Oracle® Communications Tekelec Platform

Communication Agent User's Guide

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Oracle® Communications Communication Agent User's Guide

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Chapter 1

Introduction

Topics:

- *Overview.....7*
- *Scope and Audience.....7*
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The *Communications Agent User's Guide* and Help provide an overview of ComAgent functions and of procedures to use to configure Communication Agent. The contents of this chapter include sections on the scope, audience, and organization of the documentation, and how to contact Oracle for assistance.

Overview

The Communication Agent documentation provides information about Communication Agent (ComAgent) functions, and how to use the Communication Agent GUI and the following procedures to configure ComAgent:.

- Remote Servers
- Connection Groups
- Routed Services

Scope and Audience

The Communication Agent documentation is intended for anyone responsible for configuring and using the Communication Agent application. Users of this manual must have a working knowledge of telecommunications, of network installations, and of the product that is using the ComAgent functions.

Documentation Admonishments

Admonishments are icons and text throughout this manual that alert the reader to assure personal safety, to minimize possible service interruptions, and to warn of the potential for equipment damage.

Table 1: Admonishments

Icon	Description
	Danger: (This icon and text indicate the possibility of *personal injury*.)
	Warning: (This icon and text indicate the possibility of *equipment damage*.)
	Caution: (This icon and text indicate the possibility of *service interruption*.)
	Topple: (This icon and text indicate the possibility of *personal injury* and *equipment damage*.)

Manual Organization

This manual is organized into the following chapters:

- *Introduction* contains general information about the ComAgent help documentation, the organization of this manual, and how to get technical assistance.
- *Communication Agent* describes the features and services of Communication Agent.
- *Configuration* describes how to configure ComAgent, including Remote Servers, Connection Groups, and Routed Services
- *Maintenance* describes how to view status of groups and connections and how to modify connections.

My Oracle Support (MOS)

MOS (*https://support.oracle.com*) is your initial point of contact for all product support and training needs. A representative at Customer Access Support (CAS) can assist you with MOS registration.

Call the CAS main number at **1-800-223-1711** (toll-free in the US), or call the Oracle Support hotline for your local country from the list at *http://www.oracle.com/us/support/contact/index.html*. When calling, make the selections in the sequence shown below on the Support telephone menu:

1. Select **2** for New Service Request
2. Select **3** for Hardware, Networking and Solaris Operating System Support
3. Select **2** for Non-technical issue

You will be connected to a live agent who can assist you with MOS registration and provide Support Identifiers. Simply mention you are a Tekelec Customer new to MOS.

MOS is available 24 hours a day, 7 days a week, 365 days a year.

Emergency Response

In the event of a critical service situation, emergency response is offered by the Customer Access Support (CAS) main number at **1-800-223-1711** (toll-free in the US), or by calling the Oracle Support hotline for your local country from the list at *http://www.oracle.com/us/support/contact/index.html*. The emergency response provides immediate coverage, automatic escalation, and other features to ensure that the critical situation is resolved as rapidly as possible.

A critical situation is defined as a problem with the installed equipment that severely affects service, traffic, or maintenance capabilities, and requires immediate corrective action. Critical situations affect service and/or system operation resulting in one or several of these situations:

- A total system failure that results in loss of all transaction processing capability
- Significant reduction in system capacity or traffic handling capability
- Loss of the system's ability to perform automatic system reconfiguration
- Inability to restart a processor or the system
- Corruption of system databases that requires service affecting corrective actions

- Loss of access for maintenance or recovery operations
- Loss of the system ability to provide any required critical or major trouble notification

Any other problem severely affecting service, capacity/traffic, billing, and maintenance capabilities may be defined as critical by prior discussion and agreement with Oracle.

Related Publications

For information about additional publications that are related to this document, refer to the *Related Publications Reference* document, which is published as a separate document on the Oracle Technology Network (OTN) site. See *Locate Product Documentation on the Oracle Technology Network Site* for more information.

Locate Product Documentation on the Oracle Technology Network Site

Oracle customer documentation is available on the web at the Oracle Technology Network (OTN) site, *http://docs.oracle.com*. You do not have to register to access these documents. Viewing these files requires Adobe Acrobat Reader, which can be downloaded at *www.adobe.com*.

1. Log into the Oracle Technology Network site at *http://docs.oracle.com*.
2. Under **Applications**, click the link for **Communications**.
   The **Oracle Communications Documentation** window opens with Tekelec shown near the top.
3. Click **Oracle Communications Documentation for Tekelec Products**.
4. Navigate to your Product and then the Release Number, and click the **View** link (the **Download** link will retrieve the entire documentation set).
5. To download a file to your location, right-click the PDF link and select **Save Target As**.

Chapter 2

Communication Agent

Topics:

- *Communication Agent Overview.....11*

This section describes the features and services provided by Communication Agent.

Communication Agent Overview

Communication Agent (ComAgent) includes infrastructure features and services for enabling inter-server communication. ComAgent provides the connection management, reliable routing services and software compatibility management, and supports mechanisms for exchange of Stack Events between stacks hosted on different Message Processors (MPs). ComAgent successfully routes messages between layers across processes and servers.

The Communication Agent's Routed Service provides a means by which local applications hosted on an MP can send traffic to applications on other MPs. The Communication Agent's Routed Service will have Connection Groups associated with the service assigned with different priorities. When an application sends events to other servers using a routed service, the Communication Agent chooses a connection in the highest priority group for that routed service and sends the event on that connection. The load-balancing accounts for:

- Connection Group status (an aggregation of member connection status)
- Connection availability status (same as server availability status)
- Connection Egress Congestion Level (CL)
    - Transport Connection Congestion Level (TCL)
    - MP Overload Level (OL) of peer server
- Provider State (State of the service published by the Service Provider)

Note: ComAgent supports one Routed Service and one Connection Group per Routed Service.

The Communication Agent menu also provides you a means to monitor the operational status of High-Availability (HA) Services Sub-Resources. The HA Services enables a server application to load-share its active functions across a set of servers and to notify clients of the placement of its active functions onto servers in a manner that allows the clients to send stack events to the active functions. The set of active functions is called a Resource and each active function instance is called a Sub-Resource.

Chapter 3

Configuration

Topics:

- *Configuration overview.....13*
- *Remote Servers.....13*
- *Connection Groups.....17*
- *Routed Services.....18*

This section describes the procedures used to configure ComAgent.

Configuration overview

The ComAgent establishes the following connections:

- Automatic connections between all MPs having the same parent OAM server pair
- Automatic connections between MPs that have different parent OAM servers, according to application-specific connection configuration rules. The application-specific connection configuration rules are provided with the system and augment the configuration rules built in to ComAgent.
- Manually configured connections between MPs and remote servers

The automatic and configured connections can be grouped together as Connection Groups. Inserting Remote Server entries establishes connections to the servers.

Remote Servers are configured using the **Communication Agent > Configuration > Remote Servers** GUI pages. The most important attribute of a Communication Agent Remote Server is an IP Address that can be reached via a server's Internal Management Interface (IMI). The IP address uniquely identifies the Remote Server and provides the means by which Communication Agent can establish transport connections to/from the Remote Server. The Remote Server attributes include:

- Name
- IP Address
- Connection Mode: {client, server}
- Local Server Group: group of servers that should connect to the Remote Server

Note: Use **Communication Agent** > **Configuration** > **Remote Servers** and **Communication Agent** > **Configuration** > **Connection Group** to perform this configuration.

The **Communication Agent** > **Configuration** pages provide a way for you to create and configure Remote Servers and Connection Groups, and to assign a Connection Group to the services.

By default, Communication Agent has the "Remote Servers" and "Connection Status" screens enabled.

The configuration is performed in the following order:

1. *Remote Servers*
2. *Connection Groups*
3. *Routed Services*

Note: Default configuration of Routed Services has a pre-defined Connection Group associated with it. This screen can be used to manage user-defined Connection Groups associated with the service.

Remote Servers

The **Communication Agent -> Configuration -> Remote Servers** page is used to configure connections to remote servers. A remote server is a server that has a different parent OA&M server-pair relative to a local MP server group. The remote servers will be associated with servers in a local server group. Connections are established between Remote Server and local servers in the specified server group. A Remote Server can be associated with a local server group.

The **Communication Agent -> Configuration -> Remote Servers** pages provide these actions to manage remote servers:

- Click **Insert**.

  The **Communication Agent -> Configuration -> Remote Servers [Insert]** page appears.You can create a Remote Server entry that is accessible from the Remote Server listing.

- Select a Remote Server and click **Edit**.

  The **Communication Agent -> Configuration -> Remote Servers [Edit]** page appears. You can change the mode of operation of a Remote Server.

- Select a Remote Server and click **Delete**.

  You can remove a Remote Server from the Remote Server listing. (A Remote Server cannot be deleted if it is in a Connection Group.)

Remote Servers elements

Table 2: Remote Servers Elements describes elements on the **Communiation Agent > Configuration >Remote Servers** View, Insert, and Edit pages. Data Input Notes apply only to Insert and Edit pages

Table 2: Remote Servers Elements

Name	Description	Data Input Notes
Remote Server Name	The **Remote Server Name** is a unique name within the system. The **Remote Server Name** can be repeated to associate it with multiple Local Server Groups.	Format: Text box. Valid characters are alphabetic (a-z, A-Z), numeric (0-9), and underscore (_). Must contain at least one letter and cannot begin with a number. Range Up to 32 characters
Remote Server IP Address	The IPv4 address of the Remote Server.	Dot notation format (for example: 255.255.255.255).
Remote Server Mode	The Mode in which the Remote Server operates.	Format: Pulldown list Range: Client, Server
Local Server Group	Identifies the Local Server Group associated with the Remote Server. The name of the group of local servers that establish connections with this Remote Server.	Format: Pulldown list Range: All named C-level server groups

Insert

The **Communication Agent -> Configuration -> Remote Servers [Insert]** page is used to create a Remote Server Name and to insert that name into a Remote Server listing.

The fields are described in *Remote Servers elements*.

1. Select **Communication Agent -> Configuration -> Remote Servers [Insert]**.

   The **Remote Servers** page appears.

2. Click **Insert**.

   The **Communication Agent -> Configuration -> Remote Servers [Insert]** page appears.

3. Enter a unique name for the remote server in the **Remote Server Name** field.

   The **Remote Server Name** should be a unique name within the system.

   Note: The **Remote Server Name** can be the same of an existing name but should be associated with a different local server group.

   The name must meet these requirements:

   - Maximum length of 32 characters
   - Valid characters are
     - Alphabetic (A through Z, uppercase or lowercase)
     - Numeric (0 through 9)
     - Underscore (_)
   - The name must contain at least one alphabetic character
   - The name can not start with a numeric character

4. Enter the IP address of the remote server in the **Remote Server IP Address** field.
   The IP Address should be a valid IPv4 address in dot notation format (for example: 255.255.255.255).
5. Choose a mode of operation from the **Remote Server Mode** drop down list.

   The Mode in which the Remote Server operates can be configured as a:

   - **Client** – where the servers in the local server group will accept connections initiated by the remote server
   - **Server** – where the servers in the local server group will each initiate a connection to the remote server

6. Select a Local Server Group from the **Available Local Server Groups** list and add it to the **Assigned Local Server Groups** field.

   This local server group contains the MPs that will send trace data to IDIH.

7. Perform one of these actions:

   - Click **OK** - If field validations succeed, the **Communication Agent -> Configuration -> Remote Servers** screen is displayed. An error message is displayed if:
     - The page contains any values that are not valid
     - A required field is empty (not entered)
     - The remote server IP address is not unique
   - Click **Apply** - If field validations succeed, the **Communication Agent -> Configuration -> Remote Servers [Insert]** is displayed. The fields shall display the applied values.
   - Click **Cancel** - to return to the previous page without saving any changes.

Edit

The **Communication Agent -> Configuration -> Remote Servers [Edit]** page is used to modify the mode of operation for the Remote Server.

The fields are described in *Remote Servers elements*.

1. Select **Communication Agent -> Configuration -> Remote Servers**.

   The **Remote Servers** page appears.

2. Click **Edit**.

   The **Communication Agent -> Configuration -> Remote Servers [Edit]** page appears.

   The **Remote Server Mode** field is the only available field for modification.

3. Choose a mode of operation from the **Remote Server Mode** drop down list

   The Mode in which the Remote Server operates can be configured as a:

   - **Client** – where the servers in the local server group will accept connections initiated by the remote server
   - **Server** – where the servers in the local server group will each initiate a connection to the remote server

4. Select a Local Server Group from the **Available Local Server Groups** list and add it to the **Assigned Local Server Groups** field.

   This local server group contains the MPs that will send trace data to IDIH.

5. Perform one of these actions:

   - Click **OK** - If field validations succeed, the **Communication Agent -> Configuration -> Remote Servers** screen is displayed. An error message appears if:
     - The page contains any values that are not valid
     - A required field is empty (not entered)
     - The remote server name is not unique
   - Click **Apply** - If field validations succeed, the **Communication Agent -> Configuration -> Remote Servers [Edit]** is displayed. The fields shall display the applied values.
   - Click **Cancel** - to return to the previous page without saving any changes.

Delete

The **Communication Agent -> Configuration -> Remote Servers** page **Delete** control displays a confirmation box to confirm or cancel **Remote Server** deletion.

The fields are described in *Remote Servers elements*.

1. Select **Communication Agent -> Configuration -> Remote Servers**.

   The **Remote Servers** page appears.

2. Select the Remote Server you want to delete.
3. Click on **Delete**.

A confirmation pop up window appears.

4. Perform one of these actions:
   - Click **OK** - the Remote Server will be deleted.

     Note: If the Remote Server is associated with a Connection Group or it has a connection in Enabled state then it cannot be deleted.

   - Click **Cancel** - to return to the previous page without deleting the Remote Server.

Connection Groups

The **Communication Agent -> Configuration -> Connection Groups** page provides the means to group Communication Agent Connections for the purpose of traffic load balancing. The **Connection Group** page lists the Connection Groups available and the servers within that group.

There is at least one and can be up to three predefined Connection Groups.

A Connection Group can be associated with many peer servers. These peer servers can be Remote Servers or they can be on routable remote networks. A Connection Group can have up to 16 Remote Servers that are associated to a local MP.

The **Communication Agent -> Configuration -> Connection Groups** page provides the means to manage Connection Groups:

- Select a **Connection Group** then click on the **Edit** button to modify the list of servers in that Connection Group. Any Remote Server can be in the Connection Group.

Connection Group elements

The Connection Group pages display information in a tabular format. This table describes elements on the **Connection Group** pages.

Table 3: Connection Group Elements

Name	Description
Connection Group	The name of the **Connection Group** within the system.
Available Servers	List of Servers that can be included in this group. Remote Servers are listed by their names. Servers already in the group are not listed. Default: n/a;
Assigned Servers	List of Servers that are assigned to this group are listed by their names. Default: n/a;

Edit

The **Communication Agent -> Configuration -> Connection Groups [Edit]** page is used to modify the list of servers in that group. Any remote server can be in the connection group. The same server can be in many connection groups. The server name represents the connection to that server.

The fields are described in *Connection Group elements*.

1. Select Communication Agent -> Configuration -> Connection Groups.

   The **Connection Groups** page appears.

2. Select a **Connection Group** and click **Edit**.

   The **Communication Agent -> Configuration -> Connection Groups [Edit]** page appears. The fields **Available Servers in Network Element** and **Existing Servers in Connection Group** are modifiable.

3. Select a server name and transfer it To/From the **Available Servers in Network Element** or To/From the **Existing (Assigned) Connection Group**.

   A server can be in many connection groups. Server names assigned to the connection group (Assigned Servers) are not listed under "Available Servers."

4. Perform one of these actions:

   - Click **OK** - If field validations succeed, the **Communication Agent -> Configuration -> Connection Groups** screen is displayed.
   - Click **Apply** - If field validations succeed, the **Communication Agent -> Configuration -> Connection Groups [Edit]** is displayed. The fields shall display the applied values.

Routed Services

The **Communication Agent -> Configuration -> Routed Services** page displays all the configured Routed Services and their associated connection groups. Each connection group is linked to the appropriate configuration page where you can make changes.

The fields are described in *Routed Services elements*.

The Communication Agent's Routed Service provides a means by which local applications hosted on an MP can send traffic to applications on other MPs. The Communication Agent's Routed Service will have Connection Groups associated with the service assigned with different priorities. When an application sends events to other servers using a routed service, the Communication Agent chooses a connection in the highest priority group for that routed service and sends the event on that connection. The load-balancing accounts for:

- Connection Group status (an aggregation of member connection status)
- Connection availability status (same as server availability status)
- Connection Egress Congestion Level (CL)
  - Transport Connection Congestion Level (TCL)
  - MP Overload Level (OL) of peer server

- Provider State (State of the service published by the Service Provider)

Note: ComAgent supports one Routed Service and one Connection Group per Routed Service.

Routed Services elements

Table 4: Routed Services Elements describes elements on the **Routed Services** page.

Table 4: Routed Services Elements

Name	Description
Name	The name of the **Service** within the system.
Connection Group Name	**Summary View**: Shows the number of Connection Groups used by this routed service. **Detailed view**: Lists all the servers in this Connection Group. The individual list item is hyperlinked to "Main Menu: Communication Agent -> Configuration -> Connection Groups". The display is filtered to show only the Connection Group entry.
Priority	The priority of the Connection Group. The summary view displays "-" to indicate the data is not applicable in the summary view.

Chapter 4

Maintenance

Topics:

- *Connection Status.....21*
- *Routed Services Status.....24*
- *HA Services Status.....27*

The **Communication Agent > Maintenance** pages display current status of groups and connections and provide the means to modify those connections.

Connection Status

The **Communication Agent -> Maintenance -> Connection Status** page shows the status of all connections to/from a local server. The un-expanded row will show Automatic and Configured connections from that server.

Select a Peer Server and you can toggle the Admin Connection State between

- **Enabled**: The administrator has enabled this connection. This is the default value.
- **Disabled**: The administrator has disabled this connection. System will not try to establish this connection.
- **Blocked**: Application data messages are not exchanged. However, ComAgent uses 'heartbeat' messages to monitor the health of connections and to share status.

The fields are described in *Connection Status elements*.

Connection Status elements

The **Connection Status** page displays information in a tabular format. This table describes elements on the **Connection Status** page.

Table 5: Connection Status main grid columns

Field Name	Description
Server Name	Name of the local MP server.
Automatic Connections Count	x of y in Service x = Number of Automatic Connections that are InService or Degraded y = Total number of Automatic Connections
Configured Connections Count	x of y in Service x = Number of Configured Connections that are InService or Degraded y = Total number of Configured Connections

Table 6: Connection Status sub-grid columns

Field Name	Description
Peer Server Name	All servers – local and remote – that have connections to this server are listed.
Peer Server IP Address	IP address of the peer server.
Connection Status	**Down** - Connection is down. **Forming** - Connection attempt has been made.

Field Name	Description
	Aligning - Connection Alignment is in progress. **LocallyBlocked** - Connection is locally blocked. **RemotelyBlocked** - Connection is blocked at remote side. **TotallyBlocked** - Connection is locally as well as remotely blocked. **InService** - Connection is InService and available to send user traffic. **Degraded** – Connection is available to send user traffic but is congested.
Admin Connection State	**Enabled**: The administrator has enabled this connection. This is the default value. **Disabled**: The administrator has disabled this connection. System will not try to establish this connection. **Blocked**: Connections in Blocked state do not exchange Communication Agent messages.
Connection Type	The type of connection to this server. **Auto**: This is an automatic connection. **Configured**: This is a connection to a configured remote server.
Date Last Updated	Time when the connection status was last updated.

Aggregate status of a Connection Group depends on the Operation Status of the connections in the group. Similarly, aggregate status of a collection of connection groups depends on the aggregate status of individual connection groups.

Table 7: Aggregate Status Color Coding

Admin State	Aggregate Status	Notes
Disabled	Unavailable	The Application is Disabled. Status is shown with an orange background.
Enabled	Degraded	The status is shown in a yellow background.
Enabled	Unavailable	The status is shown with a red background.
Enabled	Available	The status is shown in clear background.

Enable

The **Communication Agent -> Maintenance -> Connection Status** page **Enable** button is used to administratively enable connections to/from a local server.

The fields are described in *Connection Status elements*.

1. Select **Communication Agent -> Maintenance -> Connection Status**.

   The **Connection Status** page appears.

2. Click the **+** indicatior on the desired local server name.

   The peer server(s) status appears.

3. Select a peer server and click **Enable**.

   A confirmation pop up window appears.

4. Perform one of these actions:

   - Click **OK** - The connections to/from a local server and the peer server are enabled allowing communications.
   - Click **Cancel** - to cancel the enabling of the connection.

Disable

The **Communication Agent -> Maintenance -> Connection Status** page **Disable** button is used to administratively disable this connection. System will not try to establish this connection.

The fields are described in *Connection Status elements*.

1. Select **Communication Agent -> Maintenance -> Connection Status**.

   The **Connection Status** page appears.

2. Click the **+** indicatior on the desired local server name.

   The peer server(s) status appears.

3. Select a peer server and click **Disable**.

   A confirmation pop up window appears.

4. Perform one of these actions:

   - Click **OK** - The connections to/from a local server and the peer server are disabled. System will not try to establish this connection.
   - Click **Cancel** - to cancel the disabling of the connection.

Block

The **Communication Agent -> Maintenance -> Connection Status** page **Block** button is used to administratively block connections with this server. Connections in Blocked state do not exchange Communication Agent messages.

The fields are described in *Connection Status elements*.

1. Select **Communication Agent -> Maintenance -> Connection Status**.

   The **Connection Status** page appears.

2. Click the **+** indicatior on the desired local server name.

   The peer server(s) status appears.

3. Select a peer server and click **Block**.

   A confirmation pop up window appears.

4. Perform one of these actions:

   - Click **OK** - Data traffic is administratively blocked at local end and connection is administratively enabled at remote end. System will not try to establish this connection.
   - Click **Cancel** - to cancel the blocking of the connection.

Routed Services Status

The Communication Agent's Routed Services function provides a means by which local applications hosted on an MP can send traffic to applications on other MPs. The Communication Agent's Routed Service will have Connection Groups associated with the service assigned with different priorities. An application sends event information to the servers using a Routed Service. Using the Routed Service, ComAgent selects the Connection Group with the highest Priority. From that Connection Group, ComAgent performs load balancing on the set of available Connections. The load-balancing accounts for:

- Connection Group status (an aggregation of member Connection status)
- Connection availability status (same as server availability status)
- Connection Egress Congestion Level (CL)
  - Transport Connection Congestion Level (TCL)
  - MP Overload Level (OL) of Peer server
- Provider State (State of the service published by the Service Provider)

Note: ComAgent supports one Routed Service and one Connection Group per Routed Service.

The fields are described in *Routed Services Status elements*.

Routed Services Status elements

Table 8: Routed Services Status Main Grid describes elements on the main grid of the **Routed Services** page.

Table 8: Routed Services Status Main Grid

Field Name	Description
Routed Service	Name of the Routed Service

Field Name	Description
Users/Providers	Provides a summary of Service Users/Providers in the form of 'x of y' where: x = Number of Users/Providers using this Routed Service y = Total number of Users/Providers in the system For Users, the status from each server shows: • Provider/Connection Name • Aggregated status • Assigned Priority For Providers, the status for each server shows: • Connection Group that it hosts • Provider State • Timestamp
Summary Status - Available	Provides a summary of servers in Available status in the form of 'x of y' where: x = Number of servers that have an Available status for this Routed Service y = Number of servers using this Routed Service Routed Service status for that server is Available when all Connections in the Connection Groups associated with that service are Normal.
Summary Status - Degraded	Provides a summary of servers in Degraded status in the form of 'x of y' where: x = Number of servers that have a Degraded status for this Routed Service y = Number of servers using this Routed Service Routed Service status for that server is Degraded when at least one Connection Group used by that service has Available status.
Summary Status - Unavailable	Provides a summary of servers in Unavailable status in the form of 'x of y' where: x = Number of servers that have an Unavailable status y = Number of servers using this Routed Service Routed Service status for that server is Unavailable when none of the Connection Groups used by that service has Available status.

When the '+' sign is pressed to expand a Routed Service row, the status of each server using that Routed Service is shown in the sub-grid described in *Table 9: Routed Services Status Sub-Grid*.

Table 9: Routed Services Status Sub-Grid

Field Name	Description
Server Name	Name of the server using this Routed Service
Connection Group	**Summary View**: Shows "n Connection Groups" where: n = Number of Connection Groups associated with this Routed Service. **Detailed View:** Lists the names of Connection Groups associated with this Routed Service. Upon expanding the Connection Group by clicking the + sign, the connections/server names associated with the Connection Group are displayed. The server names are hyperlinked to the Connection Status screen filtered to show only this connection record.
Status	**Summary View**: Provides the Routed Service status at a server. • Available: The active Connection Group is Available. • Degraded: The active Connection Group is Degraded. • Unavailable: No Connection Group is Available or Degraded. **Detailed view**: Shows the summary of status of Connections in that Connection Group. The status can be: • Available: All connections in that Connection Group are InService. • Degraded: At least one Connection in the Connection Group is Degraded or at least one is InService, and at least one is neither Degraded nor InService. • Unavailable: None of the Connections in that Connection Group is InService or Degraded. Provider State: The Provider State as published by the Application that is using the ComAgent APIs. The status can be Available, Congestion Level 1 (CL1), Congestion Level 2(CL2), Congestion Level 3 (CL3), or Unavailable. Timestamp: The time when the Application published its state.

Field Name	Description
	If the Peer is not publishing Provider Status, the Provider Status and Timestamp fields will not be displayed.
Priority	**Summary View**: Displays '-'to show Not Applicable. **Detailed View**: Shows the configured Priority of that Connection Group.

HA Services Status

The HA Services Status page allows you to monitor the operational status of HA Service Sub-Resources.

A server application configures the High-Availability (HA) Framework to manage its Resources and Sub-Resources, and based upon the configuration and on the health scores of participating computers, the HA Framework assigns states to each Sub-Resource on each computer. If a Resource or Sub-Resource is "Active" on a given computer, then the server application on that computer is actively providing the software function associated with the Resource or Sub-Resource. If a Resource or Sub-Resource is"Standby" or "Spare" or "Observer" or "Out-of-Service", then the server application is not actively providing the function, but instead is waiting to be promoted to "Active" should the Resource or Sub-Resource be demoted from "Active" on some other server due to failures that reduce the other server's health score.

The HA Services Status screen shows the status as seen from a reporting server. The reporting server may be a provider of the HA Service or it may be a user of HA Services.

The fields are described in *HA Services Status elements*.

HA Services Status elements

The HA Services page displays information in a tabular format. These tables describe elements on the **HA Services** page.

- *Table 10: HA Services Status Summary View*
  - When the '+' sign is pressed to expand a reporting server that is acting as a Provider, the status sub-resources for that provider is shown in a sub-grid with elements as described in *Table 11: HA Service Provider Status Sub-Grid*.
  - When the '+' sign is pressed to expand a reporting server that is acting as a User, the status Sub-Resources for that provider is shown in a sub-grid with elements as described in *Table 12: HA Services User Status Sub-Grid*.
- *Table 11: HA Service Provider Status Sub-Grid*
- *Table 12: HA Services User Status Sub-Grid*
  - When the '+' sign is pressed to expand a reporting Sub-Resource ID, the details for the standby Sub-resource ID is shown in a sub-grid with elements as described in *Table 12: HA Services User Status Sub-Grid*.

- *Table 13: Aggregate Status Color Coding*

Table 10: HA Services Status Summary View

Field Name	Description
Reporting Server	Name of the server that has reported the status.
Resource Name	The HA Resource that is being reported.
Number of Sub-Resources	Number of Sub-Resources for which the server is reporting status.
User/Provider	**User:** This status is from the indicated reporting server acting as a user of the HA Service in the Resource Name column. **Provider:** This status is from the indicated reporting server acting as a provider of the HA Service in the Resource Name column.
Resource Routing Status	Applicable only to "User"; not "Provider". This is the roll-up status of the sub-resources at the reporting server. Values are: • **Available**: All member Sub-Resources have the 'Available' routing state. • **Degraded**: Either at least one member Sub-Resource has the 'Degraded' routing state or at least one member has the 'Available' routing state and at least one has the 'Unavailable' routing state. **Note:** In the absence of congestion, this routing state means that some Sub-Resource are reachable and some Sub-Resources are unreachable. • **Unavailable**: All member Sub-Resources have the 'Unavailable' routing state.
Available Sub Resources	Applicable only to "User"; not "Provider". The summary status is indicated as 'x of y' where: x = The number of active Sub-Resources as reported by this server. y = The Number of Sub resources.

When the '+' sign is pressed to expand a reporting server that is acting as a Provider, the status Sub-Resources for that provider is shown in a sub-grid with elements as described in *Table 11: HA Service Provider Status Sub-Grid*.

Table 11: HA Service Provider Status Sub-Grid

Field Name	Description
Sub-Resource Id	The sub resource id is a 0-based index of the sub resources.
State	The state of the Sub-Resource at this reporting provider. The possible values are: • **OutOfSrvc** (Unavailable): Provider is not actively managing the Resource instance. When it begins managing the Resource, it will be promoted to some other state based upon the Resource's HA Policy. • **Observer** (Unavailable): User Layer is monitoring the Resource but is not actually providing the Resource. If there is data associated with the Resource, then this type of Resource Provider has a copy of the data, but has read-only access to the data, and is not typically eligible to be promoted to be Active. • **Spare** (Unavailable): Provider is eligible to be promoted to Standby, if the current Standby fails. Provider is eligible to be promoted to Active if both the Active and Standby Providers fail. • **Standby** (Unavailable): Provider has been pre-selected to become Active if the current Active Resource Provider fails. • **Active** (Available): Provider has the active instance of the Sub-Resource.
Date Last Updated	The timestamp when the sub resource status was last updated.

When the '+' sign is pressed to expand a reporting server that is acting as a User, the status Sub-Resources for that provider is shown in a sub-grid with elements as described in *Table 12: HA Services User Status Sub-Grid*.

When the '+' sign is pressed to expand a reporting Sub-Resource ID, the details for the standby Sub-Resource ID is shown in a sub-grid with elements as described in *Table 12: HA Services User Status Sub-Grid*.

Table 12: HA Services User Status Sub-Grid

Field Name	Description
Sub Resource Id	The 0-based id of the sub resource.
SR Routing State	The sub resource routing state is maintained on the reporting server and indicates if this

Field Name	Description
	Sub-Resource is available and providing service. Values are: • **Available**: There is an authoritative and active Resource Provider, and the connection to the server hosting the Resource Provider has congestion level CL0. • **Degraded**: There is an authoritative and active Resource Provider, and the connection to the server hosting the Resource Provider has congestion level greater than CL0. **Note:** In the current release this routing state means that the authoritative and active Resource Provider's server has become overloaded. • **Unavailable**: There is no authoritative and active Resource Provider. **Note:** An authoritative and active Resource Provider can become unreachable if the connection to it fails, is disabled, or is blocked. Connection congestion and MP overload does not make a Resource Provider unreachable.
Congestion Level	The congestion level of the connection to the Provider.
HA State	The HA state of the Sub-Resource advertised by the indicated provider to this server. The possible values are: • **OutOfSrvc** (Unavailable): Provider is not actively managing the Resource instance. When it begins managing the Resource, it will be promoted to some other state based upon the Resource's HA Policy. • **Observer** (Unavailable): User Layer is monitoring the Resource but is not actually providing the Resource. If there is data associated with the Resource, then this type of Resource Provider has a copy of the data, but has read-only access to the data, and is not typically eligible to be promoted to be Active. • **Spare** (Unavailable): Provider is eligible to be promoted to Standby, if the current Standby fails. Provider is eligible to be promoted to Active if both the Active and Standby Providers fail.

Field Name	Description
	• **Standby** (Unavailable): Provider has been pre-selected to become Active if the current Active Resource Provider fails. • **Active** (Available): Provider has the active instance of the Sub-Resource.
Provider	Name of the server that is the provider of the sub resource.
In Use	Indicates that this provider is being used for this Sub-Resource. Possible values are: • **Yes**: This provider is in use for this sub resource. • **No**: This provider is not in use.
Date Last Updated	Timestamp when the status for this Sub-Resource was updated at the provider.

Aggregate status of HA Service resource depends on the HA State of the Sub-Resources as described in *Table 13: Aggregate Status Color Coding*.

Table 13: Aggregate Status Color Coding

Admin State	Aggregate Status	Notes
Blocked	Unavailable	The Connection is Blocked by the Administrator or the Application is Disabled. Status is shown with an orange background.
Enabled	Degraded	The status is shown in a yellow background.
Enabled	Unavailable	The status is shown with a red background.
Enabled	Available	The status is shown in clear background.

Glossary

C

ComAgent

Communication Agent

A common infrastructure component delivered as part of a common plug-in, which provides services to enable communication of message between application processes on different servers.

Communication Agent

See ComAgent.

I

IMI

Internal Management Interface

M

MP

Message Processor

The role of the Message Processor is to provide the application messaging protocol interfaces and processing. However, these servers also have OAM&P components. All Message Processors replicate from their Signaling OAM's database and generate faults to a Fault Management System.