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Stat Server User's Guide

Statistical Type Sections

Statistical Type Sections

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A *statistical type* (stat type) is a collection of actions, object types, category, and one subject that all help define the structure of a metric. Other factors may contribute to a metric's definition, such as a time profile, an optional time range, and an optional filter, all described earlier in this chapter.

Each stat type definition consists of:

- A user-defined section name, which represents the name of the stat type.
- Configuration options that apply to that section.

Most stat type configuration options can be classified as one of the following:

- Options for core stat types
- Options for Java stat types

A small number of the options serve both core and Java stat type classifications, but these options have differing permissible values. The table below lists all configuration options that you can use to define stat types. The notation in the third column in the table indicates additional information:

- J indicates that you can specify this option for stat types that are used in conjunction with a Stat Server Java extension.
- **C** indicates that the option applies to Stat Server operating in restricted cluster mode.
- **R** indicates that the option applies for core stat types that Stat Server uses in its regular mode of operation.

Statistics that are based on core stat type definitions are calculated directly within Stat Server. Statistical values of Java stat types, on the other hand, are provided to Stat Server by another Genesys server, such as Interaction Server or Outbound Contact Server.

Stat Type Configuration Options

Option	Description	J/C/R
Objects	Specifies a list of comma- separated Stat Server object types to which statistics apply. The list must consist of objects of the same compatibility group. You must include this option in a stat type definition and specify a value. Default Value: No default value Valid Values: Refer to Stat Server Object Types and Descriptions and Campaign Objects. Changes Take Effect: When Stat Server restarts.	J C R
MainMask	Specifies a list of comma- separated actions (or statuses) that indicate which contact	C R

Option	Description	J/C/R
	center events will be measured. This list comprises members from the following groups:	
	 For Stat Server operating in regular mode: regular DN actions, mediation DN actions, media-channel actions, campaign actions, or statuses. 	
	 For Stat Server operating in restricted cluster mode: regular DN actions, mediation DN actions, or statuses. 	
	This option is mandatory for core stat types and you must specify one or more values.	
	Use the wildcard (*) character to specify all actions; use the logical NOT (~) character to exclude the action it precedes. Use parentheses around each action (or status) that you want Stat Server to exclude from consideration of being filtered. You cannot, however, use parentheses in conjunction with * or ~. For example:	
	MainMask=CallInbound,(CallOutbound)	
	If a filter were applied to a statistic having this MainMask designation, Stat Server would only apply the filter to CallInbound actions. CallOutbound actions would continue to contribute to the tally of this statistic unfiltered. It is also possible to use the * and ~ characters in selective filtering.	
	Default Value: No default value	
	Valid Values: Refer to Stat Server Actions, Object Statuses, and Campaign Operational Actions for a listing and description of these actions and statuses.	
	Changes Take Effect: When Stat Server restarts.	
RelMask	Specifies a list of comma- separated actions (or statuses) that indicate the superset of contact center events against which the listing of actions (or statuses) provided in the main mask will be measured. This list comprises members from one of the following groups:	C R
	For Stat Server operating in	

Option	Description	J/C/R
	regular mode: regular DN actions, mediation DN actions, media-channel actions, campaign actions, or statuses.	
	 For Stat Server operating in restricted cluster mode: regular DN actions, mediation DN actions, or statuses. 	
	Specifying this option is not mandatory, but if you do use it, you must supply one or more values.	
	Use the wildcard (*) character to specify all actions; use the logical NOT (~) character to exclude the action it precedes; and, use parentheses around each mask that you want Stat Server to exclude from consideration of being filtered. You cannot, however, use parentheses in conjunction with * or ~.	
	Default Value: No default value	
	Valid Values: Refer to Stat Server Actions, Object Statuses, and Campaign Operational Actions for a listing and description of these actions and statuses.	
	Changes Take Effect: When Stat Server restarts.	
	Informs Stat Server how to calculate statistics. This section is mandatory for both core and Java stat types. You must supply one and only one value.	
	Default Value: No default value	
	Valid Values:	
Category	 For Stat Server operating in regular or restricted cluster mode, refer to Statistical Categories. 	J C R
	 For Java stat types, this value must be: JavaCategory 	
	Changes Take Effect: When Stat Server restarts.	
JavaSubCategory	The name of the Java subclass that implements statistic calculation.	J
	Default Value: No default value	

Option	Description	J/C/R
	Valid Values: String specified in the following format: jarfile:subclass Changes Take Effect: When Stat Server	
	restarts.	
	Specifies the object type for statistics calculation that, when changed, affects the statistical value. This section is mandatory for core stat types and you must supply one and only one value.	
	Default Value: No default value	
	Valid Values:	
	• DNAction, DNStatus, AgentStatus, GroupStatus (for Stat Server operation in either regular or restricted cluster mode)	
Subject	 PlaceStatus, CampaignAction in addition to those mentioned above (for operation in regular mode only) 	C R
	Refer to Statistical Subjects for a description of these values.	
	Changes Take Effect: When Stat Server restarts.	
	Important The AgentStatus and PlaceStatus objects were synonymous in releases 5.1, 6.0, and 6.1. However, they are independent in 6.5 and later releases.	
<business attribute=""></business>	Specifies one, and only one, business attribute that Stat Server applies as a filter during its computation of statistics. Starting with release 7.1, Stat Server supports only the MediaType business attribute. Specifying this option is not mandatory.	J C R
	Default Value: No default value	
	Valid Values: Non-empty string	
	Changes Take Effect: When Stat Server restarts.	
	The name of the business attribute must	

Option	Description	J/C/R
	be a valid business attribute that is already defined to a particular tenant before Stat Server starts. This name cannot coincide with the reserved names for other Stat Server configuration options, such as Subject , Category , and Filter . Furthermore, the name must not contain special symbols (such as , =, or ;) or spaces.	
ReasonStartOverridesStatusStart	Determines how Stat Server computes current-state statistics. If this option is set to no, Stat Server uses the timestamp that is affiliated with the agent's current status, as in prior releases, to determine statistical values. If this option is set to yes, Stat Server also considers the timestamp that is affiliated with changes in reason code. Default Value: no Valid Values: yes, no Changes Take Effect: When Stat Server restarts. Setting this option to yes enables Stat Server to provide more refined results for those circumstances in which agents designate different reasons for being in the same state. This option is applicable only to the CurrentStateReasons statistical category.	C R
UseSourceTimeStamps	For those metrics that qualify, this option specifies whether Stat Server uses the actual time that events were transmitted to Stat Server (source timestamp) or the time that Stat Server acknowledges receipt of the events (the default behavior) when calculating metric duration. Setting this option to yes enables better consistency with the metrics provided by Interaction Concentrator (ICON) and other downstream Genesys applications of ICON. Qualifying metrics have both of the following characteristics: • [<i>TimeProfileName</i>]= Selection or Growing • [<i>StatTypeDef</i>]	R

Option	Description	J/C/R
	<pre>Subject=DNAction or CampaignAction MainMask=one or more durable and/or retrospective actions (including instantaneous actions that carry an associated duration, like AgentLogin). Category=one that is historical, cumulative, and measures duration, such as TotalTime and LoadBalance.</pre>	
	Stat Server ignores a yes value for this option if the metric fails the qualification test.	
	Default Value: no	
	Changes Take Effect: When Stat Server restarts.	
	Important For Stat Server applications that operate in restricted cluster mode, Stat Server inherently behaves as if this option were set to yes.	
	Refer to Stat Server Timestamps for an extended discussion of Stat Server's use of source timestamps.	
	Enables Stat Server to compute user-specific quantities that are based on attached data communicated by TEvents. The Custom Formulas chapter is dedicated to an extended discussion of this subject. You can define a custom formula as described in the Custom Formulas section below.	
Formula	A special specifier—DistByConnID—affects Stat Server's mechanism of aggregating statistics for the call-related actions that are listed in the main mask. This specifier will be ignored for Stat Server operating in restricted cluster mode. DistByConnID is applicable only to the limited number of statistical categories:	C R
	TotalNumberTotalAdjustedNumber	

Option	Description	J/C/R
	 CurrentNumber TotalTime When the DistByConnID specifier is used in a stat type's definition, Stat Server groups the statistic's actions by connection ID (conID). In general, the contribution of a group of actions differs from that of the sum of contributions of the individual actions in that group—as is the case when DistByConnID is not specified for a statistic. Stat Server's procedure of grouping actions by connection ID applies to the actions specified in MainMask for the objects that are associated with the statistic. The procedure differs for each statistical category and is described as follows: For the TotalNumber/ TotalAdjustedNumber statistic at the end of an action or the start of status respectively: An action or status with a particular ConnID starts. There are no actions or statuses in progress for the same ConnID. No such actions or statuses were in progress for less than one minute ago (1 minute is hard-coded). If the action or status is unrelated to a call, then aggregation functions in the same manner as when DistByConnID is not specified. 	J/C/K
	statistics where filters or time ranges are also used.	

Option	Description	J/C/R
	• For the CurrentNumber statistical category, when either of the following conditions is true, Stat Server increments the statistic:	
	 An action or status with a particular ConnID starts. 	
	 There are no actions or statuses in progress for the same ConnID. 	
	When the action or status with the particular ConnID ends, Stat Server decrements the statistic only if there are no more actions or statuses in progress for that ConnID.	
	If the action is either not call- related or not durable, Stat Server ignores this action in statistic calculations.	
	 For the TotalTime statistical category, the group of actions or statuses in progress for a particular ConnID yields a one-second increment to the statistic for each second of the group's existence. Where the statistic's Subject is other than DNAction, Stat Server immediately reflects this increment in the statistical value. Where Subject=DNAction, Stat Server updates the statistic's value in a stepwise fashion, incrementing the statistic when the oldest action belonging to a group of actions ends. If an action is either not call-related or not durable, Stat Server ignores this action in statistic 	
	Tip If you use the DistByConnID qualifier, you must list it first among the Formula values as such: Formula=DistByConnID,	
	Tip Stat Server recognizes the	

Option	Description	J/C/R
	following aliases for DistByConnID:DistinguishByConnIDDCID	
	Tip Any filtering that might be used in conjunction with a statistic, such as the designation of a MediaType, is applied <i>prior</i> to Stat Server's processing of DistByConnID.	
	 Default Value: No default value 	
	 Valid Values: DCID, <custom formula></custom 	
	Changes Take Effect: When Stat Server restarts.	
	Specifies a description for this stat type. Specifying this option is discretionary; Stat Server ignores any value that you set for this option.	
Description	Default Value: No default value	J C R
	Valid Values: String of fewer than 256 characters	
	Changes Take Effect: When Stat Server restarts.	
<any name="" other=""></any>	Defines a custom parameter (specific option) for the stat-type with Category set to JavaCategory.	

Important

- If you want to change the definition of a stat type during runtime, you must first delete the entire stat-type definition and then re-create it with its new definition. Otherwise, Stat Server will recognize the change only upon restart.
- Stat Server clients may recognize other options for stat types that are not listed in the Table above. For instance, Data Sourcer requires that the **AggregationType** option be specified for statistics derived from a Stat Server Java extension. This information is processed by the client; Stat Server ignores such options.

Classification of Statistical Types

Statistical types can be classified in distinct groups—for example:

- Status-based statistics.
- Interaction-related statistics.

Status-based statistics reflect changes in object statuses and generally contain the word *status* in their names. Interaction-related statistics reflect the telephony or multimedia information applied to specific objects, and characterize the interaction flow passing through the objects. Additional statistics, such as ExpectedWaitTime and LoadBalance statistics, reflect other characteristics of the contact center that are not related to status changes or telephony object information.

In addition, you can classify statistics based on any part of their stat type definition, such as their type of filter, object, and/or subject, or on any other criteria that you specify.

Custom-Value Statistical Types

Custom-value stat types improve business data reporting by enabling you to define statistics that use formulas specific to your needs. Using your own formulas, you can create statistics that calculate average sales revenue per call and the total sales revenue for a specific time interval. The custom-value stat types that you define then become available to client applications that request them.

The format of custom-value stat types is similar to the format of Genesys-provided stat types. Custom-value stat types, however, lack the **RelMask** option and always contain the **Formula** option for which you must supply a value. At the **top** of this page see a description of the predefined statistical type format.

The Table below shows the statistical categories that apply to custom-value statistics.

Historical	Current
• TotalCustomValue	• CurrentCustomValue
 AverageCustomValue 	 CurrentAverageCustomValue
• MinCustomValue	• CurrentMinCustomValue
• MaxCustomValue	• CurrentMaxCustomValue

List of Custom-Value Categories

These categories are described on the Historical CustomValue Categories and Current CustomValue Categories pages.

Example

Suppose that you want to define a custom-value stat type that calculates the average sales revenue generated for every inbound call received by an agent. To accomplish this, create and define a new stat type section in the Stat Server Application object as follows:

- 1. Open the **Options** tab of the Stat Server application.
- 2. Create a new section and name it AverSalesAmountPerInboundCall, for example.
- 3. Within this section, add the **Objects** option and set its value to Agent, Place, GroupAgents, GroupPlaces.
- 4. Add the **Category** option to this section and set its value to AverageCustomValue.
- 5. Add the **MainMask** option and set its value to CallInbound.
- 6. Add the **Subject** option and set its value to DNAction.
- 7. Add the **Formula** option and set its value to GetNumber("Price", 1) * GetSum("Amount"). (Refer to Custom Formula below for an explanation of this formula.)
- 8. Apply the changes.

A configuration-file export of this section, as defined, appears as follows:

```
[AverSalesAmountPerInboundCall]
Objects=Agent, Place, GroupAgents, GroupPlaces
Category=AverageCustomValue
MainMask=CallInbound
Subject=DNAction
Formula=GetNumber("Price", 1) * GetSum("Amount")
```

Custom Formulas

Important

For an evaluation of custom formulas, refer to Custom Formulas.

Note: Custom formulas can be requested with Subject=DNAction only.

Custom formulas define custom values from an action on the basis of attached data. Attached data can be attached to the call by different T-Server clients. An IVR might attach data to a call, for example, by collecting the numbers that callers press on their telephone keypads in response to a prompt. An agent might also attach data to a call using a desktop application. The language used in custom formulas is similar to that used in filters. Each formula is an arithmetic expression built from function calls and numeric constants, consisting of:

- Function calls. Custom formulas can use values from the key-value UserData lists received with TEvents related to Stat Server actions. Access to these values is provided by the functions listed in the Key-Value List Functions in Custom Formulas table below. Note that the list can include more than one pair with the same key.
- Operators, as well as parentheses (for suppressing standard precedence rules).

Operators in Custom Formulas

Operator	Description
+	Addition
-	Subtraction

Operator	Description
1	Division
*	Multiplication

• Numeric constants.

Custom formulas always return a value of type float. The returned value is used in statistical calculations for each category.

Important You can apply filters to custom-formula statistics too.

The Table below lists functions to access key-value UserData lists. Local key-value lists function with data attached at the DN where the action occurs. Global key-value lists function with data attached at all participating DNs during the call.

Important

For momentary actions, the GetGlobalMax function returns the same value as the GetMax function.

Local Functions (Used for Local Key-Value List Calculations)	
Function	Description
GetNumber("Key", Index)	Returns the numeric value of the occurrence of the given key as specified by Index:
	• If Index is -1, the last occurrence is used.
	 If Index is a positive integer n, the nth occurrence is used.
	When Index exceeds the total number of occurrences of the given key in the list, or the key does not occur in the list at all, the returned value is 0 (zero).
	Index is an optional attribute for this property. If not specified, Stat Server substitutes -1 for its value; hence, GetNumber("Key") is equivalent to GetNumber("Key", -1).
GetMax("Key")	Returns the maximum value among all the values of pairs with the given key. When there are no such pairs, θ is returned.
GetMin("Key")	Returns the minimum value among all the values of pairs with the given key. When there are no such pairs, 0 is returned.

Key-Value List Functions in Custom Formulas

Local Functions (Used for Local Kev-Value List Calculations)	
GetSum("Key")	Returns the sum of all the values of pairs with the given key. When there are no such pairs, 0 is returned.
GetAver("Key")	Returns the average of all the values of pairs with the given key. When there are no such pairs, 0 is returned.
Global Functions (Used for Global Key-Value List Calculations)	
GetGlobalNumber("Key", Index)	Returns the numeric value of the occurrence of the given key, attached at any DN, which is a member of the call, as specified by Index:
	• If Index is -1, the last occurrence is used.
	 If Index is a positive integer n, the nth occurrence is used.
	When Index exceeds the total number of occurrences of the given key in the list, or the key does not occur in the list at all, 0 is the returned value.
GetGlobalMax("Key")	Returns the maximum value among all the values of pairs, attached at any DN, which is a member of the call, with the given key. When there are no such pairs, 0 is returned.
GetGlobalMin("Key")	Returns the minimum value among all the values of pairs, attached at any DN, which is a member of the call, with the given key. When there are no such pairs, 0 is returned.
GetGlobalSum("Key")	Returns the sum of all the values of pairs, attached at any DN, which is a member of the call, with the given key. When there are no such pairs, 0 is returned.
GetGlobalAver("Key")	Returns the average of all the values of pairs, attached at any DN, which is a member of the call, with the given key. When there are no such pairs, 0 is returned.

Example

Suppose that you want to multiply 99.99 by the sum of all the values of key-value pairs with key "Amount". To do so, enter the following formula:

99.99 * GetSum("Amount")