



# **Avaya Context Store Snap-in Release Notes**

Release 3.5.0.1

Issue 2

December 2018

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# Chapter 1: Introduction

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## Purpose

The Avaya Context Store Snap-in 3.5.0.1 Release Notes provides information on the features available and solution details. This document provides the latest information to supplement Context Store software and documentation.

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## Intended audience

This document is intended for implementation engineers and administrators who install/deploy Context Store Snap-in.

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## Related resources

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### Documentation

For updated documentation, product support notices, and service pack information, visit the Avaya Support Center website at <https://support.avaya.com>.

Title	Description
Avaya Context Store Snap-In Reference Guide	The purpose of this document is to describe the Context Store Snap-In characteristics and capabilities, including feature descriptions, interoperability, and performance specifications and to provide instructions on deploying, configuring, and troubleshooting the Context Store services.
Avaya Context Store Snap-In Developer Guide	Developer guide explaining how to use each individual feature of Context Store
<b><i>Other relevant product documentation</i></b>	
Avaya Breeze™ Documentation	
Engagement Designer Documentation [for users of the <b>Context Store Task Type</b> only]	
Orchestration Designer Documentation [for users of the <b>Context Store Pluggable Data Connector</b> only]	

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## Training

The following courses are available on the Avaya Learning website at [www.avaya-learning.com](http://www.avaya-learning.com). After logging into the website, enter the course code or the course title in the Search field and click Go to search for the course.

Code	Course title
2519W	Introducing Avaya Context Store Snap-in 3.1 (Self-Paced OnDemand)
4115W	Omnichannel Assisted: Avaya Breeze and Snap-ins (Part 1) (Self-Paced OnDemand)

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To find videos on the Avaya support site, select the product name, and check the videos check box to see a list of available videos.

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# Chapter 2: Release Information

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## Changes in Avaya Context Store 3.5.0.1

This Context Store 3.5.0.1 release supports the same feature set as that of Context Store 3.5.0.0. For detailed information about these features, as well as installation and configuration instructions, see the latest *Context Store Reference Guide* and *Context Store Developer Guide* available from [support.avaya.com](http://support.avaya.com)

The *Context Store Developer Guide* contains API documentation for Context Store interfaces and SDKs, as well as usage tutorials for the sample clients provided for certain features of the product.

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### (Modified) – Changes to ContextStoreRest service API

Additional URLs for alias path parameter were added. Usage of an aliasId now can be both `"/?alias=<alias>"` and `"/alias/<alias>"`.

Examples of new URLs added:

Update Context Data by aliasId:

@PUT <http://{{IP}}/services/ContextStoreRest/cs/contexts/alias/{{aliasId}}/>

Update Context Alias list by aliasId:

@PUT <http://{{IP}}/services/ContextStoreRest/cs/contexts/aliases/{{aliasId}}/>

Update Value by aliasId:

@PUT <http://{{IP}}/services/ContextStoreRest/cs/contexts/keys/alias/{{aliasId}}/{{key}}/>

Upsert Context by aliasId:

@PUT <http://{{IP}}/services/ContextStoreRest/cs/contexts/upsert/alias/{{aliasId}}/>

Get Data by aliasId

@GET <http://{{IP}}/services/ContextStoreRest/cs/contexts/alias/data/{{aliasId}}/>

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Get Context audit data by aliasId:

@GET <http://{{IP}}/services/ContextStoreRest/cs/contexts/audit/alias/{{aliasId}}/>

Get Value by aliasId:

@GET <http://{{IP}}/services/ContextStoreRest/cs/contexts/keys/alias/{key}/{{aliasId}}/>

Get groupId by aliasId:

@GET <http://{{IP}}/services/ContextStoreRest/cs/contexts/groupId/alias/{{aliasId}}/>

Delete Context by aliasId:

@DELETE <http://{{IP}}/services/ContextStoreRest/cs/contexts/alias/{{aliasId}}/>

Delete aliasId:

@DELETE <http://{{IP}}/services/ContextStoreRest/cs/contexts/aliases/{{aliasId}}/>

Delete Value by aliasId:

@DELETE <http://{{IP}}/services/ContextStoreRest/cs/contexts/keys/alias/{{aliasId}}/{key}/>

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## **(Modified) – Changes to ContextStoreTasks**

A new operation 'Get Context Store Status' has been added to ContextStoreTasks which retrieves the status of the Context Store datagrid. The response contains status information such as 'Context Store cluster is UP' or an error response 'There is an issue with the Context Store cluster'.

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## **(Modified) – Changes to Service Attributes**

After service attributes have been deselected by unchecking the 'Override Default' checkbox (in System Manager-> Elements->Avaya Breeze-> Configuration->Attributes->Attributes Configuration->Service Cluster->Select Cluster, select Service), the default value is displayed. On committing the changes for the service attributes the old attribute values are still seen. The default values should be seen instead. If deselecting an attribute value that has a 'Override Default' checkbox, select the default value and tick the checkbox. Commit changes.

The value of the dynamic dropdown for service attributes e.g. the ContextStoreManager attribute for 'GEO:Target Cluster Id' (in System Manager->Elements->Avaya Breeze-> Configuration->Attributes->Attributes Configuration->Service Cluster->Select cluster, select ContextStoreManager) is not automatically repopulated after ContextStoreManager is uninstalled and then reinstalled in the case where there is only one ContextStoreManager version installed on

SMGR. The value of the attribute 'GEO:Target Cluster Id' needs to be re-entered and saved after reinstall of ContextStoreManager on all affected clusters.

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## Avaya Breeze™ 3.5.0.1

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### Breeze root login

Enabling Avaya EASG login is required in order to enable the root user account on Breeze nodes.

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### Re-configuration of certificates required after Avaya Breeze™ upgrade

When an Avaya Breeze™ 3.5.0.1 server is upgraded (using the .ISO), the security keystore required for the Context Store geo-redundancy feature is erased by the upgrade process. Without the keystore, the geo-redundancy feature cannot operate; no data will be replicated between the clusters.

It is therefore necessary to reconfigure this keystore in the `/opt/Avaya/dcm/gigaspace/security/` directory as per the instructions in the *Avaya Context Store Snap-In Reference Guide 3.5*

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### Java 8 and SQL Server JDBC Driver (for EDM)

Breeze 3.5.0.1 (3.5, 3.4 and 3.3) are Java 8 environments, therefore the Java 8 version of SQL Server JDBC driver (*sqljdbc42.jar*) must be used for the External Data Mart feature.

See section *Upgrade SQL Server JDBC Driver used for External DataMart* in this document

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### Supported TLS version

By default, the supported TLS version across clusters is TLS 1.0 but the Oceana solution, of which Context Store is a component supports TLS1.2. You can manually change the TLS version through System Manager from `Home / Services / Security / Configuration / Security Configuration`

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# Chapter 3: Context Store Software Installation and Upgrade

All the software required for deploying the Avaya Context Store services and underlying platform is available on the Avaya Support site - <https://support.avaya.com/>

## Context Store Software

This section provides information on the software required for deployment of Context Store 3.5.0.1.

Product	Version	PLDS ID & MD5 Checksum
<b>ContextStoreManager SVAR</b>	3.5.0.1.52100601	PLDS ID: CS000000111 MD5: f2f5e836403e5355e33b01961534b7ed
<b>ContextStoreRest SVAR</b>	3.5.0.1.52100601	PLDS ID: CS000000112 MD5: e3eb9b73d41cff64fdccab02ec8f9381
<b>ContextStoreScreenPop SVAR</b>	3.5.0.1.52100601	PLDS ID: CS000000113 MD5: 51d35fa0f6f188684803f11b5cd8d31e
<b>ContextStoreNotify SVAR</b>	3.5.0.1.52100601	PLDS ID: CS000000114 MD5: 3511293ecbaa14cf25cff2cb6bd5c220
<b>ContextStoreRules SVAR</b>	3.5.0.1.52100601	PLDS ID: CS000000115 MD5: 34b3ab6e6116bce601b3b7805bbbfc1
<b>Streams SVAR</b>	3.5.0.1.52100601	PLDS ID: CS000000116 MD5: 53e878fc2d259485f47a799403beb8f4
<b>ContextStoreSoap SVAR</b>	3.5.0.1.52100601	PLDS ID: CS000000118 MD5: 255eb9b89c13d2ce38aa052137f000a0
<b>ContextStoreQuery SVAR</b>	3.5.0.1.52100601	PLDS ID: CS000000119 MD5: 78dea0a8dd0a9ed7884b13c173daf215
<b>ContextStoreTasks</b> (for Engagement Designer)	3.5.0.1.52100601	PLDS ID: CS000000117 MD5: fbd0d32ddb900db936ec96dd3168fc61
<b>CS PDC JAR</b> (Pluggable Data Connector)	cs-pdc-plugin-5210.0.6	MD5: 1847e7852105b7084152da0d7c15e43e
<b>CS Java SDK ZIP</b>	ContextStore-5210.0.6	MD5: 042a8a6d5c4355db6eaa030525328158
<b>CS JavaScript SDK</b> (DataStore package in the Client SDK)	Client SDK 4.0 (CS 3.5.0.0)	MD5: 6001828f337d893ae445664e274f1f7e

Please note that the CS PDC JAR, CS Java SDK ZIP and CS JavaScript SDK components are available through [www.devconnectprogram.com](http://www.devconnectprogram.com) -> Products & Resources -> Context Store -> select the appropriate release number.

---

## Additional Software required for 'Customer Journey for Workspaces on Elite'

The following software is required to enable the 'Customer Journey for Workspaces on Elite' functionality. However, it is not required for Customer Journey Visualization standalone for Context Store.

For more information about 'Customer Journey for Workspaces on Elite' including the deployment process, configuration and its usage please see the 'Customer Journey for Workspace on Elite Reference White Paper' available from [www.devconnectprogram.com](http://www.devconnectprogram.com) -> Products & Resources -> Context Store -> select the appropriate release number.

Product	Version	PLDS ID & MD5 Checksum
Customer Journey Service SVAR	3.5.0.1.52100601	PLDS ID: CS000000120 MD5: 48d79d4876c75b1f75b88e9b88a514ca
Customer Management SVAR	3.5.0.1.52100601	PLDS ID: CS000000121 MD5: 4f8076197b682c6731cd4e45bb648357

---

## Platform Interoperability

Context Store 3.5.0.1 release software is supported on the Avaya Breeze™ 3.5.0.1 releases only. For System Manager line-up and installation information, see Avaya Breeze™ documentation.

---

### Avaya Breeze™

Product	Version	MD5 Checksum
Avaya Breeze™ ova	Breeze-3.5.0.1.350101.ova	6f1132f6c4a1480b266954c67a0f5e27
Avaya Breeze™ iso (for upgrades)	aus-installer-3.5.0.1.350101.iso	eaf0eed122508d06d00e9a8c5e2c3a30
Required Avaya Breeze™ patch	ce-patch-3.5.0.1.17350101.bin	05dbf2b0acc19b0f9556aa1e14022547

**NB:** Before installing this Context Store release, you must install (or upgrade to) Avaya Breeze™ 3.5.0.1 release.

---

## Engagement Designer

Product	Version	MD5 Checksum
Engagement Designer svar	3.5.0.1.52005	3f4b81f3d7cbb414bf0df281a98740c
EngagementDesignerTasks jar	3.5.0.1.52005	29309460269206acf400e00e9b263905

---

## Upgrading the Context Store snap-in services

### Before you begin

**NB:** Upgrade to Avaya Breeze™ 3.5.0.1 before proceeding with this Context Store 3.5.0.1 upgrade.

---

### Upgrade Overview

To upgrade a Context Store Snap-In service, you must install a new version of the snap-in service using the Avaya Breeze™ Element Manager.

When you upgrade the ContextStoreManager SVAR, the existing data-grid remains unchanged. All CS services currently installed will continue to use the existing spaces until the cluster of Avaya Breeze™ servers are simultaneously restarted and the new data-grid is deployed.

**NB:** All information stored in the data-grid will be lost when the cluster is restarted.

### Service Version Management

- If no **Preferred Version** is selected, the newest version of the snap-in currently installed will automatically be selected to service requests.
- If **Preferred Version** is already set for the currently installed snap-in service, this version will continue to service the Context Store requests after the new version of the service has been installed. To use the newly installed snap-in service version by default, you must set the newer version as the **Preferred Version**.

For more information about snap-in service version management, see Avaya Breeze™ administration guide.

---

## Upgrade procedures for Context Store Snap-In Services

### Upgrade SQL Server JDBC Driver used for External DataMart

Breeze 3.5.0.1 runs on Java 8 therefore the SQL Server driver used in for prior releases (which is for Java 7 environments) will not function correctly.

1. Upload the Java 8 SQL Server JDBC driver (**sqljdbc42.jar**) into the Breeze Element Manager from `Home / Elements / Avaya Breeze™ / Configuration / JDBC Providers`
2. Upgrade the JDBC driver used in Context Store cluster by following the Standard Upgrade Procedure below.

### Standard Upgrade Procedure for Context Store services

**NB:** *The standard upgrade procedure described below applies to all Context Store SVARs except ContextStoreScreenPop, ContextStoreRules, Streams and ContextStoreTasks for Engagement Designer (see section customized upgrade instructions on pages 13 -15).*

1. Verify that the current Context Store deployment is functioning correctly before the upgrade.
2. On the System Manager Web console, click **Elements > Avaya Breeze™**
3. In the left navigation pane, click **Cluster Administration**.
4. Select cluster to be upgraded and set to **Deny New Service** state in the **Cluster State** list.
5. Upgrade to Avaya Breeze™ 3.5.0.1 before proceeding with this Context Store 3.5.0.1 upgrade.
6. In the left navigation pane, click **Service Management**.
7. On the **Service Management** page, load the new versions of the Context Store snap-in services.
8. To upgrade to the latest release of the Context Store service (3.5.0.1), following either of the following procedures:
  - ✓ On the **Service Management** page, select and install the new version of Context Store
  - ✓ On the **Cluster Administration** page, select the check-box beside the cluster you wish to upgrade and click the **Edit** button. On the **Services** tab, select the snap-in versions to install from the **Available Services** list.

For more information about loading and installing snap-in service, see *Administering Avaya Breeze™*.
9. When the installation is complete, verify that the upgraded services are successfully installed. For verification steps, see **Verifying a successful deployment** in the *Avaya Context Store Snap-in Reference*.
10. In the left navigation pane, click **Cluster Administration**.
11. Select upgraded cluster and set to **Accept New Service** state in the **Cluster State** list.
12. Verify that the Context Store deployment is functioning correctly after the upgrade.
13. The previously installed versions can now be uninstalled and deleted. These procedures are documented in the *Avaya Context Store Snap-in Reference Guide 3.5*



## Upgrade Procedure for ContextStoreScreenPop, ContextStoreRules and Streams services

1. Follow steps 1- 6 in the standard upgrade procedure on page 12.
2. On the **Service Management** page, uninstall the old service by selecting it and clicking uninstall.
3. After uninstallation is completed, delete the old service version from Avaya Breeze™ Element Manager.
4. Load the new version of the service SVAR.
5. Install the new version of the service on the Context Store cluster.
6. When the installation is complete:
  - *Streams:*
    - 1) navigate to **Elements > Avaya Breeze™ > Configuration > Service Ports** page
    - 2) select the Streams service
    - 3) Verify that **TCP/HTTP** and **TCP/HTTPS** ports ranging from **9292 to 9301** and **8443 to 8452** appears respectively which is an indication that System has reserved these ports for the Service.
7. In the left navigation pane, click **Cluster Administration**.
8. Select upgraded cluster and set to **Accept New Service** state in the **Cluster State** list.

---

## Upgrade procedure for Context Store PDC

1. Verify that the currently installed Context Store Snap-In Service versions are functioning correctly before starting the upgrade.
2. Start the Orchestration Designer Eclipse application.
3. Select **Window > Open Perspective > Speech**.
4. Select the project for which you have enabled Context Store PDC connector.
5. From the **Project** menu, select **Properties**.
6. On the left pane of the properties window, click **Orchestration Designer**.
7. On the **Orchestration Designer** pane, click the **Pluggable Connectors** tab.
8. From the **Available Connectors** list, clear the **Context Store Connector** check box.
9. Click **OK**.
10. Repeat step 2 through 8 for all the projects for which you have enabled Context Store PDC connector.
11. Close the Orchestration Designer Eclipse application.
12. Open the `<Eclipse_Home>/plugins` folder and delete the existing `cs-pdc-plugin-x.xx.jar` file.
13. Start the Orchestration Designer Eclipse application.
14. Copy the new `cs-pdc-plugin-5210.0.6.jar` file into the `<Eclipse_Home>/plugins` folder.
15. Re-start the Orchestration Designer Eclipse application.
16. Configure the projects to use the upgraded Context Store PDC plug-in.

For information on how to configure a project to use Context Store PDC for Avaya Experience Portal, see **Configuring the sample application to use Context Store PDC plug-in** in the *Avaya Context Store Snap-in Reference*.

### Optional: Update pre-3.3.0.0 release AAEP callflows which use the CS PDC

Existing Orchestration Designer/Avaya Aura Experience Portal workflows must be updated after upgrading to the latest Context Store PDC. A new parameter (`rulesEnabled`) was added to the Context Store PDC in 3.3.0.0 to support ContextStoreRules service functionality.

1. Verify workflow execute successfully using the Application Simulator in the Orchestration Designer environment which uses an older version of the CS PDC
2. Upgrade the PDC as instructed above (procedure also documented in the CS Developer Guide)
3. Make sure that *WEB-INF/lib* contains the updated version PDC jar only. If the old version also exists then:
  - remove it from *WEB-INF/lib* folder;
  - go to *Properties -> Java Build Path (Libraries)* and remove old PDC jar from list.
4. Restart Orchestration Designer.

### Optional: Update pre-3.2.0.0 release AAEP callflows which use the CS PDC

Context Store PDC packaging and naming was updated in the CS 3.2 release; applications built against a 3.1.X or 3.0.x version of this plugin must be cleaned and rebuilt. If rebuilding does not resolve the reported error, main .flow file must be updated manually as instructed below

1. Upgrade the PDC as instructed in Context Store Developer Guide
2. Error will be reported when new Context Store connector is enabled  
(*"Call flow item is not valid. Either the type no longer exists, or the plug-ins that define the item type are not installed. Type: com.avaya.ingensg.cs.pdc.connector"*)
3. The word "*ingensg*" in the Context Store connector package name is no longer valid and therefore all references to this name must be removed by cleaning and rebuilding the project.  
**NB:** If cleaning and rebuilding the project does not correct the error, all references to the old package name must be updated manually.  
Right-click on the main **.flow** class in the project (usually called *main.flow*), click on **Open with** and select **Text Editor** and delete "*ingensg*" from all package references, correct package name should now be "*com.avaya.cs.pdc.connector*"
4. Restart the Orchestration Designer Eclipse application; the error will be removed.

---

## Upgrade procedure for Context Store Tasks for Engagement Designer

### Before you begin

**NB:** The Engagement Designer environment must be upgraded to the version 3.5.0.1 release before proceeding with the upgrade of Task bundles.

Follow the corresponding procedure below depending on whether the existing ContextStoreTasks version is:

- 1) installed using the Avaya Breeze™ Element Manager
- 2) installed using the Engagement Designer Admin console

The Engagement Design Admin console can be accessed at the following URL:

`https://<ED-IP-ADDRESS>/services/EngagementDesigner/admin.html`

Refer to *Getting Started with Avaya Engagement Designer* for usage information for the Engagement Designer Admin console.

### **Procedure for upgrading ContextStoreTasks installed via Avaya Breeze™ Element Manager**

1. On the System Manager Web console, click **Elements > Avaya Breeze™**.
2. In the left navigation pane, click **Cluster Administration**.
3. Select cluster to be upgraded and set to **Deny New Service** state in the **Cluster State** list.
4. In the left navigation pane, click **Service Management**.
5. On the **Service Management** page, uninstall the old ContextStoreTasks service by selecting it and clicking **uninstall**.
6. After uninstallation is completed, delete the old ContextStoreTasks service version from Avaya Breeze™ Element Manager.
7. Open the **Engagement Designer Admin** console. Click on the **Bundles** tab.
8. To upload the new ContextStoreTasks SVAR, click on **Upload Bundle**
9. Click **Choose File** and navigate to the location of your saved ContextStoreTasks SVAR
10. Select the ContextStoreTasks SVAR and click **Upload**
11. When the ContextStoreTasks SVAR has been uploaded, click on it and select **Deploy Bundle**

### **Procedure for upgrading ContextStoreTasks installed via the ED Admin console**

1. Open the **Engagement Designer Admin** console.
2. Click on the **Bundles** tab.
3. Select the version of ContextStoreTasks that you wish to uninstall
4. Click on **Undeploy Bundle**
5. To upload the new ContextStoreTasks SVAR, click on **Upload Bundle**
6. Click **Choose File** and navigate to the location of your saved ContextStoreTasks SVAR
7. Select the SVAR and click **Upload**
8. When the SVAR has been uploaded, click on it and select **Deploy Bundle**
9. After the ContextStoreTasks bundle has been deployed successfully, select the old version of ContextStoreTasks and click on **Delete Bundle**

# Chapter 4: Known issues, fixes and workarounds

Refer to the Avaya Breeze™ release 3.5.0.1 documentation for known platform issues and workarounds.

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## Context Store: Known issues

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### Issue 1: *ContextStoreNotify* snap-in service is limited to one subscriber and certified to max throughput of 620 requests per second

#### Problem

There has been no change in the *ContextStoreNotify* itself, but the Breeze platform and Context Store base (*ContextStoreManager*) has been modified in numerous releases to support the Oceana solution, so there is no longer enough CPU capacity available to support more than one notification subscriber. Each subscription requires a significant amount of CPU resources to process.

#### Workaround

Avoid combining use of the *ContextStoreNotify* service, with use of features which have high CPU utilization (e.g. *aliasIds*, *audit trail*, *upsert*, *ContextStoreRules*, *Streams*).

#### Reference

CSSNAPIN-4792

#### Keywords

Notification, CPU, limitation

---

### Issue 2: High CPU Utilization for Lab 9 Deployment

#### Problem

For Lab 9 Deployment (64GB/8cpu/3nodes), when no of requests exceeds 1000 per second, CPU utilization for active LB and EDM active node is seen reaching/crossing threshold of 80%.

This occurs when the EDM PU is deployed on same node which is running the active load balancer. High CPU utilization can result in the node (and potentially eventually the cluster) going into 'deny state'.

## Workaround

N/A

## Reference

AOEC-6049

## Keywords

CPU Utilization, ContextStoreManager, EDM, Load Balancer

---

### **Issue 3: *ContextStoreManager* attribute 'GEO:Target Cluster Id' needs to be reconfigured if there is only one version of ContextStoreManager installed on SMGR which is then uninstalled and reinstalled**

#### **Problem**

The value of the ContextStoreManager dropdown attribute for "GEO:Target Cluster Id" is not automatically repopulated after ContextStoreManager is uninstalled and then reinstalled in the case where there is only one ContextStoreManager version installed on SMGR.

#### **Workaround**

The value of the attribute "GEO:Target Cluster Id" needs to be re-entered and saved after reinstall of ContextStoreManager on both GEO clusters.

#### **Reference**

ZEPHYR-59000

#### **Keywords**

ContextStoreManager, SMGR, attributes, GEO

---

### **Issue 4: The "Failed to persist item to external data mart." alarm may be delayed for up to 15 minutes after Context Store loses connection to the EDM on Oracle, SQL Server and PostgreSQL DBs.**

#### **Problem**

After the EDM is disconnected and a context is created with 'persistToEDM' flag set to true, the alarm "Failed to persist item to external data mart." should be generated. However, the generation of this alarm may be delayed by up to 15 minutes.

## **Workaround**

N/A

## **Reference**

AOEC-6705

## **Keywords**

Alarms, EDM

---

**Issue 5: After unchecking the ‘Override Default’ checkbox for service attributes in SMGR and attempting to commit the default values, the new default values are not saved.**

## **Problem**

After Context Store service attributes have been deselected by unchecking the ‘Override Default’ checkbox, the default value is displayed. On committing the changes for the service attributes, the old attribute values are still seen. The default values should be seen instead.

## **Workaround**

If deselecting an attribute value that has a ‘Override Default’ checkbox, select the default value and tick the checkbox. Commit changes.

## **Reference**

ZEPHYR-67122, ZEPHYR-65041

## **Keywords**

Breeze, attributes, checkbox, default

---

**Issue 6: *ContextStoreQuery* - Excessive failed connections with wrong EDM user and password details**

## **Problem**

If incorrect password or user details for EDM are configured for *ContextStoreQuery* or *ContextStoreManager*, *ContextStoreQuery* continues to attempt connections to the EDM.

## **Workaround**

Ensure the correct EDM password and user are configured for EDM in ContextStoreQuery and ContextStoreManager.

## **Reference**

AOEC-6938

## **Keywords**

EDM, ContextStoreQuery, ContextStoreManager

---

## **Issue 7: Streams Notifications are not sent intermittently**

### **Problem**

Notifications are not retrieved in test client. There is a NullPointerException in cs-space PU logs (/var/log/Avaya/dcm/pu/ContextStoreManager/ContextStoreManager-cs-space-\*.log):

### **Workaround**

Disable "Event Stream: Enable Event Streaming" property in ContextStoreManager attributes and then enable it again. It would trigger the ContextEventListener to be reloaded.

### **Reference**

AOEC-6540

### **Keywords**

Streams, Notifications

---

## **Issue 8: Cannot connect to the postgres database due to existing open connections**

### **Problem**

The connections to the postgres database lock up periodically. Client receives exception message "FATAL: sorry, too many clients already". Noticed on test environments in which the clusters have been restarted many times, but not the EDM server itself. Even with the connection limit set high - this is still seen to happen eventually.

### **Workaround**

---

Restarting the EDM server clears out all the old connections.

## Reference

AOEC-5967

## Keywords

EDM, connections, clients

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## Issue 9: The Avaya Context Store Developer Guide for the 3.5 release is missing ContextStoreTasks Error Handling changes introduced in the 3.5 release.

### Problem

Error handling changes were introduced in the 3.5 release of Context Store however these changes were not documented in the 3.5 version of the Avaya Context Store Developer Guide document.

### Workaround

Error handling information can be found in the online help for the ContextStoreTasks by clicking on the '?' symbol on the ContextStoreTask in the Engagement Designer Design console.

## Reference

CSSNAPIN-4906

## Keywords

Documentation, error handling, ContextStoreTasks

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## Context Store: Fixed issues

---

### Issue 1: CPU resources are being overconsumed

#### Problem

This is scenario caused by database disk not being managed (oldest data should be truncated or archived) or invalid credentials being provided resulting in Context Store becoming unable to connect to the EDM. The retry on the connection is results in memory and CPU resources being overconsumed until the processing unit fails.



## Workaround

If the EDM is inaccessible, an alarm will be raised e.g. ContextStoreManager\_CS\_EVT\_4 "Could not open connection" or "Failed to persist item to EDM". Redeploying the EDM PU after making the EDM accessible (either by making space in the EDM or by entering the correct EDM credentials), will free up the resources used by the EDM PU.

This can be achieved by killing the cs-edm process as follows:

- 1) Login to all Breeze nodes in the CS cluster as root user
- 2) Run the command `ps -ef | grep 'cs-edm'` on each of the nodes to find the applicable node and process id for the EDM PU.
- 3) Undeploy the EDM PU through SMGR > Avaya Breeze>Configuration->Attributes->Service Clusters. Select appropriate 'Cluster'. Select 'ContextStoreManager' 'Service. Unselect 'EDM: Enable Persistence to database' attribute, then select it again and choose 'false'. Select 'commit'.
- 4) Run the command `ps -ef | grep 'cs-edm'` to check if the EDM PU pid has been removed.
- 5) If the EDM PU pid is still visible,run the command `kill -9 <<process_id>>` on the applicable node to kill the EDM PU pid.
- 6) Verify that the EDM PU has been undeployed by re-running the command `ps -ef | grep 'cs-edm'` on each Breeze node.
- 7) If it has not been undeployed, repeat steps 3-6 above.
- 8) Correct the EDM inaccessibility issue; for example correct the EDM password or make space on the EDM.
- 9) Redeploy the EDM PU through SMGR > Avaya Breeze>Configuration->Attributes->Service Clusters. Select appropriate 'Cluster'. Select 'ContextStoreManager' 'Service. Unselect 'EDM: Enable Persistence to database' attribute, then select it again and choose 'true'. Select 'Commit'.
- 10) Verify that the EDM PU has been deployed by re-running the command `ps -ef | grep 'cs-edm'` on each Breeze node and checking that persisted contexts are visible in the EDM.

## Reference

AOEC- 4695 & AOEC- 5620

## Keywords

ContextStoreManager, EDM, Cluster, CPU, memory

# Chapter 5: Certified Deployments

This chapter contains a list of all Context Store deployments which have been tested and certified.

Detailed configuration information for each of these thirteen certified deployment options is provided in the [Data-grid Configuration Settings – ContextStoreManager Attributes](#) of this document. For additional, uncertified deployment configurations, use the CS Capacity Planner (available from DevConnect) to estimate the most suitable configuration.

## About these certified deployments

- Deployments 1 - 3 are small labs intended for trial purposes and product demos only.
- Deployments 4 – 13 are suitable for production environments.

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## Configuration Details – Supported Features

Id	Deployment Name	Avaya Breeze™ Nodes	Memory	CPU Cores	Disk Size	HA	GEO	EDM	Event Streams	Notifications
1	Lab: Core	1	8	4	S	N	N	N	N	N
2	Lab: HA	2	8	4	S	Y	N	N	N	Y
3	Lab: Feature	1	10	6	S	N	N	Y	N	Y
4	Prod: 16x2	2	16	8	M	Y	Y	Y	N	Y
5	Prod: 16x3	3	16	8	M	Y	Y	Y	N	Y
6	Prod: 32x3	3	32	8	M	Y	Y	Y	N	Y
7	Prod: 32x4	4	32	8	M	Y	Y	Y	N	Y
8	Prod: 32x5	5	32	8	M	Y	Y	Y	N	Y
9	Prod: 64x3	3	64	8	L	Y	Y	Y	Y	Y
10	Prod: 64x5	5	64	8	L	Y	N	Y	Y	Y
11	Prod: 128x1	1	128	8	L	N	N	Y	N	Y
12	Prod :128x2	2	128	8	L	Y	Y	Y	N	Y
13	Prod: 128x3	3	128	8	L	Y	Y	Y	N	Y

**NOTE:**

All of the thirteen certified deployment configurations listed support the **ContextStoreRest** interface (which includes the audit, upsert and alias features), **ContextStoreScreenPop**, **ContextStoreNotify**, the **Context Store SDK**, **ContextStoreRules**, the **Context Store PDC** and the **Context Store Engagement Designer Tasks**.

- **NB:** The *Event Streams* feature (Streams SVAR) is not included in these certified configurations.

If enabling this feature, the 6GB of memory required for deployment of this feature must be taken from the *ContextStoreSpace* size given for certified deployment configurations.

---

## Traffic Rates, Configuration Settings and Limitations

Id	Requests / Sec	Lease	Number of Notifications Clients	Max Number of Audit Trail Entries	Number of AliasIds per Context
1	5	7200	0	10	1
2	10	7200	1	10	1
3	5	7200	1	10	1
4	50	7200	2	10	2
5	100	7200	2	10	2
6	120	3600	3	10	3
7	700	7200	1	10	2
8	1000	7200	1	10	2
9	1240	7200	1	10	3
10	1240	10800	1	10	3
11	400	9000	1	10	3
12	420	10800	1	10	3
13	1240	14400	1	10	3

The configuration information (snap-in service attributes) which applies to these certified Context Store deployments is provided in the [Data-grid Configuration Settings – ContextStoreManager Attributes](#) of this document.

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## Hard Disk Sizing For Context Store Nodes

ContextStore stores all the data in-memory, rather than on disk. The hard disk is only necessary for logs files, software installed on the cluster etc. The S, M, L sizings suggested for certified deployments are guidelines only based on this usage.

The default disk size Breeze allocates on smaller node profiles, 50GB, is sufficient for the lab deployments (lab 1, 2 & 3).

Typical recommendation is 150GB for medium and 300GB for large, but this can vary depending on what the customer wants.

If logs need to be retained for long period of time (this is configurable on a per service basis), then the large 300GB disk should be used.

---

## Performance Impact when Enabling Multiple Optional Features

If multiple optional features which have high cpu-usage are enabled on the Context Store cluster, supported throughput rate is decreased. This is necessary to preserve service by preventing *CPU Overload* state from being triggered on the Avaya Breeze™ nodes in the Context Store cluster.

If CPU usage on an Avaya Breeze™ server remains above 80% for more than one minute, *CPU Overload* protection will be triggered on Avaya Breeze™ and all requests to that server will be blocked. This situation puts additional load on the CPUs of remaining nodes in the cluster therefore it is likely that *CPU Overload* state will eventually be triggered on these nodes also.

For example, If both **EDM** and **ContextStoreNotify** features are enabled, the supportable throughput rate for environments which support over 1000 RPS for basic operation, is reduced by 50%

For additional performance-related information, see the **Performance and Scalability Considerations** chapter in the *Context Store Developer Guide*; in particular the **Enabling Optional Features** sub-section

---

## ContextStoreSoap Capacity Limitation

The **ContextStoreSoap** interface is certified for up to 300 requests per second only in CS 3.5.0.1.

This throughput level has been certified with the following combination of features.

- AliasId feature used, three aliasIds associated with each Context
- EDM persistence enabled, all Contexts persisted to External DataMart
- ContextStoreNotify enabled, two notifications subscribers receiving unfiltered notifications
- CS Audit: Event Limit = 5 entries per Context

---

## ContextStoreNotify Capacity Limitation

**ContextStoreNotify** snap-in service is limited to one subscriber and certified to max throughput of 620 requests per second in this release. Each notification subscription requires a significant amount of CPU resources to process, and there is no longer enough spare CPU capacity available on a cluster to support more than one subscription at high throughput (> 620 requests per second). Enabling multiple subscribers at high throughput is likely to cause *CPU Overload* state which will negatively impact all users of Context Store.

For optimum performance, avoid combining use of the *ContextStoreNotify* service, with use of other features which have high CPU utilization (e.g. aliasIds, audit trail, upsert, *ContextStoreRules*, *Streams*) at high traffic rates.

---

## Context Store External Data Mart Capacity Limitation

When the EDM PU is deployed on the same node as an active load balancer the maximum throughput of 800 requests per second is supported in this release for the largest deployment of Context Store.

Data in the External Data Mart will need to be archived or truncated periodically, this is related to the type of database being used and how large it is. Please note; archived data cannot be returned via Context Store Query or Customer Journey.

# Appendix

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## Data-grid Configuration Settings – ContextStoreManager Attributes

**NB:** If enabling *Event Streams* feature (Streams SVAR), the 6GB of memory required for deployment of this feature must be taken from the *ContextStoreSpace* size given for certified deployment configurations.

This feature is only supported on Context Store clusters equal to, or greater than, 3 servers with 64GB of RAM each, i.e. lab Id 9 or higher.

**Note:** The configuration values provided for the ContextStoreManager attribute ‘EDM: Mirror Service redo log size’ equates to approximately 30 minutes of data stored before reconnection of the EDM. The number provided in relation to this attribute represents the number of replication packets stored. A replication packet is either a single non-transactional “destructive” (write/take/update) operation, or a group of such operations that are done under the same transaction.

---

### Deployment Scenario – Id 1 Lab: Core

➔ Single Avaya Breeze™ server with 8GB of RAM and 4 cores

Requirement	Specification
ContextStore ManagerSpace DataGrid Settings	64m,128m,1
ContextStoreSpace DataGrid Settings	256m,1024m,1
CS Audit: Event limit	10
CS Default Lease Time	7200
CS Threshold: Instance High Requests per Second	6
CS Threshold: Instance Low Requests per Second	5
CS Threshold: Service High Requests per Second	6
CS Threshold: Service Low Requests per Second	5
EDM: Mirror Service container size	<i>EDM is not supported on nodes with just 8GB of RAM</i>
GEO: Gateway Service container size	<i>GEO is not supported on single-node deployments or on nodes with just 8GB of RAM</i>

---

## Deployment Scenario – Id 2 Lab: HA

→ Cluster of two Avaya Breeze™ servers with 8GB of RAM and 4 cores each

Requirement	Specification
ContextStore ManagerSpace DataGrid Settings	64m,128m,1
ContextStoreSpace DataGrid Settings	256m,1536m,1
CS Audit: Event limit	10
CS Default Lease Time	7200
CS Threshold: Instance High Requests per Second	11
CS Threshold: Instance Low Requests per Second	10
CS Threshold: Service High Requests per Second	11
CS Threshold: Service Low Requests per Second	10
EDM: Mirror Service container size	<i>EDM is not supported on nodes with just 8GB of RAM</i>
GEO: Gateway Service container size	<i>GEO is not supported on nodes with just 8GB of RAM</i>

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## Deployment Scenario – Id 3 Lab: Feature

→ Single Avaya Breeze™ server with 10GB of RAM with 6 cores

Requirement	Specification
ContextStore ManagerSpace DataGrid Settings	64m,128m,1
ContextStoreSpace DataGrid Settings	256m,1024m,1
CS Audit: Event limit	10
CS Default Lease Time	7200
CS Threshold: Instance High Requests per Second	6
CS Threshold: Instance Low Requests per Second	5
CS Threshold: Service High Requests per Second	6
CS Threshold: Service Low Requests per Second	5
EDM: Mirror Service container size	128m
EDM: Mirror Service redo log size	10000
GEO: Gateway Service container size	<i>GEO is not supported on single-node deployments</i>

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## Deployment Scenario – Id 4 Prod: 16x2

→ Cluster of two Avaya Breeze™ servers with 16GB of RAM and 8 cores each

Requirement	Specification
ContextStore ManagerSpace DataGrid Settings	256m,512m,1
ContextStoreSpace DataGrid Settings	512m,5120m,1
CS Audit: Event limit	10
CS Default Lease Time	7200
CS Threshold: Instance High Requests per Second	50
CS Threshold: Instance Low Requests per Second	40
CS Threshold: Service High Requests per Second	50
CS Threshold: Service Low Requests per Second	40
EDM: Mirror Service container size	1
EDM: Mirror Service redo log size	30000
GEO: Gateway Service container size	1

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## Deployment Scenario – Id 5 Prod: 16x3

→ Cluster of three Avaya Breeze™ servers with 16GB of RAM and 8 cores each

Requirement	Specification
ContextStore ManagerSpace DataGrid Settings	256m,512m,1
ContextStoreSpace DataGrid Settings	512m,9216m,1
CS Audit: Event limit	10
CS Default Lease Time	7200
CS Threshold: Instance High Requests per Second	60
CS Threshold: Instance Low Requests per Second	50
CS Threshold: Service High Requests per Second	100
CS Threshold: Service Low Requests per Second	80
EDM: Mirror Service container size	1
EDM: Mirror Service redo log size	60000
GEO: Gateway Service container size	1



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## Deployment Scenario – Id 6 Prod: 32x3

→ Cluster of three Avaya Breeze™ servers with 32GB of RAM and 8 cores each

Requirement	Specification
ContextStore ManagerSpace DataGrid Settings	1,2,1
ContextStoreSpace DataGrid Settings	4,16,1
CS Audit: Event limit	10
CS Default Lease Time	3600
CS Threshold: Instance High Requests per Second	60
CS Threshold: Instance Low Requests per Second	50
CS Threshold: Service High Requests per Second	120
CS Threshold: Service Low Requests per Second	100
EDM: Mirror Service container size	2
EDM: Mirror Service redo log size	10000
GEO: Gateway Service container size	2

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## Deployment Scenario – Id 7 Prod: 32x4

→ Cluster of four Avaya Breeze™ servers with 32GB of RAM and 8 cores each

Requirement	Specification
ContextStore ManagerSpace DataGrid Settings	1,2,1
ContextStoreSpace DataGrid Settings	2,32,1
CS Audit: Event limit	10
CS Default Lease Time	7200
CS Threshold: Instance High Requests per Second	650
CS Threshold: Instance Low Requests per Second	550
CS Threshold: Service High Requests per Second	1240
CS Threshold: Service Low Requests per Second	1000
EDM: Mirror Service container size	<i>Certified configuration does not include EDM feature</i>
EDM: Mirror Service redo log size	<i>Certified configuration does not include EDM feature</i>
GEO: Gateway Service container size	<i>Certified configuration does not include GEO feature</i>

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## Deployment Scenario – Id 8 Prod: 32x5

→ Cluster of five Avaya Breeze™ servers with 32GB of RAM and 8 cores each

Requirement	Specification
ContextStore ManagerSpace DataGrid Settings	512m,1024m,1
ContextStoreSpace DataGrid Settings	4,40,1
CS Audit: Event limit	10
CS Default Lease Time	7200
CS Threshold: Instance High Requests per Second	650
CS Threshold: Instance Low Requests per Second	550
CS Threshold: Service High Requests per Second	1240
CS Threshold: Service Low Requests per Second	1000
EDM: Mirror Service container size	2
EDM: Mirror Service redo log size	30000
GEO: Gateway Service container size	<i>Certified configuration does not include GEO feature</i>

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## Deployment Scenario – Id 9 Prod: 64x3

→ Cluster of three Avaya Breeze™ servers with 64GB of RAM and 8 cores each

Requirement	Specification
ContextStore ManagerSpace DataGrid Settings	1,2,1
ContextStoreSpace DataGrid Settings	8,112,1
CS Audit: Event limit	10
CS Default Lease Time	7200
CS Threshold: Instance High Requests per Second	650
CS Threshold: Instance Low Requests per Second	550
CS Threshold: Service High Requests per Second	1240
CS Threshold: Service Low Requests per Second	1000
EDM: Mirror Service container size	4
EDM: Mirror Service redo log size	250000
GEO: Gateway Service container size	4

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## Deployment Scenario – Id 10 Prod: 64x5

→ Cluster of five Avaya Breeze™ servers with 64GB of RAM and 8 cores each

Requirement	Specification
ContextStore ManagerSpace DataGrid Settings	1,2,1
ContextStoreSpace DataGrid Settings	8,160,1
CS Audit: Event limit	10
CS Default Lease Time	10800
CS Threshold: Instance High Requests per Second	650
CS Threshold: Instance Low Requests per Second	550
CS Threshold: Service High Requests per Second	1240
CS Threshold: Service Low Requests per Second	1000
EDM: Mirror Service container size	4
EDM: Mirror Service redo log size	250000
GEO: Gateway Service container size	4

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## Deployment Scenario – Id 11 Prod: 128x1

→ Single Avaya Breeze™ server with 128GB of RAM and 8 cores

Requirement	Specification
ContextStore ManagerSpace DataGrid Settings	1,2,1
ContextStoreSpace DataGrid Settings	8,80,1
CS Audit: Event limit	10
CS Default Lease Time	9000
CS Threshold: Instance High Requests per Second	401
CS Threshold: Instance Low Requests per Second	400
CS Threshold: Service High Requests per Second	401
CS Threshold: Service Low Requests per Second	400
EDM: Mirror Service container size	4
EDM: Mirror Service redo log size	30000
GEO: Gateway Service container size	<i>GEO is not supported on single-node deployments</i>

## Deployment Scenario – Id 12 Prod: 128x2

→ Cluster of two Avaya Breeze™ servers with 128GB of RAM and 8 cores each

Requirement	Specification
ContextStore ManagerSpace DataGrid Settings	1,2,1
ContextStoreSpace DataGrid Settings	8,80,1
CS Audit: Event limit	10
CS Default Lease Time	10800
CS Threshold: Instance High Requests per Second	420
CS Threshold: Instance Low Requests per Second	340
CS Threshold: Service High Requests per Second	420
CS Threshold: Service Low Requests per Second	340
EDM: Mirror Service container size	4
EDM: Mirror Service redo log size	30000
GEO: Gateway Service container size	4

## Deployment Scenario – Id 13 Prod: 128x3

→ Cluster of three Avaya Breeze™ servers with 128GB of RAM and 8 cores each

Requirement	Specification
ContextStore ManagerSpace DataGrid Settings	1,2,1
ContextStoreSpace DataGrid Settings	8,120,1
CS Audit: Event limit	10
CS Default Lease Time	14400
CS Threshold: Instance High Requests per Second	650
CS Threshold: Instance Low Requests per Second	550
CS Threshold: Service High Requests per Second	1240
CS Threshold: Service Low Requests per Second	1000
EDM: Mirror Service container size	4
EDM: Mirror Service redo log size	45000
GEO: Gateway Service container size	<i>Certified configuration does not include GEO feature due to lack of hardware for test (128GB x 6 nodes). This does not preclude customers from running a GEO setup with clusters of this size.</i>

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## Context Store Deployment in Oceana Solution

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### Oceana 100-Agent Deployment

Requirement	Specification
ContextStore ManagerSpace DataGrid Settings	128m,256m,1
ContextStoreSpace DataGrid Settings	256m,1536m,1
CS Audit: Event limit	50
CS Default Lease Time	7200
CS Threshold: Instance High Requests per Second	12
CS Threshold: Instance Low Requests per Second	11
CS Threshold: Service High Requests per Second	21
CS Threshold: Service Low Requests per Second	19
EDM: Mirror Service container size	128m
EDM: Mirror Service redo log size	10000

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### Oceana 1000-Agent Deployment

Requirement	Specification
ContextStore ManagerSpace DataGrid Settings	128m,256m,1
ContextStoreSpace DataGrid Settings	512m,10240m,1
CS Audit: Event limit	50
CS Default Lease Time	7200
CS Threshold: Instance High Requests per Second	65
CS Threshold: Instance Low Requests per Second	55
CS Threshold: Service High Requests per Second	105
CS Threshold: Service Low Requests per Second	85
EDM: Mirror Service container size	1
EDM: Mirror Service redo log size	60000

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## Oceana 2000-Agent Deployment

Change the ContextStoreSpace DataGrid Settings attribute value from **2560m**, 20480m, 1 to **2048m**, 20480m, 1. If the data-grid has already been deployed, a cluster reboot is necessary for the change in container size to take effect.

Requirement	Specification
ContextStore ManagerSpace DataGrid Settings	128m,256m,1
ContextStoreSpace DataGrid Settings	2048m,20480m,1
CS Audit: Event limit	50
CS Default Lease Time	7200
CS Threshold: Instance High Requests per Second	130
CS Threshold: Instance Low Requests per Second	110
CS Threshold: Service High Requests per Second	210
CS Threshold: Service Low Requests per Second	170
EDM: Mirror Service container size	2
EDM: Mirror Service redo log size	250000

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## Migrating External DataMart Data from CS 3.3 (or older)

There is no data migration required when upgrading from CS 3.4.X.X to CS 3.5.0.1 release.

However if upgrading from CS 3.3.X.X (or older) to CS 3.5.0.1 release then there will be changes in the schema of the External DataMart which will require migration of the existing schema.

If migration steps are not executed, the old data with differing structure will cause errors when Customer Journey data is being queried.

These migration scripts are also available from [www.devconnectprogram.com](http://www.devconnectprogram.com) on the Context Store product page for release 3.5.0.1

Variations of migration scripts are available for each database type supported by Context Store (PostgreSQL, SQL Server, Oracle), to facilitate older as well as more modern product versions.

**\*\*\* WARNING \*\*\* DO NOT INTERRUPT COMMANDS as doing so will result in data corruption**

### Expected Operation Ranges Per SQL Migration Command:

Database	Estimated Migration Time Per 1,000 Records (this will increase for larger context data)
PostgreSQL	209 Milliseconds / 1,000 records
Microsoft SQL Server	596 Milliseconds / 1,000 records
Oracle	1394 Milliseconds / 1,000 records

### Verify Indexes:

Ensure that the indexes below are in place before running the scripts. The indexes do not exist then refer to the *Avaya Context Store Snap-in Reference Guide* for details on how to create them.

Index Name	Table	Field
CS_OPERATION_TOUCHPOINT_IDX	CS_OPERATION	TOUCHPOINT
CS_OPERATION_TIMESTAMP_IDX	CS_OPERATION	TIMESTAMP

### SQL Migration Commands:

Database	SQL Commands
PostgreSQL	1 DO LANGUAGE plpgsql \$\$ DECLARE max_id INTEGER = 0;

	<pre> BEGIN WHILE max_id &gt; -1 LOOP WITH insertrows AS ( WITH cte AS ( SELECT persist_context_uid, touchpoint FROM CS_OPERATION WHERE touchpoint IS NULL LIMIT 10000 ) UPDATE CS_OPERATION d SET touchpoint = LEFT( RIGHT(META_JSON, (position('}' in META_JSON) - (position('lastTouchpoint' in META_JSON)+16) )), (position('*' in REPLACE ( REPLACE ( RIGHT(META_JSON,(position('}' in META_JSON) - (position('lastTouchpoint' in META_JSON)+16) ) ) ',' , '*') ',' , '*') ) -2) ) FROM cte WHERE d.persist_context_uid = cte.persist_context_uid RETURNING d.persist_context_uid ) SELECT max(persist_context_uid) INTO max_id from insertrows; RAISE NOTICE '%', max_id; END LOOP; END\$\$ </pre>
<p><b>PostgreSQL</b></p>	<p><b>2</b></p> <pre> DO LANGUAGE plpgsql \$\$ DECLARE max_id INTEGER = 0; BEGIN WHILE max_id &gt; -1 LOOP WITH insertrows AS ( WITH cte AS ( SELECT persist_context_uid, timestamp FROM CS_OPERATION WHERE timestamp IS NULL LIMIT 10000 ) UPDATE CS_OPERATION d SET timestamp = LEFT( RIGHT(META_JSON, (position('}' in META_JSON) - (position('timestamp' in META_JSON)+10) )), (position('*' in REPLACE ( REPLACE ( RIGHT(META_JSON,(position('}' in META_JSON) - (position('timestamp' in META_JSON)+10) ) ) ',' , '*') ',' , '*') ) -1) ) FROM cte WHERE d.persist_context_uid = cte.persist_context_uid RETURNING d.persist_context_uid ) </pre>



		<pre> SELECT max(persist_context_uid) INTO max_id from insertrows; RAISE NOTICE '%', max_id; END LOOP; END\$\$ </pre>
Oracle	1	<pre> BEGIN LOOP UPDATE CS_OPERATION SET TOUCHPOINT = SUBSTR( SUBSTR(META_JSON,INSTR(META_JSON,'lastTouchpoint')+17), 0, (INSTR( REPLACE ( REPLACE ( SUBSTR(META_JSON,INSTR(META_JSON,'lastTouchpoint')+17) , ' ' , '*') , '}' , '*') , ' ' , '*') -2)) WHERE TOUCHPOINT IS NULL AND rownum &lt;= 10000; exit when sql%notfound; COMMIT; END LOOP; commit; END; </pre>
Oracle	2	<pre> BEGIN LOOP UPDATE CS_OPERATION SET TIMESTAMP = SUBSTR( SUBSTR(META_JSON, INSTR(META_JSON,'timestamp')+11 ) ,1 , (INSTR( REPLACE ( REPLACE ( SUBSTR(META_JSON,INSTR(META_JSON,'timestamp')+11) , ' ' , '*') , '}' , '*') , ' ' , '*') -1)) WHERE TIMESTAMP IS NULL AND rownum &lt;= 10000; exit when sql%notfound; COMMIT; END LOOP; </pre>

<b>MS SQL Server</b>	<b>1</b>	<pre> DECLARE @Rowcount INT = 1 WHILE @Rowcount &gt; 0 BEGIN UPDATE TOP (10000) CS_OPERATION SET TOUCHPOINT = LEFT( RIGHT(CAST(META_JSON as NVarchar(MAX)), (CHARINDEX('}',META_JSON) - (CHARINDEX('lastTouchpoint',META_JSON)+16) )), (CHARINDEX('*', REPLACE ( REPLACE ( RIGHT(CAST(META_JSON as NVarchar(MAX)), (CHARINDEX('}',META_JSON) - (CHARINDEX('lastTouchpoint',META_JSON)+16) ) ) ',' , '*') ',' , '*') ) -2) ) where TOUCHPOINT IS NULL or TOUCHPOINT = '' SET @Rowcount = @@ROWCOUNT END; </pre>
<b>MS SQL Server</b>	<b>2</b>	<pre> DECLARE @Rowcount INT = 1 WHILE @Rowcount &gt; 0 BEGIN UPDATE TOP (10000) CS_OPERATION SET TIMESTAMP = LEFT( RIGHT(CAST(META_JSON as NVarchar(MAX)), (CHARINDEX('}',META_JSON) - (CHARINDEX('timestamp',META_JSON)+10) )), (CHARINDEX('*', REPLACE ( REPLACE ( RIGHT(CAST(META_JSON as NVarchar(MAX)), (CHARINDEX('}',META_JSON) - (CHARINDEX('timestamp',META_JSON)+10) ) ) ',' , '*') ',' , '*') ) -1) ) where TIMESTAMP IS NULL or TIMESTAMP = '' SET @Rowcount = @@ROWCOUNT END; </pre>