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Chapter 1: Real-Time Speech Snap-in description

Intended audience

This document is intended for people who need to install, configure, and administer Avaya Real-Time Speech Snap-in (Real-Time Speech). This document contains specific information about this Snap-in. For an overview of the Avaya Aura® Collaboration Environment, see the Avaya Aura® Collaboration Environment Overview and Specification. For general information about Collaboration Environment Snap-in deployment, see Quick Start to Deploying Avaya Aura® Collaboration Environment Snap-ins.

Document changes since last issue

The following changes have been made to this document since the last issue:
- Added information to the Upgrading Real-Time Speech services section.

Overview

Real-Time Speech Snap-in provides a consolidated set of services for the management and use of speech technologies with a focus on real-time, interactive speech applications. Real-Time Speech runs on the Avaya Aura® Collaboration Environment 3.0 platform.

Real-Time Speech provides the following functionality:
- A standard REST Web Service API to provide access to Real-Time Speech Snap-in services.
- A developer SDK, including a sample application that provides query management capabilities and demonstrates the use of the various elements of the snap-in REST APIs.
- Real-time speech search services that support complex search queries for voice calls.
- Speech search capabilities using the embedded speech search engine of Avaya Media Server.
- Call event services to enable the application of speech services for specific calls and call events.
Features of Real-Time Speech Snap-in

Real-Time Speech Snap-in provides RESTful web services that deliver the following services to clients:

Query management

Queries define the search terms that are applied to a call. Use the query management API to create, update, or delete search queries. A simple query that does not make use of logical operators consists of one or more phrases that the user wants to search for. You can create a simple query using just a single phrase, for example, “Good morning, thank you for calling Avaya”.

Using the API, you can create complex queries using more than one search term with time-based or logical conditions. Complex queries can have hierarchy and utilize a set of logical operators to combine phrases together. Some operators support the use of a proximity attribute that make searches more precise. For example, an ALL operator specified with a proximity of 20 seconds will only return a match if the required operands and operators below it occur within the specified time.

You can create queries programmatically and also create and store queries in the data grid. You can create queries in multiple languages. For more information on supported languages, see Avaya Real-Time Speech Snap-in Release Notes.

Speech search

Real-Time Speech search uses a speech search engine embedded in Avaya Media Server. To start speech search on a specified call, use the Speech Search API by providing the queries to be applied to the call. The Speech Search API uses the Unique Call Identifier (UCID) to identify the call that needs to be searched. You can search by each party or both the parties of the call. You can also stop speech search on an active call.

Call event notification

You can subscribe or unsubscribe from speech search or call events. Use the events API to subscribe or unsubscribe from different events such as call answered, call ended, speech search started, speech search stopped, and speech search match. You can subscribe to speech search or call events using the HTTP POST request. You must provide a callback URL where you want to receive notifications. To receive notification events, your application must provide an endpoint capable of receiving POST responses via HTTPs protocol from the Speech Search API.

Speech Search Engine language support

Speech Search Engine (SSE) is a dynamically loaded library of Avaya Media Server that provides audio searching using the phonetic search technology. For more information about the supported languages, see Avaya Real-Time Speech Snap-in Release Notes.
Real-Time Speech REST API

Real-Time Speech delivers a RESTful web services interface, the Real-Time Speech service, to provide the required services to clients. Using the Real-Time Speech Snap-in service, you can:

• Subscribe to speech search and call-related events.
• Remove a subscription to events.
• Receive notifications for speech search and call-related events.
• Start a speech search request for a call or a party on a call.
• Stop a speech search.
• Store speech search-related queries.
• Organize and access stored speech search queries using tags.

Real-Time Speech implementation

Avaya Real-Time Speech Snap-in ships a sample application. The sample application is designed using the Javascript library AngularJS to demonstrate the capabilities of the Real-Time Speech Search Snap-in.

For more information, see Avaya Real-Time Speech Snap-in SDK at http://www.avaya.com/DevConnect.

Data grid

Collaboration Environment delivers a data grid that the Real-Time Speech Snap-in uses for storing search queries.

The queries remain in the data grid while the Collaboration Environment instance remains active. However, the query data is not saved to the disk. Therefore, during a complete stoppage or outage of all Collaboration Environment nodes within the cluster hosting the Real-Time Speech Snap-in, the query data is discarded. You can use the query management API to perform bulk query data download or data upload or both to back up the query data.

In addition to providing storage space, the data grid functionality provides the following advantages to Real-Time Speech:

• Efficiency by providing an in-memory data cache for a fast and reliable response in any operation on context data
• Scalability by distributing load across all available resources through the built-in scalability features
• High availability in a multi-instance cluster, and consistency by maintaining data integrity with 100% transactional data handling
Chapter 2: Product requirements and compatibility

Avaya product requirements

Install the following Avaya products before installing Avaya Real-Time Speech Snap-in:

**Mandatory products**

<table>
<thead>
<tr>
<th>Avaya product make this column narrower</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avaya Aura® Collaboration Environment</td>
<td>3.0</td>
</tr>
<tr>
<td>Avaya Aura® Communication Manager</td>
<td>6.2 Feature Pack 4</td>
</tr>
<tr>
<td>Avaya Aura® Session Manager</td>
<td>6.2 Feature Pack 4</td>
</tr>
<tr>
<td>Avaya Aura® System Manager</td>
<td>6.2 Feature Pack 4</td>
</tr>
<tr>
<td>Avaya Media Server</td>
<td>7.6</td>
</tr>
</tbody>
</table>

**Optional products**

<table>
<thead>
<tr>
<th>Avaya product make this column narrower</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avaya Aura® Application Enablement Services</td>
<td>6.2 Feature Pack 4</td>
</tr>
<tr>
<td>Avaya one-X® Agent</td>
<td>2.5</td>
</tr>
<tr>
<td>Avaya Collaboration Designer Snap-in</td>
<td>3.0</td>
</tr>
</tbody>
</table>

**Software requirements**

- Avaya Aura® 6.2 Feature Pack 4:
  - Avaya Aura® System Manager 6.3.9
  - Avaya Aura® Session Manager 6.3.9
  - Avaya Aura® Communication Manager 6.3.6

- VMware:
  - ESXi 5.0, 5.1, or 5.5
  - vSphere client software

- Web servers:
Avaya provides a sample application that can be run on Jetty 7.6 web servers. For more information, see *Avaya Real-Time Speech Snap-in SDK*.

**Note:**

The web servers must run Java 1.7 to host the sample application.

---

**Hardware requirements**

The Real-Time Speech hardware requirements are based on the Collaboration Environment and System Manager requirements. For more information, see the respective product documentation. Additionally, you require:

• Avaya Aura® Collaboration Environment with 4 vCPU and 6 GB of RAM
• Avaya Media Server with 4 vCPU and 4 GB of RAM
Chapter 3: Real-Time Speech Snap-in deployment

Real-Time Speech deployment process flow

1. Ensure Collaboration Environment 3.0 is deployed and configured on System Manager
2. Load the Real-Time Speech License via WebLM on System Manager
3. Create a general purpose CE cluster (Ensure that CallEventControl and EventingConnector are installed)
4. Have the CallEventControl and EventingConnector been installed on the cluster?
   - Yes: Load the Real-Time Speech Snap-in into Collaboration Environment
   - No: Install CallEventControl and EventingConnector snap-ins on cluster
5. Install the Real-Time Speech Snap-in to the previously created cluster
6. Verify the successful installation of the Snap-in
7. End
# Real-Time Speech deployment checklist

<table>
<thead>
<tr>
<th>No.</th>
<th>Task</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ensure that Avaya Aura® System Manager is running.</td>
<td>None.</td>
</tr>
<tr>
<td>2</td>
<td>Ensure that Avaya Aura® Session Manager is running.</td>
<td>None.</td>
</tr>
<tr>
<td>3</td>
<td>Ensure that Avaya Aura® Communication Manager is running.</td>
<td>None.</td>
</tr>
<tr>
<td>4</td>
<td>Install and configure the Avaya Aura® Collaboration Environment server.</td>
<td>Before turning on the Collaboration Environment server, ensure that you set the memory to 6 GB of RAM.</td>
</tr>
</tbody>
</table>

**Note:**  
When you administer a new Collaboration Environment server, you must add the server to a cluster. If not, the Collaboration Environment asset is not usable. |
| 6   | Configure the Speech Search Engine on Avaya Media Server. | None. |
| 7   | Configure a station for Real-Time Speech. | None. |
| 8   | Install a WebLM license on System Manager. remove the extra space before SM | None. |
| 9   | Download the Real-Time Speech Snap-in services from PLDS. | The Real-Time Speech Snap-in services are available as Service Archive (SVAR) zip files in PLDS.  

**Note:**  
Do not add any space between the file name and the service name while saving the SVAR file. |
| 10  | Load the Real-Time Speech SVAR file in System Manager. | None. |
| 11  | Install Real-Time Speech. | The CallEventControl and EventingConnector Snap-ins are loaded by default when you install Collaboration Environment. |
| 12  | Verify the installation. | None. |

*Table continues...*
### Key customer configuration information

You need the following information to install and configure the Real-Time Speech Snap-in services. Record the information in this worksheet before beginning the installation.

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Notes</th>
<th>Your value</th>
</tr>
</thead>
<tbody>
<tr>
<td>The names of the Real-Time Speech SVAR files that are available on PLDS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The location of the Real-Time Speech SVAR files that you downloaded from PLDS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The cluster name</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The configuration attributes of the Real-Time Speech services</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Setting up the system

#### Creating a Real-Time Speech cluster

**Procedure**

1. On the System Manager web interface, click **Elements > Collaboration Environment**.
2. In the left pane, click **Cluster Administration**.
3. On the Cluster Administration page, click **New**.
   - The system displays the Cluster Editor page.
4. In the **Cluster Profile** drop-down list, select the **General Purpose** profile.
   - The system refreshes the Cluster Editor page and populates the profile attributes.
Note:
You cannot select a new profile without canceling the page.

5. In the General tab, type the details in the following fields:
   a. **Cluster Name**: The unique name of the cluster.
   b. **Cluster IP**: The cluster IP address. The cluster IP address is mandatory if you enable the load balancer.
      For information on setting up the load balancer, see *Administering Avaya Aura® Collaboration Environment*.
   c. **Description**: The description of the cluster.

6. In the Servers tab, in the Unassigned Servers table, click the plus sign (+) next to the Name column to add the Collaboration Environment server to the cluster.
   If the server is assigned to another cluster, remove the server from the existing cluster before you add to the Real-Time Speech cluster.

7. In the Services tab, select the services to install on all servers in the cluster.

8. Click **Commit** to create the cluster.
   On the Cluster Administration page, the **Service Install Status** field displays a green check mark after the cluster is successfully created.

9. *(Optional)* To view the Collaboration Environment instances in the cluster, click **Show** in the Details column of the cluster.
   The system displays the members of the cluster and the status of each instance in the cluster.

10. *(Optional)* To view the details of the Snap-ins installed on that instance, click a specific Collaboration Environment instance in the cluster.

---

**Configuring Speech Search Engine on Avaya Media Server**

**Before you begin**
Get the user name and password for the Element Manager interface.

**Procedure**

1. Log on to the Avaya Media Server web interface.
2. In the left pane, click **System Configuration > Media Processing > General Settings**.
3. On the General Settings page, click the **Aurix Speech Search Engine** link.
4. In the Aurix Speech Search Engine section, ensure the **Enable AURIX SSE Real-time Interfaces** feature is enabled. If the feature is disabled, select the **Enable AURIX SSE Real-time Interfaces** check box.
5. In the left pane, click **System Status > Element Status**.
6. On the Element Status page, click **Restart**.

---

### Station configuration for testing Real-Time Speech

You must configure SIP or H.323 types of endpoints to test Real-Time Speech search. For information about endpoint configurations, see *Avaya Aura® Collaboration Environment Call Intercept Services* at [https://support.avaya.com](https://support.avaya.com).

---

### Installing Real-Time Speech

#### Loading Real-Time Speech

**Before you begin**

- Install a WebLM license on System Manager.
- Download the Real-Time Speech Snap-in services from PLDS.

**Procedure**

1. On the System Manager web interface, click **Elements** > **Collaboration Environment**.
2. In the left pane, click **Service Management**.
3. On the Service Management page, click **Load**.
4. In the Load Service dialog box, click **Browse** and select the `RealTimeSpeech<version>.svar` file.
   
   The system displays the `RealTimeSpeech<version>.svar` file in the **Local PC** text field.
5. Click **Load**.
   
   System Manager checks the licensing of Real-Time Speech. On successful validation, System Manager displays the Accept End User License Agreement dialog box.
6. Click **Accept**.
   
   System Manager adds the Real-Time Speech Snap-in to the list of services.

**Related Links**

[Configuring Real-Time Speech licenses](#) on page 28
Installing Real-Time Speech

Before you begin

- Load the Real-Time Speech Snap-in.
- Ensure that you know the cluster name to install the Real-Time Speech Snap-in.

Procedure

2. In the left pane, click Service Management.
   The system displays the Service Management page.
3. In the services name list, select the Snap-in that you want to install, and then click Install.
   The system displays a list of cluster names in the Confirm Install services dialog box.
4. Select the cluster name to install the Real-Time Speech Snap-in, and then click Commit.
   The system starts installing the service and changes the state of the service to Installing. After installation, the system changes the state to Installed.

Verifying a Real-Time Speech deployment

Procedure

1. Open a web browser.
2. To check the query management REST API, type the following URL:
   
   ```
   https://<CE_CLUSTER>/services/RealTimeSpeech/queries
   ```
   
   where `<CE_CLUSTER>` is the IP address of the Real-Time Speech cluster where the service that you want to verify is running.

   Note:

   Provide the Collaboration Environment Entity IP address. Collaboration Environment has two addresses, but the service is only available on the Entity IP address.

   The system displays the following message:

   ```
   {"pagination":{"offset":0,"limit":25,"total":0},"searchQueries":[]}
   ```

Adding Real-Time Speech to the Service Profile

Before you begin

Install Real-Time Speech Snap-in or service.
About this task
Use this procedure to add the Real-Time Speech Snap-in to an existing Service Profile.

Procedure
1. On the System Manager web interface, click **Elements > Collaboration Environment**.
2. On the Server Administration page, click **Configuration > Service Profiles**.
3. On the Service Profile Configuration page, select the service name that you want to add to the Service Profile page.
4. Click **Edit**.
   The system displays the Service Profile Editor page.
5. In the Available Service to Add to this Service Profile section, perform one of the following actions:
   • In the Add to Service Profile list, click the plus sign (⁺) next to the snap-in.
     The system adds the latest version of the service in the Services in this Service Profile section.
   • In the Add to Service Profile list, click **Advanced** next to the snap-in name to choose a version of the service.
   • In the Add Service - Advanced dialog box, select the version of the service. The system adds the selected version of the service in the Services in this Service Profile section.

   🌟 Note:
   For best results, use the latest version of the service unless Avaya Professional Services specifies another version.
6. Click **Commit**.

Configuring attributes for Real-Time Speech

Procedure
1. On the System Manager web interface, click **Elements > Collaboration Environment**.
2. On the Server Administration page, click **Configuration > Attributes**.
   The system displays the Attributes Configuration page.
3. Configure attributes on the following tabs:
   • **Service Profiles**: The attributes used by all Real-Time Speech Snap-ins that are part of the service profile that you select. For users of snap-ins on that profile, Service Profile attributes will override both global and cluster snap-in attributes.
   • **Service Clusters**: The attributes are used by all Real-Time Speech Snap-ins that are part of the cluster that you select. For users of snap-ins on that cluster, cluster attributes override global attributes, but not Service Profile attributes.
• **Service Globals**: The attributes are used by all occurrences of the Real-Time Speech Snap-ins except when overridden by attributes administered for a specific cluster or Service Profile.

4. To configure attributes for **Service Profiles**, click the **Service Profiles** tab.
   a. In the **Profile** field, select the service profile where the Snap-in is installed.
   b. In the **Service** field, select the service name as **RealTimeSpeech**.
      The system displays a list of attributes that you can configure.
   c. In the **Override Default** column, specify the attributes by selecting the corresponding check box.
   d. **(Optional)** In the **Effective Value** column, change the value of the attributes.
      You can always restore the default by clearing the **Override Default** box.

5. To configure attributes for **Service Clusters**, click the **Service Clusters** tab.
   a. In the **Cluster** field, select the cluster where the Snap-in is installed.
   b. In the **Service** field, select the service name as **RealTimeSpeech**.
      The system displays a list of attributes that you can configure.
   c. In the **Override Default** column, specify the attributes by selecting the corresponding check box.
   d. **(Optional)** In the **Effective Value** column, change the value of the attributes.
      You can always restore the default by clearing the **Override Default** box.

6. To configure attributes for **Service Globals**, click the **Service Globals** tab.
   a. In the **Service** field, select the service name as **RealTimeSpeech**.
      The system displays a list of attributes that you can configure.
   b. In the **Override Default** column, specify the attributes by selecting the corresponding check box.
   c. **(Optional)** In the **Effective Value** column, change the value of the attributes.
      You can always restore the default by clearing the **Override Default** box.

7. Click **Commit** to save the configuration.

**Related Links**

[Real-Time Speech attributes field descriptions](#) on page 19

---

**Real-Time Speech attributes field descriptions**

The following attributes are applicable only to the automatic start of speech search. In other scenarios, the values are specified as part of the speech search request.
<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Default value</th>
<th>Change to</th>
</tr>
</thead>
<tbody>
<tr>
<td>Call Party Target</td>
<td>Determines what parties are targeted by default for speech search. The valid entries are both, calling, and called.</td>
<td>both</td>
<td>Change the call party target, depending on your use case.</td>
</tr>
<tr>
<td>Enable Automatic Start of Speech Search</td>
<td>Automatically starts speech search for calls. The valid entries are true and false.</td>
<td>false</td>
<td>true</td>
</tr>
<tr>
<td></td>
<td>---------------------------------------------------------------------------</td>
<td></td>
<td>Note: Set the default value to true if you want to automatically start speech search on all calls.</td>
</tr>
<tr>
<td>Enable Example Query</td>
<td>By default, the system is configured with a default query to enable rapid demonstration.</td>
<td>false</td>
<td>true</td>
</tr>
<tr>
<td></td>
<td>Note: Change the default value if you want to perform validation of the system before creating search queries.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Search Language</td>
<td>Determines the language used with speech search requests.</td>
<td>en_US</td>
<td>Change the search language to any of the languages supported by the Speech Search Engine. The search language is applicable only to automatic speech searches.</td>
</tr>
<tr>
<td>Search Tags</td>
<td>Search tags are only used if you have enabled the automatic speech search, and provided a valid tag. Enables users to configure a global search tag. This attribute is relevant only if the Example query is disabled. If you do not configure a global search tag, speech search fails.</td>
<td>en_US</td>
<td>The default value for tags is empty. When you add a tag, ensure that the tag matches a tagged query stored in the system. You can add and tag queries using the REST API.</td>
</tr>
</tbody>
</table>

Related Links
Speech Search Engine language support on page 7
Real-Time Speech upgrade

Upgrade overview

To upgrade a Real-Time Speech Snap-in service in Collaboration Environment, you must install a new version of the Snap-in service.

When you upgrade the Real-Time Speech SVAR, the system does not remove the Real-Time Speech spaces that are already deployed. The upgrade and services in the upgraded SVARs use the spaces that are already deployed.

You can upgrade by using the preferred version or the latest version option.

Preferred version

When you deploy a new version of the Real-Time Speech service, the previous version of the service continues servicing the REST requests. To bring the newly deployed SVAR into service, you must set the newer version as the preferred version on the Collaboration Environment > Service Management page. For more information, see Setting the preferred version for upgrades.

Latest version

When you deploy a new version of the Real-Time Speech service, the new version of the Snap-in service starts servicing the REST requests automatically.

When you deploy a Real-Time Speech service in a new Collaboration Environment instance, the service is set to latest by default.

The system does not display the latest value in the Collaboration Environment > Service Management page. If you do not set any version as the preferred version, the system uses the latest version value.

When a version is set as the preferred version, the system does not give the option to set the latest version in the Service Management page.

Related Links

Setting the preferred version for upgrades on page 21

Setting the preferred version for upgrades

Before you begin

Install the Snap-in service on Collaboration Environment.

Procedure

2. In the left pane, click Service Management.
3. Select the service that you want to set as the default version.
4. Select Set Preferred Version.
The system displays the list of clusters.

5. Select the clusters for which you want to set the preferred version.

6. Click **Commit**.

   The **Preferred Version** column displays the clusters for which you have set the preferred version.

7. Verify whether the updated service can service requests successfully. For more information, see **Verifying a Real-Time Speech deployment**.

**Related Links**

- [Verifying a Real-Time Speech deployment](#) on page 17

---

**Upgrading the Real-Time Speech services**

**Before you begin**

*Note:*

To ensure that queries are not lost, export the queries via the REST interface.

Select the latest or preferred version on the **Service Management** page.

**Procedure**

1. On the System Manager web interface, click **Elements > Collaboration Environment**.

2. In the left pane, click **Service Management**.

3. On the **Service Management** page, click **Load**.

4. Click **Browse** next to **Local PC** to locate the Real-Time Speech service (.svar), and then click **Open**.

   The Service Archive (svar) file is provided by a service developer.

5. In the Load Service window, click **Load** to load the Real-Time Speech service.

6. On the End User License Agreement (EULA) page, click **Accept**.

   The Service Management page displays the service with the **LOADED** state.

7. To install the latest version of the Real-Time Speech service, perform one of the following steps:

   - On the **Service Management** page, select and install the latest version of the Real-Time Speech service.

   - On the **Cluster Administration** page, edit the cluster to select and commit the latest version of the Real-Time Speech service.

   - If you set the preferred version option for a service, the service continues to service the requests. The new service version comes in to service only after you set the new version as the preferred version option in the **Service Management** page.
If you do not set the preferred version option for the service in the cluster, the newly deployed version comes in to service after successful deployment.

8. Verify if the services are installed successfully. For more information, see *Verifying a Real-Time Speech deployment*.

9. *(Optional)* Uninstall the previous version of the service.

10. *(Optional)* Delete the previous version of the service.

**Next steps**
Resubscribe for events related to the new version of the snap-in. The existing subscriptions will not work when the snap-in version changes.

**Related Links**
- *Verifying a Real-Time Speech deployment* on page 17

---

**Real-Time Speech uninstallation and deletion**

**Real-Time Speech uninstallation overview**

The options are:

- Uninstall a service Snap-in: When you uninstall a service, the system does not remove the attributes from the Collaboration Environment Postgres database. For more information, see *Uninstalling Real-Time Speech* on page 23.
- Delete a service Snap-in: When you delete a service, the system removes the attributes from the Collaboration Environment Postgres database. For more information, see *Deleting Real-Time Speech* on page 24.

---

**Uninstalling Real-Time Speech**

**About this task**

When you uninstall a service, the system does not remove the attributes from the Collaboration Environment Postgres database. The system preserves the DataGrid and the entries written to spaces until the lease time expires.

**Procedure**

1. On the System Manager web interface, click **Elements > Collaboration Environment**.
2. In the left pane, click **Cluster Administration**.
3. On the Cluster Administration page, select the check box for the cluster and then click **Edit**.
4. On the Cluster Editor page, perform the following steps:
   a. Click the Services tab.
      The system displays the list of services installed in the cluster.
   b. Click the X icon for the service that you want to uninstall.
   c. Click Commit.

Next steps
To verify that the service is uninstalled, click Elements > Collaboration Environment and perform the following steps:
   1. On the Server Administration page, verify that the Service Install Status for the service is Uninstalling.
   2. On the Service Management page, verify that the State of the service is Loaded.
   3. On the Cluster Administration page, perform the following steps:
      a. Click Show.
      b. Click the required server, and verify that the Service Status page does not display the uninstalled service.

Related Links
Deleting Real-Time Speech on page 24

Deleting Real-Time Speech

Before you begin
Ensure that the Real-Time Speech Snap-in is uninstalled. For more information, see Uninstalling Real-Time Speech.

About this task
When you uninstall a service, the system removes the attributes from the Collaboration Environment Postgres database. The system preserves the DataGrid and the entries written to spaces until the lease times expire. Entries such as Property do not expire.

Procedure
   2. In the left pane, click Service Management.
   3. On the Service Management page, perform the following steps:
      a. Verify that the State of the service is Loaded.
      b. Select the service that you want to delete, and then click Delete.
      c. In the dialog box, select the Please Confirm check box.
      d. Click Delete.
Next steps
To verify that the service is deleted, click Elements > Collaboration Environment and perform the following steps:

1. Click Service Management.
2. Verify that the Service Management page does not display the deleted service.

Related Links
Uninstalling Real-Time Speech on page 23
Chapter 4: Real-Time Speech Snap-in administration

Configuring global attributes

About this task
Configuring values for the Real-Time Speech Snap-in is a one-time activity that you must perform before installing a service.

Procedure
2. Click the Service Globals tab.
3. From the Service drop-down menu, select the service that contains the attributes you want to configure.
   The table displays all the attributes that you can configure for the service, including a description of each attribute.
4. For the attribute you want to change:
   a. Click Override Default.
   b. In the Effective Value field, enter the new value or string.
5. Click Commit to save your changes.
Chapter 5: Real-Time Speech Snap-in performance

Capacities and scalability

Real-Time Speech supports up to 80 active speech search sessions on a single Avaya Media Server, subject to engineering and query complexity. You can add additional Avaya Media Server instances to a cluster to scale up to a maximum of 500 concurrent calls running speech search.

Traffic

In the current Avaya Aura® Collaboration Environment architecture, all calls that you want to apply speech search to must be anchored on the Avaya Media Server when the call is established. The Real-Time Speech Snap-in triggers this call anchoring step when a call is sequenced through, which means that all such calls that you want to search on must be sequenced through the Real-Time Speech Snap-in.

Anchoring of the calls on Avaya Media Server imposes a moderate performance penalty on Collaboration Environment call processing throughput and Avaya Media Server resource utilization. Hence, you should aim to tailor your application sequencing rules on Avaya Aura® Session Manager and the service profiles on Collaboration Environment wherever possible, to sequence only those calls into the Real-Time Speech that are most likely to need to be searched.

Once a call is anchored on Avaya Media Server, an external application, such as a custom application using the Real-Time Speech in REST API, or a workflow created using the Avaya Collaboration Designer Snap-in application, can then start the speech search.
Chapter 6: Real-Time Speech Snap-in licenses

License requirements

Use of the Real-Time Speech software requires valid Real-Time Speech and Collaboration Environment license files.

Real-Time Speech uses the Snap-in service licensing feature provided by Collaboration Environment.

Platform and Snap-in licenses are available through PLDS. You must install these licenses on the WebLM server of System Manager, which manages the Platform and Snap-in licenses.

Real-Time Speech contains a digital signature that Collaboration Environment Element Manager uses to confirm that the licenses are applicable for these services. If the signature is invalid, the system does not load the service.

A single license, containing information for each licensed feature, applies to the Real-Time Speech Snap-in.

Configuring Real-Time Speech licenses

Before you begin

• Get the Real-Time Speech license from Avaya PLDS.
• Ensure that the Real-Time Speech license is installed on the WebLM server that is integrated with System Manager.
• Ensure that the Collaboration Environment platform license is installed on System Manager.

In System Manager, click Elements > Collaboration Environment > Server Administration to see the current status of each Collaboration Environment server platform license.

About this task

Configure Real-Time Speech licenses in System Manager.

Procedure

1. On the System Manager Home page, click Services > Licenses.
2. Select Install License.
3. Browse to the location of the Real-Time Speech license.

4. Select the license file and click **Install**.

   The system installs the license file.

   In the left navigation pane, the system displays REAL_TIME_SPEECH in **Licensed Products**.

5. To verify if the license file is installed successfully:
   a. Click **Elements > Collaboration Environment > Service Management**.
   b. In the **License mode** column, verify that the column displays a check mark for the Real-Time Speech mode.

The following licensing modes apply to all Collaboration Environment and Real-Time Speech licenses:

- **License Normal Mode**: A valid license file is installed. License errors are not found. The complete functionality is present for the Collaboration Environment instance.

- **License Error Mode**: License error is seen in this mode. The Collaboration Environment instance is in a 30 day grace period during this mode. Complete functionality is available during the grace period. The system displays the warning icon along with the date and time of the grace period expiration in the **License Mode** column.

- **License Restricted Mode**: The Collaboration Environment instance goes in to the restricted mode after the 30 day grace period expires. The Collaboration Environment server goes in to the Deny New Service mode. If you install a license file the Collaboration Environment server goes into the normal mode. The server automatically returns to service.

For more information about licensing modes and licensing for Collaboration Environment, see *Administering Avaya Aura® Collaboration Environment*.

Collaboration Environment licensing audit runs every 9 minutes. Any license changes, including install or uninstall actions on the WebLM server, take time to reflect on the user interface. The latest license information thus takes maximum 9 minutes to reflect in the Collaboration Environment Element Manager.
Chapter 7: Security

Security overview

Avaya Real-Time Speech Snap-in utilizes Avaya Aura® Collaboration Environment to provide all security configurations to access all Collaboration Environment services. Collaboration Environment provides configuration for HTTPS, Mutual TLS (Client Certificate Challenge), Cross Origin Resource Sharing (CORS), Whitelists, and Trust Certificates. In addition, System Manager provides a flexible platform for administering certificates and authorities.

For more information about the security configuration, see the Collaboration Environment and System Manager product documentation.

Certificate-based authentication overview

For Real-Time Speech Snap-in certificate-based authentication, perform the following procedures on the System Manager web interface:

- Create a client keystore.
- Download the Collaboration Environment trusted certificate from System Manager.
- Authenticate browsers.

Ensure that the client applications that access Real-Time Speech operations provide the location and credentials of their client certificate and trusted certificate to establish a secure session with the Real-Time Speech cluster.

For more information, see the Collaboration Environment and System Manager product documentation.

Cross Origin Resource Sharing

Cross Origin Resource Sharing (CORS) enables access to Real-Time Speech requests that originate from other domains.

The configuration is available on the Collaboration Environment > Configuration > HTTP Security page.
Note:

If you use a custom web client application, and enable the client certificate challenge, the web clients cannot authenticate the client certificate through Javascript, that is, Ajax calls. The browser and javascript layer are not connected. Hence, the system does not send the required client certificate.

Port utilization

For Real-Time Speech Snap-in port information, see the Collaboration Environment 3.0 Port Matrix document at http://support.avaya.com/security.
Chapter 8: Troubleshooting

Alarms

Overview

Avaya Real-Time Speech Snap-in generates alarms when any error occurs. The system sends a self-service email to the configured email address.

You can view, search, filter, export, and configure alarms from the System Manager web interface. Alarm information is available on the Services > Events > Alarms page in System Manager. For more information, see Maintaining and Troubleshooting Avaya Aura® Collaboration Environment at https://support.avaya.com/.

Alarm severities

<table>
<thead>
<tr>
<th>Severity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major</td>
<td>Major alarms identify failures that are causing a critical degradation of service. These alarms require immediate attention.</td>
</tr>
<tr>
<td>Minor</td>
<td>Minor alarms identify failures that are causing service degradation. These failures do not cause the system to be inoperable.</td>
</tr>
<tr>
<td>Warning</td>
<td>Warning alarms identify failures that cause no significant degradation of service. Warning alarms are not reported to a services organization.</td>
</tr>
<tr>
<td>Indeterminate</td>
<td>Indeterminate alarms indicate that the alarm matches one of the established alarm rules. Indeterminate alarms do not specify a severity.</td>
</tr>
</tbody>
</table>

Alarm status

<table>
<thead>
<tr>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raised</td>
<td>An alarm has been generated. Software recovery actions have failed to correct the problem.</td>
</tr>
<tr>
<td>Cleared</td>
<td>The problem has been fixed and the alarm has been cleared. This state must be set manually.</td>
</tr>
</tbody>
</table>
Data grid space not available

**Alarm text**
RealTimeSpeech_GRIDNA "Unable to acquire DataGrid space."

**Alarm ID**
RealTimeSpeech_GRIDNA

**Alarm level**
Major

**Trigger component**
- Insufficient resources on Collaboration Environment cluster.
- Collaboration Environment cluster connectivity issue.

**Problem description**
The data grid space could not be created or deployed or a connection to the space could not be made.

**Proposed solution**
**Procedure**
1. Provision additional resources or Collaboration Environment instances if needed.
2. Restore network connectivity.

Data grid operation exception

**Alarm text**
RealTimeSpeech_GRIDRWFAIL "Attempt to read/write to space failed."

**Alarm ID**
RealTimeSpeech_GRIDRWFAIL

**Alarm level**
Major

**Trigger component**
- Loss of connection between the proxy server and the data grid.
- Failure of the data grid.

**Problem description**
A request to add or get data from the data grid resulted in an exception.

**Proposed solution**
**Procedure**
1. Provision additional resources or Collaboration Environment instances if needed.
2. Restore network connectivity.

**Subscriber endpoint failure**

**Alarm text**
RealTimeSpeech_SUBCBFAIL "The Callback URL for a subscribing client application has become unavailable."

**Alarm ID**
RealTimeSpeech_SUBCBFAIL

**Alarm level**
Warning

**Trigger component**
- A subscriber endpoint responded with an error status.
- A connection could not be made to a subscriber endpoint, or a connection timed out.

**Problem description**
An attempt to communicate with a subscriber endpoint using a client-supplied callback URL was unsuccessful.

**Proposed solution**

**Procedure**
1. Ensure the endpoint is operating correctly and has sufficient resources to handle requests.
2. Check connectivity to the endpoint.

**Speech search start failure**

**Alarm text**
RealTimeSpeech_SRCHSTRTFAIL "System unable to initiate a speech search request."

**Alarm ID**
RealTimeSpeech_SRCHSTRTFAIL

**Alarm level**
Minor

**Trigger component**
The system cannot execute the speech search query. For example, the sum of the complexity of all selected or supplied queries exceeds the defined threshold.

**Problem description**
The system was unable to start a speech search.
Proposed solution

Procedure

1. Ensure query complexity and number of queries matching selection criteria do not exceed complexity thresholds.
2. Review log output for any other failure conditions.

Speech search platform failure

Alarm text
RealTimeSpeech_SRCHPLATFAIL "Platform returned failure message on request for speech search services."

Alarm ID
RealTimeSpeech_SRCHPLATFAIL

Alarm level
Major

Trigger component
• Speech search services did not run.
• No connectivity with speech search services.

Problem description
The system-provided speech search services are unavailable to the Real-Time Speech Snap-in service.

Proposed solution

Procedure

1. Ensure speech search services are running.
2. Ensure network connectivity between components of the system.

Queries not available

Alarm text
RealTimeSpeech_QRYNA "No queries have been configured on the system."

Alarm ID
RealTimeSpeech_QRYNA

Alarm level
Warning

Trigger component
No queries defined.

Problem description
The system cannot perform speech searches because you have not defined the speech search queries.
Proposed solution

Procedure

The customer must define one or more speech search queries.

Logging

Real-Time Speech log files

Collaboration Environment provides a separate log file for Real-Time Speech. If more than one version of Real-Time Speech is installed, all logs are stored to the same file.

The following table describes the log name and location of the logs related to Real-Time Speech:

<table>
<thead>
<tr>
<th>Log name</th>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real Time Speech logs</td>
<td>/var/log/Avaya/services/RealTimeSpeech/RealTimeSpeech.log</td>
<td>Validates that the snap-in is receiving call events and that speech search operations are successful.</td>
</tr>
</tbody>
</table>

You can modify the logging level for Collaboration Designer snap-ins on the System Manager Collaboration Environment Logging Configuration page. You can view the details of each log, perform a search for logs, and filter specific logs. Use the /opt/avaya/contrib/bin/ce tool to enter commands for viewing logs, changing logs configuration.

For more information, see *Maintaining and Troubleshooting Avaya Aura® Collaboration Environment*.

Automatic Speech Searches not triggered

Condition

Calls are being sequenced through the Real-Time Speech Snap-in, but no speech searches occur even though automatic starting of speech search is configured. The system raises a RealTimeSpeech_QRYNA alarm.

The cause is that no defined queries match the language and tags values defined in the Real-Time Speech Snap-in attribute configuration.

Solution

1. Adjust the Real-Time Speech Snap-in attributes either at the profile, cluster or global level as appropriate, to ensure the attributes match at least one defined query

   OR
2. Create one or more queries whose language and tags values match the configured Real-Time Speech Snap-in attributes.
# Chapter 9: Additional resources

## Documentation

See the following related documents at [http://support.avaya.com](http://support.avaya.com).

<table>
<thead>
<tr>
<th>Title</th>
<th>Description</th>
<th>Audience</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Avaya Real-Time Speech Snap-in Release Notes</strong></td>
<td>This document contains Avaya Real-Time Speech Snap-in information that is not included in the Snap-in documentation. This document highlights known issues about Real-Time Speech with workarounds that are available.</td>
<td>Avaya Professional Services Implementation engineers</td>
</tr>
<tr>
<td><strong>Maintaining and Troubleshooting Avaya Aura® Collaboration Environment</strong></td>
<td>This document contains procedures to identify and troubleshoot problems for Avaya Aura® Collaboration Environment.</td>
<td>Avaya Professional Services Implementation engineers</td>
</tr>
<tr>
<td><strong>Avaya Real-Time Speech Snap-in SDK</strong></td>
<td>This document provides a client library for users to write software that interacts with a deployed Real-Time Speech system.</td>
<td>Avaya Professional Services Implementation engineers Software developers</td>
</tr>
<tr>
<td><strong>Avaya Aura® Collaboration Environment Overview and Specification</strong></td>
<td>This document describes tested product characteristics and capabilities, including product overview and feature descriptions, interoperability, performance specifications, security, and licensing requirements.</td>
<td>Avaya Professional Services Implementation engineers Services and Support personnel System administrators</td>
</tr>
<tr>
<td><strong>Administering Avaya Aura® Collaboration Environment</strong></td>
<td>This document provides the procedures to administer and configure Collaboration Environment services.</td>
<td>Services and Support personnel System administrators</td>
</tr>
<tr>
<td><strong>Administering Avaya Aura® System Manager</strong></td>
<td>This document provides the procedures to administer and configure System Manager.</td>
<td>Services and Support personnel System administrators</td>
</tr>
<tr>
<td><strong>Avaya Collaboration Designer Snap-in Reference</strong></td>
<td>This document provides a functional description of Avaya Collaboration Designer Snap-in as</td>
<td>Sales engineers Software developers</td>
</tr>
</tbody>
</table>

*Table continues…*
<table>
<thead>
<tr>
<th>Title</th>
<th>Description</th>
<th>Audience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avaya Collaboration Designer Snap-in Developer’s Guide</td>
<td>This document describes detailed steps and concepts needed to create and deploy different types of Workflow Definitions.</td>
<td>Workflow Definition developers</td>
</tr>
<tr>
<td>Getting Started with the Avaya Collaboration Designer Snap-in</td>
<td>This document guides through the core steps needed to create a Workflow Definition.</td>
<td>Workflow Definition developers</td>
</tr>
<tr>
<td></td>
<td>well as administration, deployment, security and maintenance. Includes interoperability, performance, and design considerations.</td>
<td>System administrators Services and Support personnel</td>
</tr>
</tbody>
</table>

**Support**

Visit the Avaya Support website at [http://support.avaya.com](http://support.avaya.com) for the most up-to-date documentation, product notices, and knowledge articles. You can also search for release notes, downloads, and resolutions to issues. Use the online service request system to create a service request. Chat with live agents to get answers to questions, or request an agent to connect you to a support team if an issue requires additional expertise.
Appendix A: Guidelines for creating queries

Overview

To get the best search results from Real-Time Speech Snap-in, it is important to put some thought and care into the selection of search terms and the creation of search queries. Ensure that the search terms capture all likely ways of talking about the topics that you wish to find and to make the most effective use of the phonetic search technology. The following sections describe some best practices when selecting search terms and organizing them with operators to form complex search queries.

Phonetic search workflow
The parsing of a search term is potentially a multiple stage process. For all languages there are two stages in common:

- The system performs a look-up in a pronunciation dictionary for each word in the phrase. This dictionary might contain multiple alternative pronunciations for a word. In such case, the system keeps each potential pronunciation when the search is actually performed. The system performs the pronunciation dictionary look-up in two phases; first a case-sensitive look-up, and if the case-sensitive lookup fails, then the system performs a case-insensitive search.

- If the word is not found in the pronunciation dictionary, then the system applies a series of letter-to-sound rules, which are unique to the language-pack, to produce an estimated pronunciation. The letter-to-sound (LTS) rules always produce a single pronunciation.
General guidelines for entering search terms

- Use correct spelling as missing or extraneous characters can drastically affect how a word is pronounced.
- Avoid using single, short words as search phrases as they do not give you the best chance of good results. It is likely to lead to incorrect results. For example, if you use cat as a search term, it could match many irrelevant words, such as category or catastrophe.
- Use longer words and word-sequences to maximize the use of the acoustic information in the audio recordings.
- Use distinctive words in search terms, if possible.
- Remember that different people say the same thing in different ways and create multiple search-terms that reflect those variations. For example, five hundred K, five hundred thousand, and half a million mean the same thing.

Search terms that use abbreviations

You can categorize abbreviations as:

- Abbreviations that are pronounced when spoken such as NATO or scuba.
- Abbreviations that are spelled out when spoken such as IBM or FBI.

Common acronyms can be present in the pronunciation dictionary. If a dictionary entry exists, all alternative pronunciations in the dictionary will be used, and letter to sound (LTS) rules will not be used. If LTS is used, only one pronunciation is searched for. If an abbreviation is typically spelled out, then to use it as a search phrase you need to use spaces or full-stops to separate the letters. Single letters on their own will be pronounced as letters of the alphabet. For example, enter I B M or I.B.M as the search phrase. If you enter the search phrase as IBM, and the search phrase is not found in the pronunciation dictionary, you can try to derive a pronunciation for this string of characters from the LTS rules.

In cases where an acronym can be both pronounced and spelled out, depending on the individual speaking, it would be a good idea to enter both alternatives as search phrases. For example, VAT, that is Value Added Tax, which some people spell out but others pronounce; so you would use V A T, or V.A.T, and VAT as the search terms.

Guidelines for capitalization

The use of upper and lower case can affect the interpretation of a search term. The use of capitals in a search phrase can make a difference if a word happens to be in the pronunciation dictionary with multiple cases. For example, in the UK English pronunciation dictionary, the word reading has two pronunciations: there is a town in England named Reading, actually pronounced as Redding.
and Reading. The word reading has only one pronunciation. If a word is not found in the pronunciation dictionary, the letter to speech (LTS) rules are employed. The interpretation will remain same, irrespective of the use of letter case.

Complex search queries with logical operators

You can define search phrases within a logical operator which determines how results for that phrase are processed. You can define the operators within an operator and create complex search queries. Following are the available operators and gives some examples of usage:

ANY

The ANY operator returns a match when any of the constituent terms is matched. ANY is commonly used to express variations of phrases and synonyms, to capture the natural variability in the way a particular phrase or concept may be spoken.

Examples of phrase variations:

- I want a refund, I want my money back, I want compensation
- fourteen days, two weeks
- five hundred thousand, half a million
- I want to speak to a supervisor, I want to speak to someone in charge

ALL

The ALL operator returns a match when all of the constituent terms are matched. Use of the ALL operator might help to restrict the number of incorrect matches by looking for spoken terms that are expected to be found together. You must specify a duration parameter by giving a maximum time window during which matches for the constituent terms are expected to occur.

ATLEAST

The AT LEAST operator is similar to the ALL operator, but does not require every constituent term to match. Use of the AT LEAST operator provides for situations where a hit for more than a single phrase is required to confirm that something is occurring, but use of an ALL would risk missing genuine occurrences. You must specify a duration parameter by giving a maximum time window during which matches for the constituent terms are expected to occur.

FIRST

The FIRST operator indicates that matches for a particular term are only relevant at the start of the call. For example, if a greeting is being searched for and is only expected to occur during the first N seconds of the call, placing the greeting search term within a FIRST operator can be useful in avoiding genuine hits in the wrong parts of the call. You can use the duration option to specify a time window from the start of the call during which matches are expected.

Duration

Every operator, with the exception of ANY, must specify a duration value which determines the size of the time window within which matches must be found. If you carefully tailor the duration, you can provide an effective way of reducing the number of false-positives and providing more useful results.
This is especially true in cases where there is an expectation that matches should occur within a particular period of time.

The duration property also has an impact on latency because the engine prioritizes detecting the best match within the specified time window, rather than returning a result as early as possible. If the duration you specify is too long, then the results are not returned in a timely manner.

**Threshold**

A threshold parameter on each search term is applicable to both operators and phrases. The threshold parameter supports user defined control of the number of matches returned.

Specifying a lower threshold reduces the risk of missing things and increases the rate of recall but also increases the chance of seeing irrelevant results. Specifying a higher threshold increases the likelihood that the returned results are relevant but increases the chance that genuine matches are missed.

You can use defaulted thresholds, however, you must tune these values to the particular scenario to produce a useful balance between rate of recall and false-positives.
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