Service Gateway 4.2.0.0 Patch

Release Notes and Installation Instructions

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Contents

Introduction

This document describes the changes included in this patch to Service Gateway, along with the patch installation instructions. This patch can only be applied directly to version 4.1.2 or 4.1.3 of Service Gateway. Earlier versions must first be upgraded to 4.1.3.

Enhancements

The following new features and enhancements are included in this patch:

EE 19510 - Additional detail in audit logs

Descriptions have been added to audit logs indicating which fields and attributes have been modified.

REF #12 - WiMAX Device Data Model Support

Support has been added for the WiMAX TR-069 Device Data Model, published by the WiMAX Forum as WMF-T33-105-R015v01.

REF #13 - Femtocell Device Data Model Support

Support has been added for the Femtocell Access Device data model, published by the Broadband Forum as TR-196 Issue 1.

EE 22529 - Oracle 11g Support

Support has been added for Oracle 11g. Support for Oracle 10g has been retained.

EE 22938 - EAI: Overwrite templates

The EAI web service methods addDevice and updateDevice have been enhanced to support modification of device override templates.

EE 22636 - EAI: Clearing selected parts of DBoR

Functionality has been added to the EAI web services for retrieving and deleting DBoR records for a device. Records can be deleted by specifying GUID, status, or deleting all.

EE 22984 - Reduce contention on the SPRT_NC_CPE table

A lot of row lock contention was happening on the SPRT_NC_CPE table due to multiple processes attempting to update the NC_CPE_CONNECTION and NC_CPE_WORKFLOW_STATE columns simultaneously. These columns have been moved into their own tables (SPRT_NC_CPE_CONNECTION and SPRT_NC_CPE_WF_STATE, respectively) in order to avoid this contention.

EE 23015 - Value Aliases for Real-time Probes

Values entered for real-time probe "Is one of:" validation type may not have meaningful values to a CSR. Values of 1,0 may have a meaning of true,false in one scenario and Enabled,Disabled in another. Aliasing has been added to display a textual representation of the validation values in this case.

EE 19736 - Dates in reports displayed in local time

Reports now generate times in IETF standard date format (ie. "Mon, 25 Dec 1995 13:30:00 GMT+0430"). Also, the HTML XSL now transforms this date into the date format specified in the report definition, if specified, or the format specified in the global preferences. Note, the date format must meet the specifications of the Datejs open-source JavaScript Date Library. The output of this date will be local to the browser.

EE 22158 - Device Search on hardware and firmware

Hardware and firmware have been added to the device search criteria on the device management screen.

REF #57 - IPv6 support for CWMP communication

The ACS now supports IPv6 for communication with TR-069 devices.

EE 22313 - Realm binding of capability tests

The user interface now binds capabilities discovery test cases to a realm. Only the capabilities in the selected realm can be associated with the test. Users can only access test cases that are in a realm to which they have access. Realm-constrained users can view, but they no longer have the ability to create or modify test cases that are associated with system-defined capabilities, as these test cases can affect devices that are in a realm for which they do not have access.

EE 23014 - Tabular View of Real-time Probe results

Real-time probe results can now be displayed in a tabular format, allowing a CSR to see all records in a table (such as Port Mappings or Firewall Rules) at once. Additionally, this new view allows records to be added and removed from such a table.

EE 23120 - Ability to associate Services with Subscribers

Services can now be associated with subscribers, in addition to associating them with devices. All devices associated with a subscriber will inherit any services that are associated with that subscriber, in addition to any services that are associated directly with the device. When evaluating conditions or Velocity script that reference services, the full list of services that apply to the device, including those inherited through the subscriber, will be used.

EE 22958 - Log the URL used by firmware upgrade

The file URL is now logged in the SPRT_NC_CPE_FW_UPGRADE table when a firmware upgrade is performed.

EE 23022 - Ability to set Conditions on Real-time Probes

Conditions can now be defined for a real-time probe. These conditions are used to control which devices the real-time probe is applicable to, and only those that match will appear in the real-time probe module in the CSR UI for the selected device. A real-time probe that does not have any conditions defined will apply to all devices. Note that real-time probes also have a tab for defining which capabilities a real-time probe applies to. Since capabilities can also be specified in conditions, it is important to be cautious to not define conditions that will contradict any capabilities specified on the Capabilities tab.

EE 22310 - Reboot device as part of the provisioning

An option has been added to Templates to cause a reboot of the device after delivering the template. When this option is checked, the reboot will be issued after the template has been successfully delivered. Synchronization of configuration will continue to subsequent templates (if any) following the reboot.

EE 23505 - CWMP session statistics returned by Java API

API functionality has been enhanced for GetParameterValue calls to return timestamps for various milestones in the communication, including connection request, connection request response, inform, RPC and RPC response times.

EE 23637 - EAI: GetParameterNames, GetAttributeValues and SetAttributeValues

Three new EAI web service operations have been added, allowing direct interaction with a device using the GetParameterNames, GetAttributeValues and SetAttributeValues RPCs.

EE 24130 - Improved query to FW Upgrade tracking table

The query used to check if a device is in progress of updating its firmware has been updated to be more efficient.

REF #209 - Performance Monitoring Interface

New application performance monitoring interfaces have been added to provide better insight into the load being placed on the system, and how the system is handling that load. These views are useful during troubleshooting, as well as a constant display in a network operations center.

A configurable dashboard displays a summary of all application and ACS servers in the deployment. The dashboard is updated in real-time, and allows health thresholds to be configured which color-code the performance indicators for an at-a-glance indication of any potential problems.

A graph view is also provided, showing recent trends in key performance indicators over time. Each graph can contain multiple key performance indicators, and multiple graphs can be displayed at a time.

REF #210 - Software Module Management

Support has been added for Software Module Management, as defined in CWMP 1.2. Software Modules can be uploaded to the system and delivered to devices in several ways. Modules may be associated with a configuration template, allowing them to be part of configuration synchronization. They may also be installed or uninstalled using a new policy action, allowing new modules to be pushed to devices much like a firmware update. Lastly, a new CSR module is available to view the modules currently installed on a device, as well as install a new module, or uninstall an existing one.

Software modules may have dependencies on other software modules. When a software module is installed, any dependencies may also be installed if they are not already present on the device. This behavior is optional, and can be enabled or disabled per template and per policy action. It is also an option when installing modules using the CSR module.

The resource footprint of a software modules can be supplied, and a resource check performed before installing a new module, to ensure the device has the storage capacity and available runtime memory to support the module. This check may be controlled in the same ways as the dependency check.

REF #211 - Data Purging using Table Partitioning

A new record purging mechanism that takes advantage of the table partitioning feature of Oracle Enterprise Edition has been added. This method can be enabled on many of the tables that experience rapid growth, and for which the current method of record purging proves computationally expensive and difficult to tune. Dropping a partition is immensely faster and cheaper than executing a delete statement, allowing historical data to be kept for much longer periods of time, if desired.

The approach used by Service Gateway is to create a partition to be used for each calendar day, based on UTC time. Partitions are created several days in advance, and dropped once they reach a configurable age in days. The time of day this activity occurs can be confined to a configurable window of time within the day. If for any reason a partition does not exist for the current day when a record is added, the record is placed into a default partition and will be automatically moved to the proper partition when it is created.

Issues Addressed

The following issues are addressed by this patch:

REF #7 - File Server selection not adhering to active/inactive

When a file server is determined for a file download the selection criteria does not take into consideration whether the server is marked as active or inactive. This has been changed such that inactive file servers will not be selected.

REF #8 - Unnecessary stack trace when file distributor not available

Encore.log shows a stack trace ERROR log when a file server is not available. Log has been changed to display the proper ERROR but not display the stack trace output.

REF #9 - Save button not enabled in CWMP GET/DB action

If you modified a CWMP Get for Database Storage policy action configuration, and only changed the field name for either a parameter or variable mapping the save button for the policy would not become enabled. Now, the save button becomes enabled if a parameter or variable mapping is modified.

EE 22991 - Device aging job should skip devices involved in a policy

If devices were currently being executed by a policy, it was possible that the device aging job could delete that device, causing conflicts in device processing. The device aging job has been modified to ignore devices if they are currently being processed by a policy.

EE 23584 - Unable to display large numbers of domains in UI

Large amounts of administrative domains cause user interface timeouts when rendering the tree display. References to nodes are cached instead of searching the structure when needed, thus speeding up the tree generation and avoiding the timeouts.

REF #24 - Unable to import Device:1.0 data model

The "TR-106" and "TR-106 Types" definition share the same spec id, and the latter does not include anything importable. Depending on which record the database returns first, the TR-106 data model definition may either offer models and components to import, or not. The Database GUID is now used to return models and components rather than using the spec id.

REF #26 - Server Error attempting to disable Service with configuration in use

An error would occur if a service was disabled while it was in use. An appropriate notification is now displayed, linking to a report of objects referencing the service.

REF #27 - Problems with Manual Overrides on new device

When adding a new device, the list of available Manual Override Templates was not being populated. Also, when changing the Realm of a device after Attributes had been selected, an error would occur. These issues have been corrected.

REF #29 - Problem with hybrid policy event handling

Devices were not being removed from a hybrid policy device list when processing a device event. This has been corrected.

REF #32 - Approved polices being set to Active

Approved policies would be set to Active even if no devices were processed. The policy will now remain in an Approved state until at least one device is processed.

REF #33 - Service Priority not defined when Realm changed

When adding a new service, the service being added was not available on the priority tab if the Realm was changed after the name and code were specified. This has been corrected.

EE 22271 - Wrong services shown in Conditions tab when defining Templates

Sometimes the wrong list of options would appear in the conditions tab, due to a race condition when switching between realms. This has been corrected.

EE 22098 - Polices with filter evaluation period set to "Once per Active Window" do not start

Scheduled policies that are configured to re-evaluate the device filter 'Once Per Active Window' will now start processing devices once the device list has been rebuilt. Previously it would rebuild the device list continually.

REF #39 - Change Realm of Group associated with user

A realm can no longer be removed from a group if a user belonging to that group is associated with that realm.

REF #40 - Snapshot action stack trace when device communication fails

The CWMP Configuration Snapshot policy action did not have a specific result code for the case that a device was offline. A "Device Not Reachable" result code has been added with a default workflow of STOP_SKIP.

REF #41 - Filtering of Data Model Params

Filtering of CWMP Data Model parameters in the UI has been modified to filter on the leaf parameter name and not the full name. Tooltips have been added to help in determining the full path of parameters.

REF #42 - System Key regex validation is not enforced

The validation regular expression was not being enforced when a parameter mapping was configured to update a system key. This has been corrected. If the regular expression does not match the parameter value from the device, a warning message will appear in the logs and the system key will not be updated.

REF #43 - CWMP Get Parameter Values (Attribute Storage) does not validate value

The CWMP Get Parameter Values (Attribute Storage) policy action will now validate the value from the device against the regular expression defined on the attribute before setting the attribute.

REF #44 - Save/Cancel buttons enabled when attribute value not changed

When editing the attributes of an object, such as a device, the act of giving focus to the value of an attribute was being treated as an edit. This resulted in a confirmation dialog asking to discard changes when navigating away from the object, even if no changes were made to the value. This has been corrected.

REF #45 - Optimize SQL used by runAgedResultsCheck

One of the queries used to clear stuck devices was performing a full table scan, thereby affecting system performance. This query has been updated to take advantage of indexes, and now avoids the full table scan.

REF #46 - Encoding error in conditions when value is a URL

When defininining a condition expression, attribute test values containing a colon were being trunctated when viewed. This has been corrected.

EE 22591 - Hardware filter in policy action missing product class

When viewing a previously saved filter expression that contained a hardware condition, the product class was not being displayed as part of the hardware name. This has been corrected.

EE 23026, 23754 - Multiple Issues with Report Scheduler

Multiple issues related to scheduled reports have been addressed. The day selection checkbox for Saturday is no longer checked when Sunday is set. The display label for the Thursday checkbox has been corrected. The Start Date field has been renamed to Next Start Date, to more accurately reflect the value it contains. The Next Start Date will correctly show up when viewing a weekly recurring schedule. The Next Start Date field will be incremented to the next valid start date for weekly recurring schedules, based on the selected days of the week. A report schedule with only one day of the week selected will no longer continue to run repeatedly on the same day.

EE 22623 - Templates: sometimes the apply or remove tabs are not loaded

When switching between Templates of the same type, sometimes the content of the Apply or Undo tabs would be blank. This has been corrected.

EE 22044,23217 - Timer driven policies do not start on time

Event and Timer schedules for policies did not take into consideration time zone changes which could result in the day of the week changing. Also, the end time also had to be in an "active day" to be considered accurate. Schedules are now specified as a start time, the specified days, and lasting for a specified number of minutes (up to 1 day).

EE 23392 - Contention on index SPRT_EC_DEVICE_IDX10

The LAST_COMM_DATE and LAST_SUCCESSFUL_COMM_DATE fields were being updated twice when processing a device event. The redundant update has been removed, reducing contention on the indexes.

EE 23395 - Policy History query performance

A query that checks for stale policy actions was performing a full table scan on a table that can contain millions of records. This query has been updated to take advantage of indexes and now performs and index range scan instead.

EE 23363 - Query: relative number of executions

Several optimizations were made to reduce database queries for specific high frequency operations. When performing a configuration synchronization, the number of times the DBoR entries were loaded from the database has been reduced. The number of times devices are loaded when a device record is updated has been reduced. The device attributes are not loaded during policy processing if they are not required.

REF #95 - Searching for device by IP is broken for Realm users.

Device search by IP Address is now working for realm-constrained users.

EE 23424 - Configured CSR widget width not used

The width setting for custom CSR modules was not used when loading an existing layout, resulting in the default width of 300. This has been corrected.

REF #138 - Security Violation on WebLogic startup

A benign Security Violation was being logged when deploying the application. This was due to an attempt to access security-constrained functionality to cache a list of values before a security context was available. While this situation would correct itself before this list was needed, the application has been updated to ensure the list is only initialized once the security context is available.

REF #139 - Sorting subscriber search results by Name does not work

The results of a subscriber search were not properly sortable by Name. This has been corrected.

EE 23359 - NPE during capabilities discovery

When performing Data Model Capabilities Discovery tests, if none of the test parameters used the same data model root as the device being tested, an error was occurring. This case is now being treated as if none of the parameters match, thus not assigning the capability.

REF #145 - Manual Override on a device not respecting conditions on template

Conditions were not being evaluated for templates associated directly to a device as overrides. This has been corrected.

EE 23008 - Table SPRT_NT_EVENT_LISTENER is growing

A new index has been added to the SPRT_NC_EVENT_LISTENER table to improve performance when deleting records from that table. In addition, a primary key column and a timestamp column have been added to assist with correlating orphaned records with events that may be the root cause of the orphaned records. Lastly, a new record purging job has been added to delete orphaned records from the SPRT_NC_EVENT_LISTENER table.

REF #176 - Unable to access DBoREntry

Templates with a delivery rule of ALWAYS were causing an exception on the second and subsequent times the configuration was delivered. This has been corrected.

REF #178 - Templates not being saved when a service is re-enabled.

When editing an existing service that was not enabled, templates would not be saved, requiring templates to be added again after the service was enabled. This has been corrected, allowing the service to be enabled and templates assigned in a single step.

EE 24226 - Modem Session information not tracked when CWMP fault occurs

Several issues related to the configuration synchronization tracking API have been addressed. Specifically, details of all SetParameterValue RPCs are returned, instead of just the first one, and detail is returned even if a fault occurs during synchronization.

EE 24049 - Duplicate templates in DBoR

When the same template was delivered to a device multiple times via different services, the DBoR was not being properly updated, and orphaned entries would build up in the DBoR over time.

This scenario is now being handled properly. Also, any previously orphaned records that existed before the upgrade will be cleaned up during the next configuration synchronization of the device.

EE 23784 - SetParameterValues fault ignored after timeout

Configuration Synchronization appeared to be successful even if a fault was returned by the device. The status for a DBoR template was being set to ACTIVE if a CPE sent a SetParameterValuesFault after the ACS-Server CPE timeout was reached. This scenario is now being checked, and the template status is now being set to APPLY_FAILED.

REF #213 - STUN Interoperability Issues

Addressed multiple issues with STUN interoperability. Both numeric and string representations of boolean parameter values are now handled properly. Unsupported options are ignored instead of resulting in an error.

Patch Contents

In addition to this document, the patch includes the files:

- ears/sprt-050-ServiceGateway4.2.0.0.260-jb40cl.ear
- ears/sprt-050-ServiceGateway4.2.0.0.260-jb40.ear
- ears/sprt-050-ServiceGateway4.2.0.0.260-wl92.ear
- ears/servicegateway-integration.jar
- ears/ACS-server.war
- ears/ACS-api.war
- ears/sprtWeblogicSecurityProviders.jar
- etc/login-config.xml
- sql/OracleDBChangesFrom4.1.3.0_DDL.sql
- sql/OracleDBChangesFrom4.1.3.0_DML_1.sql
- sql/OracleDBChangesFrom4.1.3.0_DML_2.sql

These files will be updated in various locations to address the issues described above.

This patch updates the Service Gateway EAR file. Once this patch is applied to Service Gateway 4.1.2 or 4.1.3, the Service Gateway EAR file version will be:

- ServiceGateway4.2.0.0.260

Additionally, the patch also includes the following directories which contain files required by the installer itself:

- bin
- configuration
- interface
- lib
- scripts

Installation Instructions

This patch is packaged with a web-based installer to ease the upgrade process. The installer is used in the same way as during a new install.

It is necessary to run the installer on all servers that make up the Service Gateway installation. This is required so that the installer can update, at minimum, patch level information on each server.

Prior to upgrading any server, all ACS, STUN and application servers should be shut down. In a WebLogic deployment, do not shut down the admin server, only the managed servers.

Perform the upgrades to the Database Schema first, following by the Application Servers. When patching a WebLogic clustered environment, the Admin server must be patched before any managed servers are patched. WebLogic servers must be running before the patch process can be started. Ensure that the WebLogic configuration is not locked.

Once the application servers and database schema have been successfully upgraded, proceed with the upgrade of each ACS server. The ACS upgrade will automatically restart the ACS.

The steps to upgrade each server are as follows:

1. Extract the contents of the patch archive to a temporary location.

2. Copy the JDBC driver for the database to the root directory of the extracted patch contents, . For Oracle 10g, this file is ojdbc14.jar. For Oracle 11g, this file is ojdbc5.jar.

3. Enter the "bin" directory and start the run script appropriate to the operating system. Run.bat for Windows, and run.sh for Solaris.

4. Under Windows, the default web browser is automatically launched and directed at http://localhost:8888/. On Solaris, a web browser must be launched from any computer on the network and directed at the installation site manually. The installer listens for HTTP connections on port 8888 of the server the installer is running on.

5. After accessing the installer web UI, select "Update an existing instance" and click "Next".

6. Once the target instance has been selected and the license agreement has been accepted, the patch prerequisite scripts will run. If they are all successful, clicking "Next" will start the upgrade process.

Troubleshooting and Manual Installation

If the installer fails for any reason, the installer.log should be backed up to a safe location so that there is no loss of information needed to diagnose the problem and to understand the current state of the application. This file should be sent to Consona Technical Support for review. Manual patch instructions are available to Consona technicians to assist in recovery from a failed upgrade.

Updated Service Gateway Integration JAR

The patch contains a new copy of servicegateway-integration.jar, which is used by all utilities that interface with Service Gateway. Any custom code or integration applications must be updated to use the new integration jar file.

New UI Properties for Translation

New UI properties have been added. These are already present in the EAR file that has been deployed, so no action is required. However, if any translations have been created for the installation, the new tokens will need to be translated and added to the translated properties files. A list of the new tokens can be found in the NewUIProperties.txt file included with the upgrade package.

EAI Web Service Interface Changes

Two of the Inventory web service operations, addDevice and updateDevice, have been modified to allow the addition and deletion of override templates. Ordinals are used to control the order of override templates which are added or updated. As the new elements are optional, these changes are backwards compatible with existing integrations.

Two additional Inventory web service operations have been added: getDBoREntriesForDevice and deleteDBoREntriesForDevice, to help manage DBoR entries for devices. DBoR entries can be removed from a device based on GUID or status.

Three additional CWMP web service operations have been added: getParameterNames getAttributeValues and setAttributeValues. These allow the namesake CWMP RPCs to be called on a device, and the result returned to the caller.

Two existing operations to manage subscribers, addSubscriber and updateSubscriber, have been enhanced to allow services to be associated with subscribers. As the new elements are optional, these changes are backwards compatible with existing integrations. In additional, the following three operations will return the list of services associated with a subscriber: findSubscriberByUniqueIdentifier, findSubscribers and getSubscriber.

