![Genesys logo]

Orchestration Server Deployment Guide

General Deployment

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General Deployment

This topic contains general information for the deployment of your Orchestration Server (ORS). In addition, you may have to complete additional configuration and installation steps specific to your Orchestration Server and devices.

Note: You must read the Framework 8.1 Deployment Guide before proceeding with this Orchestration Server guide. That document contains information about the Genesys software you must deploy before deploying Orchestration server.

Prerequisites

Orchestration server has a number of prerequisites for deployment. Read through this section before deploying your Orchestration Server.

Framework Components

You can only configure ORS after you have deployed the Configuration Layer of Management Framework as described in the Management Layer User's Guide. This layer contains DB Server, Configuration Server, Configuration Manager, and, at your option, Deployment Wizards. If you intend to monitor or control ORS through the Management Layer, you must also install and configure components of this Framework layer, such as Local Control Agent (LCA), Message Server, Solution Control Server (SCS), and Solution Control Interface (SCI), before deploying ORS. Refer to the Framework 8.1 Deployment Guide for information about, and deployment instructions for, these Framework components.

When deploying ORS 8.1.3 or later, Local Control Agent and Solution Control Server version 8.1.2 or later are required.

Orchestration Server and Local Control Agent

To monitor the status of Orchestration Server through the Management Layer, you must load an instance of Local Control Agent (LCA) on every host running Orchestration Server components. Without LCA, Management Layer cannot monitor the status of any of these components.

Persistent Storage

Determine whether you will use persistent storage (Apache Cassandra). If you chose to do so, then installing Cassandra should be performed as the first step before you deploy ORS. See the Cassandra Installation/Configuration Guide.

Supported Platforms

For the list of operating systems and database systems supported in Genesys releases 8.x. refer to the Genesys System-Level Guides, such as *Supported Operating Environment Reference Guide* and

Interoperability Guide on the Genesys documentation website at docs.genesys.com.

Task Summary: Prerequisites for ORS Deployment

Objective	Related Procedures and Actions
Deploy Configuration Layer and ensure that Configuration Manager is running.	See the Framework 8.1 Deployment Guide for details.
Deploy Network objects (such as `Host` objects).	See the Framework 8.1 Deployment Guide for details.
Deploy the Management Layer.	See the **Framework 8.1 Deployment Guide** for details. Also see the Management Layer User's Guide.
Deploy Local Control Agent on every host where Orchestration Server components to be running.	See the Framework 8.1 Deployment Guide for details. Also see the Management Layer User's Guide.
Deploy persistent storage.	See the Cassandra Installation and Configuration Guide.

About Configuration Options

Configuring Orchestration Server is not a one-time operation. It is something you do at the time of installation and then in an ongoing way to ensure the continued optimal performance of your software. You must enter values for Orchestration Server configuration options on the Options tab of your Orchestration Server Application object. The instructions for configuring and installing Orchestration Server that you see here are only the most rudimentary parts of the process. You must refer extensively to the configuration options section of this document.

Familiarize yourself with the options. You will want to adjust them to accommodate your production environment and the business rules that you want implemented.

Deployment Tasks

You can configure ORS entirely in Configuration Manager or in Genesys Administrator. This chapter describes ORS configuration using Configuration Manager.

The table below presents a high-level summary of ORS deployment tasks.

Task	Related Action or Procedure
In Configuration Manager, import the `Application` Template for ORS. The file name is `OR_Server_813.apd`.	If you need help with this task, consult the Configuration Manager Help available on the Management Framework page. See Configuration Database Objects > Environment > Application Templates.
Create the ORS `Application` object. Configure **Server Info** and **Tenants** tabs.	Configure the **Server Info** tab: • **Host**: Select name of the `Host` where the ORS Application will be running.

	• **Port**: Enter the available Listening Port of ORS. Configure **http port**: • **Port ID**: http • **Communication port**: Enter any available port. • **Connection protocol**: select http. Configure the **Tenants** tab: Set up the list of Tenants that ORS works with. See the section on Creating the ORS Application object.
Create a connection for the ORS Application object to the following servers: • T-Server(s) • Universal Routing Server • Interaction Server (if needed for multimedia)	Use the **Connection** tab of the Application object to set up connections to other servers. See Creating the ORS Application object.
Configure the ORS Application to work with persistence storage.	Go to the Orchestration Server Application object > **Options** tab > persistence section: cassandra-listenport: Set to the value of Cassandra port. cassandra-nodes: Enter semi-colon separated list of host names of Cassandra nodes in cluster. cassandra-keyspace-name: Specify the name of Cassandra keyspace. cassandra-schema-version: Enter Cassandra schema version. cassandra-strategy-class: Set to SimpleStrategy if Cassandra is deployed as a single cluster, Set to NetworkTopologyStrategy in the case of Data Centers Cassandra cluster deployment. cassandra-strategy-options: Set the replication factor for a given keyspace. Examples: If SimpleStrategy: cassandra-strategy-options = replication_factor:2 If NetworkTopologyStrategy: cassandra-strategy-options = DC1:2;DC2:3|
Configure ORS cluster.	See Clustering.
Manually loading an SCXML application on objects other than ORS.	See the following: Manually Loading an SCXML application on a DN. Manually Loading an SCXML Application on an Enhanced Routing Script object. Configuring the ApplicationParams Section of an Enhanced Routing Script Object.

	Go to the Orchestration Server Application object, **Options** tab, `orchestration` section:
Configure the ORS Application to work with multimedia interactions (if needed).	`mcr-pull-by-this-node`: Set to `true` if the ORS Application should work with multimedia interactions.
	Define the Orchestration default interaction queue as described below.
	Also see:
	Configuring eServices Application with Type T-Server.
Set a Redundancy type (if needed).	In **Server Info** tab:
	Primary server: **Redundancy** type field, set to `Warm Standby`.
	Backup server: select the backup server application
	Backup server: **Redundancy type** field, set to `Warm Standby`
	See High Availability.
Add the ORS Application into the ORS cluster.	See Configuring an ORS Cluster.
Install Orchestration Server.	See Installation.
Configure the Universal Routing Server Application.	In the `default` section, configure the following:
	option: `strategy`: Set to `ORS`.
Test your ORS Deployment.	See Debugging SCXML Applications with Composer.

Note: The above ORS Deployment Tasks assumes you have installed/configured any other Genesys components which interact with Orchestration Server, for example, T-Server/SIP Server, Stat Server, Universal Routing Server, Interaction Server (if needed), Composer (if needed), Genesys Administrator (if needed), Genesys Voice Platform (if needed).

Creating the ORS Application Object

1. In Configuration Manager, select **Environment** > **Applications**.

2. Right-click either the `Applications` folder or the subfolder in which you want to create your `Application` object.

3. From the shortcut menu that opens, select **New** > **Application**.

4. In the **Open** dialog box, locate the template that you just imported, and double-click it to open the ORS `Application` object. For Configuration Server versions before 8.0.3, the **Type** field will display `Genesys Generic Server`.

5. Select the **General** tab and change the `Application` name (if desired).

6. Make sure that the **State Enabled** check box is selected.

7. In a multi-tenant environment, select the **Tenants** tab and set up the list of `Tenants` that use ORS. Note: Order matters. The first Tenant added will become the default Tenant for Orchestration Server. Please ensure that the list of Tenants is created in the same order for both Orchestration Server and

Universal Routing Server.

8. Click the **Server Info** tab and select the following: **Host**, select the name of the Host on which ORS resides; **Ports**, select the Listening Port. Note that a default port is created for you automatically in the `Ports` section after you select a Host. Select the port and click **Edit Port** to open the **Port Info** dialog box.

9. Enter an unused port number for the **Communication Port**. For information on this dialog box, see the Port Info Tab topic in the *Framework 8.1 Configuration Manager Help*.

10. For Web Service access to this ORS Application, configure the HTTP port:

    • In the **New Port Info** dialog box, in **Port ID**, enter `http`.

    • For **Communication Port**, enter an unused port number.

    • For **Connection Protocol**, select `http` from the drop-down menu list.

    • Click **OK**.

11. Select the **Start Info** tab and specify the following:

    • **Working Directory**, enter the `Application` location (example: `C:/GCTI/or_server`)

    • **Command Line** enter the name of executable file (example: `orchestration.exe`).

    Note: If there is a space in the ORS `Application` name, you must place quotation marks before and after the name of the ORS `Application`.

    • **Command Line Arguments**, enter the list of arguments to start the `Application` (example: -host <name of Configuration Server host> -port <name of Configuration Server port>-app <name of ORS Application>

    Note: If you are using Configuration Server Proxy and do not use Management Layer, enter the name of Configuration Server proxy for host and the port of the Configuration Server Proxy.

    • **Startup time**, enter the time interval the server should wait until restarting if the server fails.

    • **Shutdown time**, enter the time interval the server takes to shut down.

    • **Auto-Restart setting**, selecting this option causes the server to restart automatically if the server fails.

    • **Primary setting**, selecting this option specifies the server as the primary routing server (unavailable).

12. Select the **Connections** tab and specify all the servers to which ORS must connect

    • T-Server

    • Interaction Server

    • Universal Routing Server

Configuring an ORS Cluster

ORS provides a new configuration `Transaction` of the type `List`, called `ORS` in the `Environment` tenant , to determine the ORS cluster configuration. Each section in the List represents a single Orchestration cluster. Each of the key/value pairs in that section links a specific Orchestration application to a Data Center.

Notes:

- All ORS nodes with the Data Center set to an empty string will belong to one "nameless" Data Center.

- ORS 8.1.3 and later requires creating an ORS `Transaction List` even if the deployment has only one ORS node.

Adding an ORS Application to Cluster and Data Center

Configure each section to represent a single Orchestration cluster, and each of the key/value pairs to link a specific Orchestration Application to a Data Center.

1. In Configuration Manager, select the Tenant `Environment` and navigate to the `Transactions` folder.

2. Right-click inside the `Transactions` window and select **New** > **Transaction** from the shortcut menu.

3. On the **General** tab, enter the following information:

   - **Name:** ORS

   - **Alias:** ORS

   - **Type:** List (pulldown menu)

   - **Recording Period**: 0

   - **State Enabled** should be checked.

4. Click the **Annex** tab to enter the cluster information.Right-click inside the Section window and select **New** from the shortcut menu. Enter the name of your cluster.

5. Double-click on the cluster name.

6. Right-click inside the **Section** window and select **New** from the shortcut menu.

7. In the **Option Name** field, enter the name of an Orchestration application configured as Primary.

8. In the **Option Value** field, enter the name of the Data Center associated with the Orchestration Node.

9. Click **OK** to save.

10. Repeat Steps 7 - 10 for all Orchestration Nodes that belong to this cluster.

11. Click on **Up One Level**.

12. Repeat Steps 5 - 12 for all clusters.

13. Click **OK** to save and exit. An example is shown below.
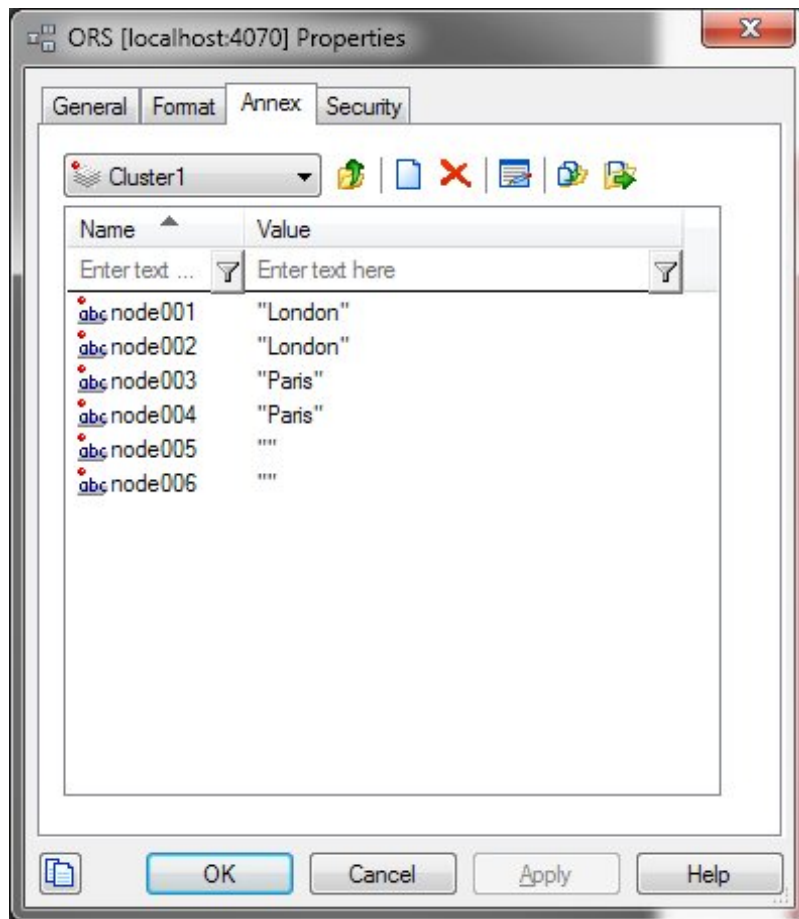
In the above example, `Cluster1` consists of six nodes presented by Primary instances of Orchestration Servers:

- node001 and node002, which are linked to Data Center London.
- node003 and node004, which are linked to Data Center Paris.
- node005 and node006, which are linked to a "nameless" Data Center.

When a Data Center value is left empty, the nodes default to a "nameless" Data Center.

Notes:

- In ORS 8.1.3 and later, work allocation happens automatically, based on the configuration of the cluster described above.

- ORS 8.1.3 and later requires creating an ORS `Transaction List` even the deployment has only one ORS node.

Manually Loading an SCXML Application on a DN

This section describes manually loading an SCXML application on a DN. The following types of DNs can be configured: Extension, ACD Position, Routing Point. See DN Level Options.

1. In Configuration Manager, select the appropriate Tenant folder, Switch name, and DN folder.

2. Open the appropriate DN object.

3. Select the **Annex** tab.

4. Select or add the Orchestration section.

5. Right-click inside the **Options** window and select **New** from the shortcut menu.

6. In the resulting **Edit Option** dialog box, in the **Option Name** field, type application.

7. In the **Option Value** field, type the URL of the SCXML document to load.

8. Refer to the application option description for a full description of this configuration option and its valid values.

9. Click **OK** to save

## Manually Loading an SCXML Application on an Enhanced Routing Script

See Enhanced Routing Script Options.

1. In Configuration Manager, select the appropriate Tenant and navigate to the Scripts folder.

2. Open the appropriate Script object of type Enhanced Routing Script (CfgEnhancedRouting).

3. Select the **Annex** tab.

4. Select or add the Application section.

5. Right-click inside the options window and select **New** from the shortcut menu.

6. In the **Option Value** field, create the url option.

7. Refer to the url option description in the Application section for a full description of this configuration option and its valid values.

8. Click OK to save

In addition, an option can be used to specify a string that represents a parameter value that is to be passed to the Application. The ApplicationParms section contains the values for data elements that can be referred to within the SCXML application. The Enhanced Routing Script object is named as such to identify SCXML applications and Routing applications. Existing IRD-based IRL applications are provisioned as Script objects.

Configuring the ApplicationParms Section of an Enhanced Routing Script Object

1. In Configuration Manager, select the appropriate Tenant and navigate to the `Scripts` folder.

2. Open the appropriate `Script` object of type `Enhanced Routing Script` (`CfgEnhancedRouting`).

3. Select the **Annex** tab.

4. Select or add the `ApplicationParms` section.

5. Right-click inside the options window and select **New** from the shortcut menu.

6. In the resulting **Edit Option** dialog box, in the **Option Name** field, type a name for the `parameter` option.

7. In the **Option Value** field, type the value for the option. **Note:** Refer to the option description for `{Parameter Name}` for a full description of this configuration option its valid values. The table *Parameter Elements for ApplicationParms* provides useful information about parameters that can be added. The figure below shows an example of the use of the ApplicationParms section.
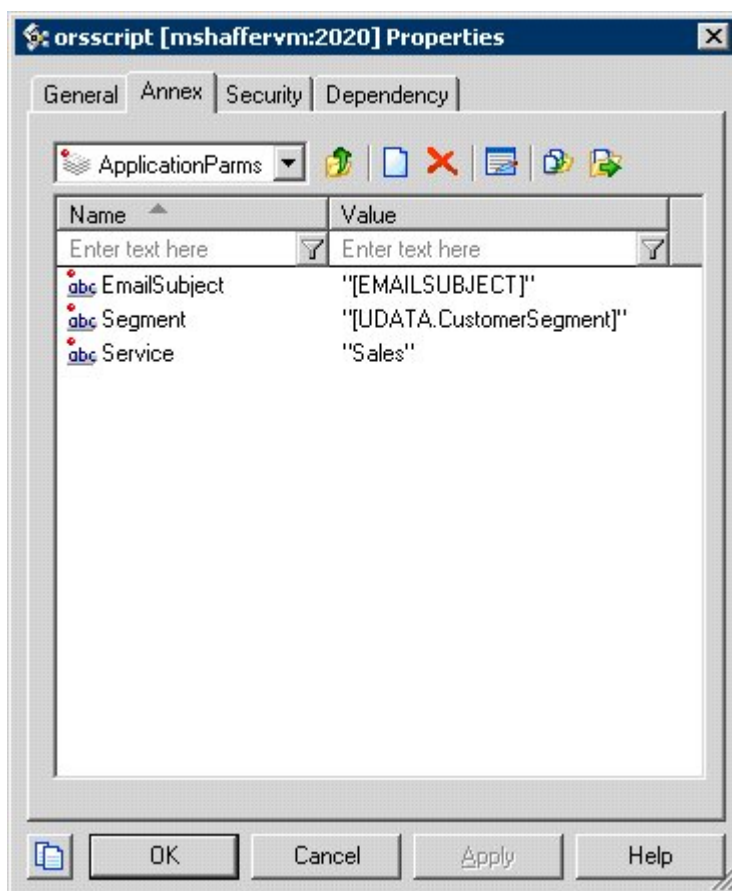

8. Click **OK** to save.

9. Repeat from Step 5 to add another option in this section.

Interacting with eServices

In your Configuration Environment, the ORS Application as a client of Interaction Server, must have two separate connections to each Interaction Server Application. As shown below, Interaction Server is represented by two Application objects in the ORS **Connections** tab.
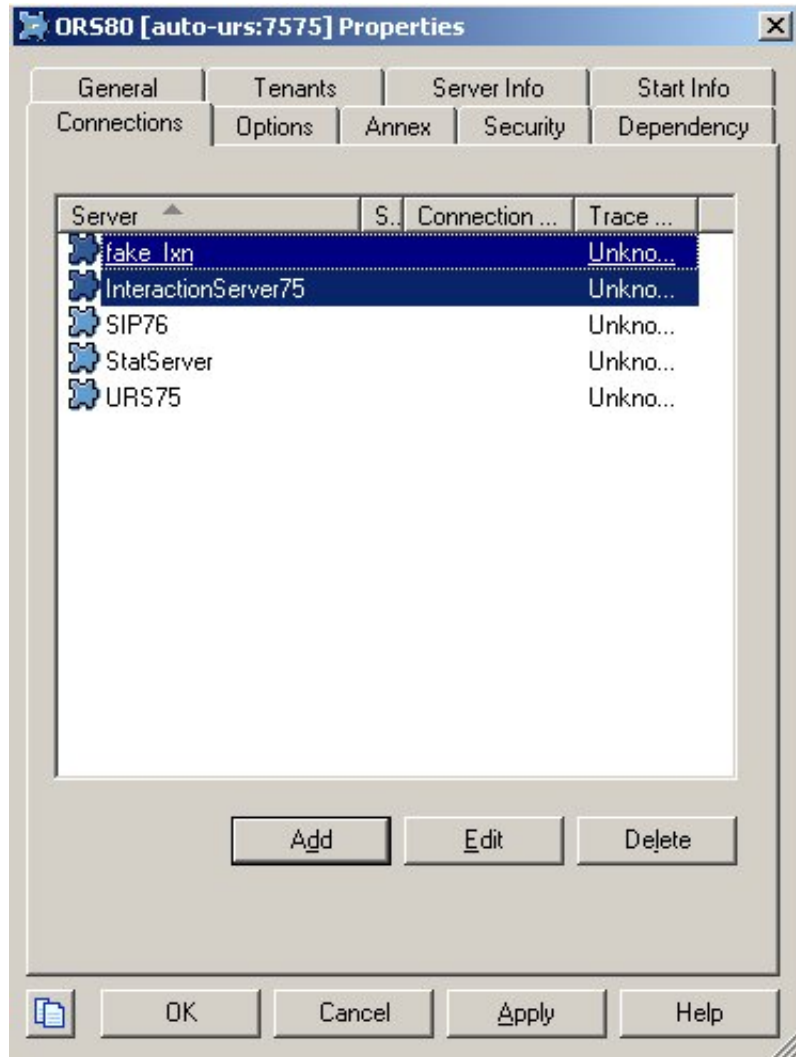

You can think of the first Interaction Server Application object as a server and and the second object as its proxy. You need only install and operate one instance of Interaction Server: the server instance. It is not necessary to install the proxy instance because it does not run as an application.

Configuring eServices Application with Type T-Server

To enable ORS to operate with eServices interactions by configuring two Interaction Server Application objects.

1. Import two templates to create the Interaction Server Application objects.
    •
    • Use an `Interaction Server Application` template for the Application object that you are using for the actual installation.
    • Use a `T-Server Application` template (with its default configuration) for the second `Application` object.
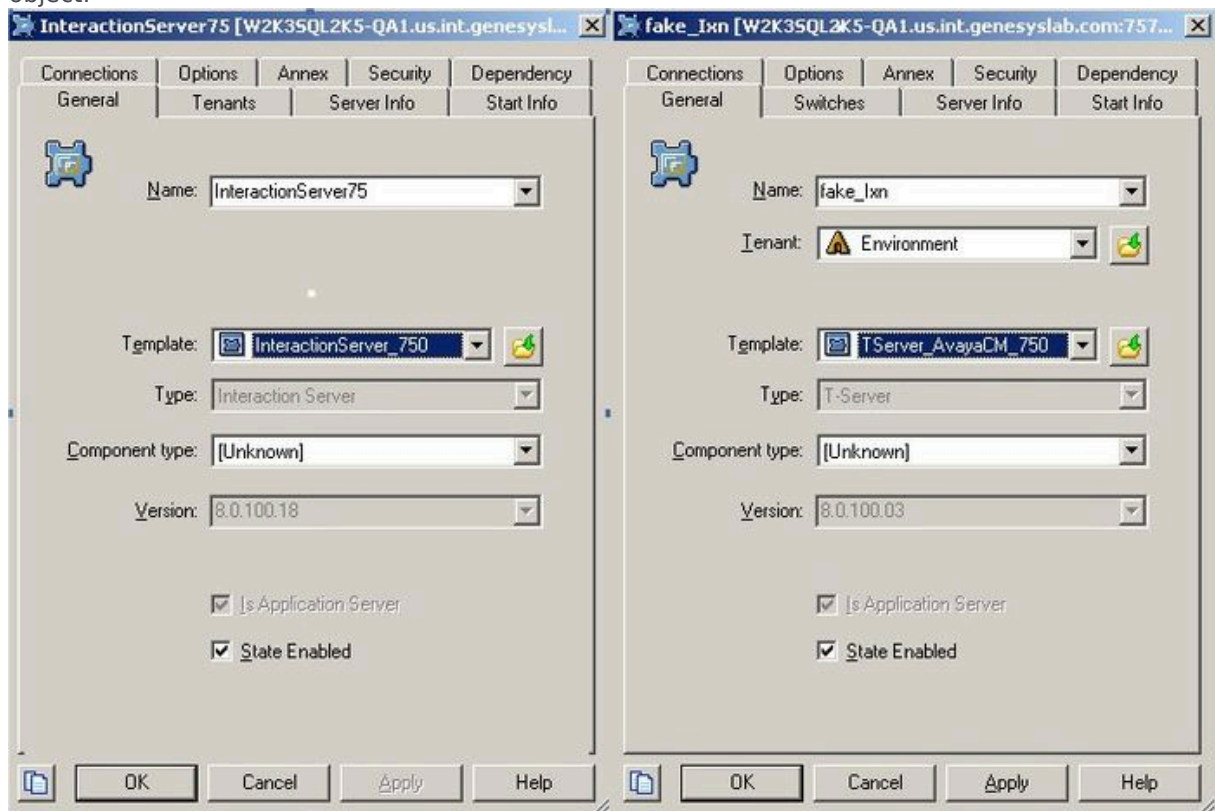
2. Create the Interaction Server Application objects. Ensure that both of the Interaction Server Application objects have different Application object names (see figure above).

3. In the second `Application` object (based on the T-Server template), specify multimedia switch in the **Switches** Tab. Note: The first Interaction Server Application (created by using the `Interaction Server` template) has no association in its properties with a multimedia switch. ORS determines this association, based on the Tenant that is specified in **General** tab of the ORS Application. Alternatively, the second the Interaction Server Application (based on `T-Server` template) must have a multimedia switch configured in its properties, and it must be the same one that is used by the first Interaction Server Application.

4. As shown in the figure below, on the **Server Info** tab of each Interaction Server Application, configure the same port number and ensure both `Applications` exist on the same `Host`.
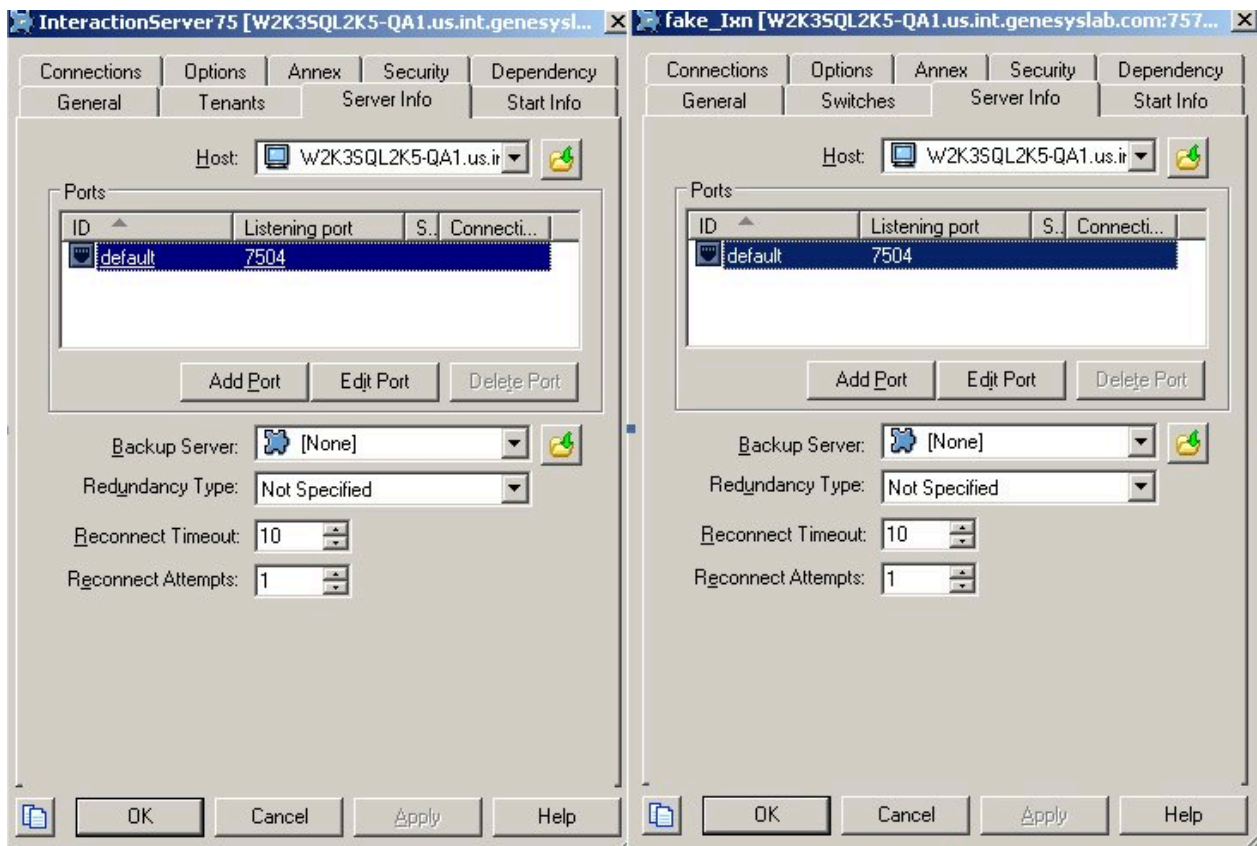
5. Save the configuration.

Orchestration Default Interaction Queue

The name of the Orchestration Server default interaction queue is `orchestration_system`. It should be created manually under each Tenant that contains an eServices deployment that the Orchestration Server works with.

Note: The Orchestration SCXML application should not be provisioned for this interaction queue, either directly (via the `orchestration` section in the Annex) or indirectly (via an Interaction Submitter > Interaction View).

Usage

ORS uses the `orchestration_system` queue as a value of the queue attribute, if that attribute is not explicitly defined in the `<ixn:createmessage>` action. Also, if queue was not explicitly defined in that action, ORS will automatically request the selected media server to send a "created" message and to clean up the interaction created by the media server for that message.

The processing of `<ixn:createmessage>` action in ORS if the queue attribute is not defined is as follows:

1. ORS will send an ESP request to create a message of the specified type to the server, defined in the `<ixn:createmessage>` action, with parameter "Queue" = "orchestration_system".

2. As soon as an ACK response is received with new `InteractionID`, ORS will automatically send an ESP request to send the created message to the server that is defined in the `<ixn:createmessage>` action.

Automatic clean-up of interactions, submitted into interaction queue `orchestration_system`, is as follows:

1. All ORS nodes constantly monitor events for interaction queue `orchestration_system`.

2. Upon processing of `EventInteractionSubmitted`, each node will determine the node that "owns" the interaction by the content of `KVPair` "ORSI:..." in the User Data.

3. The ORS node that owns that interaction will automatically pull it from the `orchestration_system` queue by `InteractionID`.

4. As soon as the interaction is pulled, the ORS node will request Interaction Server to stop processing that interaction and the interaction will be discarded.