_Handle_Time]
Category=TotalTime
MainMask=InteractionHandling
Description=Total time spent handling interactions
Objects=Agent,GroupAgents,GroupPlaces,Place
Subject=AgentStatus
[WFM_Chat_Handled]
Category=TotalNumber
MainMask=InteractionHandling
Description=Total number of interactions handled
Objects=Agent,GroupAgents,GroupPlaces,Place
Subject=DNAction
```

Statistics for intelligent Workload Distribution Interactions

```
[WFM_OMedia_Entered]
AggregationType=Total
Category=JavaCategory
Description=The total number of interactions
JavaSubCategory=eServiceInteractionStat.jar:OMQ Total Entered
Objects=StagingArea
MediaType=MediaX
[WFM_OMedia_Abandoned]
AggregationType=Total
Category=JavaCategory
Description=The total abandoned from queue
JavaSubCategory=eServiceInteractionStat.jar:OMQ Total Abandoned
Objects=StagingArea
MediaType=MediaX
[WFM_OMedia_Average_Speed_Answer]
AggregationType=Total
Category=JavaCategory
Description=Average time taken to answer
JavaSubCategory=eServiceInteractionStat.jar:OMQ Average Waiting Time
Objects=StagingArea
MediaType=MediaX
[WFM_OMedia_Total_Distributed]
AggregationType=Total
Category=JavaCategory
Description=Total Distributed
JavaSubCategory=eServiceInteractionStat.jar:OMQ Total Distributed
Objects=StagingArea
MediaType=MediaX
[WFM_OMedia_Handle_Time]
Category=TotalTime
MainMask=InteractionHandling
Description=Total time spent handling interactions
Objects=Agent,GroupAgents,GroupPlaces,Place
Subject=AgentStatus
[WFM_OMedia_Handled]
Category=TotalNumber
MainMask=InteractionHandling
Description=Total number of interactions handled
Objects=Agent,GroupAgents,GroupPlaces,Place
Subject=DNAction
```

Statistics for Voice Interactions

```
[WFMTotalNumberCallsEntered]
```

```
Category=TotalNumber
MainMask=CallEntered
Subject=DNAction
Objects=Queue,RoutePoint,GroupQueues
[WFMTotalNumberCallsAband]
Category=TotalNumber
MainMask=CallAbandoned, CallAbandonedFromRinging
Subject=DNAction
Objects=Queue,RoutePoint,GroupQueues
[WFMTotalNumberCallsDistrib]
Category=TotalNumber
MainMask=CallDistributed
Subject=DNAction
Objects=Queue,RoutePoint,GroupQueues
[WFMServiceFactor1]
Category=ServiceFactor1
MainMask=CallAnswered,CallAbandoned,CallAbandonedFromRinging
Subject=DNAction
Objects=Queue, RoutePoint, GroupQueues
[WFMAverTimeBeforeAnswering]
Category=AverageTime
MainMask=CallAnswered
RelMask=CallAnswered
Subject=DNAction
Objects=Queue, RoutePoint, GroupQueues
[WFMTotalHandleTime]
Category=TotalAdjustedTime
MainMask=CallInbound, CallOutbound, AfterCallWork
Subject=DNAction
Objects=Agent, Place,GroupAgents,GroupPlaces
[WFMTotalNumberCallsHandled]
Category=TotalNumber
MainMask=CallInbound,CallOutbound
Subject=DNAction
Objects=Agent,Place,GroupAgents,GroupPlaces
```

MS SQL Database Replication

This topic contains information that will help you to replicate and maintain your MS SQL database for your Workforce Management deployment, based on the assumption that there is an existing single database instance.

Before you begin replicating the database, ensure that the existing instance is updated to the latest version. For new WFM installations, create a database as described in Create Your WFM Database.

System Requirements

The replication solution requires MS SQL Server 2008 R2 Enterprise Edition server.

Setting Up the Database Replication

There are two ways to set up the replication: copying during replication and copying before replication.

Copying Data During Replication

Purpose: To create a copy of the WFM database during replication.
Prerequisite: Your original WFM database has been updated to the latest WFM Database version (if it is not a new installation of WFM).

Start of Procedure

1. Use the WFM Backup-Restore Utility (BRU) to backup the original database.
2. Create new database instances in all locations; On each instance, run the BRU to create the WFM table structure. (In this case, the original WFM database is not used.)
3. Set up replication:
    a. Enable distribution on all servers manually, or by using a script named `1 Before Replication. Enable Distribution - run on all servers.sql`, that is provided by the BRU in the installation directory `\scripts\`.
    b. Create a Publication on one Database Server manually, or by using the script named `2 Before Replication. Create Publication - run on one server only.sql`, that is provided by the BRU in the installation directory \scripts\.
    c. Make the Publication *peer-to-peer* manually, or by using the script named `3 Before Replication. Enable Peer-To-Peer Replication - run on one server only.sql`, that is provided by the BRU in the installation directory `\scripts\`.

> **Important**
>
> For the scripts listed in steps 3a, 3b, and 3c, specific Database Server names—and in some cases, other information, such as database name, files location, publication name, user login, and password—must be entered into the script before running it.

d. Configure the ranges for the primary key values. Identity value ranges must be assigned for replicated tables which use auto-incremented identify fields. WFM Backup-Restore Utility provides a script named `4 Reseed. Change Identify Field Ranges - run on all servers.sql`, that you can find in the installation directory `\scripts\`.

> **Important**
>
> The identity ranges on each database instance must be unique and values in the script must be modified manually, based on the number of database instances used.

5. Use the Backup-Restore Utility to restore the WFM database backup (from Step 1 above) to any single database instance.

   Restored data is synchronized across all locations by MSSQL Server replication.

End of Procedure

Copying Data Before Replication

Purpose: To create a copy of the WFM database before replication.
Prerequisite: Your original WFM database has been updated to the latest WFM Database version (if it is not a new installation of WFM).

Start of Procedure

1. Back up your WFM database, usingBRU backup or MSSQL backup tools.
2. Create new additional database instances, if needed. (In this case, the original WFM database is not used.)
3. Create and restore the database on each new instance using WFM Backup-Restore Utility or restore the MSSQL backup from Step 1.
4. Set up replication:
   a. Enable distribution on all servers manually, or by using a script named `1 Before Replication. Enable Distribution - run on all servers.sql`, that is provided by the BRU in the installation directory `\scripts\`.
   b. Create a Publication on one Database Server manually, or by using the script named `2 Before Replication. Create Publication - run on one server only.sql`, that is provided by the BRU in the installation directory \scripts\.
   c. Make the Publication *peer-to-peer* manually, or by using the script named `3 Before Replication. Enable Peer-To-Peer Replication - run on one server only.sql`, that is provided by the

BRU in the installation directory `\scripts\`.

> **Important**
> For the scripts listed in steps 4a, 4b, and 4c, specific Database Server names—and in some cases, other information, such as database name, files location, publication name, user login, and password—must be entered into the script before running it.

d. Configure the ranges for the primary key values. Identity value ranges must be assigned for replicated tables which use auto-incremented identify fields. WFM Backup-Restore Utility provides a script named `4 Reseed. Change Identify Field Ranges - run on all servers.sql`, that you can find in the installation directory `\scripts\`.

> **Important**
> The identity ranges on each database instance must be unique and values in the script must be modified manually, based on the number of database instances used.

End of Procedure

Maintaining Database Replication

After you have backed up your database, you can use the procedure and other information in this section to restore it.

Restoring Replicated Databases from Backup

Purpose: To restore a back up of the replicated database.

Start of Procedure

1. Verify that none of the database instances are in use.
2. For MSSQL backups, use Microsoft tools and documentation to restore the backup of the replicated database.
3. For WFM Backup-Restore Utility backups, use the Database Restore functionality on a single instance of the database.
   All data will be replicated and synchronized across the instances.

End of Procedure

Replication Issues

Due to unforeseen usage scenarios or operational mistakes in access rights configuration, there

might be occasional data collisions caused by replication. Solve these collisions on a case-by-case basis, using MSSQL conflict resolution tools.

Application-Level Access Limitations

Genesys recommends that you deploy the WFM application so that all actively running WFM Server and WFM Data Aggregator components access the same database instance. (*Actively running* means that these components are updating the database.) You could set up WFM Server instances to access and write to different instances of database; If you do, Genesys recommends certain applications and user restrictions (see Site Access Rights and Module Access Rights.

Using certain deployment and access limitations ensures that multiple database instances are not modifying the same data at the same time. The MSSQL database replication does not resolve data collisions caused by complex simultaneous modifications of the same data records on different database instances. To prevent collisions on the application level, assign access rights and restrict certain functionality so that it is performed only on the *main* database instance.

Site Access Rights

When you are configuring the system you must decide which site will be configured by using WFM Web, and on which database instance.

For users who connect to that instance and want to change the data by using WFM Web, you must limit access to only those sites that are to be modified in that particular database instance.

Module Access Rights

WFM Web contains functionality that involves the modification of data for multiple sites, or data that is not related to a site object and therefore, cannot be protected by site access rights. There are also subsystems which provide access to data that is also modified by WFM Server through the WFM Web interface. Accessibility to this functionality must be limited only to users who are connecting to the main database by using WFM Server.

The following list of subsystems, menu items, or functions must be restricted in local database instances, and be available only to users who are connecting to the main database server:

- User Security—Security option `Configuration` > `Users` and `Configuration` > `Roles`
- Skills—Security option `Configuration` > `Organization` > `Skills`
- Time Zones—Security option `Configuration` > `Organization` > `Time Zones`
- Organization/BU, Sites—Enable only the security option `Configuration` > `Organization` > `Add/Edit/Delete`
- Organization Teams—These can be accessible on remote sites, but only in read only mode. Enable only the security option `Configuration` > `Organization` > `Read`
- Schedule State Groups—Enable only the security option `Configuration` > `Schedule State Groups`

Important

On the Master database, users must enable both options: `Modules` > `Configuration` > `Organization` > Read and `Modules` > `Configuration` > `Organization` > `Add/Edit/Delete`. This setting enables users to perform any action on BUs, Sites and Teams.

In Remote locations, users must enable only `Modules` > `Configuration` > `Organization` > Read. This setting enables users to move agents between teams, but they cannot delete or create a BU, site or team.

Disable the `Modules` > `Configuration` > `Organization` > `Add/Edit/Delete` option for users who connect to and work on remote locations or databases.

Recommended sizing for WFM sites

For optimal performance, it is recommended to keep the size of each workforce management (WFM) site to 5,000 agents or less. It is more favorable to configure an overall environment consisting of multiple smaller sites rather than a single or few larger sites. Keeping site size to 5,000 agents or less helps ensure WFM continues to operate at optimal performance, even during the peak periods.

In WFM, site is a modular entity used as a whole by WFM components for the majority of operations. In many cases site is also a scalability entity, for example Data Aggregator operates over WFM site and it’s possible to assign dedicated Data Aggregators to different sites for scalability and performance leveling purpose. However it’s not possible to assign multiple Data Aggregators to operate over a single site.

When supervisors operate over multiple sites (for example, when supervisors select multiple Sites in the UI for time-off approvals), the performance improvement from using smaller sites is still present. This is because each time-off request during granting will evaluate against the limits of its site objects, which for a configuration consisting of four sites will be four different objects, each with a smaller number of calculations since each site will have fewer agents and activities.

Querying several smaller sites is cheaper from a WFM server and database management system (DBMS) communications perspective. For instance, building a schedule for 20,000 agents in one go will be more resource-consuming, longer, and heavier task than doing such a calculation for four sites each with 5,000 agents.