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[Bias-Free Language](#)

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Related Information

Introduction

This article describes the enhanced split upgrade feature introduced in 3.2 P3 compared with the traditional split upgrade method.

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- Basic knowledge of Cisco Identity Service Engine

Components Used

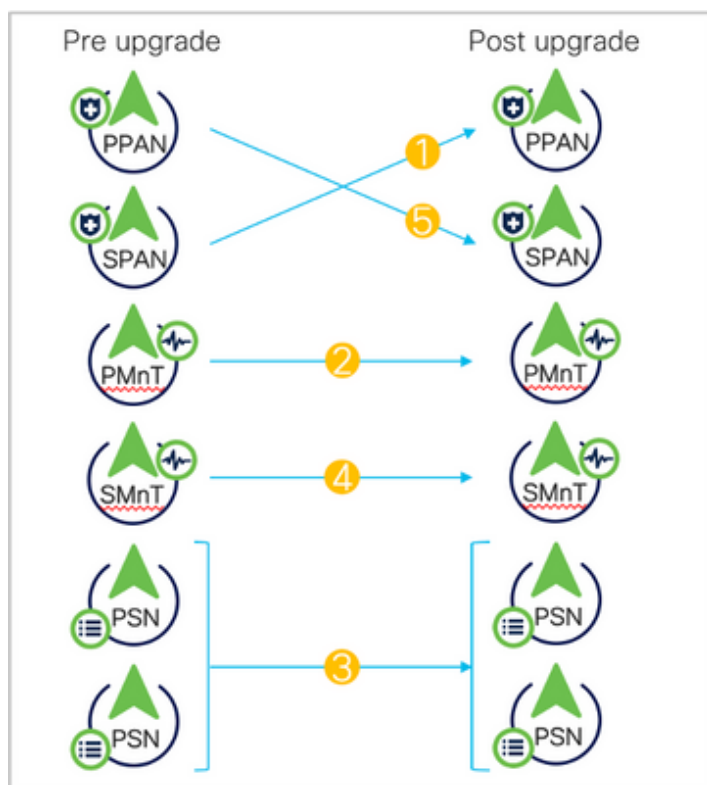
This document is not restricted to specific software and hardware versions.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

Background Information

GUI upgrade methods

- Split
 - Multi-step sequential process to upgrade your deployment while the services are available.



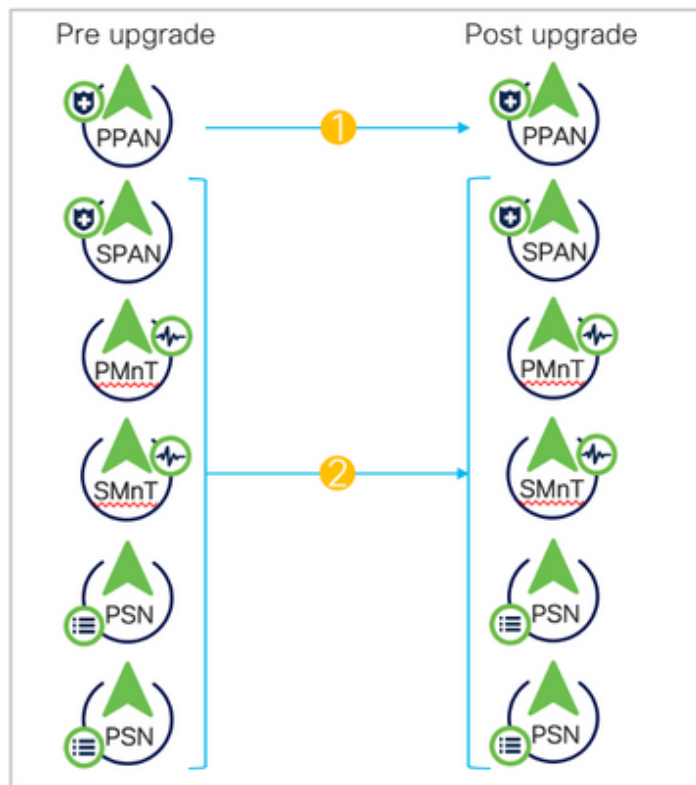
Old split upgrade

- Full
 - Two-step process to upgrade all nodes in parallel with service outage.

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- Takes lesser time than split upgrade.



Full upgrade

- New split
 - Upgrade in batches
 - Increase stability and reduce downtime.
 - Lesser time than old split upgrade.
 - Pre-checks.

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- No URT.



New split upgrade

Upgrade paths

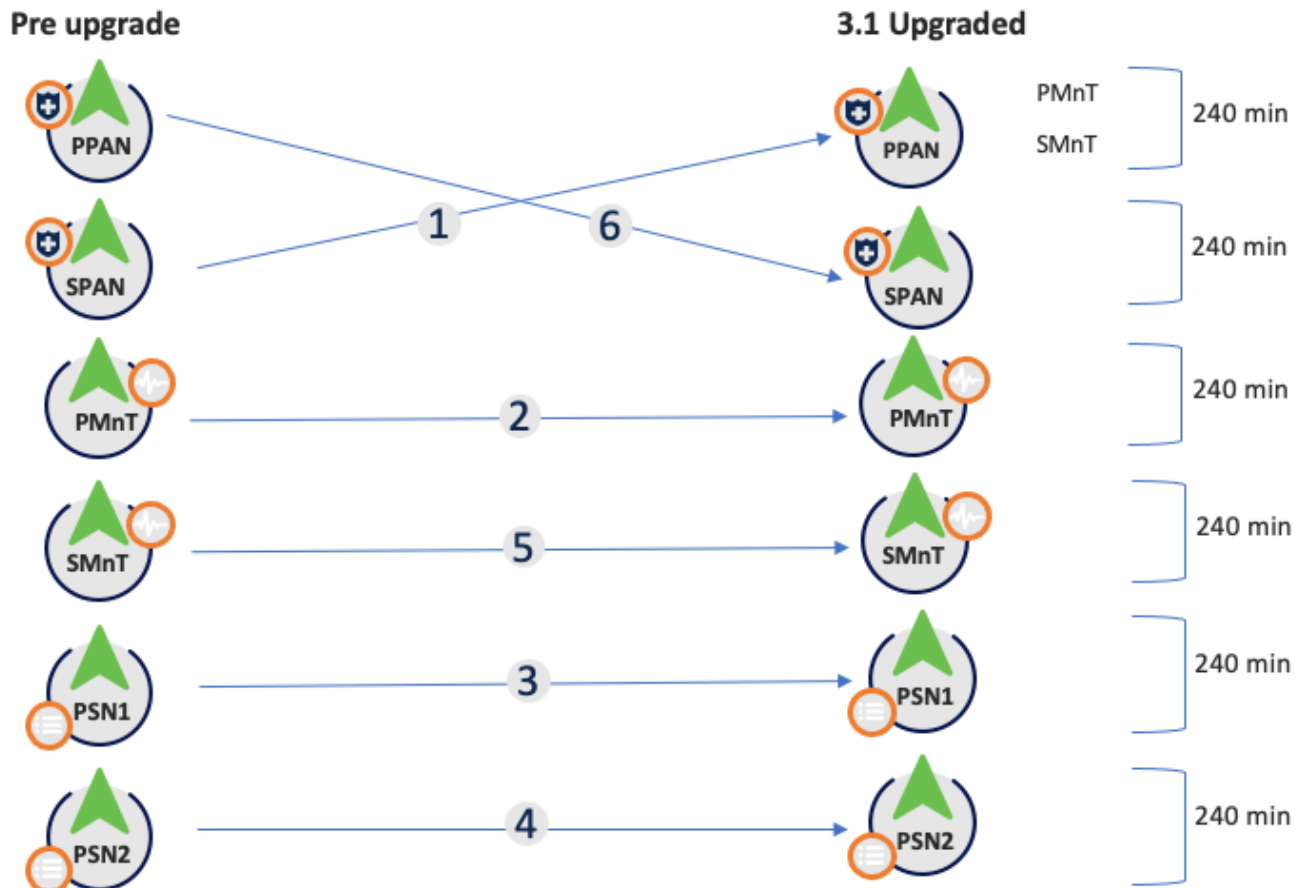
- 2.6, 2.7, 3.0 > SPLIT/FULL > 3.1
- 2.7, 3.0, 3.1 > SPLIT/FULL > 3.2
- 3.0, 3.1, 3.2 > SPLIT/FULL > 3.3
 - Starting 3.2 P3 the new split upgrade replaced old split upgrade leaving two options only: Full upgrade and New Split.

New vs Old split upgrade

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Old split upgrade process



Old split upgrade steps

1. **SPAN:** Deregister, config data upgrade, promote to PAN.
2. **pMnT:** Deregister, Register in new deployment, Download and Import operational data upgrade.
3. **PSN1:** Deregister, register in new deployment, download and import data.
4. **PSN2:** Deregister, register in new deployment, download and import data.
5. **sMnT:** Deregister, register in new deployment, download and import operational data upgrade.
6. **PPAN:** Register, Download, and import data, promote SPAN so as to make same deployment as before the

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upgrade.

	Old Split Upgrade	New Split Upgrade
Total Time for upgrade	More; Increases as per the sequence	Less; Increases as per the No. of Iterations ✓
Total Time for 6 nodes	~24 hours	~7 hours with 2 iterations
URT	required	✓ Not-required
Pre-Checks	Not available	✓ Available
Staging	Not-Available	✓ Available
Recommended max no. of nodes per iteration	4	15
Post-Upgrade Checks	Not Available	Not Available
Patch Installation	Need to do it separately	✓ Can install patch during the upgrade

Old split vs new split

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New split upgrade - Wizard

1



Welcome

Welcome to Cisco ISE Upgrade.
This workflow will help you upgrade your Cisco ISE in an orderly manner. Click Let's Do It to start upgrading your Cisco ISE.



Step 1

2



Checklist

Ensure the following tasks are completed, and then proceed to upgrade Cisco ISE nodes.

BACKUP ISE

- Configuration and operational data ([Administration > System > Backup & Restore](#))
- Backup system logs ([Operations > Troubleshoot > Download Logs](#))
- Export certificates and private keys ([Administration > System > Certificates > System Certificates](#))

SOFTWARE

- Review the ISE Upgrade Guide and Release Notes for upgrade information (<http://cisco.com/go/ise>)
- Confirm valid ISE upgrade paths. Ensure that a repository is available to store the ISE upgrade bundle ([Administration > System > Maintenance > Repository](#))
- Download the ISE upgrade bundle and place it in the repository (ISE software is available at <http://cisco.com/go/ise>)

CREDENTIALS

- Make a note of the Active Directory join credentials, and the RSA SecurID node secret, if applicable.

OPERATIONAL DATA PURGE

- Purge operational data to improve upgrade performance ([Administration > System > Maintenance > Operational Data Purge](#))

☒ I have reviewed the checklist

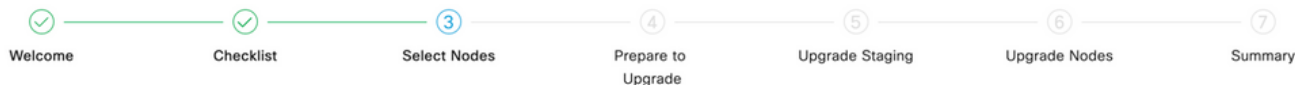
[Print Checklist](#)

Step 2. Checklist

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3



Select Nodes (Iteration 1)

Select Nodes for Split Upgrade

P-PAN cannot be selected until all the other nodes are upgraded or selected for upgrade.

S-PAN will be selected by default in first iteration of upgrade.

Hostname	Personas	Role(s)
<input type="checkbox"/> isenode21.dominion.in	Primary Administration	PRIMARY
<input checked="" type="checkbox"/> isenode22.dominion.in	Secondary Administration	SECONDARY
<input type="checkbox"/> isenode23.dominion.in	Primary Monitoring	SECONDARY
<input checked="" type="checkbox"/> isenode24.dominion.in	Secondary Monitoring	SECONDARY
<input type="checkbox"/> isenode25.dominion.in	Policy Service,pxGrid	SECONDARY
<input checked="" type="checkbox"/> isenode26.dominion.in	Policy Service,pxGrid	SECONDARY

Step3. Select nodes

4



Prepare to Upgrade (Iteration 1)

From the following drop-down lists, choose the required repository, upgrade software bundle, and patch file. Then, click Start Preparation.

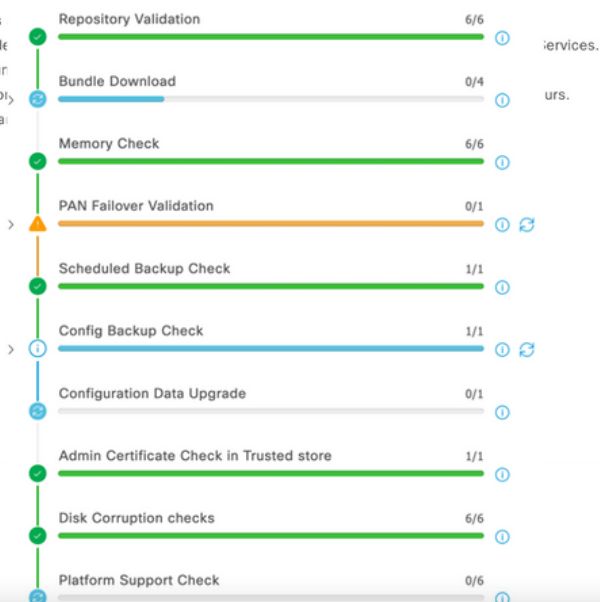
ISE Services will continue to run while Prechecks Upgrade can be triggered. Proceeding to Upgrade Precheck will continue execution in the background. Bundle Download, Patch bundle Download, Platform Other prechecks get expired after 3 hours and ca

Repository*
ftp-upgrades-patches

Bundle*
ise-upgradebundle-3.0.x-3.2.x-to-...

Patch
None

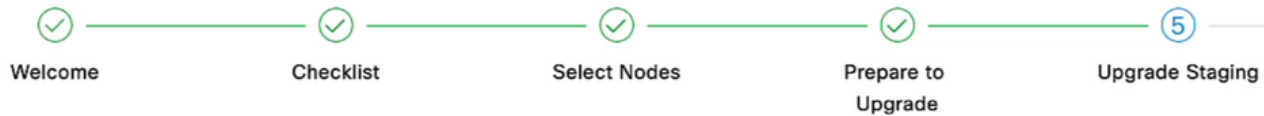
Start Preparation



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5



Upgrade Staging

The upgraded data is being transferred to all nodes in your ISE deployment, the status of transfer for each node can be viewed below. You can continue to use Cisco ISE while the transfer is in progress.



Step5. Upgrade staging

6



Upgrading Nodes (Iteration 1)

View the progress of the upgrade process on each Cisco ISE node.

Upgrade progress can be monitored from Secondary PAN UI while Primary PAN is getting upgraded and from Primary PAN UI while Secondary PAN is getting upgraded.

Nodes selected for current iteration are: isenode22.dominion.in, isenode24.dominion.in, isenode26.dominion.in

Estimated time of Upgrade process: 4hr 29min

Overall Upgrade Progress



Step6. Upgrade nodes

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Welcome



Checklist



Select Nodes

Prepare to
Upgrade

Upgrade Staging

Summary (Iteration 1)

You are successfully completed Upgrade workflow! Download all reports before clicking Finish.

✓ Selected Nodes [Download Report](#)

✓ Prepare to Upgrade [Download Report](#)

✓ Upgrade Report [Download Report](#)

Summary page



Note: The same steps are repeated per iteration.

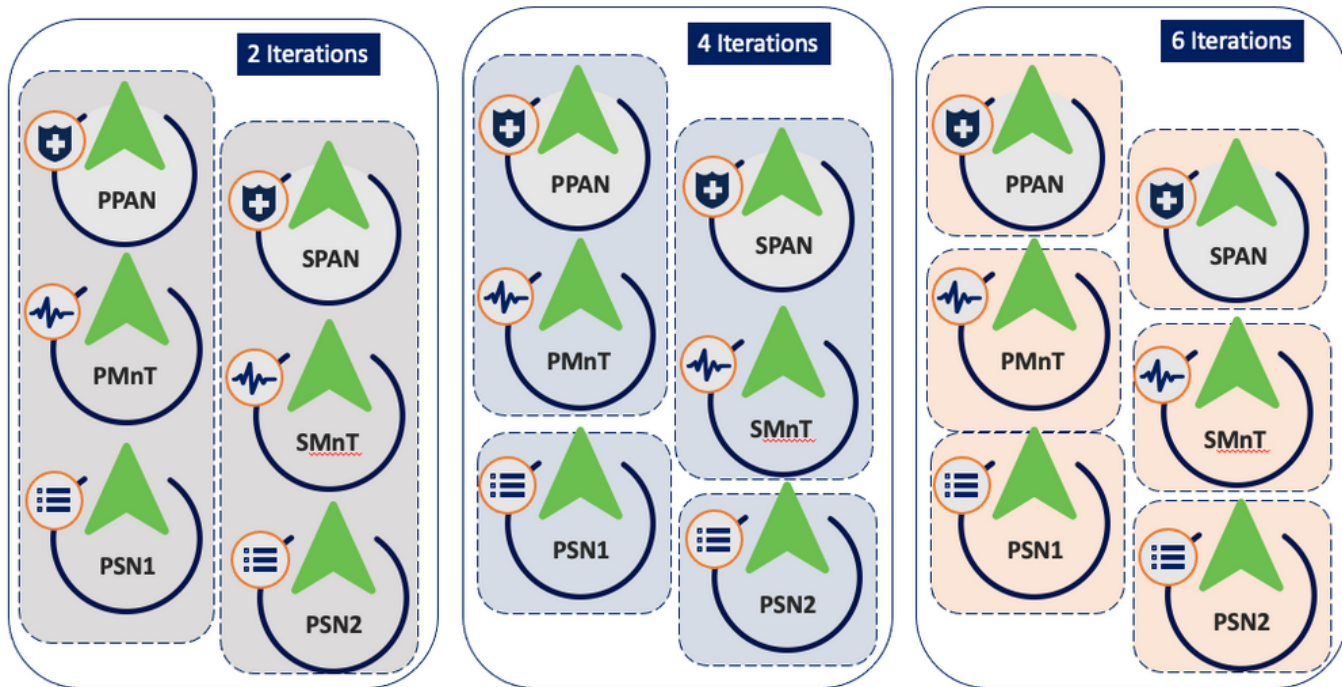
Detailed steps

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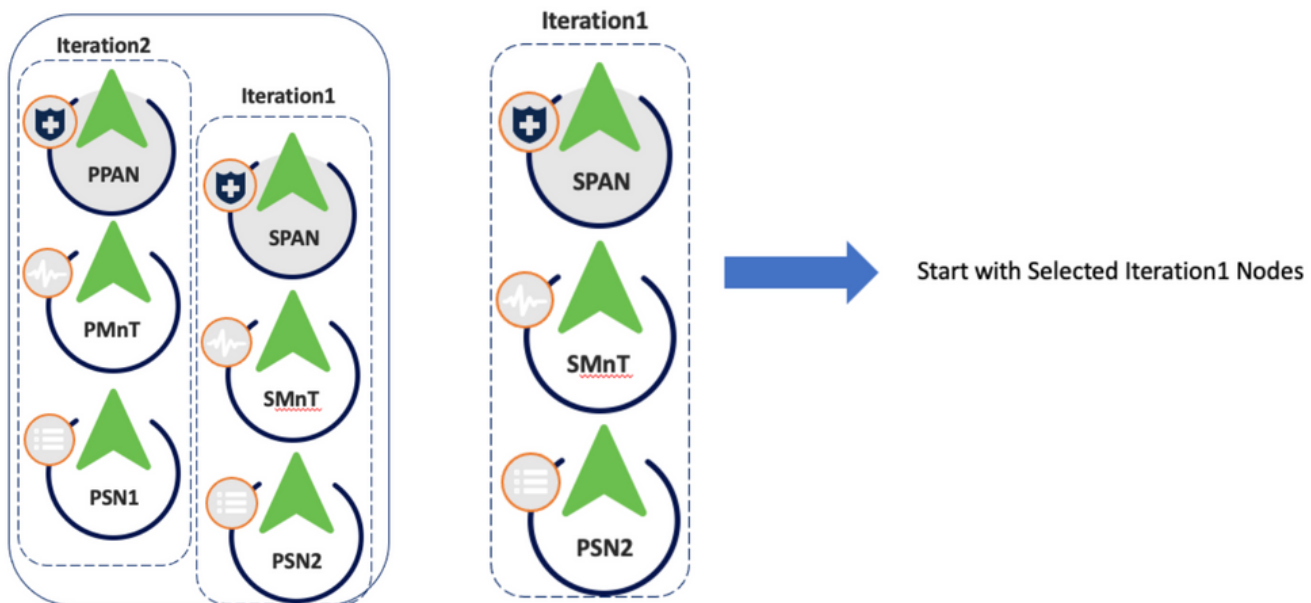
STEP 3 Select nodes for iterations

Different iterations can be selected for the same deployment.



Iteration options

In the case of 2 iterations, Step 3 begins selecting the nodes.

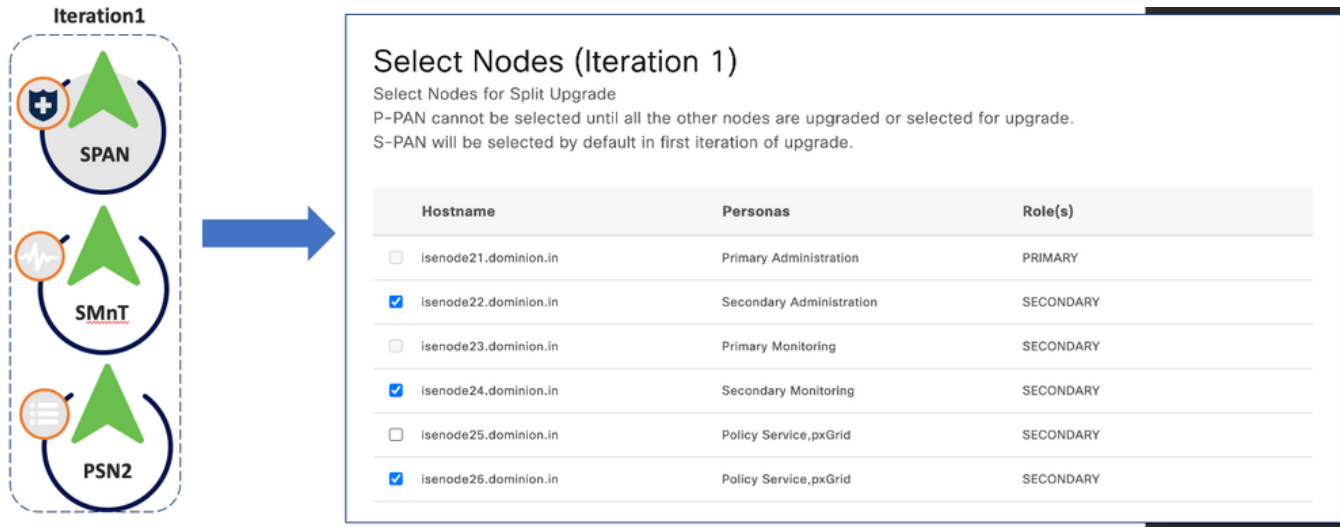


Iteration1 node selection

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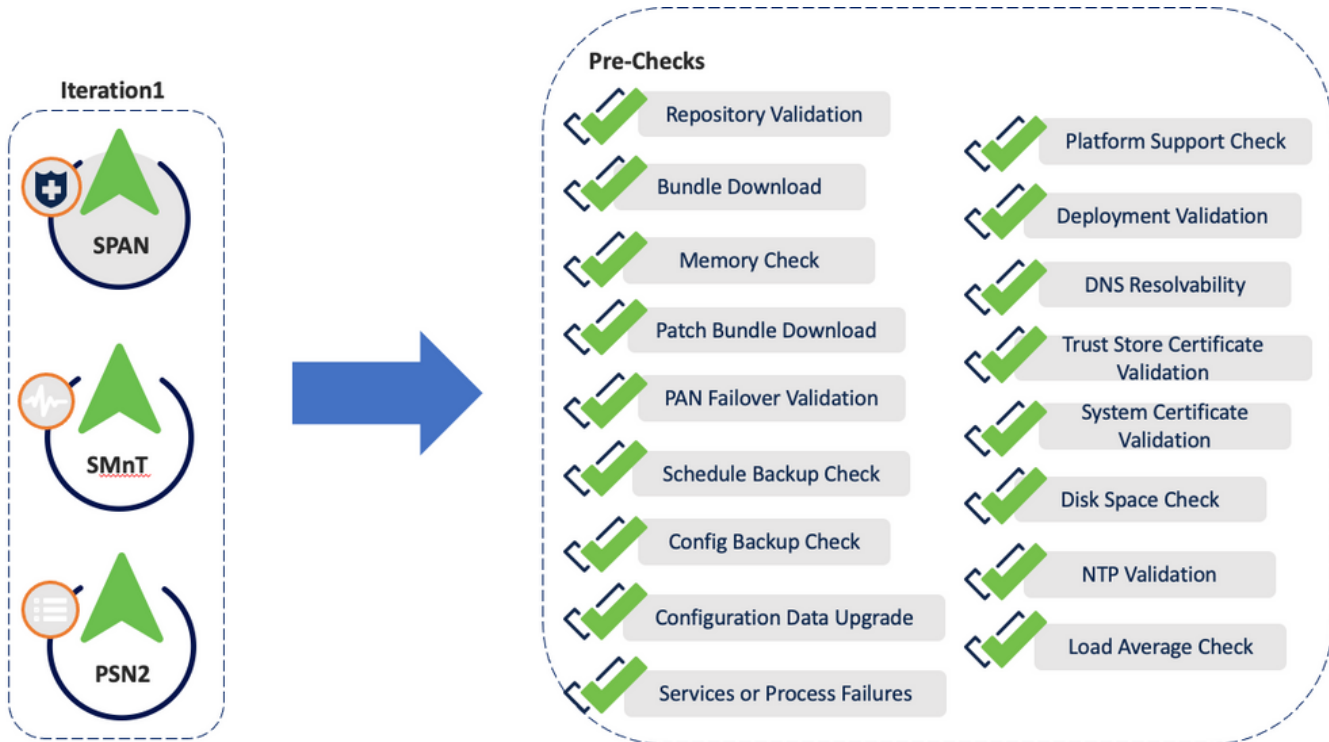
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STEP 4. Prepare for Upgrade



Node selection

Pre



Prechecks

- **Repository validation** Checks if repository is configured for all the nodes
- **Bundle Download** Helps to download.
- **Memory Check** Checks whether 25% memory space is available on the PAN node, and 1GB space memory space is available in other nodes.

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at PAN failover
atory.

- **Config Backup Check** Checks whether configuration backup was done recently. Upgrade process runs only after the backup is completed.
- **Configuration Data Upgrade** Runs the configuration data upgrade on the configuration database clone and creates the upgrade data dump. This check starts after the bundle download.
- **Services or Process Failures** Indicates the state of the service or application (whether it is running or in a failed state)
- **Platform support check** Checks the supported platforms in the deployment. It checks whether the system has a minimum of 12 core CPUs, 300-GB hard disk, and 16-GB memory. It also checks whether the ESXi version is 6.5 or later.
- **Deployment validation** Checks the state of the deployment node (whether it is in sync or in progress)
- **DNS Resolvability** Checks for the forward and reverse lookup of host name and IP address.
- **Trust Store Cert Validation** Checks whether the trust store certificate is valid or has expired.
- **System Cert Validation** Checks the system certificate validation for each node.
- **Disk Space Check** Checks whether the hard disk has enough free space to continue with the upgrade process.
- **NTP Validation** Checks for the NTP configured in the system and whether the time source is from the NTP server.
- **Load Average Check** Checks the system load on a specific interval. The frequency can be 1, 5 or 15 minutes.



Note: Not all prechecks are applicable in all nodes, some of them are only run in the PAN.

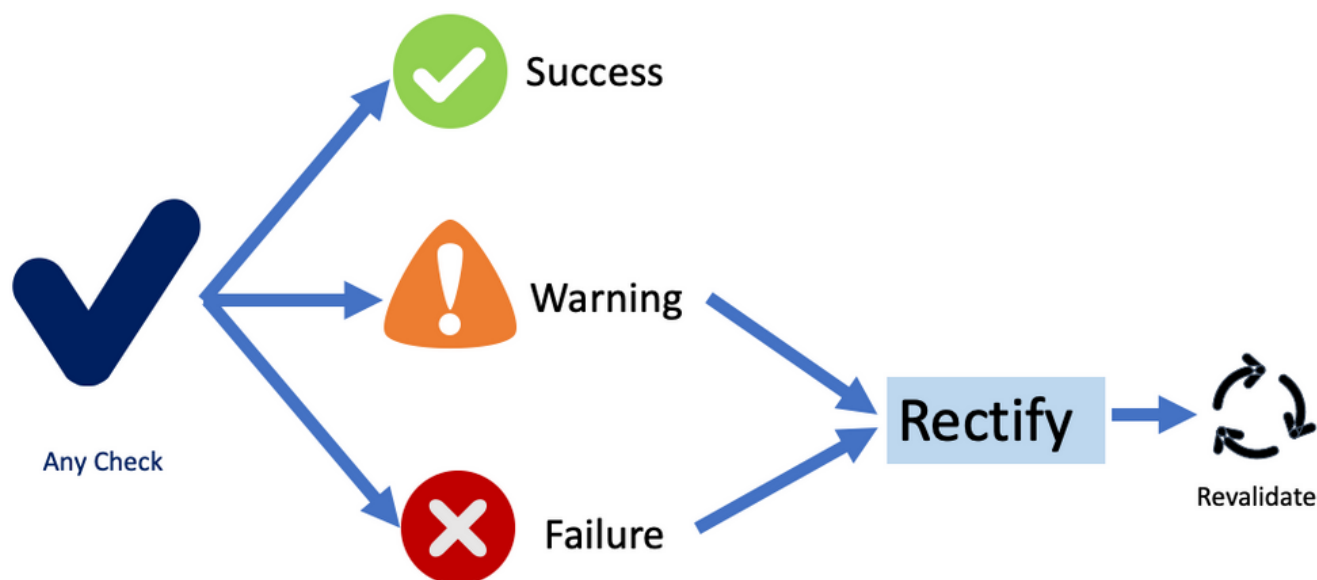
- All nodes
 - Repository validation
 - Bundle download
 - Memory check
 - Patch bundle download
 - Service or process failures
 - Platform support check
 - DNS resolvability
 - Disk Space check
 - NTP validation
 - Load average check.
- Only on PAN
 - PAN failover validation check
 - Scheduled backup check
 - Config backup check
 - Configuration data upgrade
 - Deployment validation
 - Trust store cert validation

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- Failure

Once fixed, the prechecks with Warnings and Failures can be reevaluated.



Precheck status

 **Note:** ISE services will continue to run while prechecks are executed. Report will be valid for 12 hours during which upgrade can be triggered.

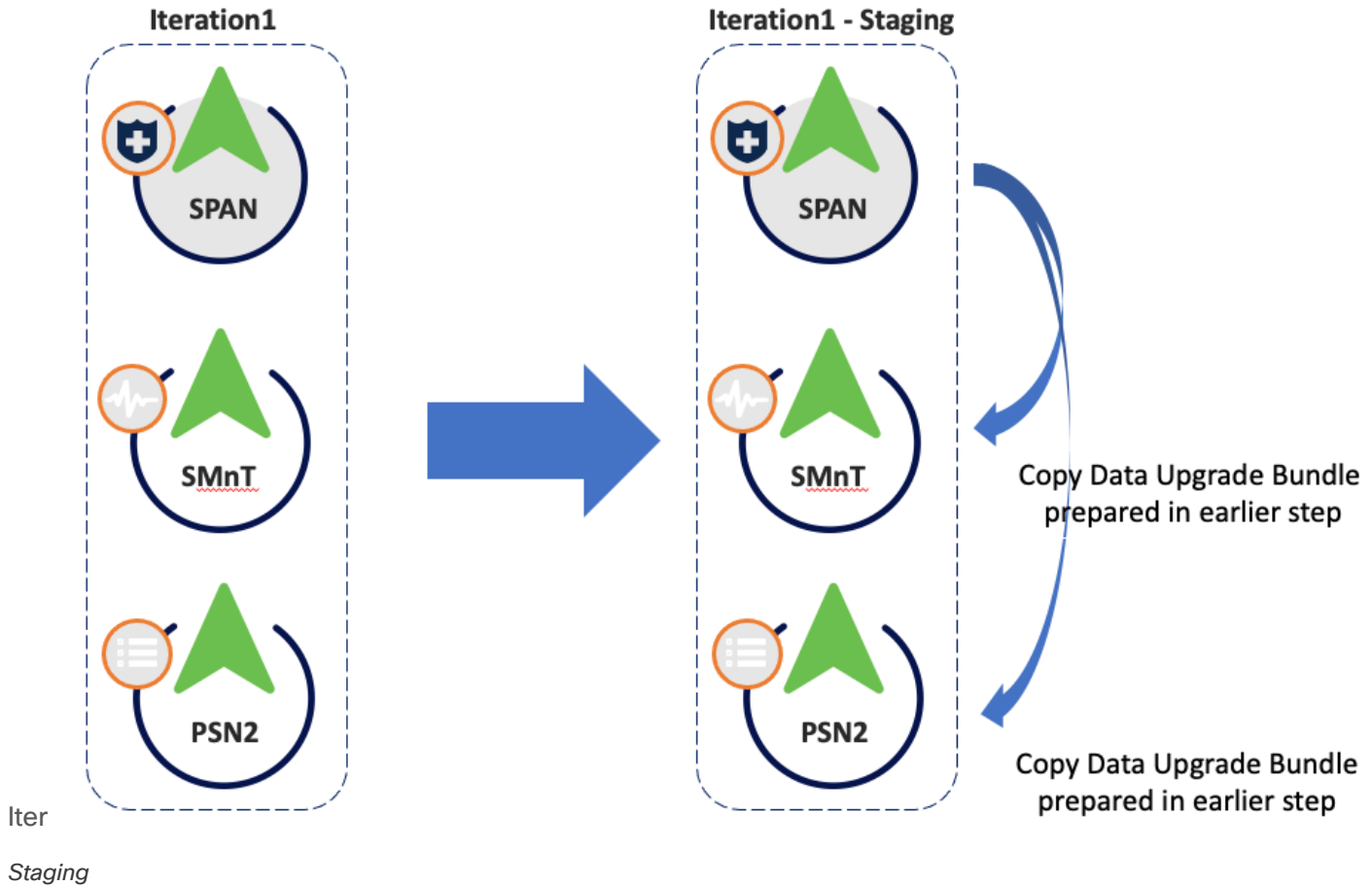
 **Note:** Bundle download, patch bundle download, platform check, configuration data upgrade and disk space check are valid for 12 hours. Other prechecks get expired after 3 hours and can be revalidated using refresh failed checks button or individual refresh button.

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STEP 5. Staging

Once all prechecks passed successfully the next step, staging, the PAN copies the config database dump prepared in earlier step to the rest of the nodes in the iteration.



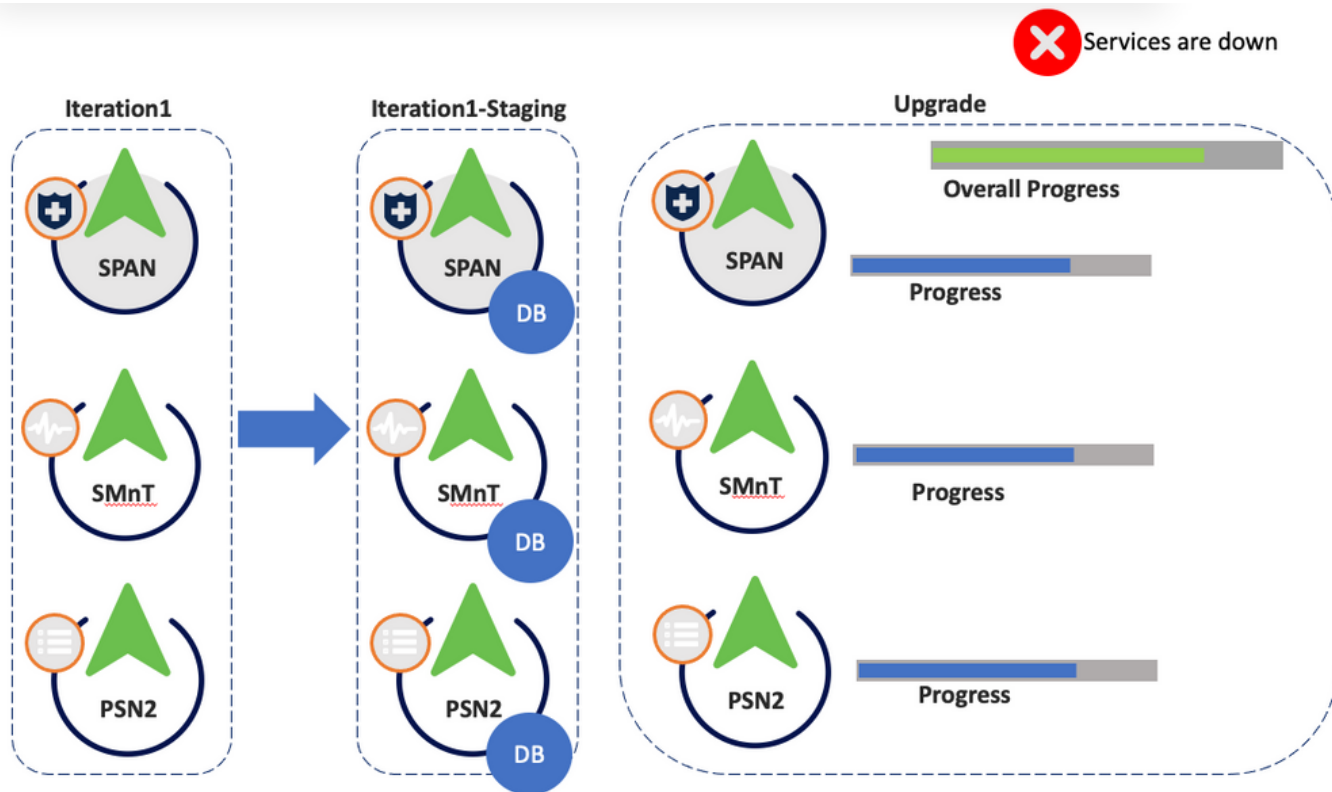
Note: Proceeding to upgrade staging (by clicking start staging) step will not cause suspension of any ISE services. Precheck will continue execution in the background even if ISE UI is closed.

STEP 6. Upgrade

- All the nodes in the iteration are upgraded in parallel, hence services are disrupted.
- Each node has a its own progress bar and there is another one for the overall progress of the iteration.
- The upgrade progress is monitored via PPAN.

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Upgrade

Iteration 2

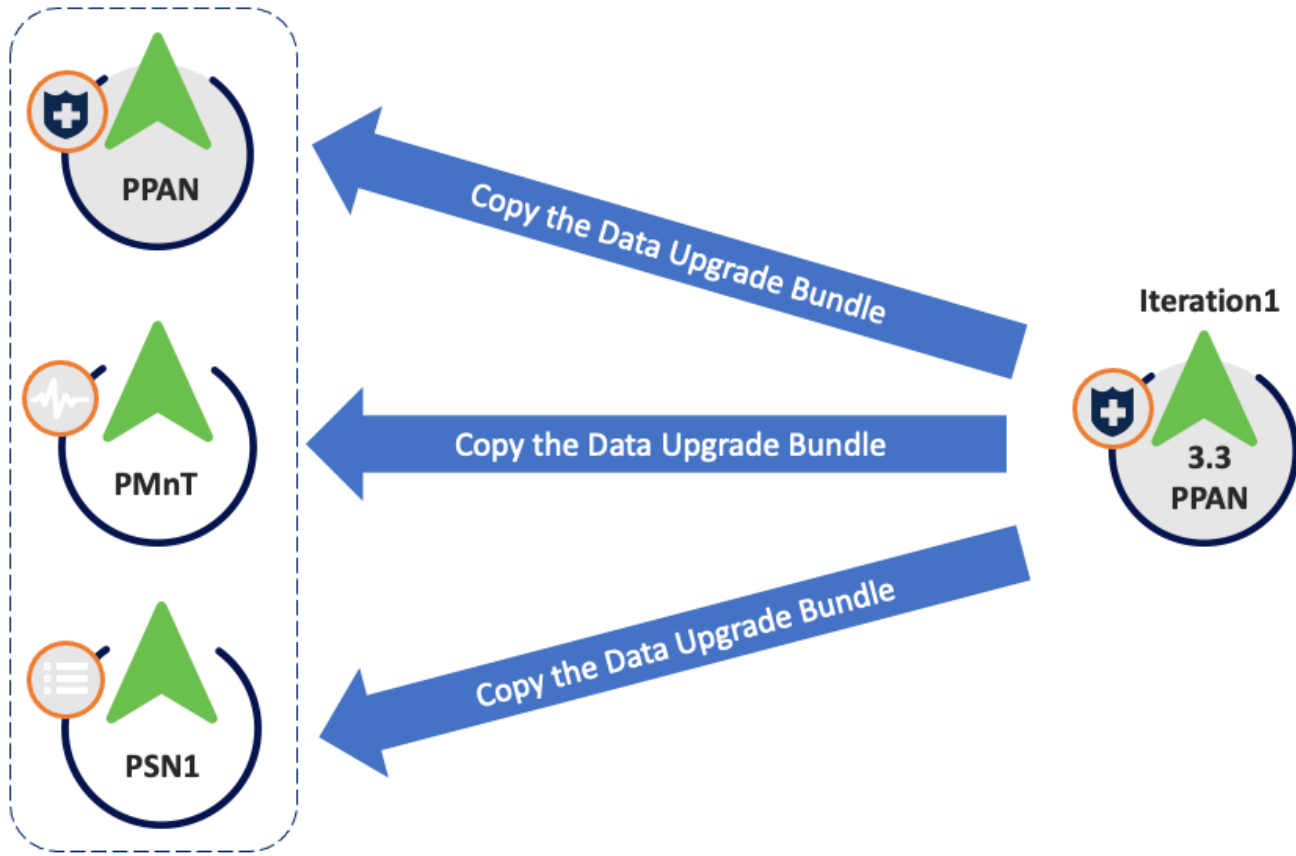
- Same prechecks applies.

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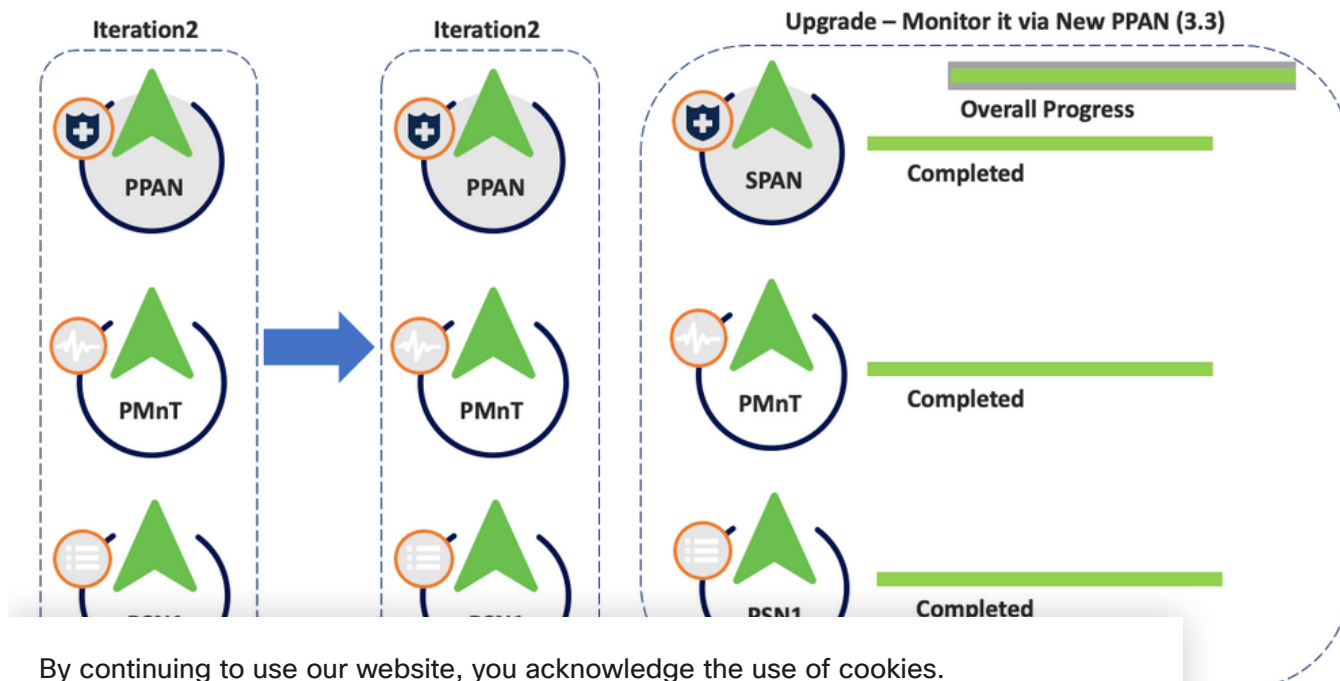
- During staging the config database dump (not the upgrade bundle) is copied from the "new" PPAN in 3.3 from iteration 1.

Iteration2 – 3.2 Nodes



Iteration 2, staging

- Nodes are upgraded and status is monitored via new PPAN (3.3)



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Troubleshooting

Pre-Checks Failed


Refer to the ADE.log and ise-psc.log files.

```
show logging system ade/ADE.log
show logging application ise-psc.log
```

Configuration Data Upgrade Check

Refer to ADE.log, configdb-upgrade-[timestamp].log and dbupgrade-data-global-[timestamp].log on secondary admin node.

```
show logging system ade/ADE.log
show logging application configdb-upgrade-[timestamp].log
show logging application dbupgrade-data-global-[timestamp].log
```

 **Note:** When you collect the Support Bundle, make sure to enable full configuration database check to include configdb-upgrade logs.

Upgrade Issues, log collection

Upgrade failed in one of the nodes and cannot continue with rest of the deployment.

Refer to:

- ADE.log
- ise-psc.log

```
show logging system ade/ADE.log
show logging application ise-psc.log
```

Additional logs:

- monit.log

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Upgrade issues, fix it

SPAN Upgrade Failure

- **Failure after reboot:** Fresh install the node and join back to the deployment
- **Failure before reboot:** Node will automatically join back to the old deployment

PPAN Upgrade Failure

- Fresh install and join back to new deployment as SPAN

Other Nodes

- **Failure before reboot:** Automatically, joins back to old deployment
- **Failure Post reboot:** Fresh install failed node and join back to New deployment

Troubleshooting actions

Related Information

- [Cisco Technical Support & Downloads](#)

Revision History

Revision	Publish Date	Comments
1.0	29-Aug-2023	Initial Release

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