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AVEVA™ System Platform migration and upgrading best practices

David Gardner – Technical Account Manager

Jerry Lau – Senior Manager, Technical Support

Jerry Lau

Senior Manager, Technical Support

AVEVA

jerry.lau@aveva.com

David Gardner

Technical Account Manager

AVEVA

david.gardner@aveva.com

Why follow Best Practices ?

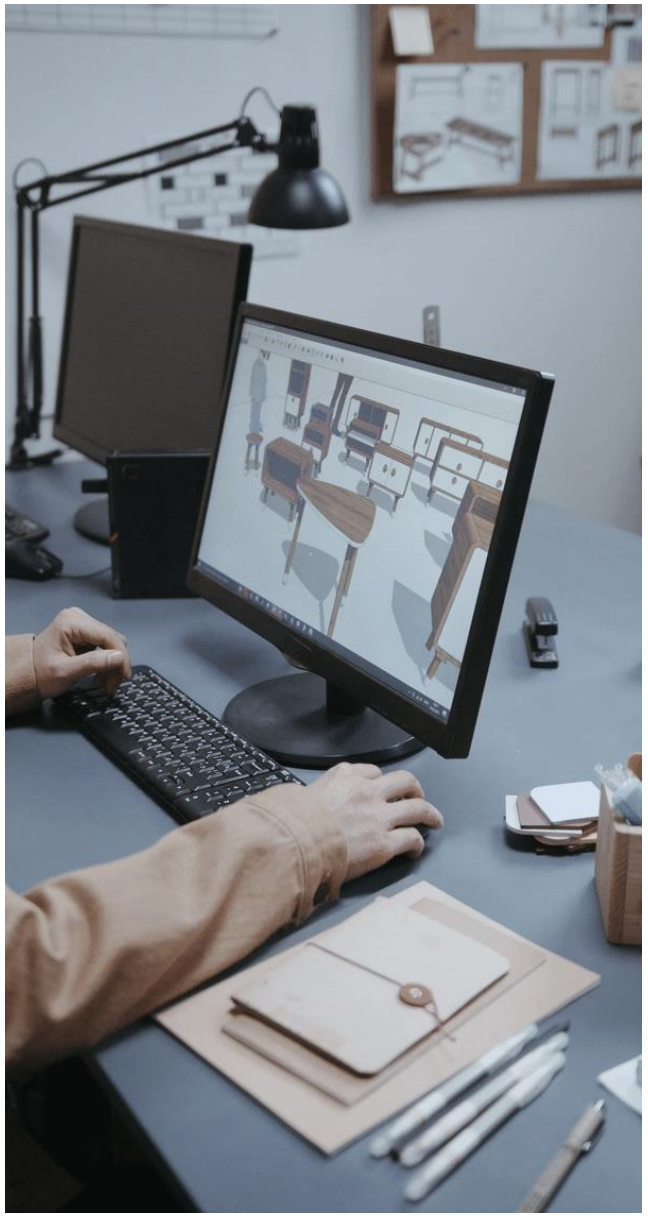
Agenda

- Why follow Best Practices ?
- Things to take note within the Galaxy
- Actions to take before the Upgrade / Migration process
- Best practices for Upgrade and Migration

Best Practices

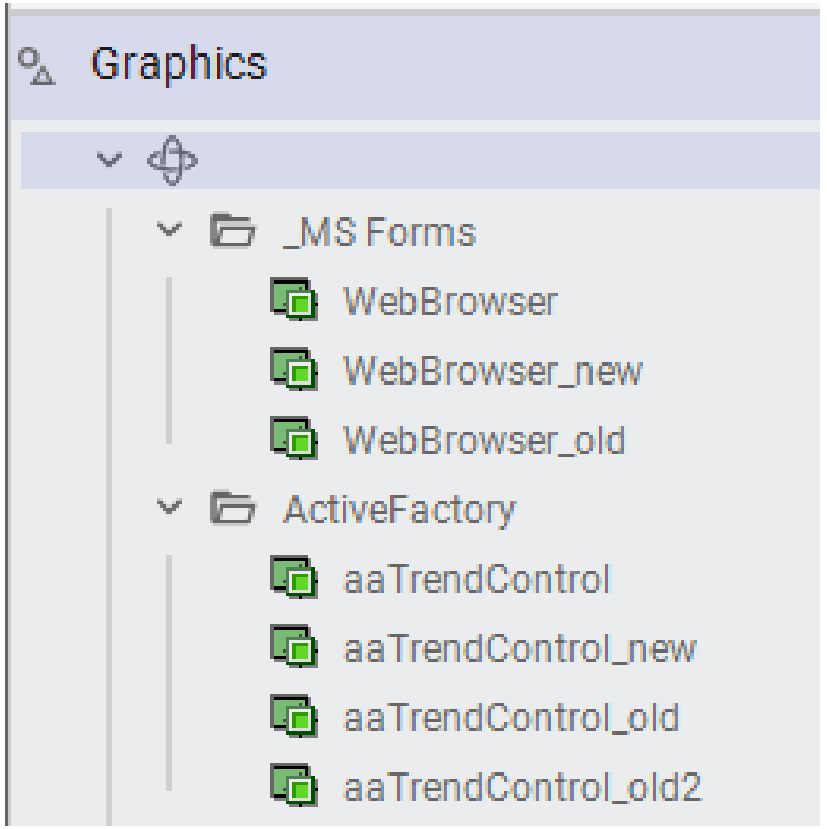
Why adhere to best practices ?

- Ensure smooth and successful upgrade and migration.
- Preempt and prevent as many unknown issues as possible.
- Validation that the procedures work correctly before making changes to the actual production system.
- Planning helps to prevent failures and also provides contingency plans.



Things to take note within the Galaxy

.NET Controls



- Look out for old and incompatible .NET Controls used within the Galaxy
- Look for the dates of the .NET Controls
- Delete duplicated .NET Controls
- If there are graphics associated with the duplicated .NET Control, update them to use the one to keep
- Check in the following folder for the .NET Controls associated files :
  - C:\Program Files (x86)\ArchestrA\Framework\FileRepository**[GalaxyName]**\Vendors

ActiveX

- Look out for old and incompatible ActiveX used within the ManagedApp
- Look for the dates of the ActiveX

3rd Party Components

- Look out for old and incompatible 3rd party component used within the Galaxy, example 32-bit / 64-bit
- Look for the dates of the 3rd party component (e.g. partners' or other 3rd party)
- Either remove the incompatible 3rd party component or replace it with one that is compatible
  - DreamReports -> AVEVA Reports for Operations

Actions to take before the upgrade / migration

Description of what needs to be upgraded

- Galaxy
- Historian
- Application Object Servers (AOS)
- View Clients

Actions to consider before the process

- Following actions to take / consider before the upgrade / migration
- It will speed up the whole process

Upgrade and Migration

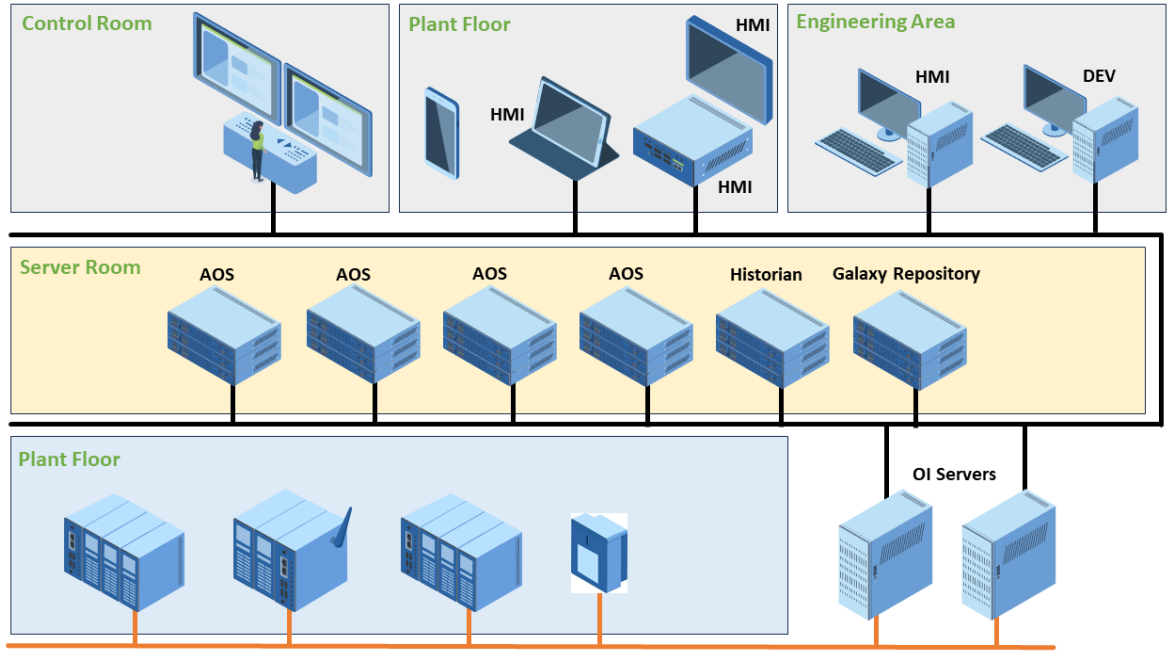
Workflow for Upgrade and Migration of a running system

- Preparation
  - Review\Document current architecture including current software version information
  - Understand software upgrade requirements
  - Test migration on a shadow test system
  - Backup applications
- Execution
  - Install proper licensing
  - Migration Order: Historian, GR, AOS, Visualization
- Validation
  - Verify data and system functionality including redundancy, data collection\storage, visualization and that it is consistent when compared to pre-migration
  - Review Wonderware Logger Errors Warnings

Upgrade and Migration

Preparation for Upgrade and Migration

- Update system topology to include all computers involved



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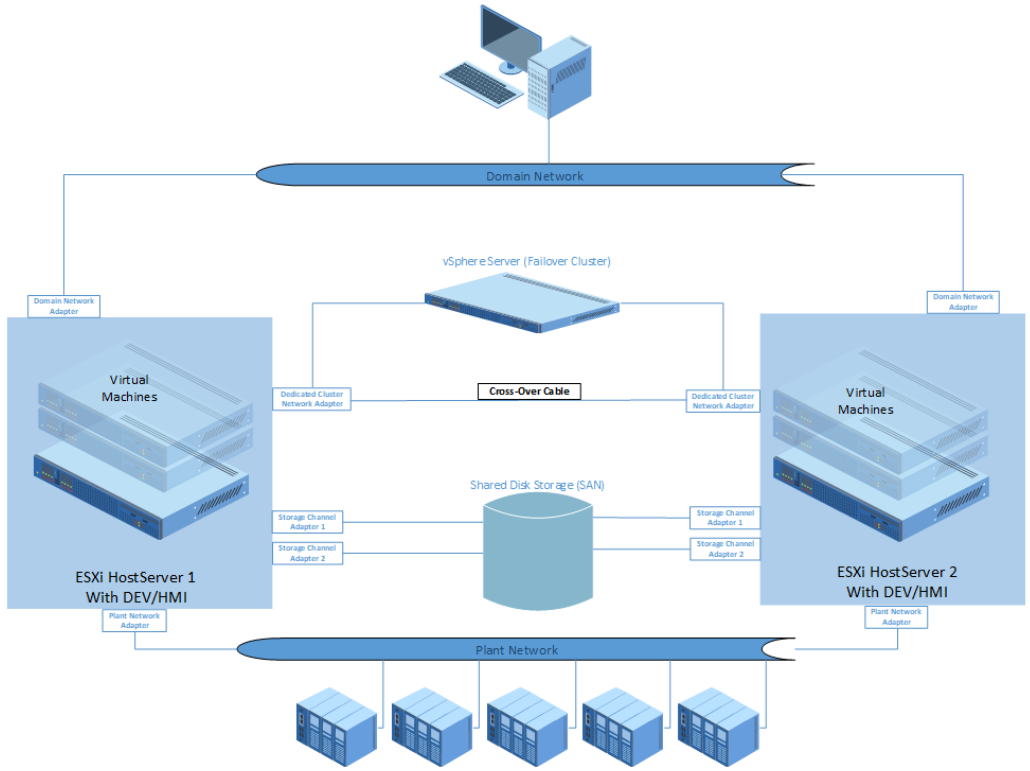

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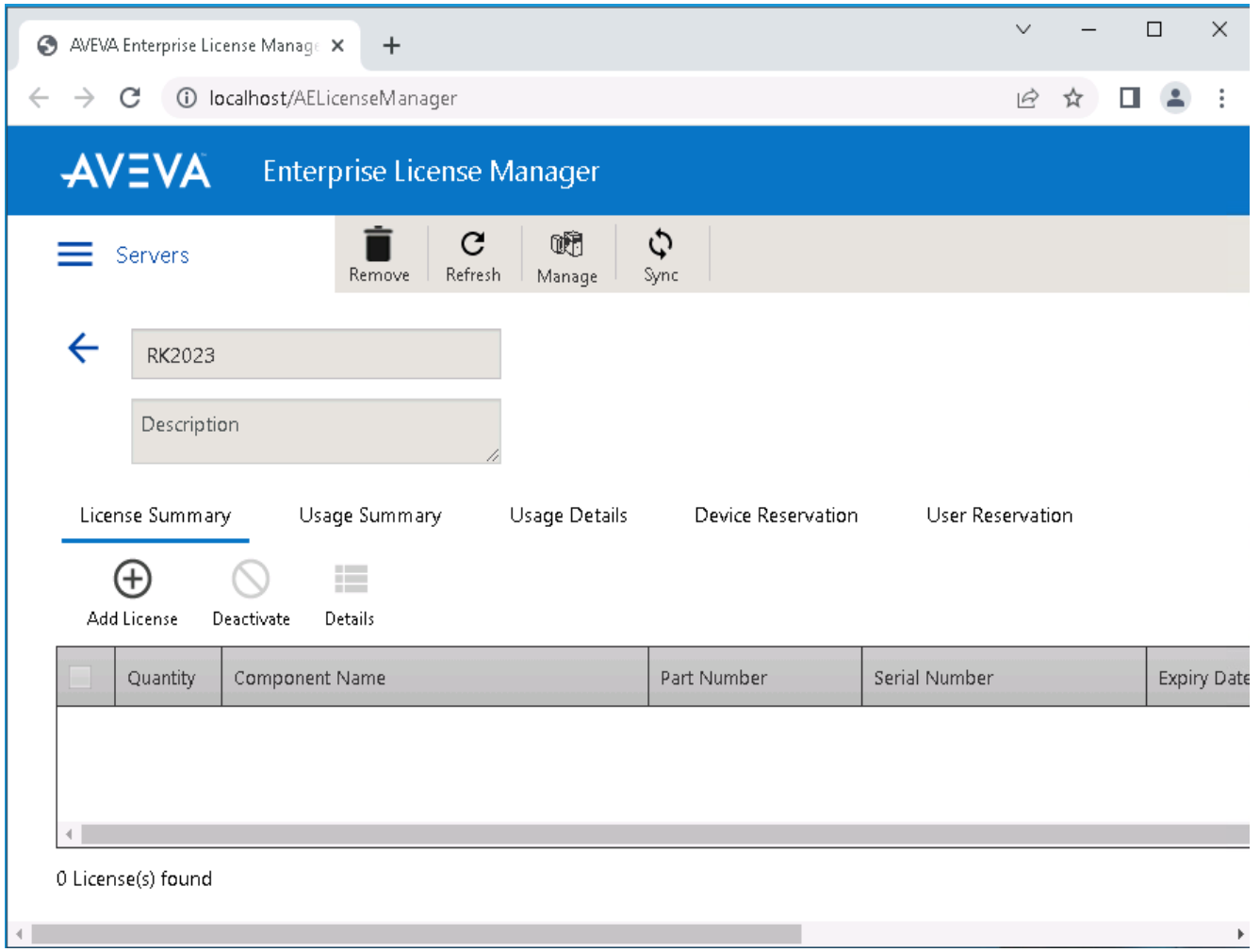

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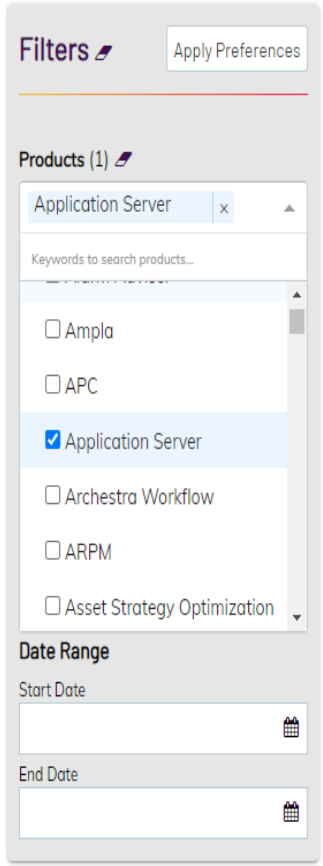
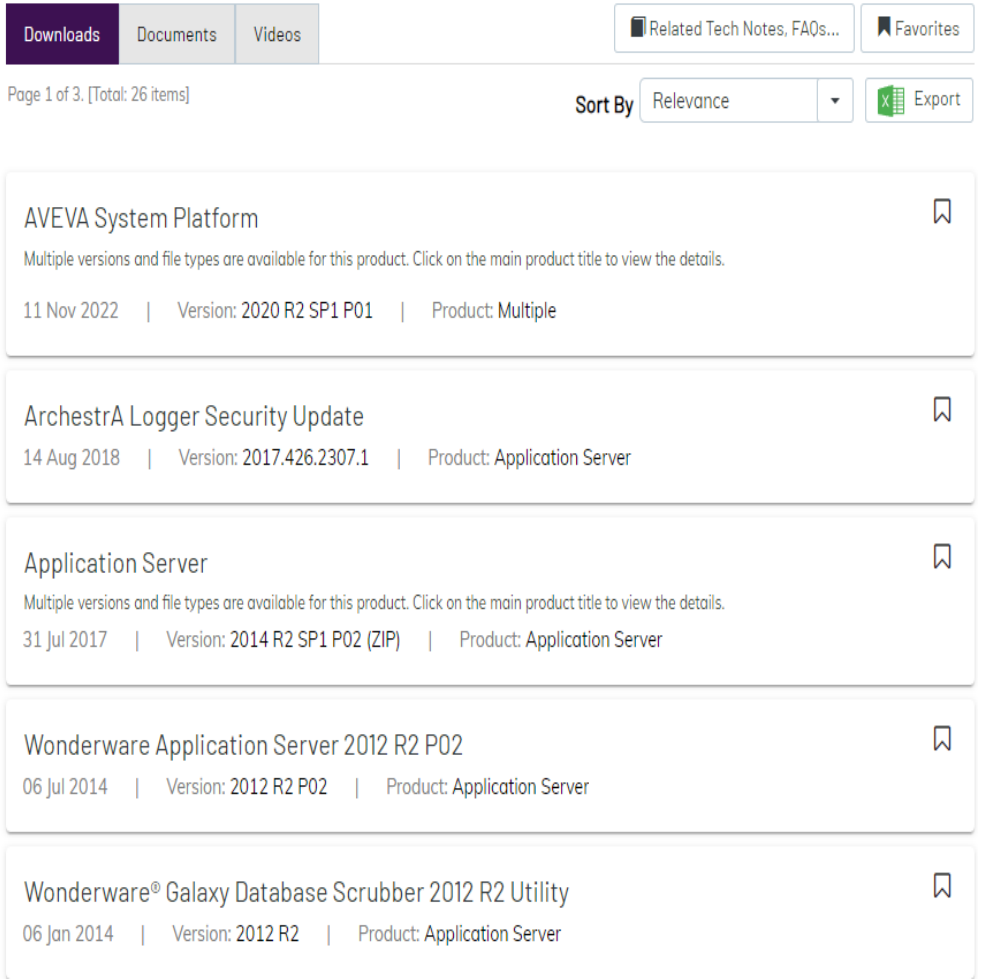
- Download any necessary AVEVA patch updates





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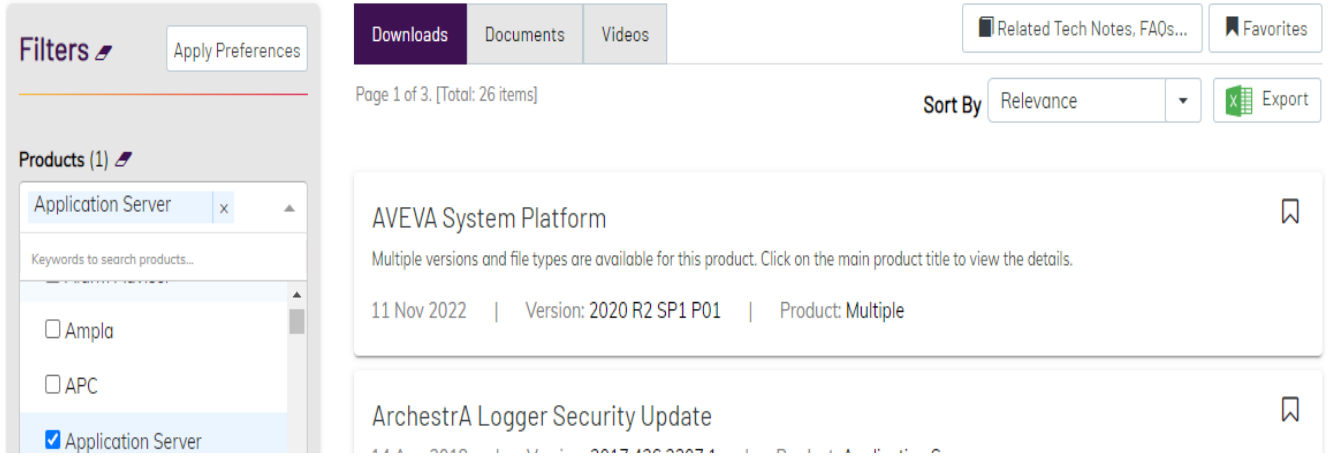

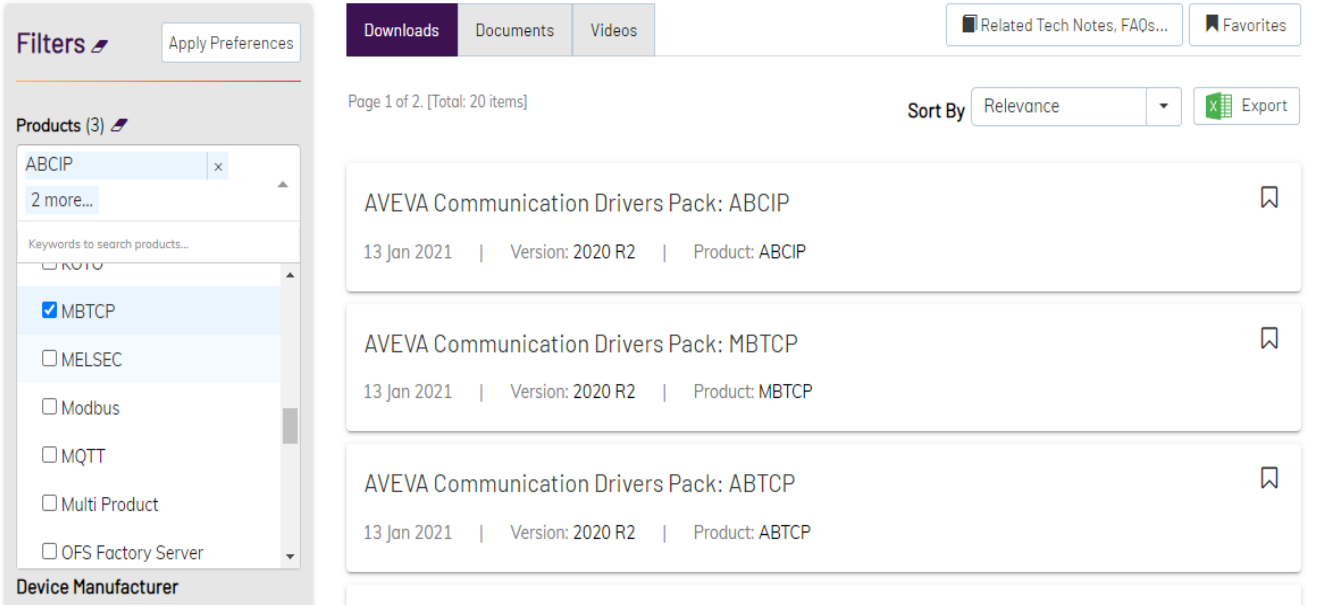

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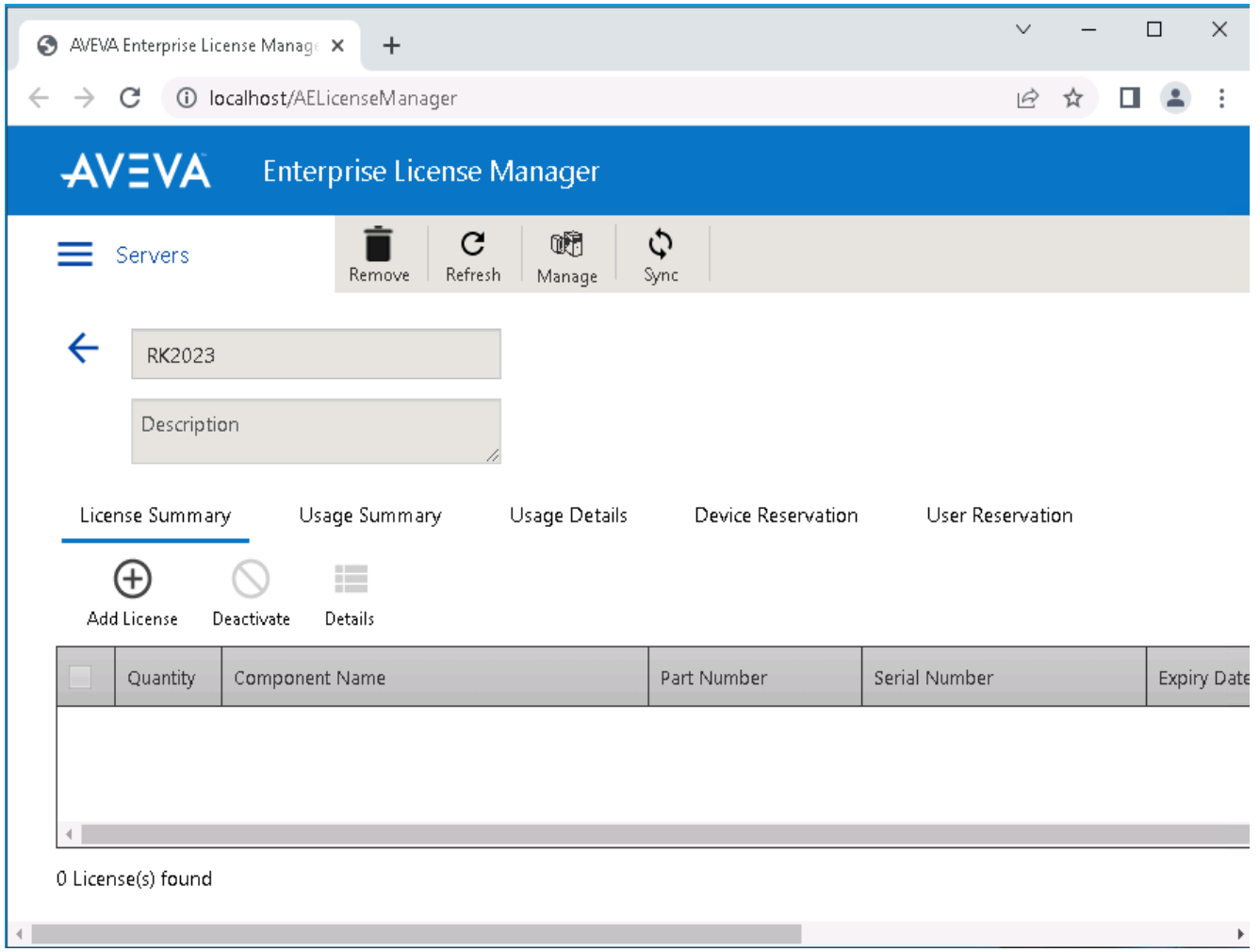

Upgrade and Migration

Preparation for Upgrade and Migration…cont'd

- Coordination with IT\Network Team:
  - Microsoft Windows Updates are in place, Check Security Central for support

Security Central

Microsoft Security Updates Reports | Product Cyber Security Updates | Policy & Guidelines

Select Product Line:

Wonderware

Archive | Export

Posted	Report	Status	MS Security	Description	Microsoft KB/OS
Jan 10, 2023	WW23-009	In Testing	Release Notes	Microsoft Office (KB5002332, KB5002336, KB5002335, KB50...	View
Jan 10, 2023	WW23-008	In Testing	Release Notes	Monthly Rollup for Windows (KB5022352, KB5022348)	View
Jan 10, 2023	WW23-007	In Testing	Release Notes	Security-Only update for Windows (KB5022346, KB5022343)	View
Jan 10, 2023	WW23-006	In Testing	Release Notes	Windows 11 Version 22H2 (KB5022303)	View
Jan 10, 2023	WW23-005	In Testing	Release Notes	Windows 11 Version 21H2 (KB5022287)	View
Jan 10, 2023	WW23-	In Testing	Release Notes	Windows Server 2022 (KB5022291)	View

Upgrade and Migration

Preparation for Upgrade and Migration…cont'd

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Application Server & System Platform

DCOM	135/tcp
File and printer sharing	445/tcp
SQL TCP	1433/tcp
SQL Server Browser	1434/udp
Ports	1024 to 65535 TCP

Application Server & System Platform Multi-Galaxy

ASBGRBrowsing Service	7500	(default, configurable)
ASBMxDataProvider Service	3572	(default, configurable)
ASBAuthentication Service	7779	(default, configurable)
Local Discovery Server	9111	
Primary Local Galaxy	9110	
Secondary Local Galaxy Server	9210	
Primary Cross Galaxy Server	9310	
Secondary Cross Galaxy Server	9410	
Galaxy Pairing	7085	
Configuration Service	6332	
Content Provider Service	6011	
Deploy Agent Service	6533, 6633	
Service Manager Service	6111, 6113	
System Authentication Service	9876	

Upgrade and Migration

Preparation for Upgrade and Migration…cont'd

- Coordination with IT\Network Team:
  - Microsoft Windows Updates are in place, Check Security Central for support
  - Necessary ports are updated in any external Firewall
  - AVEVA Files and Folders excluded from Anti Virus Scan
  - Any additionally needed hard disk space added
    - For Checkpoint files
    - For Store forward blocks
    - For Galaxy Database file

Exclude these ArchestrA folders in a 64-bit system:

- C:\ProgramData\ArchestrA\ and all subfolders
- C:\Program Files\Common Files\ArchestrA\
- C:\Program Files (x86)\ArchestrA\
- C:\Program Files (x86)\Common Files\ArchestrA\
- C:\Program Files (x86)\FactorySuite\ (The FactorySuite directory may not exist in newer installations)
- C:\Program Files (x86)\Wonderware\
- C:\Users\All Users\Wonderware\
- C:\Users\Public\Wonderware\
- C:\InSQL\Data\ (The InSQL folder may not exist in newer installations)
- C:\Historian\Data\

Exclude these folders:

- History Store Forward directory in 32- and 64-bit systems:
- C:\Users\All Users\ArchestrA\ (default location) Checkpoint directory location default location in a 32-bit system:
- C:\Program Files\ArchestrA\Framework\bin\ Checkpoint directory location default location in a 64-bit system:
- C:\Program Files (x86)\ArchestrA\Framework\bin\ InTouch HMI Application folder path:
- C:\Users\Public\Wonderware\IntouchApplications (default folder path) You can select an application folder path when an InTouch HMI application is created SMC Logger Storage file path:
- C:\ProgramData\ArchestrA\LogFiles\
- C:\Documents and Settings\All Users\Application data\Archestra\LogFiles\ Exclude these files from the
- C:\Windows\Temp folder: *.aFDX Location of SQL Server database files to be excluded: 32-bit systems:
- C:\Program Files\Microsoft SQL Server\MSSQL.MSSQLSERVER\MSSQL\DATA\ (will vary by SQL Server version) 64-bit systems:
- C:\Program Files (x86)\Microsoft SQL Server\MSSQL.MSSQLSERVER\MSSQL\DATA\ (will vary by SQL Server version)

Exclude SQL Server database files within this directory of the following types:

- .mdf
- .ldf

Upgrade and Migration

Preparation for Upgrade and Migration…cont'd

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  - Microsoft Windows Updates are in place, Check Security Central for support
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Upgrade and Migration

Preparation for Upgrade and Migration…cont'd

- Backups
  - Create a snapshot of VMs of all nodes of the production system, if running in a Virtual Environment
  - Create a ghost image/backup of all nodes of the production system, if running on physical machines
  - Upload runtime changes, if any runtime data needs to be persisted
  - Create a backup of galaxy using the Galaxy Database Manager in SMC
  - Export the custom client controls
  - Export all automation objects into an aaPKG as a secondary backup
  - Export DAS\OI Server Configurations

Check on Galaxy Integrity

- Check on Galaxy DB integrity to make sure it is ready for upgrade / migration
- Fix whatever known issues there are within the existing Galaxy
- Should not take upgrading/migration as a method to fix existing issues. If the issue/bug has not been addressed in the newer version, the upgrade/migration will not address the problem.
- Some issues, if they are already addressed in the newer version, will be fixed after the upgrade/migration.

Shrink the Galaxy DB

- Shrink the Galaxy DB before the upgrade/migration
- Not only will it take longer if this step is not taken, the Galaxy BAK will be very bulky

Clean up of ManagedApp

- Delete non necessary files
- Clean up extra additional folders – Duplicated folders etc etc

Export / Import of Galaxy DB

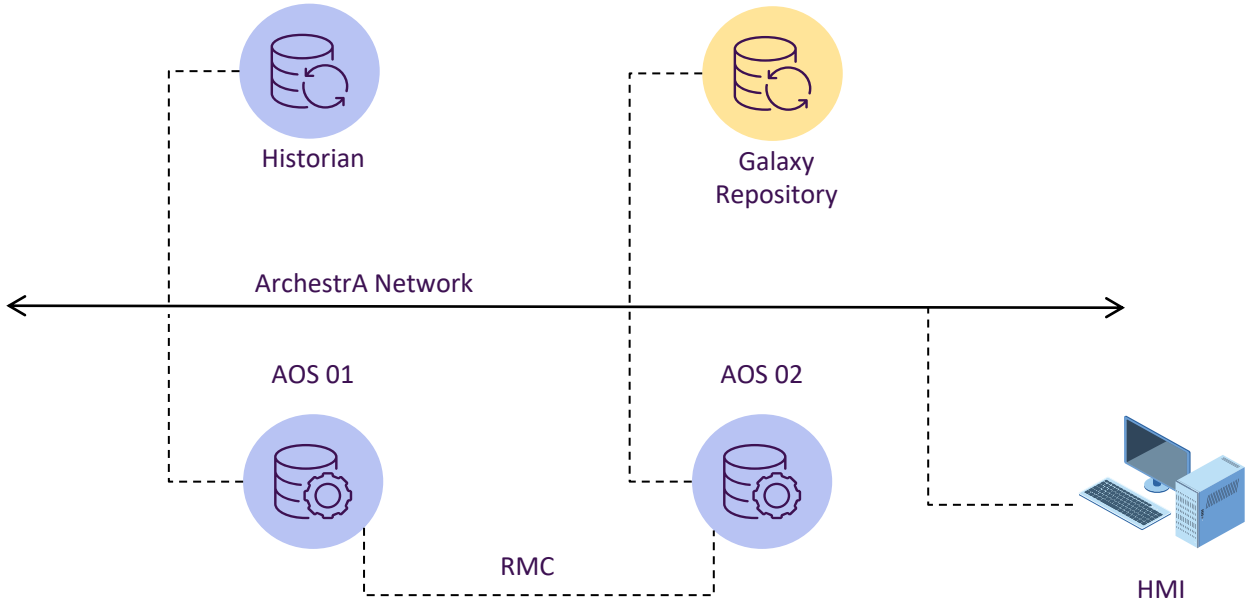
- If there are pre-existent issues in the older Galaxy, it would be best to perform an export and import of objects at that version before the upgrade/migration
- Do not export the aaPKG in an old version and then import that aaPKG into the new version. Fix the problem using the same version.
- Some customers have existing issue within their Galaxy DB.
- Take note of Galaxies using the Base Template Library (BTL).

Best practices for Upgrade and Migration

Upgrade and Migration

Upgrade and Migration Case Study

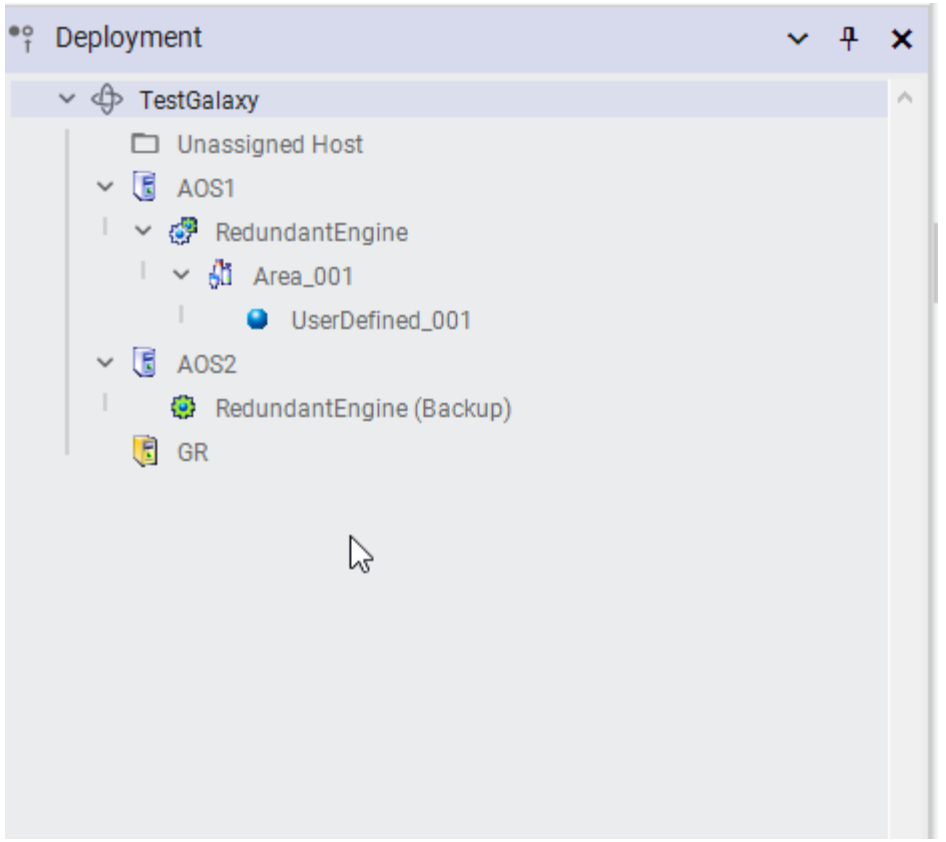
- Scenario
  - A simple Galaxy having 3 platforms Galaxy Repository (GR), Application Object Servers (AOS1 and AOS2).
  - AOS1 and AOS2 platforms configured for redundancy hosting a redundant engine.
  - AOS1 runs the primary engine as the active engine and AOS2 runs the backup engine as the standby engine.



Upgrade and Migration

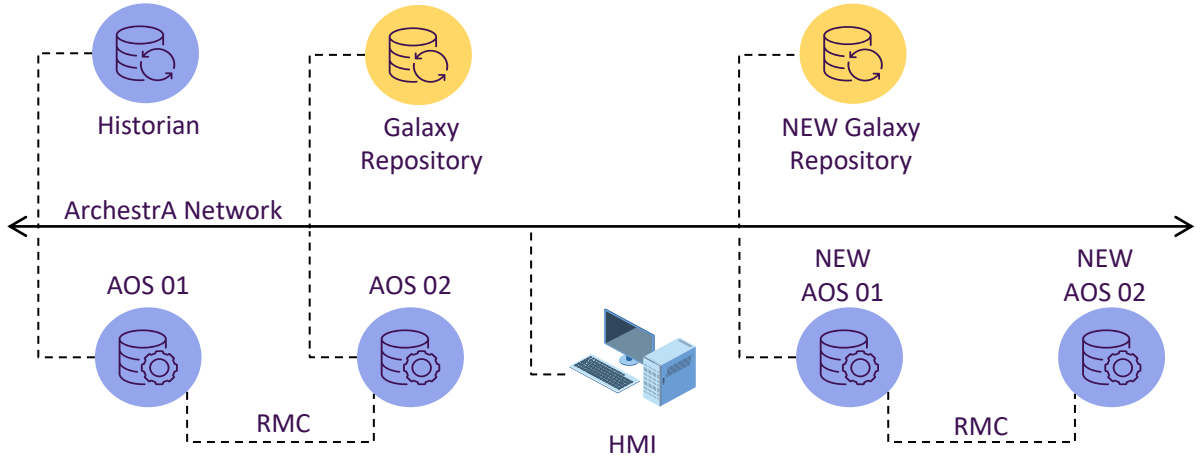
Different approaches to upgrade and migration

- Parallel Galaxy
- In-place Rolling Upgrade
- Node Replacement Upgrade



Upgrade and Migration

Parallel Galaxy Steps



- Setup new nodes for GR, AOS1 and AOS2
- Node names and IP addresses should be different to avoid conflict with existing platforms
- Restore the Galaxy cab file on the new GR Node and migrate the Galaxy
- Change the network address of the GR, AOS1 and AOS2 platform objects to match the new node names
- Deploy the GR Platform
- Deploy AOS1 Platform without selecting the cascade Deploy option
- Deploy AOS2 Platform without selecting the cascade Deploy option
- Deploy redundant engine including the partner engine
- Ensure that new Galaxy is operational very similar to the current Galaxy
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Upgrade and Migration

Parallel Galaxy Steps

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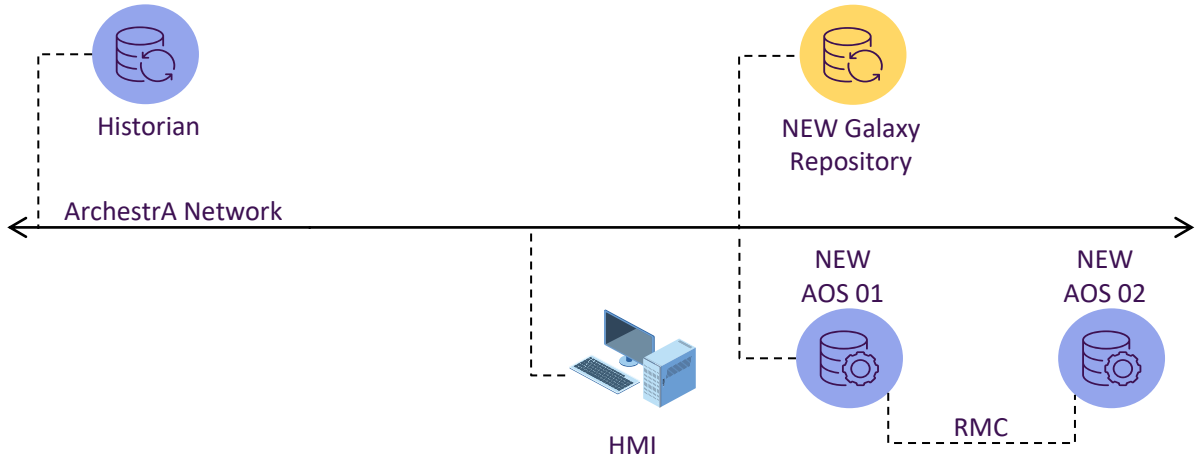
- Ensure that new Galaxy is operational very similar to the current Galaxy
- Decommission the old Galaxy platform nodes



Upgrade and Migration

Parallel Galaxy…cont'd

- Pros
  - Simplest way of upgrading the Galaxy.
  - Ideal for situations where hardware and operating system as well need an upgrade.
  - Gives an opportunity to compare the old and new Galaxy operations side by side.
  - No downtime, old Galaxy can be decommissioned only after ensuring that new Galaxy is completely operational.
- Cons
  - As the node names get changed for the platform nodes, scripts (that reference the nodes by name), need to be updated as well.
  - If a same PLC is referenced by both the Galaxies, objects in both Galaxies may write to the PLC items.

AVEVA

Upgrade and Migration

In-place Rolling Upgrade Steps

- Undeploy the GR Platform
- Upgrade the GR Node by installing higher version of the Application Server software
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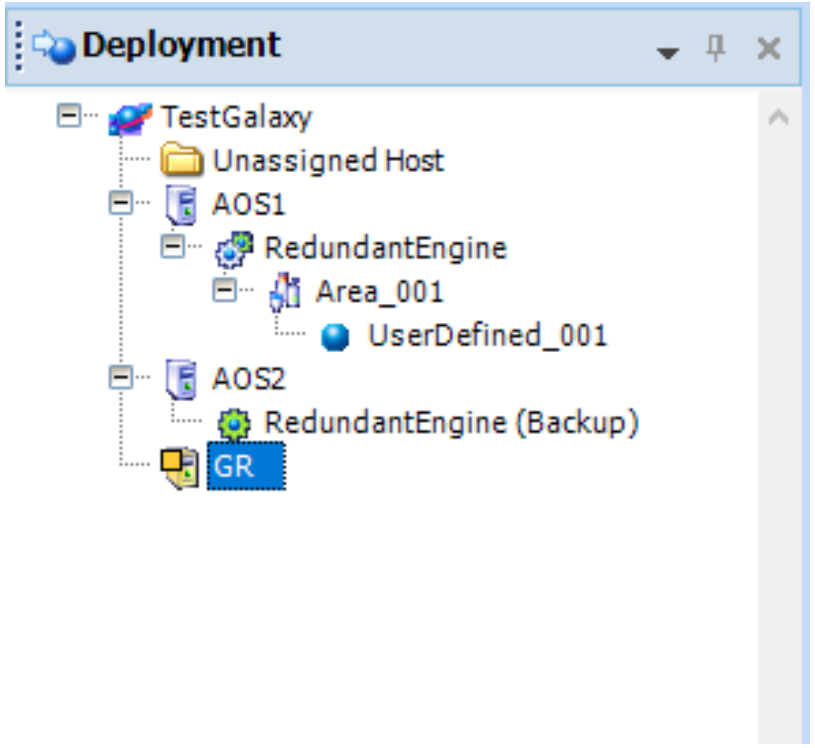

Upgrade and Migration

In-place Rolling Upgrade Steps

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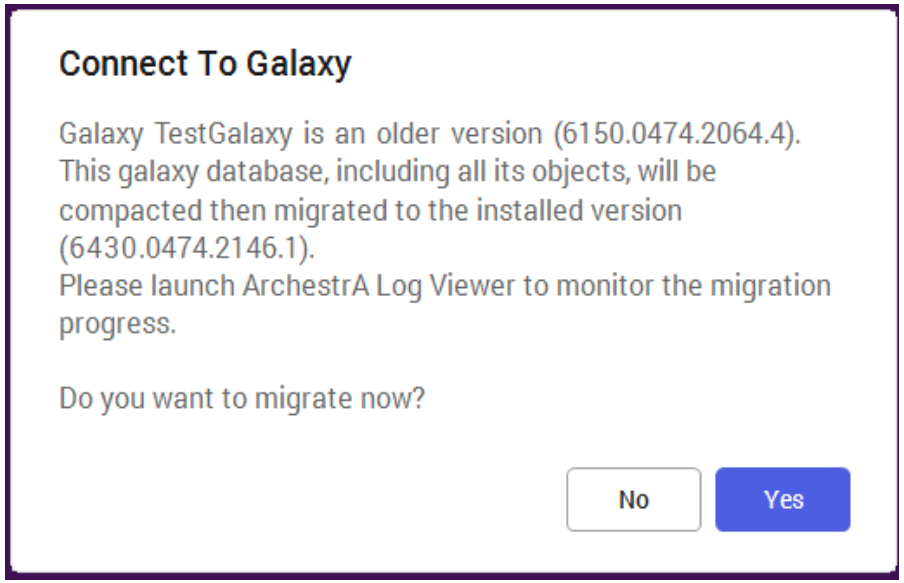

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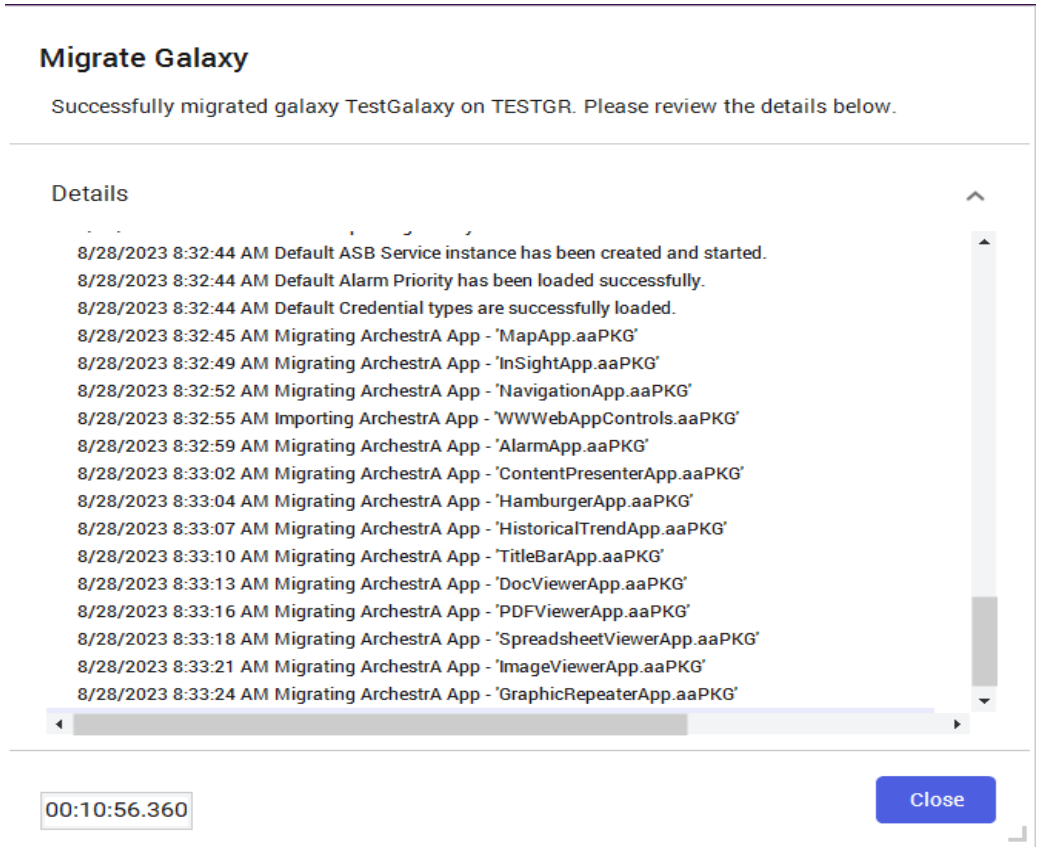

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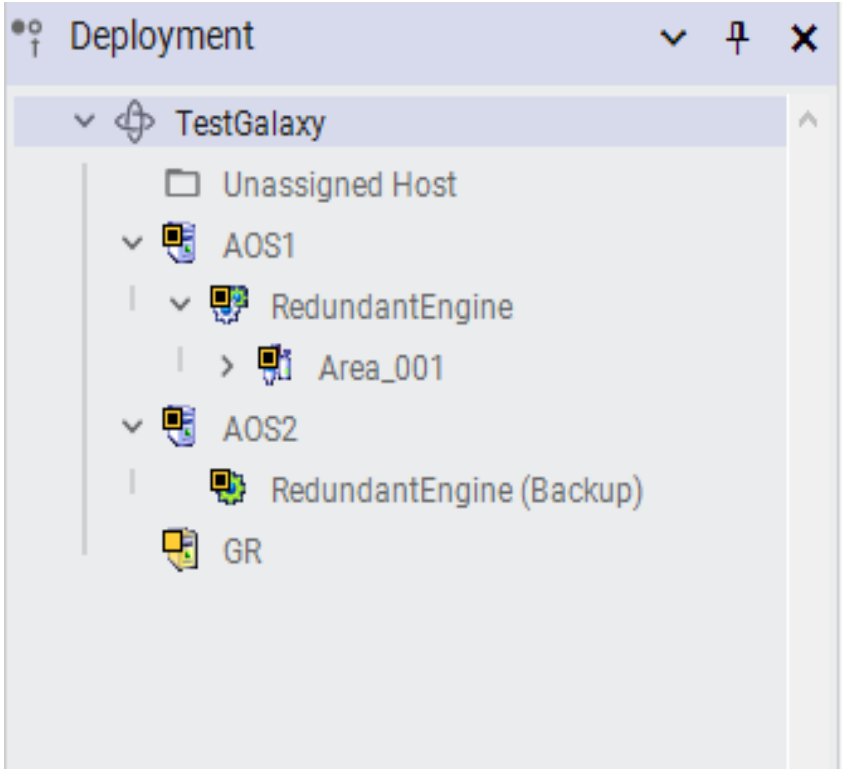

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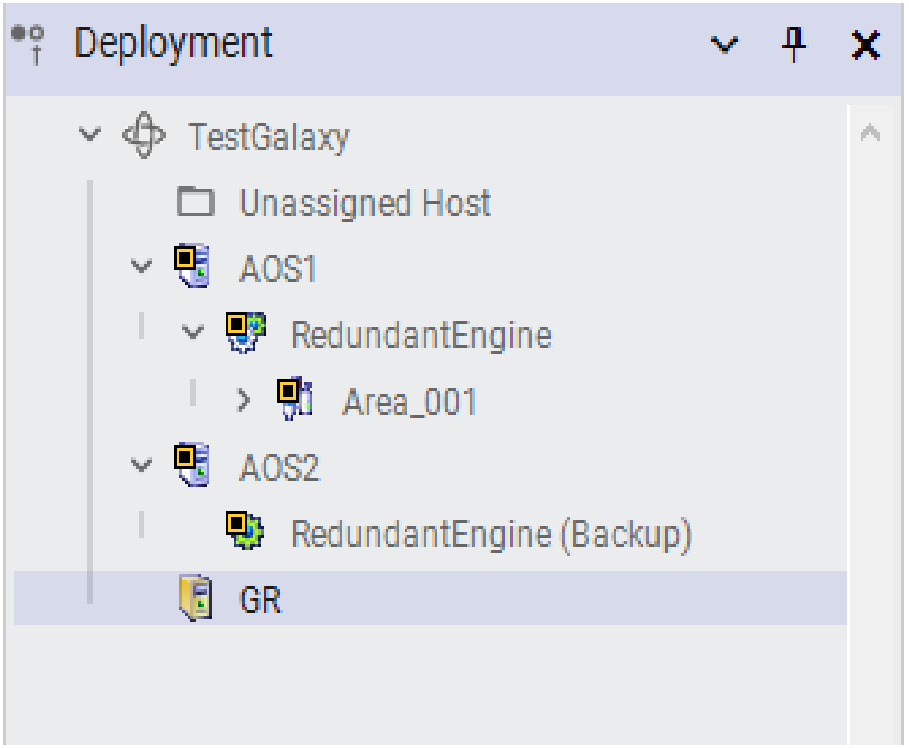

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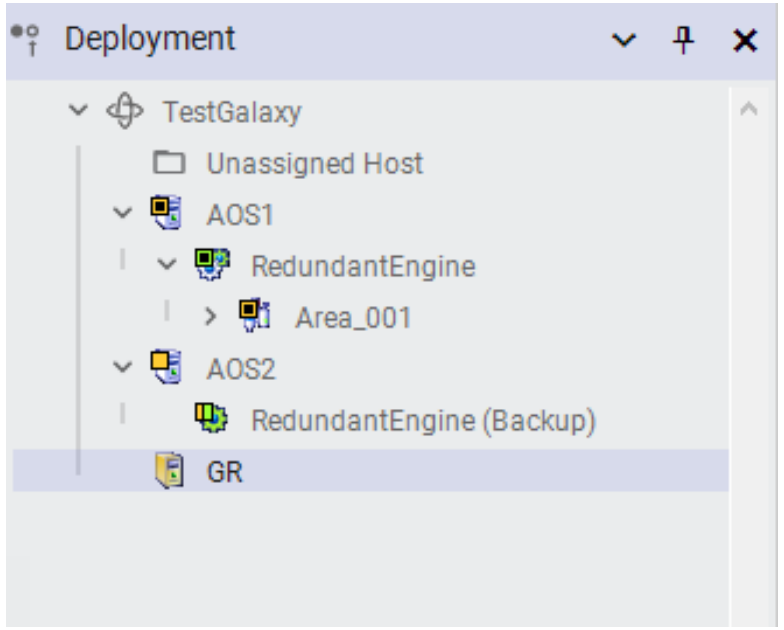

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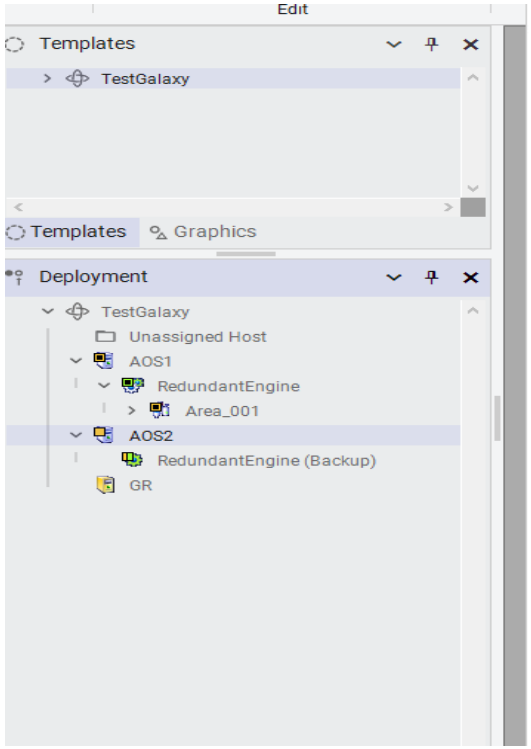

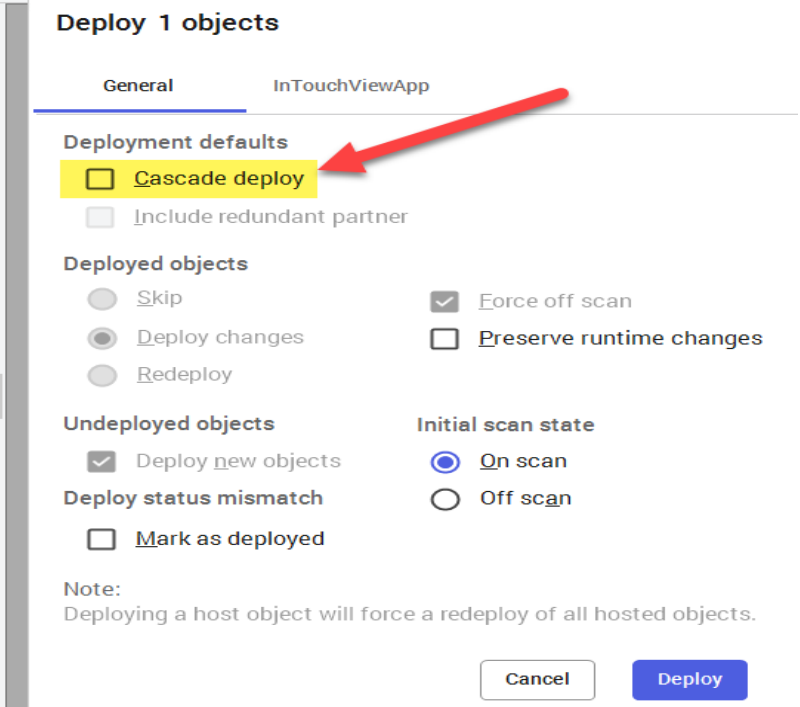

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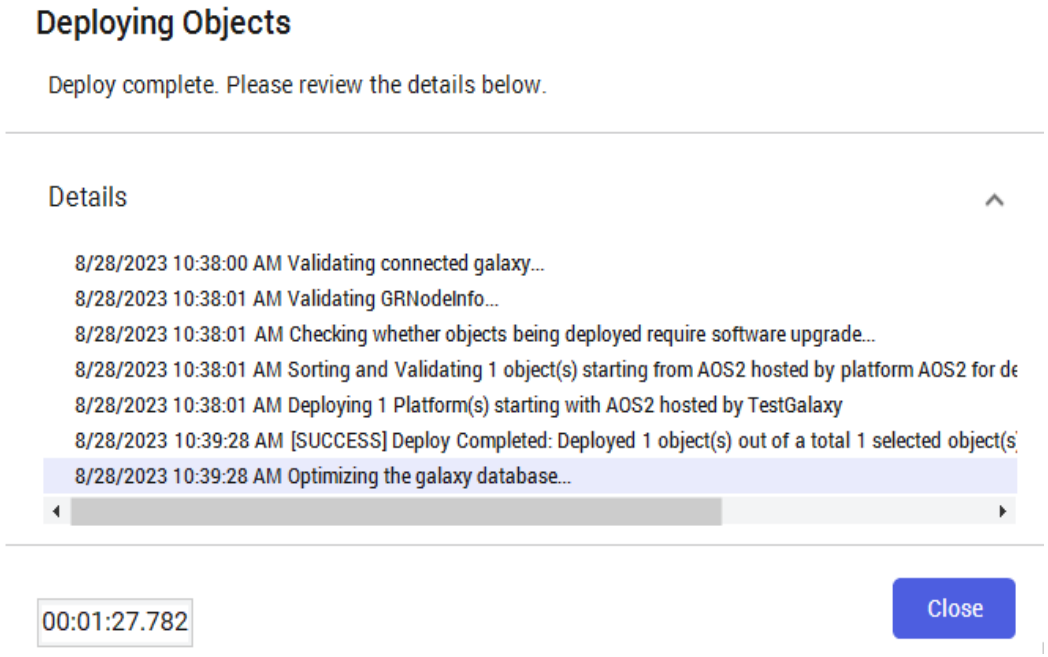

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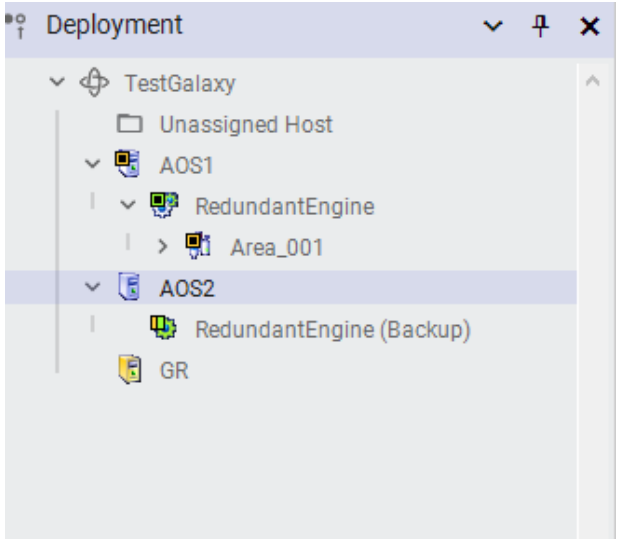

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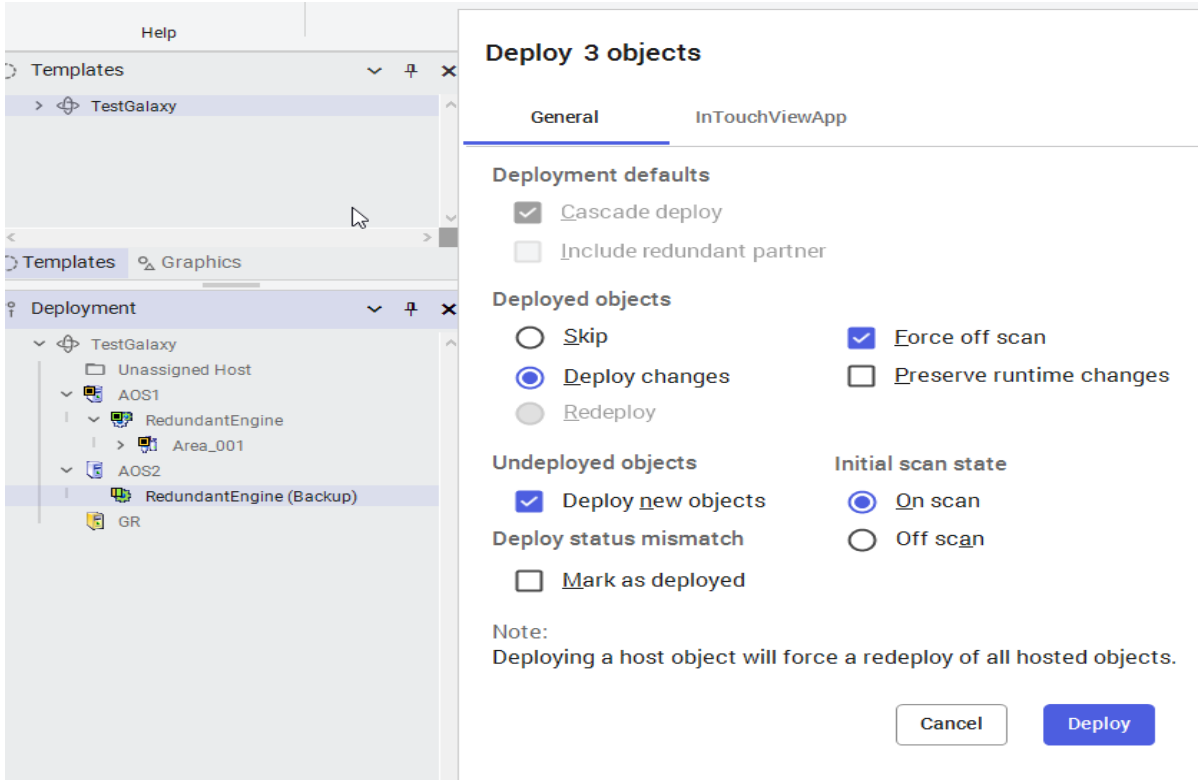

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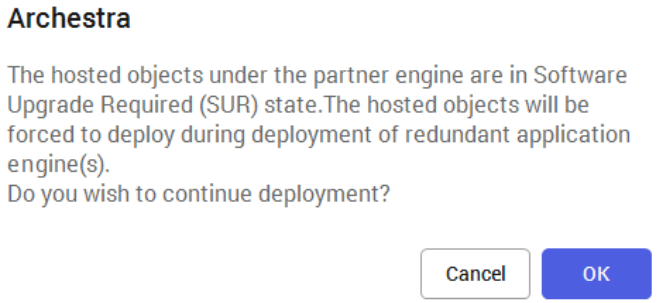

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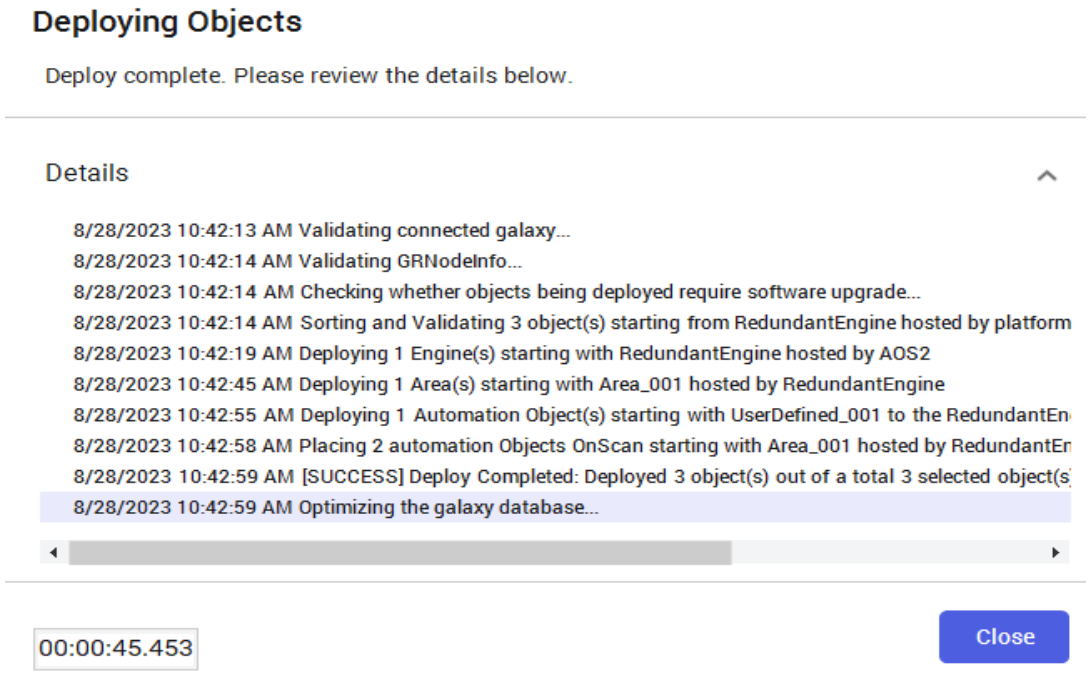
In-place Rolling Upgrade Steps

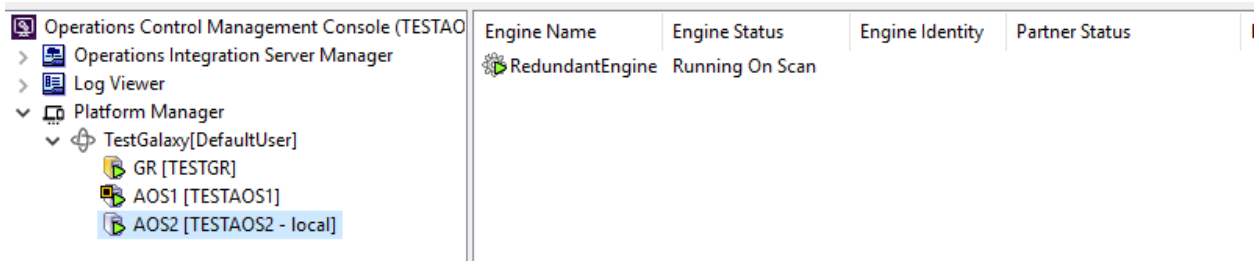
- Undeploy the GR Platform
- Upgrade the GR Node by installing higher version of the Application Server software
- Launch IDE and migrate the Galaxy
- Ensure that all the other deployed instances on AOS1 and AOS2 are flagged as Software Update Pending (SUP)
- Deploy the GR Platform
- Upgrade the AOS2 platform which is running the stand by engine with higher version of the Application Server software
- Verify that platform object of AOS2 is in the undeployed state in the deployment tab
- Deploy the AOS2 platform by not selecting the “Cascade Deploy” option
- Deploy the backup engine with “Cascade Deploy” option pre-selected



Upgrade and Migration

In-place Rolling Upgrade …cont'd

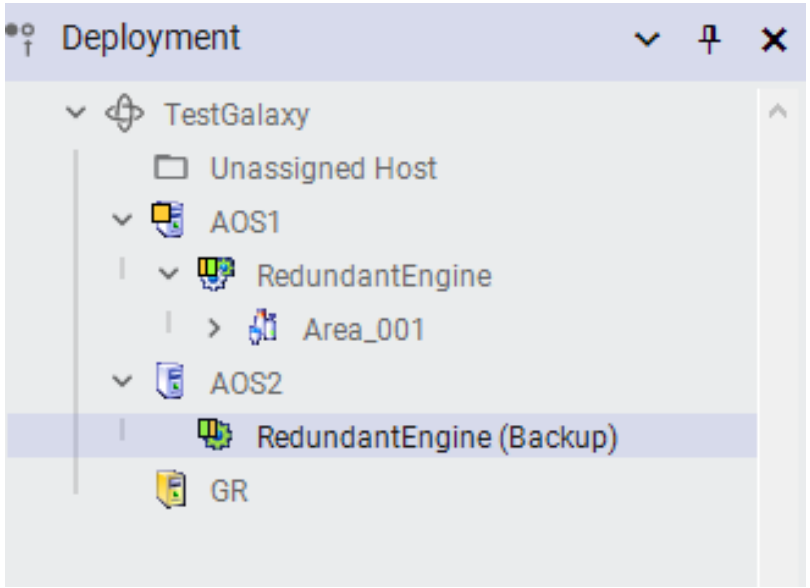
- Ensure that the engine is listed as "Running On Scan" under AOS2 in SMC Platform Manager



Upgrade and Migration

In-place Rolling Upgrade …cont'd

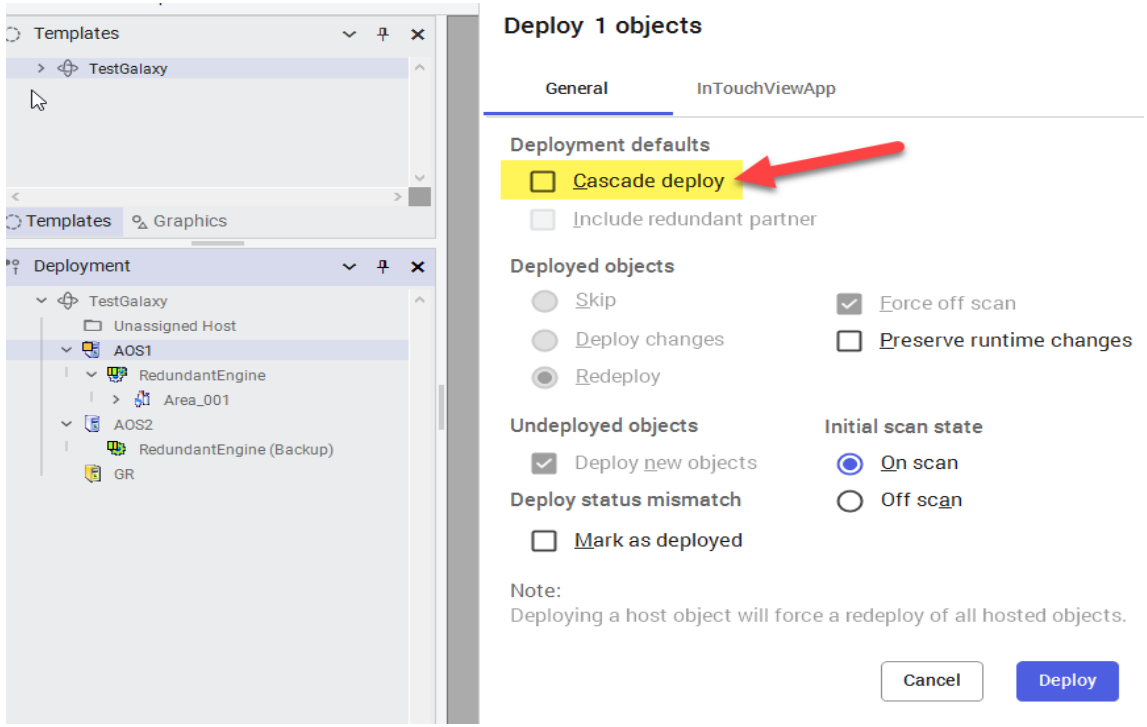
- Ensure that the engine is listed as "Running On Scan" under AOS2 in SMC Platform Manager
- Upgrade the AOS1 Platform Node with higher version of the Application Server software
- Ensure that platform object of AOS1 is in the undeployed state in the Deployment tab in IDE



Upgrade and Migration

In-place Rolling Upgrade …cont'd

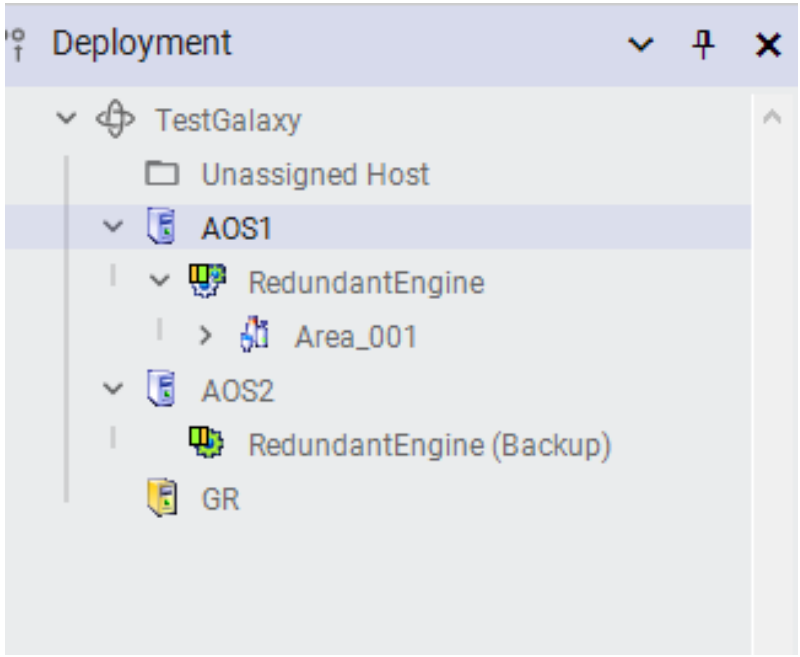
- Ensure that the engine is listed as "Running On Scan" under AOS2 in SMC Platform Manager
- Upgrade the AOS1 Platform Node with higher version of the Application Server software
- Ensure that platform object of AOS1 is in the undeployed state in the Deployment tab in IDE
- Deploy the AOS1 platform with no cascade deploy option



Upgrade and Migration

In-place Rolling Upgrade …cont'd

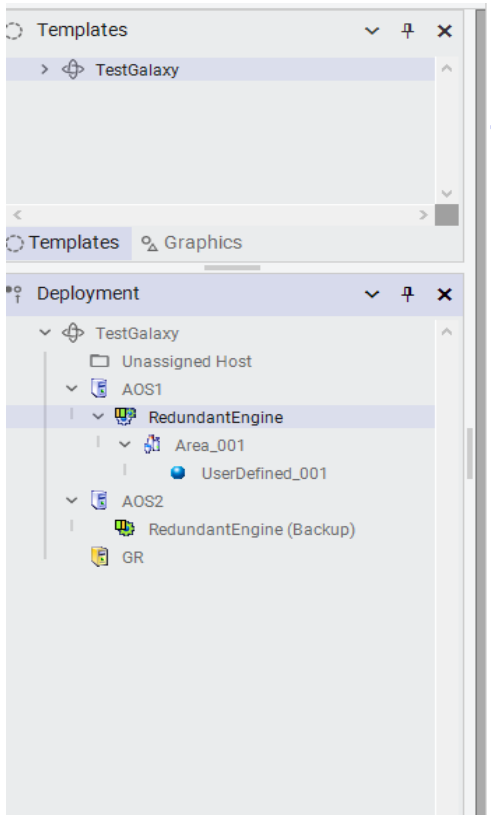
- Ensure that the engine is listed as "Running On Scan" under AOS2 in SMC Platform Manager
- Upgrade the AOS1 Platform Node with higher version of the Application Server software
- Ensure that platform object of AOS1 is in the undeployed state in the Deployment tab in IDE
- Deploy the AOS1 platform with no cascade deploy option

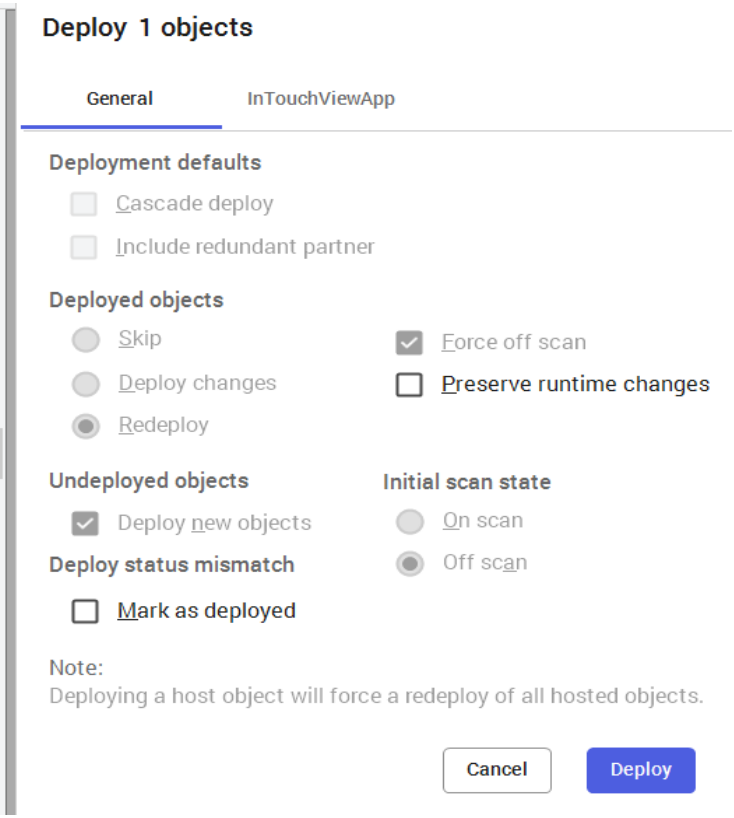


Upgrade and Migration

In-place Rolling Upgrade …cont'd

- Ensure that the engine is listed as "Running On Scan" under AOS2 in SMC Platform Manager
- Upgrade the AOS1 Platform Node with higher version of the Application Server software
- Ensure that platform object of AOS1 is in the undeployed state in the Deployment tab in IDE
- Deploy the AOS1 platform with no cascade deploy option
- Deploy the primary engine under AOS1 with cascade deploy option

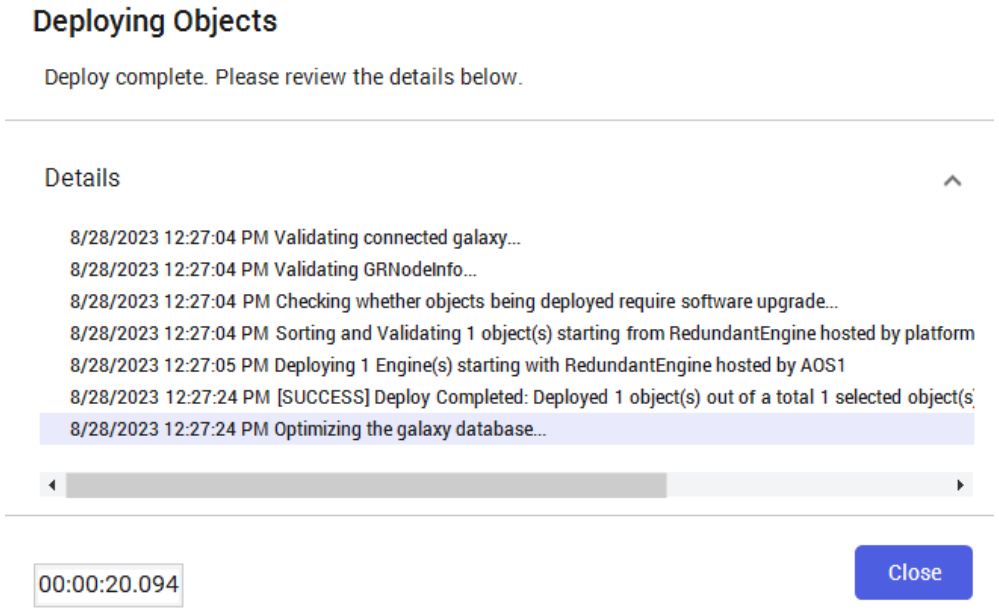




Upgrade and Migration

In-place Rolling Upgrade …cont'd

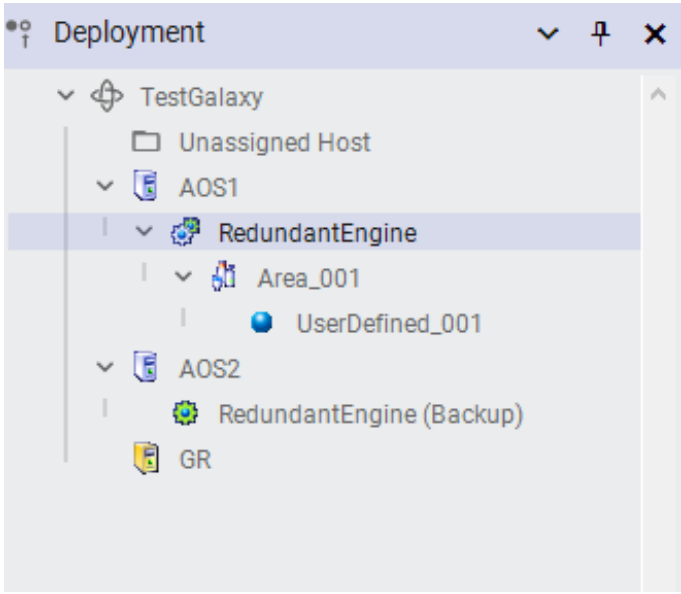
- Ensure that the engine is listed as "Running On Scan" under AOS2 in SMC Platform Manager
- Upgrade the AOS1 Platform Node with higher version of the Application Server software
- Ensure that platform object of AOS1 is in the undeployed state in the Deployment tab in IDE
- Deploy the AOS1 platform with no cascade deploy option
- Deploy the primary engine under AOS1 with cascade deploy option



Upgrade and Migration

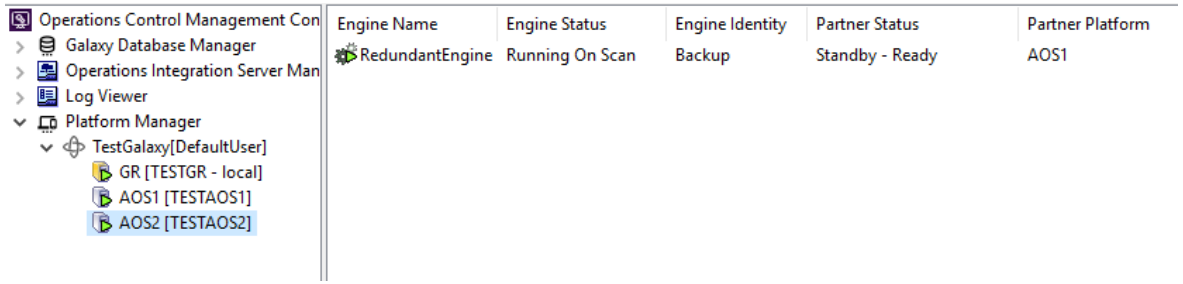
In-place Rolling Upgrade …cont'd

- Ensure that the engine is listed as "Running On Scan" under AOS2 in SMC Platform Manager
- Upgrade the AOS1 Platform Node with higher version of the Application Server software
- Ensure that platform object of AOS1 is in the undeployed state in the Deployment tab in IDE
- Deploy the AOS1 platform with no cascade deploy option
- Deploy the primary engine under AOS1 with cascade deploy option



Upgrade and Migration

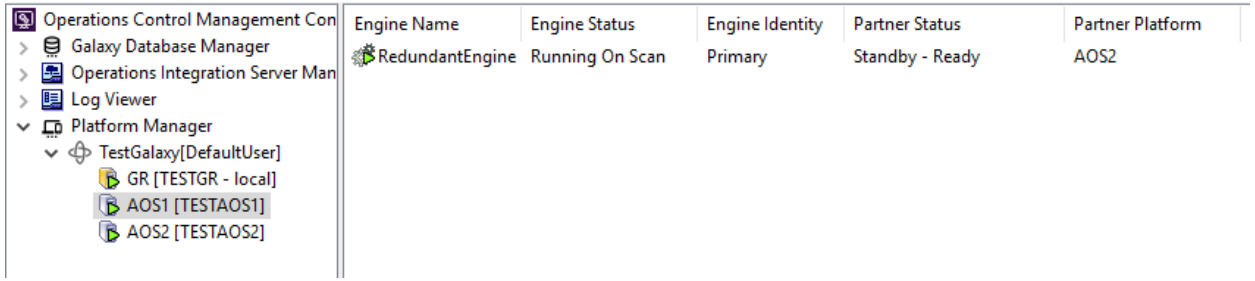
In-place Rolling Upgrade …cont'd



- Ensure that the engine is listed as "Running On Scan" under AOS2 in SMC Platform Manager
- Upgrade the AOS1 Platform Node with higher version of the Application Server software
- Ensure that platform object of AOS1 is in the undeployed state in the Deployment tab in IDE
- Deploy the AOS1 platform with no cascade deploy option
- Deploy the primary engine under AOS1 with cascade deploy option
- Ensure that the partner engine already running on AOS2 recognized the just deployed engine on AOS1 with its partner status as "Standby-Ready"

Upgrade and Migration

In-place Rolling Upgrade …cont'd



- Ensure that the engine is listed as "Running On Scan" under AOS2 in SMC Platform Manager
- Upgrade the AOS1 Platform Node with higher version of the Application Server software
- Ensure that platform object of AOS1 is in the undeployed state in the Deployment tab in IDE
- Deploy the AOS1 platform with no cascade deploy option
- Deploy the primary engine under AOS1 with cascade deploy option
- Ensure that the partner engine already running on AOS2 recognized the just deployed engine on AOS1 with its partner status as "Standby-Ready"
- Force failover the engine from AOS2 to AOS1 so that it moves back to the original state

Upgrade and Migration

In-place Rolling Upgrade…cont’d

- Pros
  - Seamless upgrade of the Galaxy.
  - Operators at HMI stations continue to visualize the plant data while the upgrade is in progress in the background.

- Cons
  - In case the systems need hardware and operating system upgrade as well, it is risky to perform an in place upgrade of hardware and operating system.

Upgrade and Migration

Node Replacement Upgrade Steps

- Failover the active engine running on AOS1 to AOS2
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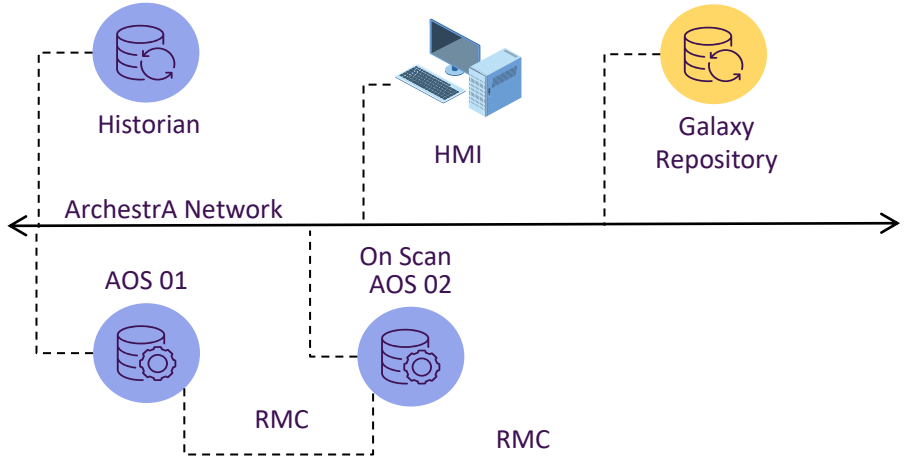

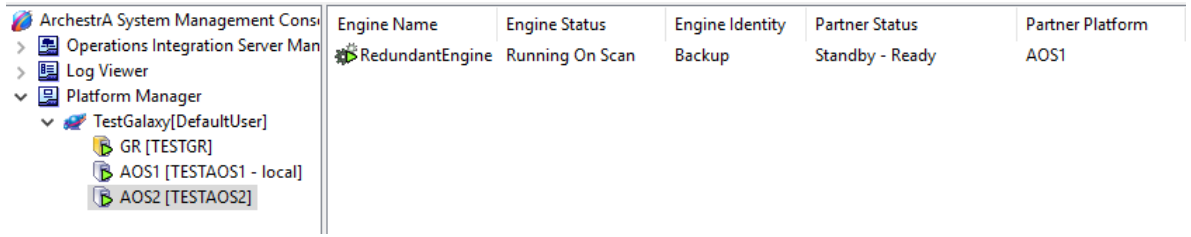

Upgrade and Migration

Node Replacement Upgrade Steps

- Failover the active engine running on AOS1 to AOS2
- Decommission the GR and AOS1 node, then remove them from the network to avoid the conflict
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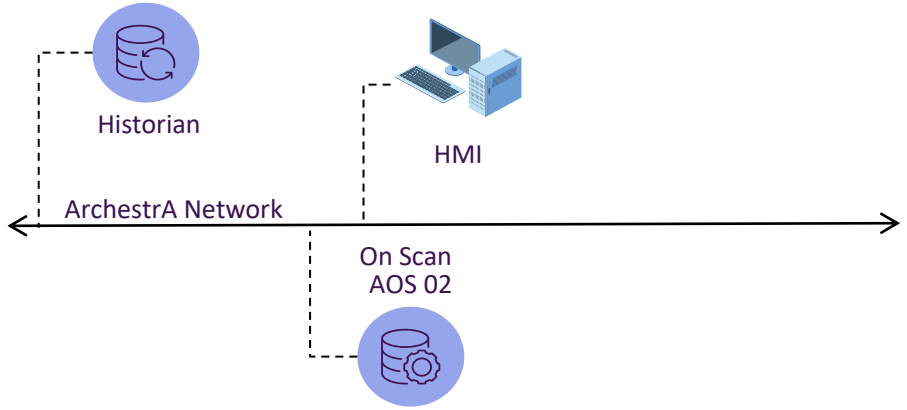

Upgrade and Migration

Node Replacement Upgrade Steps

- Failover the active engine running on AOS1 to AOS2
- Decommission the GR and AOS1 node, then remove them from the network to avoid the conflict
- Ensure that the engine is “Running On Scan” on AOS2
- On AOS2 node export the registry key “HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\ArchestrA\Framework\Platform\PlatformNodes\Platform3” into .reg file.
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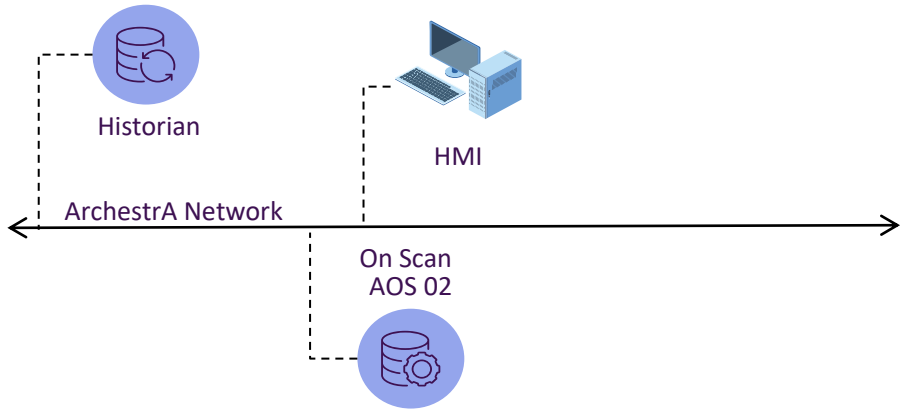
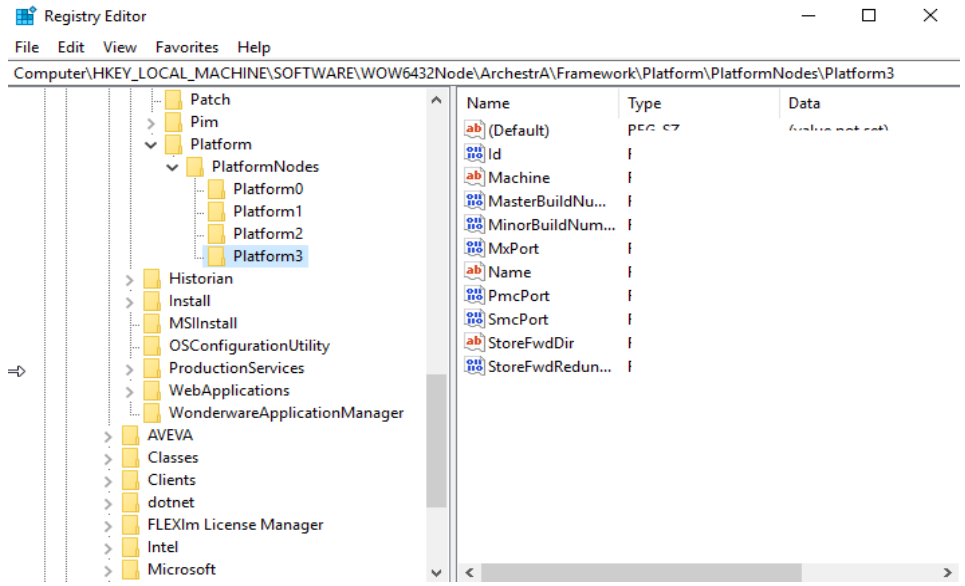
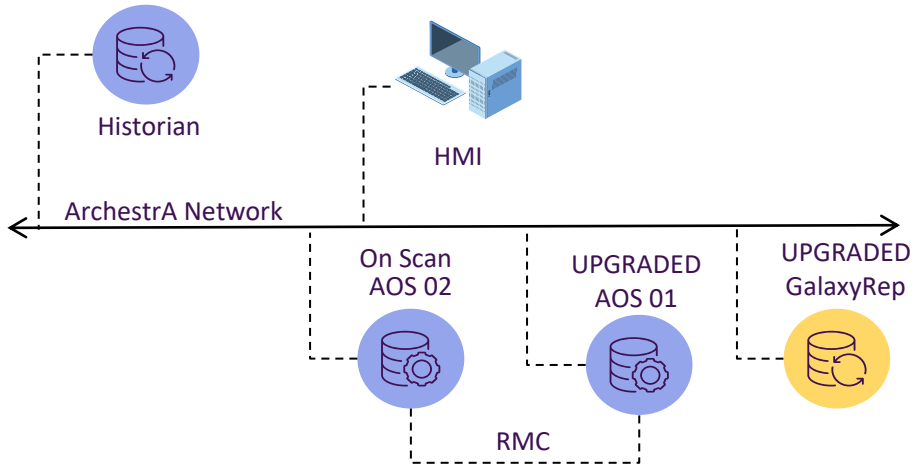




Upgrade and Migration

Node Replacement Upgrade Steps



- Failover the active engine running on AOS1 to AOS2
- Decommission the GR and AOS1 node, then remove them from the network to avoid the conflict
- Ensure that the engine is “Running On Scan” on AOS2
- On AOS2 node export the registry key “HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node \ArchestrA\Framework\Platform\PlatformNodes\Platform3” into .reg file.
- Setup the new computers for GR and AOS1 nodes with exactly the same names and IP addresses as the old systems. Install the higher version of Application Server
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Upgrade and Migration

Node Replacement Upgrade Steps

- Failover the active engine running on AOS1 to AOS2
- Decommission the GR and AOS1 node, then remove them from the network to avoid the conflict
- Ensure that the engine is “Running On Scan” on AOS2
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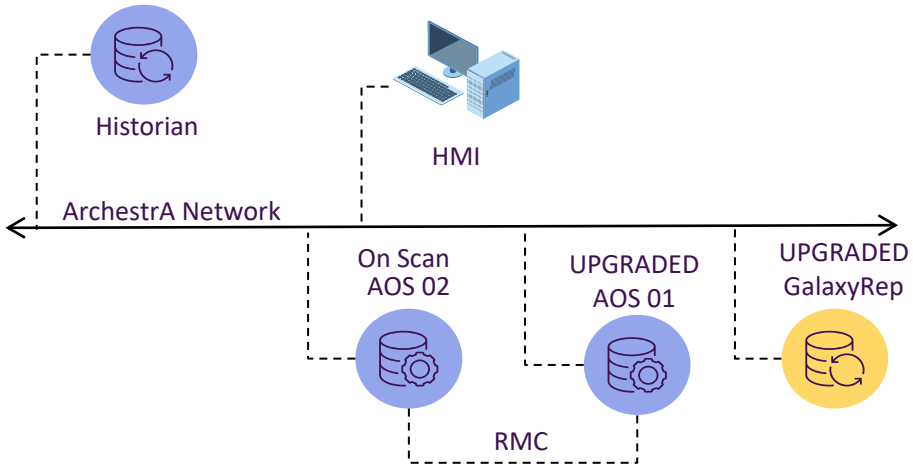

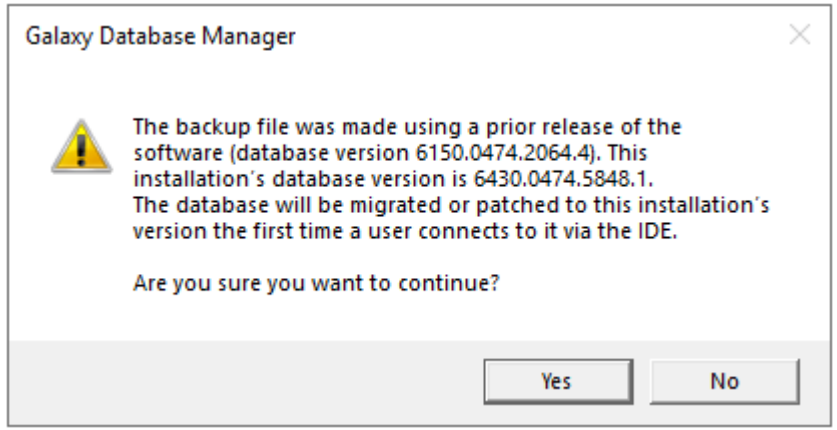

Upgrade and Migration

Node Replacement Upgrade Steps

- Failover the active engine running on AOS1 to AOS2
- Decommission the GR and AOS1 node, then remove them from the network to avoid the conflict
- Ensure that the engine is “Running On Scan” on AOS2
- On AOS2 node export the registry key “HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\ArchestrA\Framework\Platform\PlatformNodes\Platform3” into .reg file.
- Setup the new computers for GR and AOS1 nodes with exactly the same names and IP addresses as the old systems. Install the higher version of Application Server
- Restore the Galaxy CAB file on the new GR Node & migrate the Galaxy
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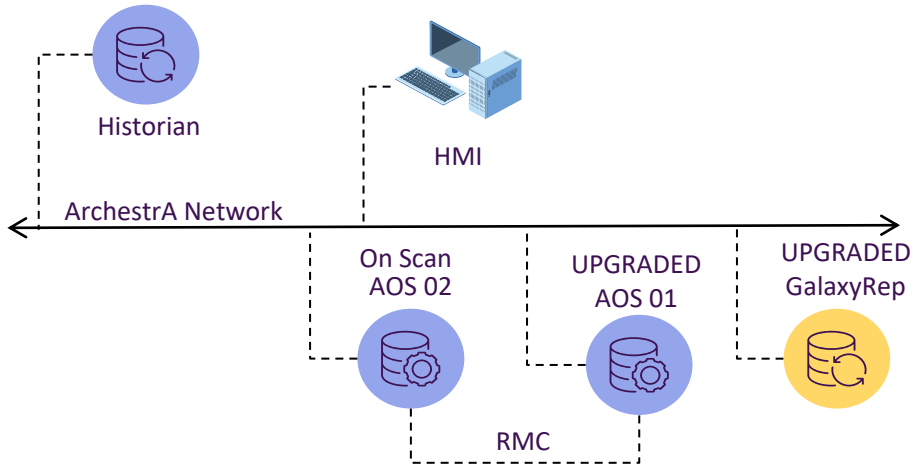
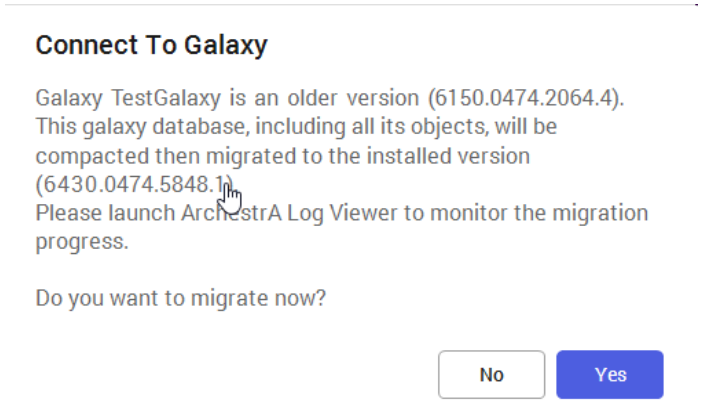
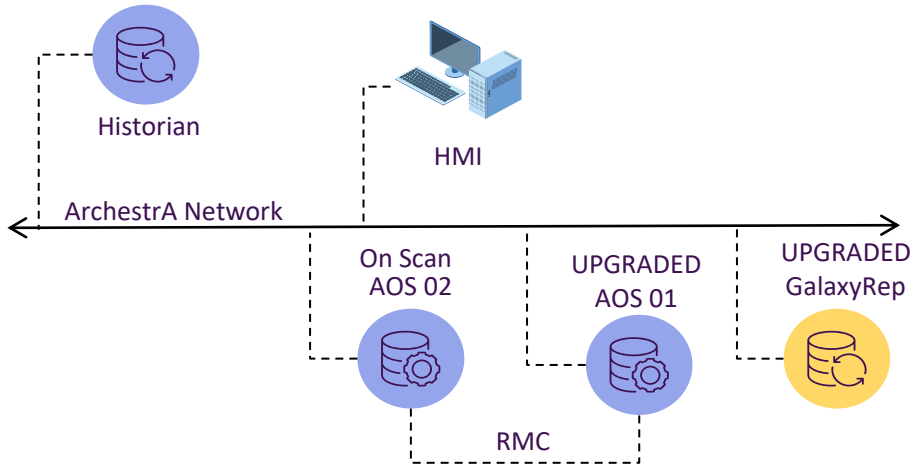


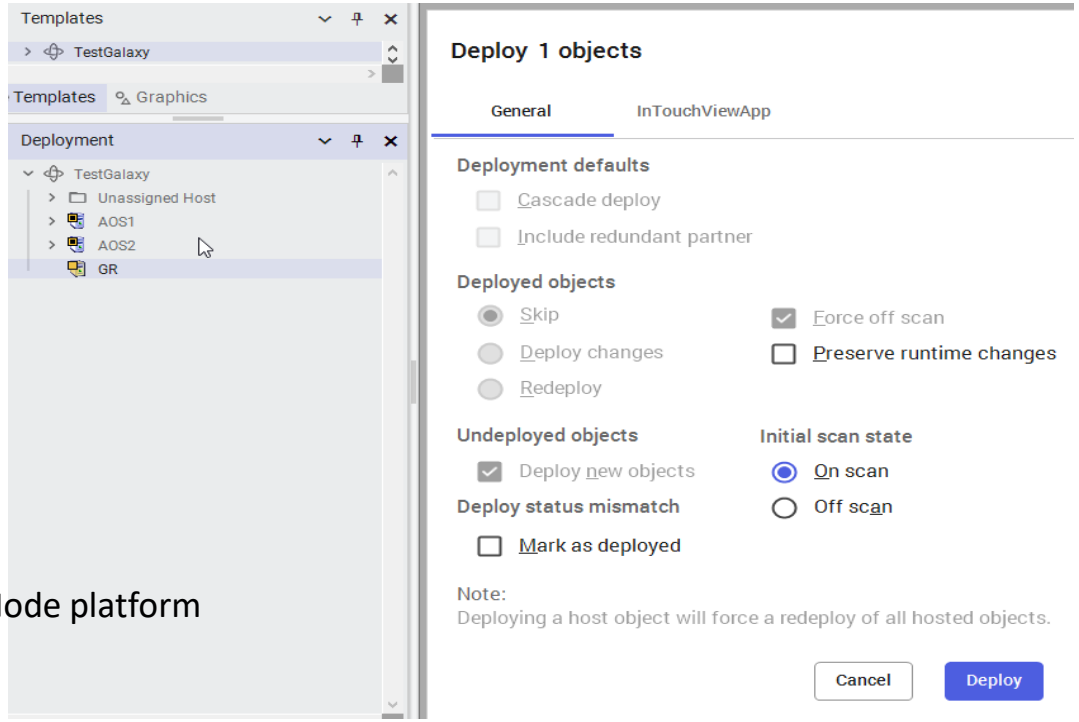


Upgrade and Migration

Node Replacement Upgrade Steps

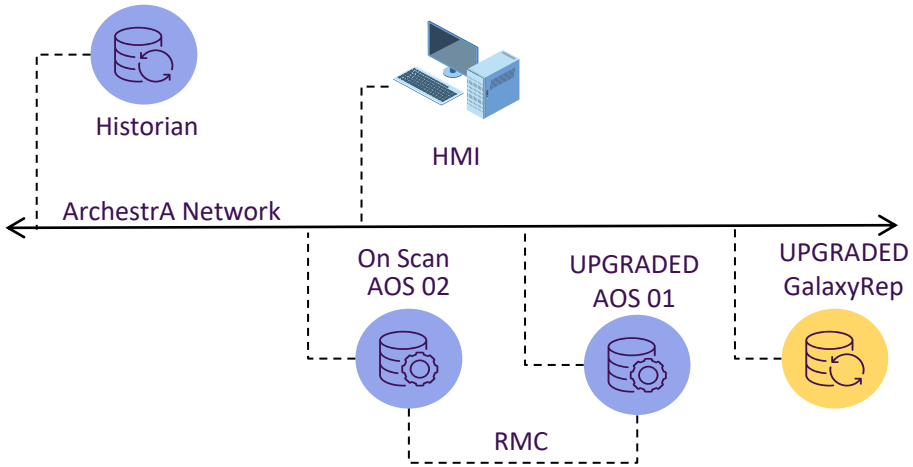
- Failover the active engine running on AOS1 to AOS2
- Decommission the GR and AOS1 node, then remove them from the network to avoid the conflict
- Ensure that the engine is “Running On Scan” on AOS2
- On AOS2 node export the registry key “HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\ArchestrA\Framework\Platform\PlatformNodes\Platform3” into .reg file.
- Setup the new computers for GR and AOS1 nodes with exactly the same names and IP addresses as the old systems. Install the higher version of Application Server
- Restore the Galaxy CAB file on the new GR Node & migrate the Galaxy
- Notice the presence of Software Update Pending (SUP) state on the objects under AOS1 and AOS2 platforms
- On the GR Node import the .reg file that was created earlier and deploy the GR Node platform

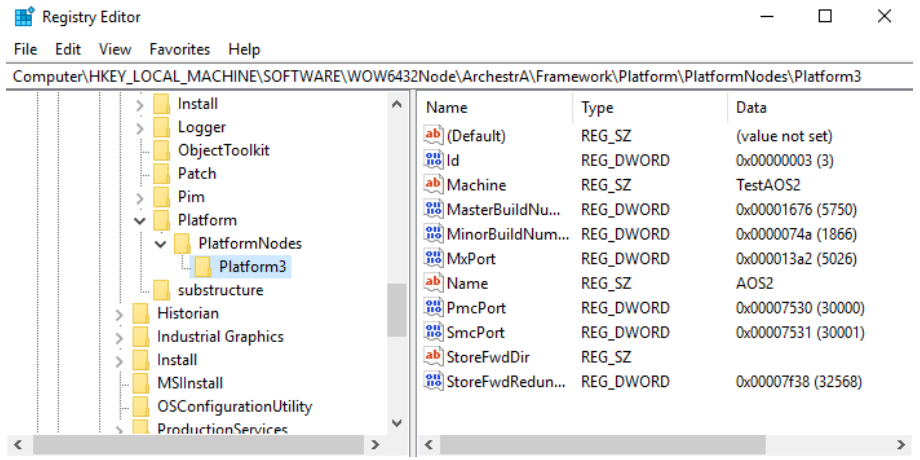




Upgrade and Migration

Node Replacement Upgrade Steps

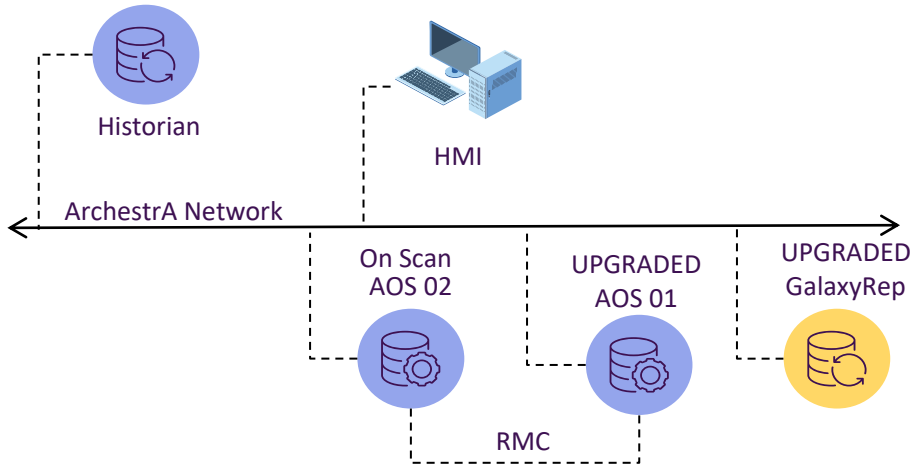




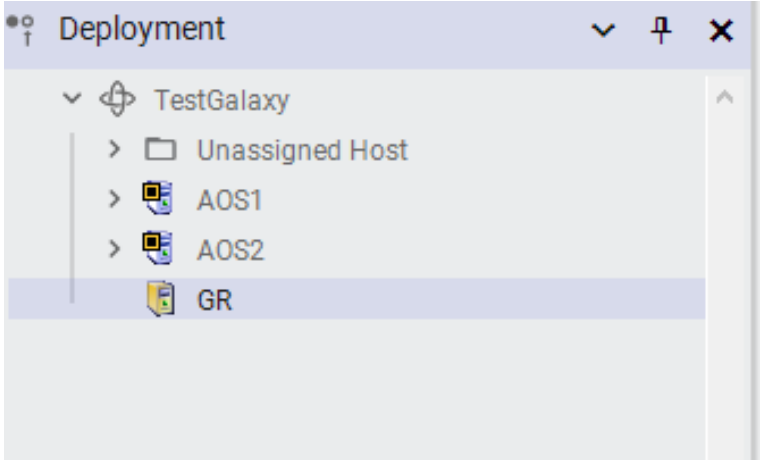
- Failover the active engine running on AOS1 to AOS2
- Decommission the GR and AOS1 node, then remove them from the network to avoid the conflict
- Ensure that the engine is “Running On Scan” on AOS2
- On AOS2 node export the registry key “HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node \ArchestrA\Framework\Platform\PlatformNodes\Platform3” into .reg file.
- Setup the new computers for GR and AOS1 nodes with exactly the same names and IP addresses as the old systems. Install the higher version of Application Server
- Restore the Galaxy CAB file on the new GR Node & migrate the Galaxy
- Notice the presence of Software Update Pending (SUP) state on the objects under AOS1 and AOS2 platforms
- On the GR Node import the .reg file that was created earlier and deploy the GR Node platform

Upgrade and Migration

Node Replacement Upgrade Steps



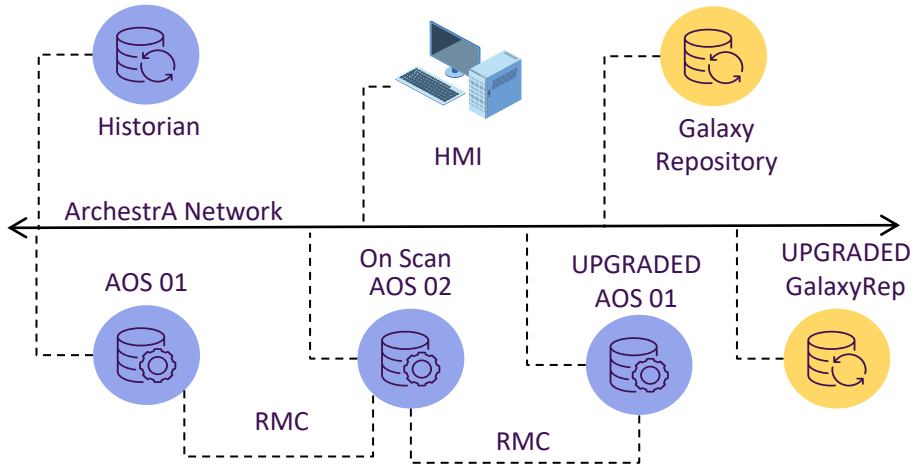
- Failover the active engine running on AOS1 to AOS2
- Decommission the GR and AOS1 node, then remove them from the network to avoid the conflict
- Ensure that the engine is “Running On Scan” on AOS2
- On AOS2 node export the registry key “HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\ArchestrA\Framework\Platform\PlatformNodes\Platform3” into .reg file.
- Setup the new computers for GR and AOS1 nodes with exactly the same names and IP addresses as the old systems. Install the higher version of Application Server
- Restore the Galaxy CAB file on the new GR Node & migrate the Galaxy
- Notice the presence of Software Update Pending (SUP) state on the objects under AOS1 and AOS2 platforms
- On the GR Node import the .reg file that was created earlier and deploy the GR Node platform

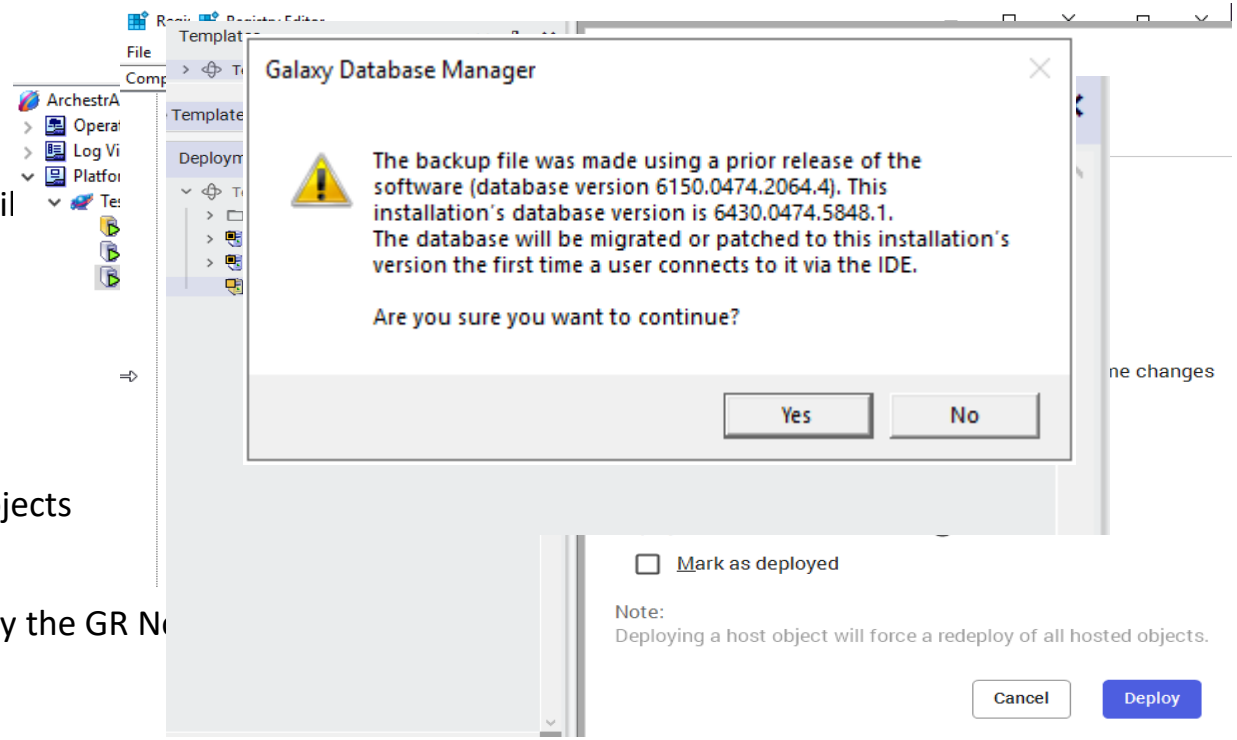


Upgrade and Migration

Node Replacement Upgrade Steps

- Failover the active engine running on AOS1 to AOS2
- Decommission the GR and AOS1 node, then remove them from the network to avoid the conflict
- Ensure that the engine is “Running On Scan” on AOS2
- On AOS2 node export the registry key “HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\ArchestrA\Framework\Platform\PlatformNodes\Platform3” into .reg fil
- Setup the new computers for GR and AOS1 nodes with exactly the same names and IP addresses as the old systems. Install the higher version of Application Server
- Restore the Galaxy CAB file on the new GR Node & migrate the Galaxy
- Notice the presence of Software Update Pending (SUP) state on the objects under AOS1 and AOS2 platforms
- On the GR Node import the .reg file that was created earlier and deploy the GR N

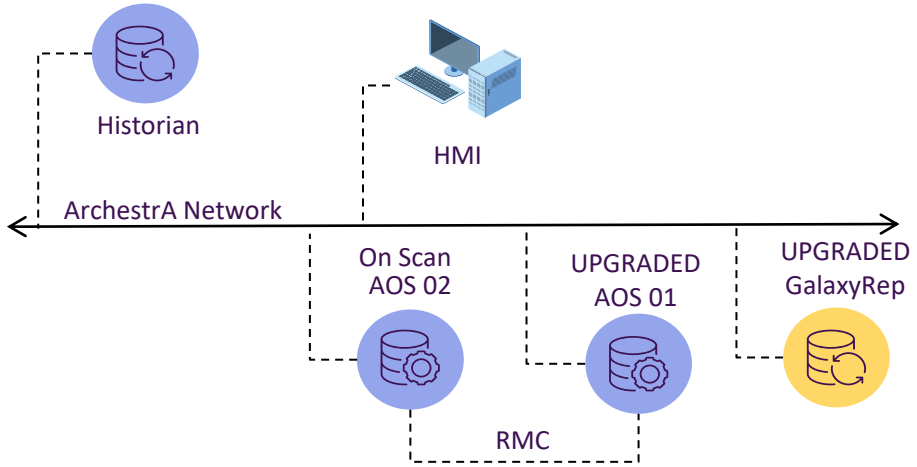


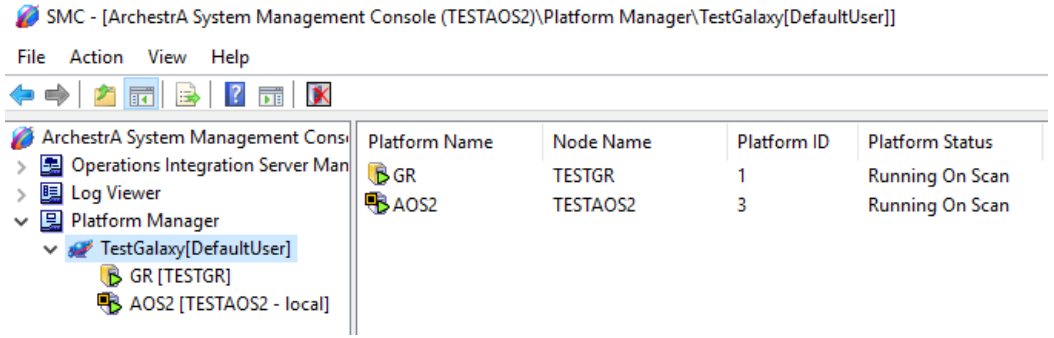


Upgrade and Migration

Node Replacement Upgrade…cont'd

- On AOS2 node ensure that the new GR is listed as On Scan

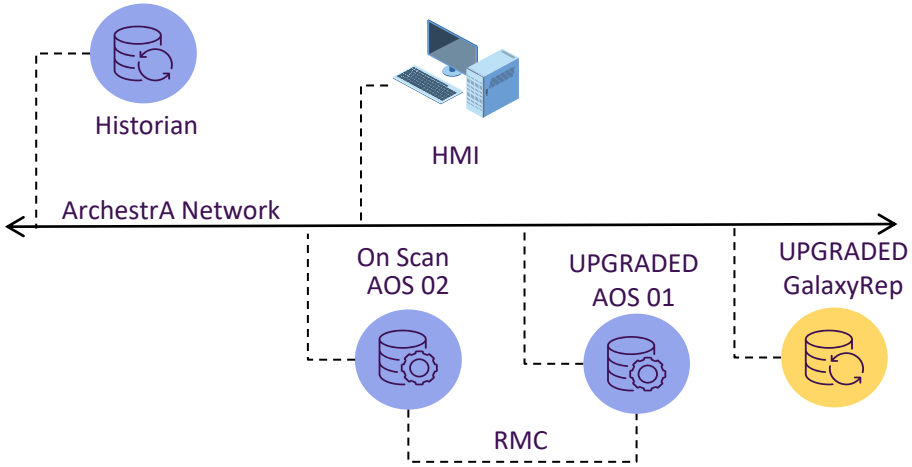


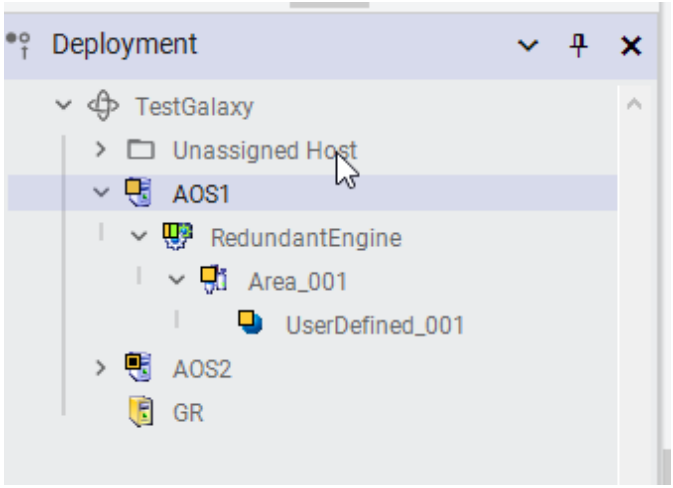


Upgrade and Migration

Node Replacement Upgrade…cont'd

- On AOS2 node ensure that the new GR is listed as On Scan
- Undeploy the AOS1 with "On Failure Mark as Undeployed" option
- Ensure that AOS1 platform/all objects under it are undeployed

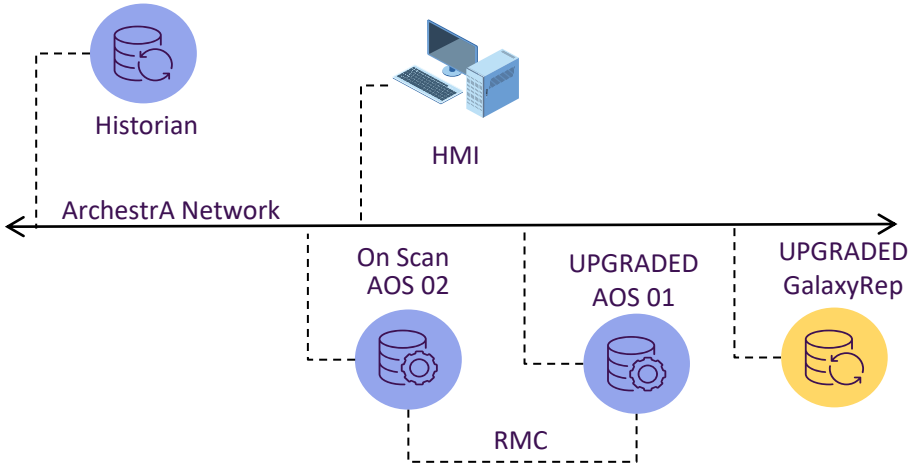


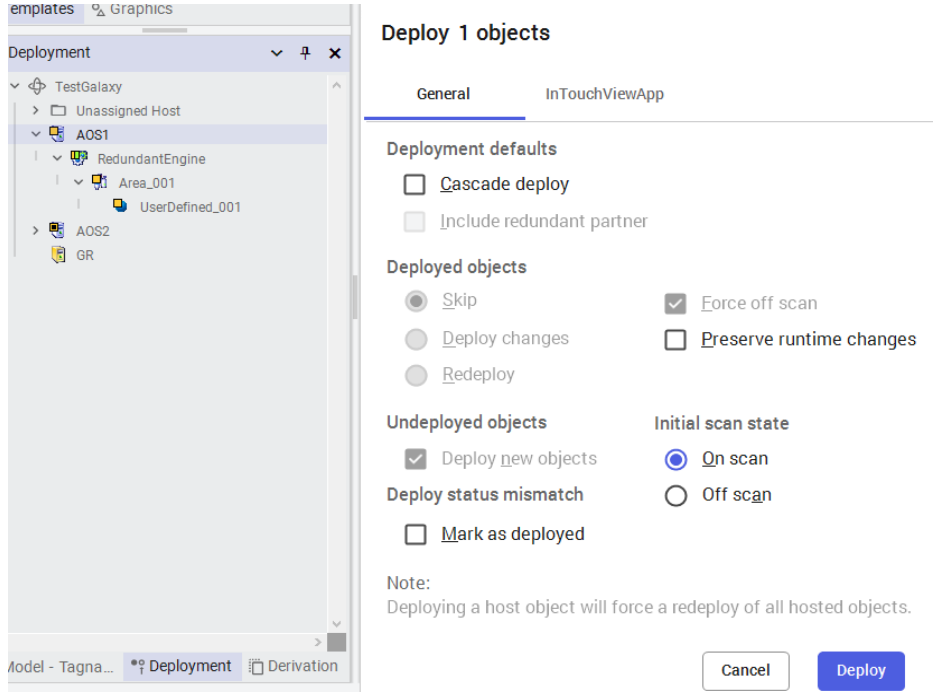


Upgrade and Migration

Node Replacement Upgrade…cont'd

- On AOS2 node ensure that the new GR is listed as On Scan
- Undeploy the AOS1 with "On Failure Mark as Undeployed" option
- Ensure that AOS1 platform/all objects under it are undeployed
- Deploy the AOS1 platform without selecting the "Cascade Deploy"

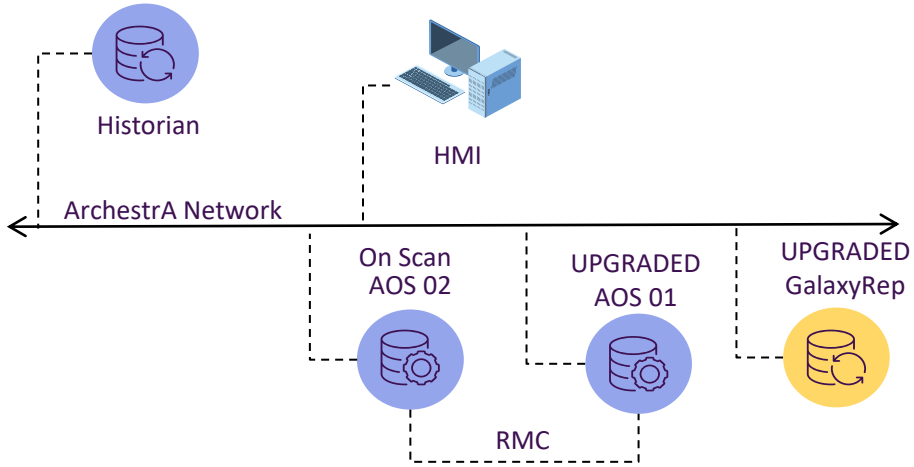


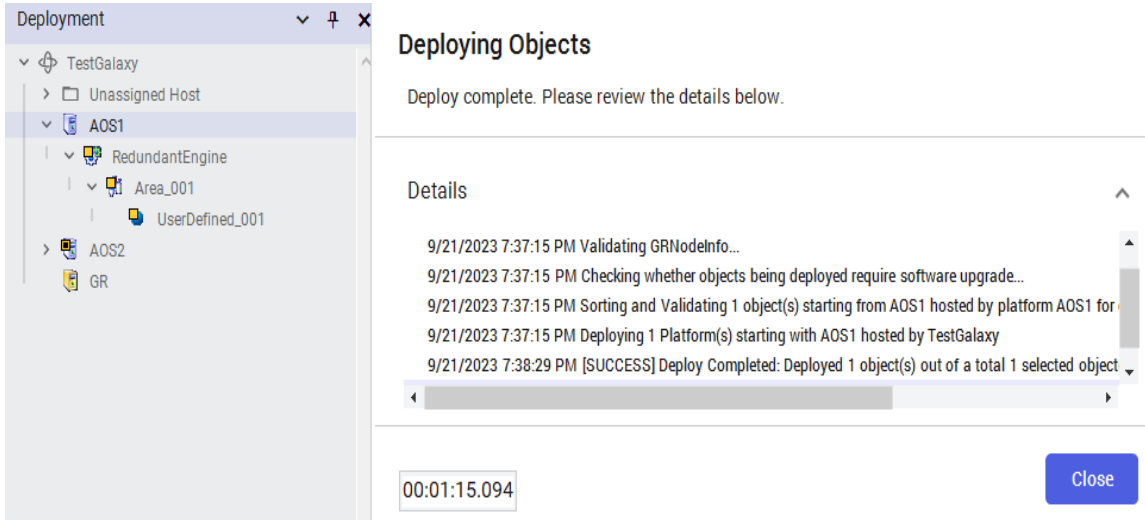


Upgrade and Migration

Node Replacement Upgrade…cont'd

- On AOS2 node ensure that the new GR is listed as On Scan
- Undeploy the AOS1 with "On Failure Mark as Undeployed" option
- Ensure that AOS1 platform/all objects under it are undeployed
- Deploy the AOS1 platform without selecting the "Cascade Deploy"





Upgrade and Migration

Node Replacement Upgrade…cont'd

- On AOS2 node ensure that the new GR is listed as On Scan
- Undeploy the AOS1 with "On Failure Mark as Undeployed" option
- Ensure that AOS1 platform/all objects under it are undeployed
- Deploy the AOS1 platform without selecting the "Cascade Deploy"
- On AOS2 ensure the new AOS1 is On Scan in Platform Manager
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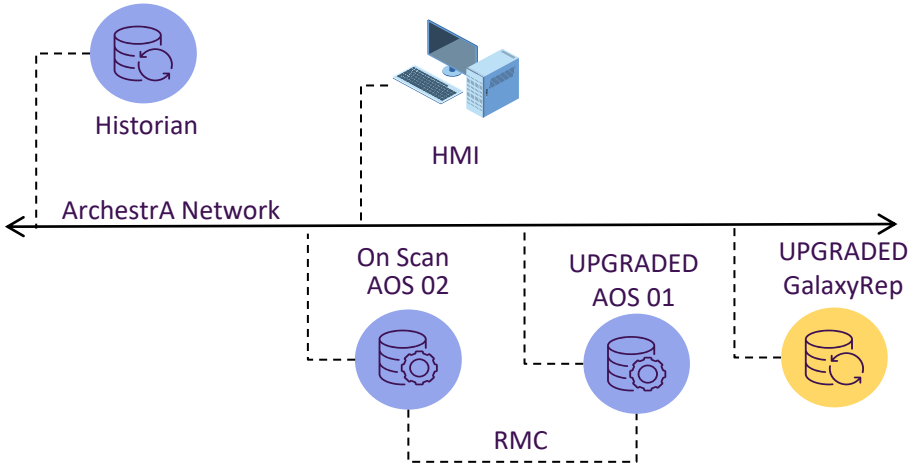

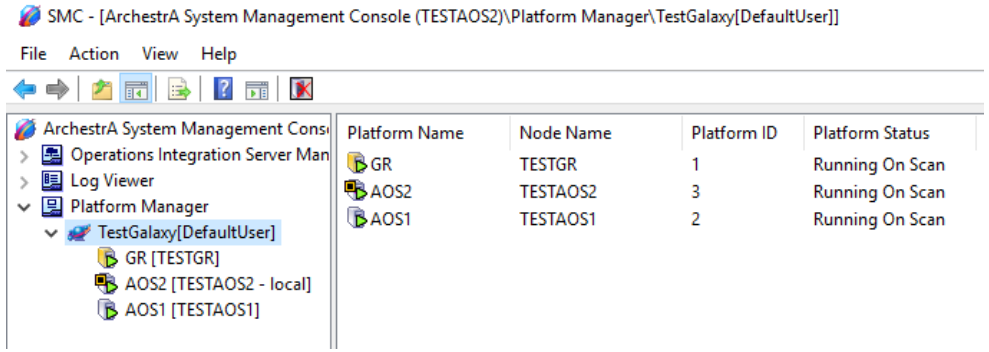

Upgrade and Migration

Node Replacement Upgrade…cont'd

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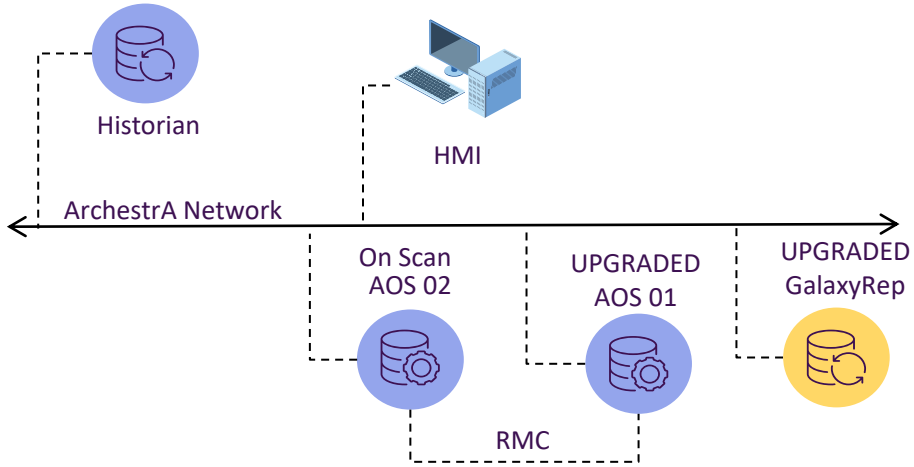

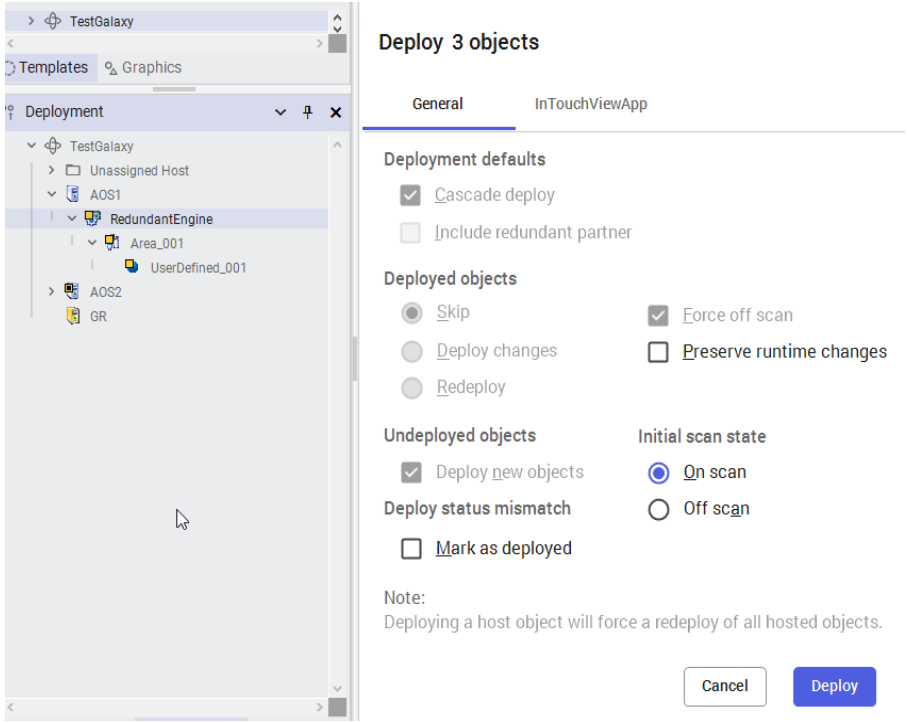

Upgrade and Migration

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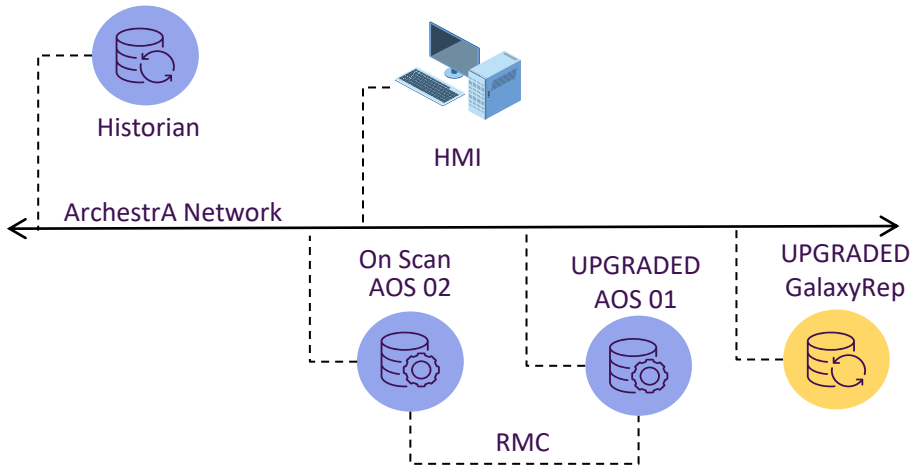

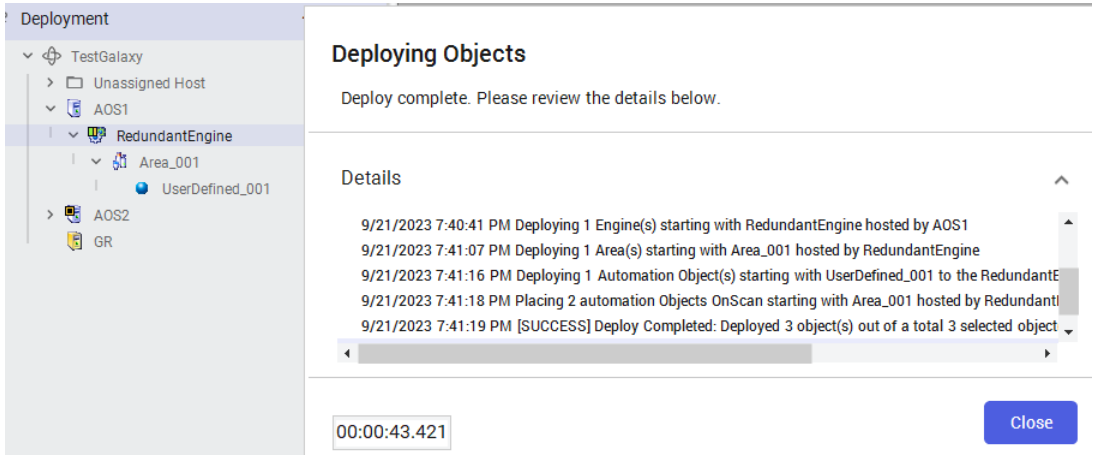

Upgrade and Migration

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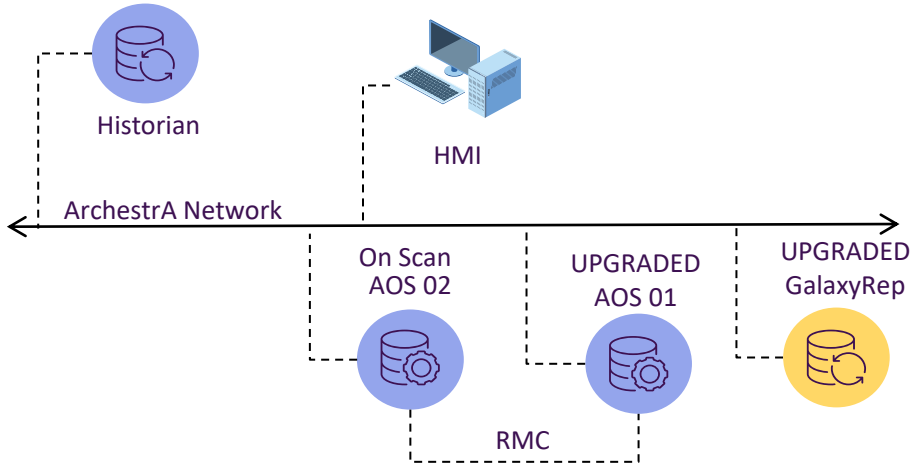

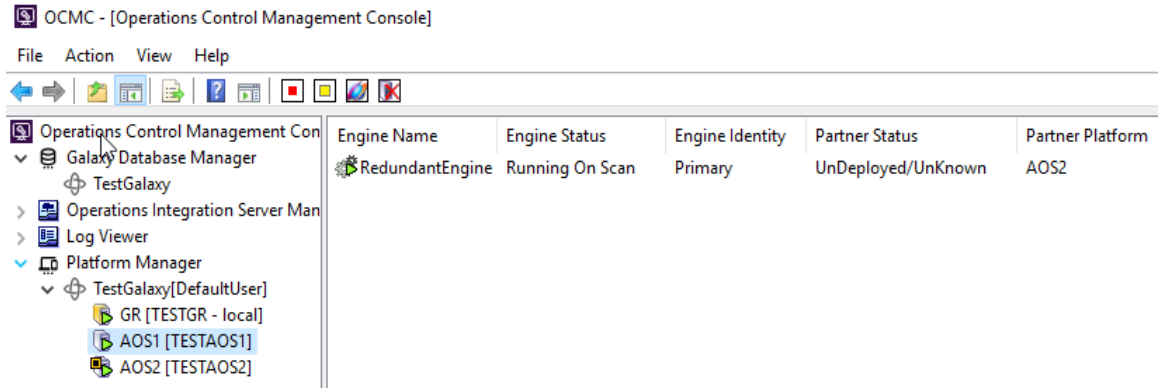

Upgrade and Migration

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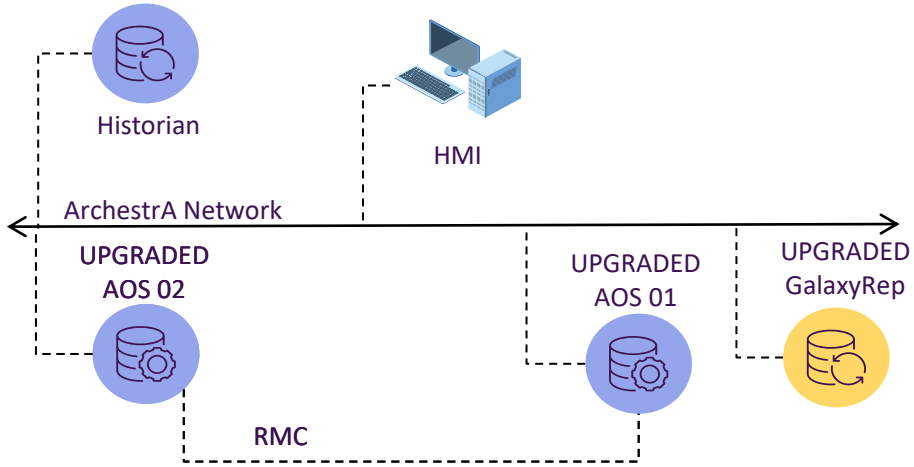

Upgrade and Migration

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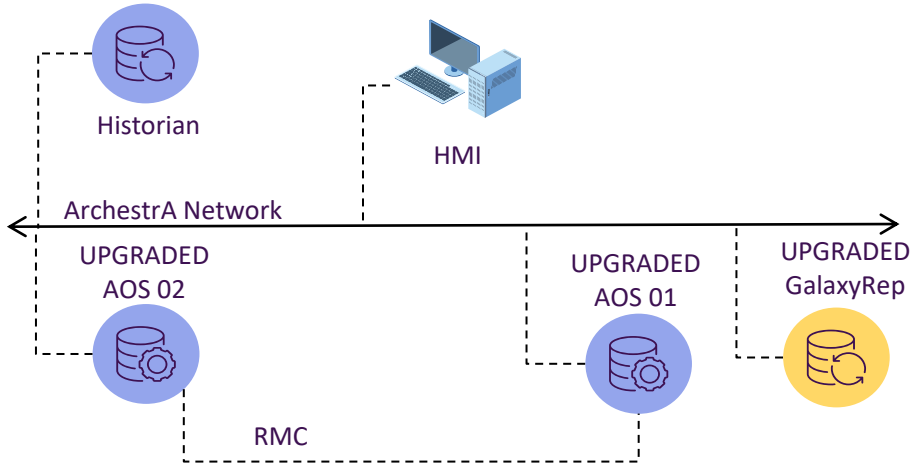

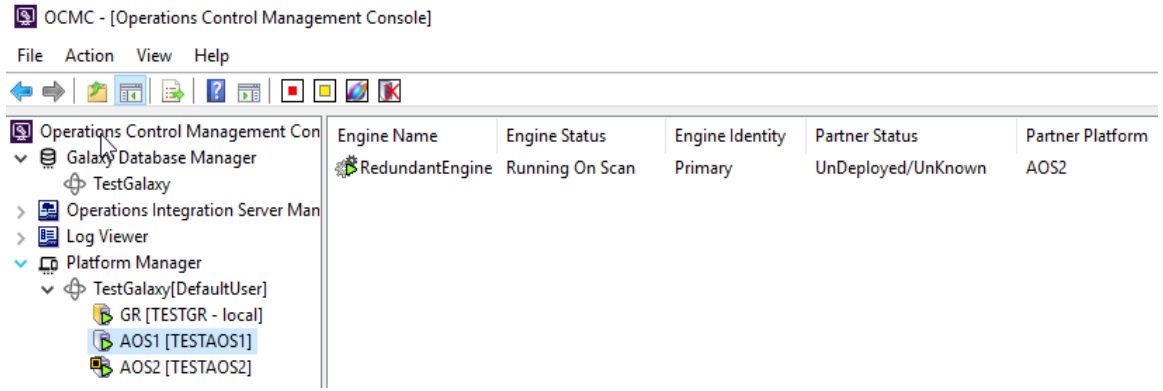

Upgrade and Migration

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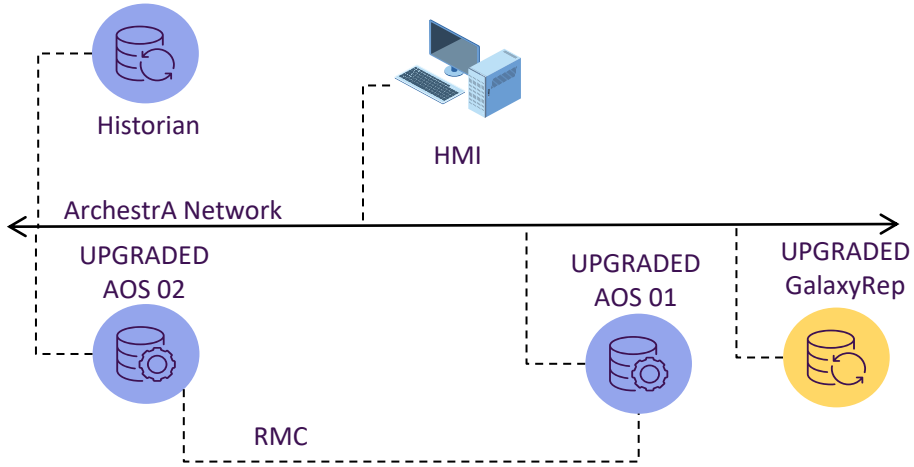

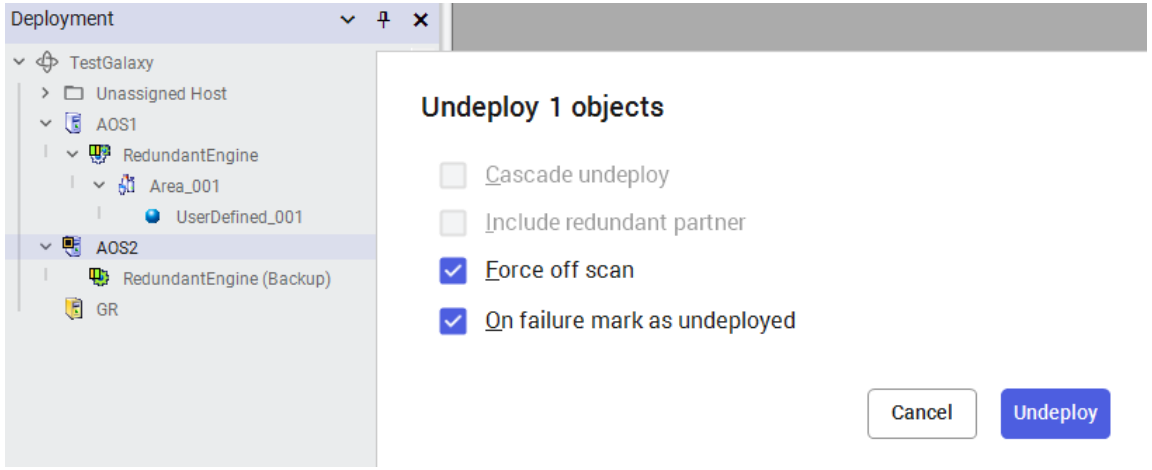

Upgrade and Migration

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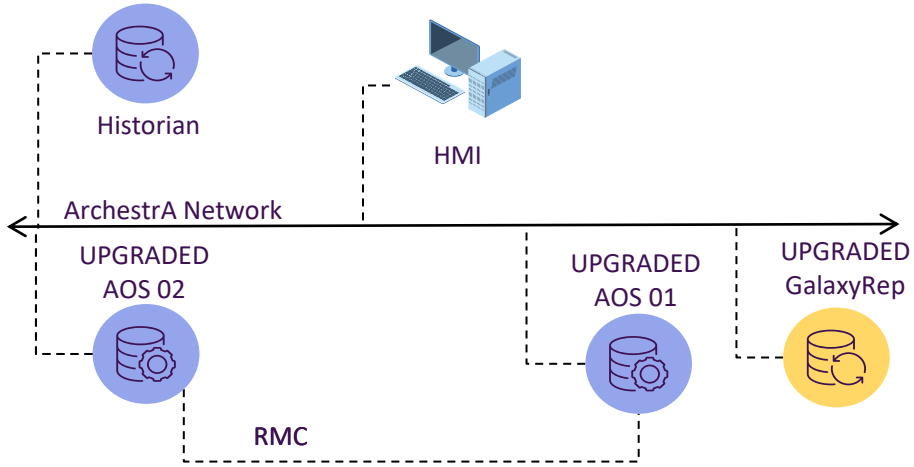

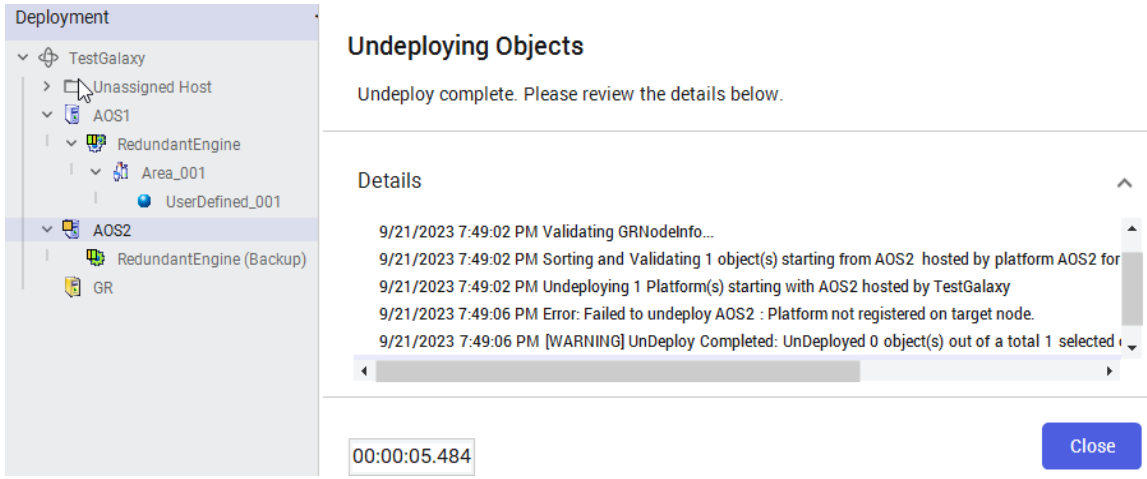

Upgrade and Migration

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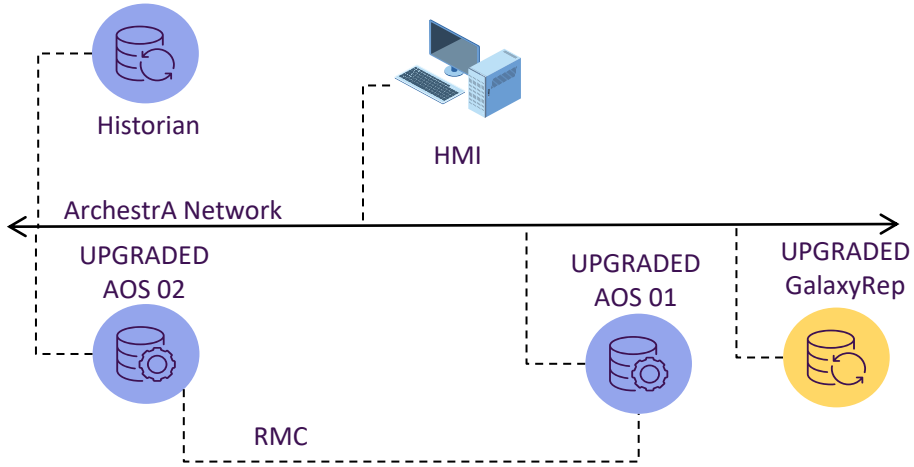

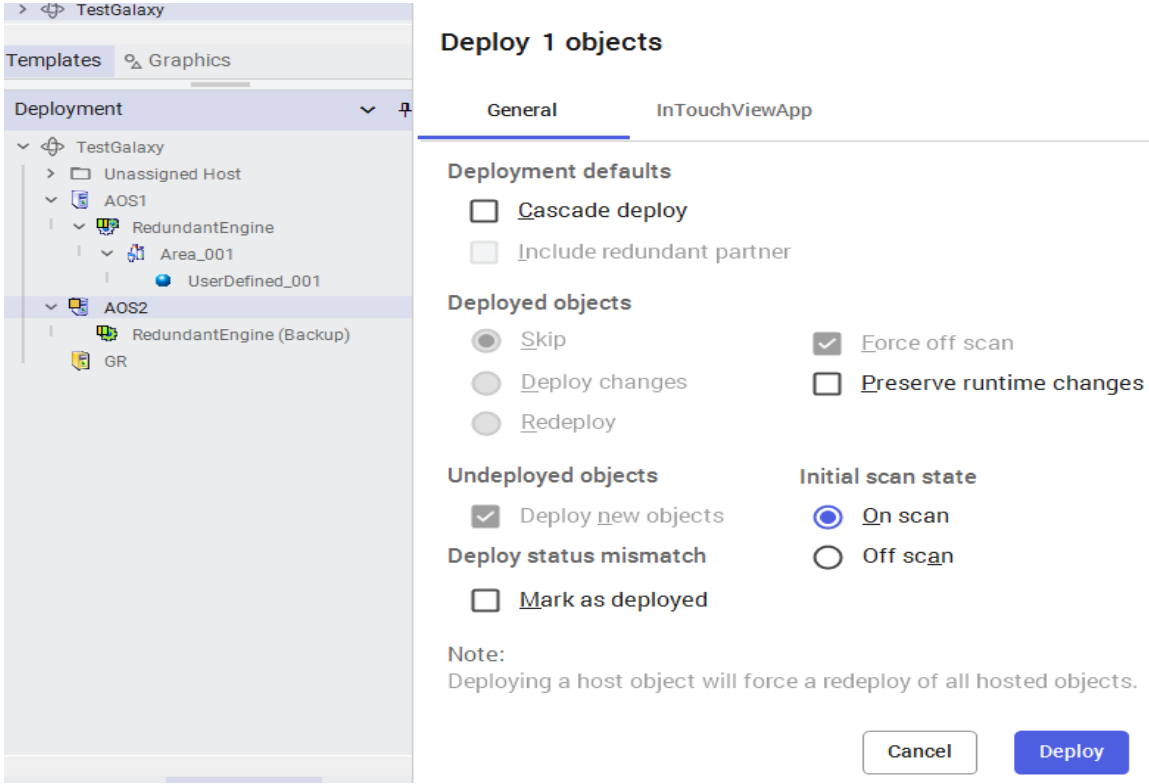

Upgrade and Migration

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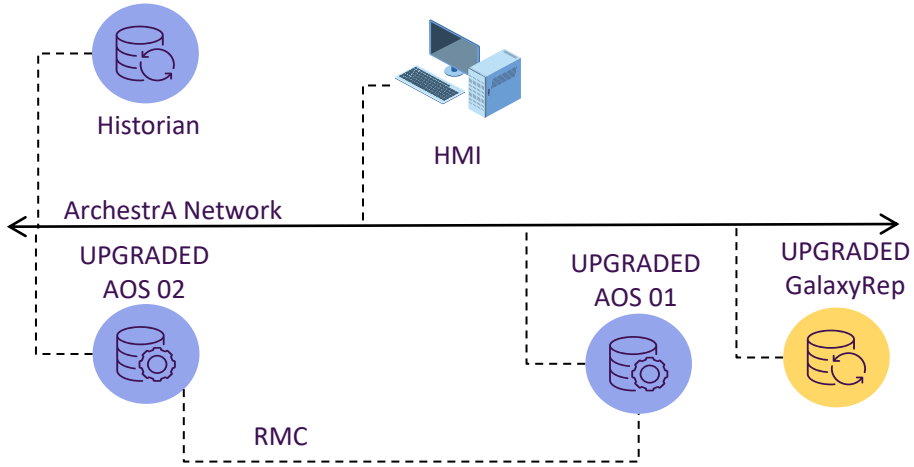
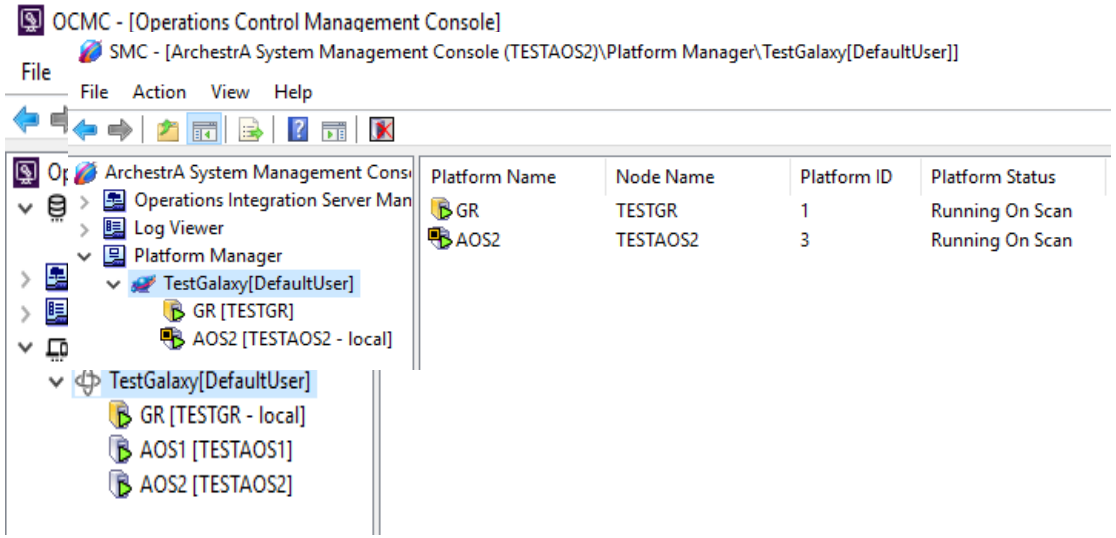
- Ensure that AOS2 is listed as On Scan in the SMC Platform Manager





Upgrade and Migration

Node Replacement Upgrade…cont'd

- Deploy backup engine assigned under AOS2
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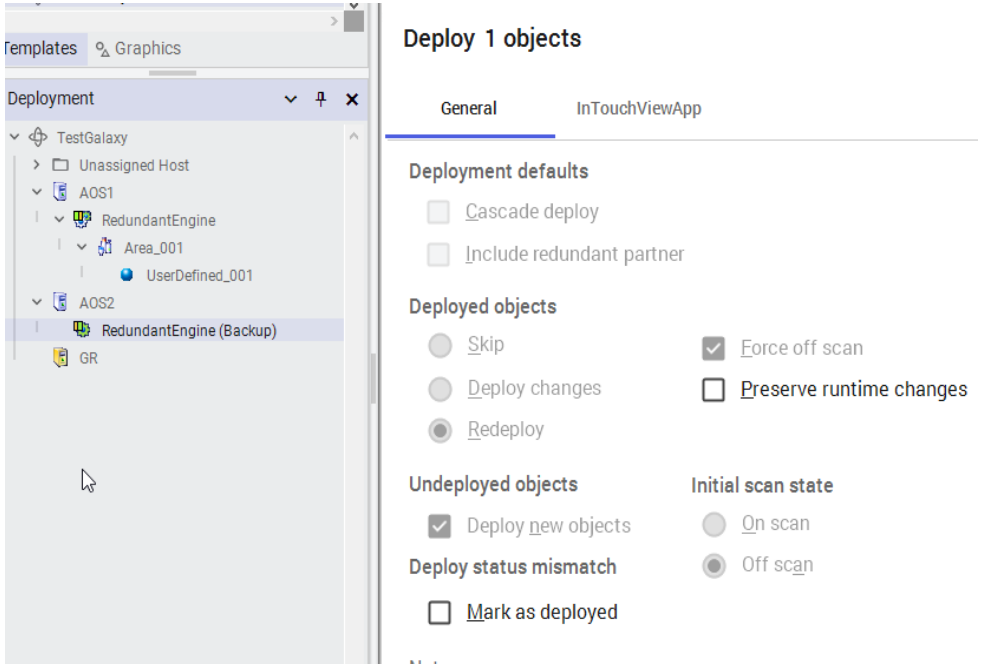

Upgrade and Migration

Node Replacement Upgrade…cont’d

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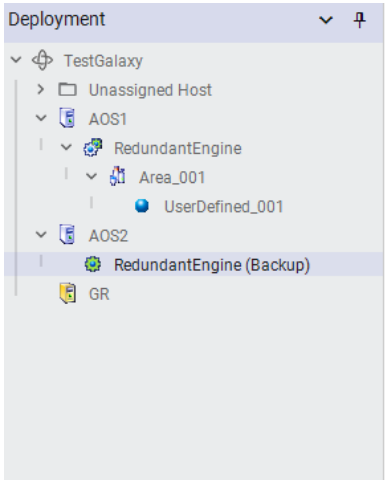

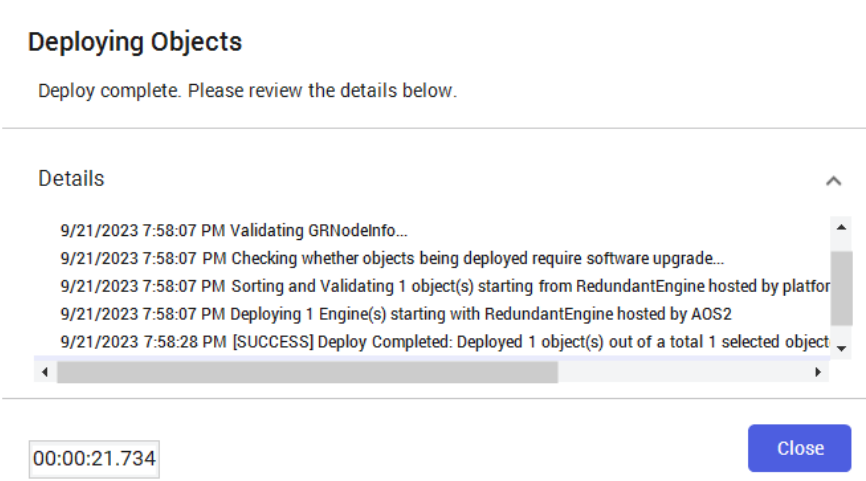

Upgrade and Migration

Node Replacement Upgrade…cont'd

- Deploy backup engine assigned under AOS2
- In the SMC Platform Manager ensure that the engine is listed as "Running On Scan" under AOS1 with its partner status as "Standby-Ready"
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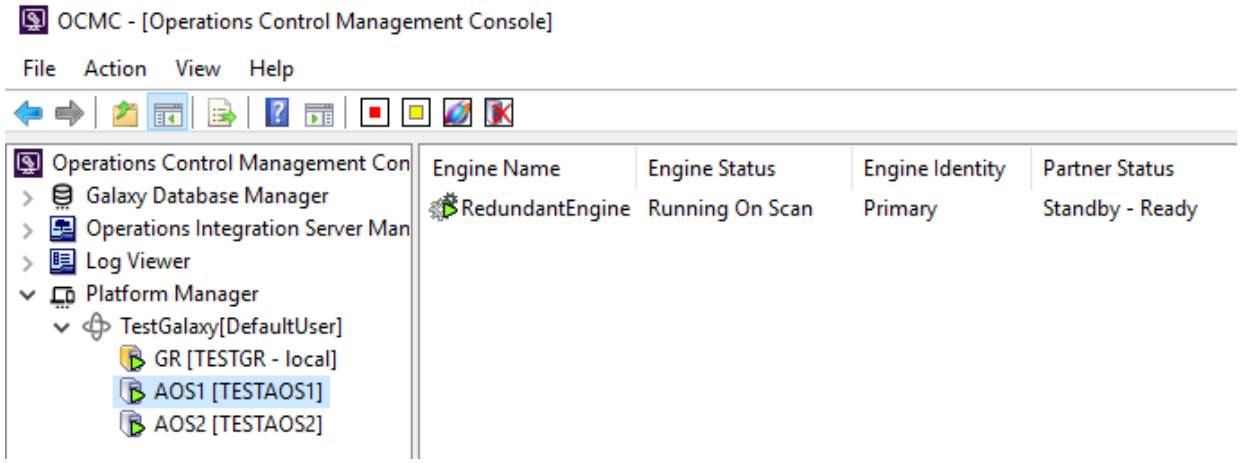
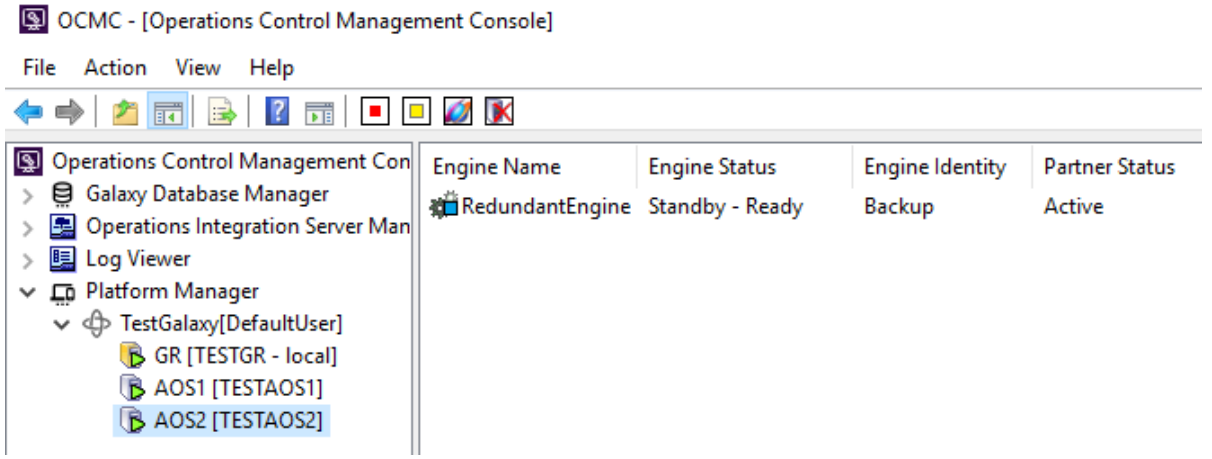


Upgrade and Migration

Node Replacement Upgrade…cont'd

- Deploy backup engine assigned under AOS2
- In the SMC Platform Manager ensure that the engine is listed as "Running On Scan" under AOS1 with its partner status as "Standby-Ready"
- In the SMC Platform Manager ensure that the engine is listed as "Standby-Ready" under AOS2 with its partner status as "Active"



Upgrade and Migration

Node replacement upgrade…cont'd

- Pros
  - Seamless upgrade of the Galaxy
  - Operators at HMI stations continue to visualize the plant data while the upgrade is in progress in the background
  - It is possible to upgrade the hardware and operating system of platform nodes while avoiding downtime.

- Cons
  - None

Questions?

Please wait for the microphone.

State your name and company.

Please remember to…

Navigate to this session in the mobile app to complete the survey.

Thank you!

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