



Upgrade CWM Solutions

This chapter lists the configuration tasks required to migrate CWM Solutions to the latest version.

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CWM Solutions upgrade workflow

This section describes the steps to migrate data from CWM Solutions version 2.0 to version 2.1.

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Before you migrate

- Confirm that all applications and pods are in a healthy, non-degraded, and fully functional state.
- Ensure that all NSO providers are reachable and healthy.
- Verify that every device has an administrative state of **syncd** and an NSO state of **syncd**.

Back up the CWM Solutions data

Before moving to the new version, you must create a secure backup of your current data.



Note

This procedure applies only if you are already using CWM Solutions version 2.0 on Crosswork platform version 7.1.

Procedure

Step 1 Configure destination for backup:

- a) Go to **Administration > Backup and Restore**.
- b) Click **Destination** and provide relevant details in the **Add Destination** drawer window.
 - Host name (FQDN) or IP address
 - Access port
 - Username and password
 - Server path or location

Click **Save** to confirm your changes.

Step 2 Create a data backup file:

- a) Go to **Administration > Backup and Restore**.
- b) Click **Actions > Data Backup**.
- c) In the **Data Backup** dialog box, Provide a relevant name in the **Job Name** field.
- d) Check the **Backup NSO** checkbox .
- e) Verify that the destination information matches the details entered in the previous step.
- f) Click **Verify backup readiness** to confirm sufficient resources for the backup. If successful, click **OK** to acknowledge the warning about the operation's duration.
- g) Click **Backup** to execute the backup.

The system creates a backup job set and adds it to the job list. The **Job details** panel reports the status of each backup step.

Note

Applications will enter maintenance mode and be inaccessible for approximately five minutes during the backup process.

Step 3 Verify backup completion:

- a) Monitor the backup progress in the **Job details** panel.
 - b) Select the job entry and confirm that the status is **Completed successfully** and all sub-tasks are finished.
 - c) Once the backup is confirmed, shut down the Crosswork platform 7.1 instance.
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Upgrade NSO

This section provides a detailed procedure for upgrading Cisco NSO from version **6.4.1.1** to **6.4.8.1**. This upgrade is a critical component of the migration from CWM Solutions 2.0 to version 2.1.0.

The upgrade process involves moving the NSO and the associated packages to newer versions to support migration of CWM Solutions. This procedure ensures that the NSO instance, core packages, function packs, and Network Element Drivers (NEDs) are correctly aligned with the new system requirements.

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NSO upgrade prerequisites

- Ensure that the NSO instance and its packages are fully operational and in a **healthy** condition on Crosswork Manager before starting.
- Perform a full backup of NSO. For detailed instructions, see the [NSO documentation](#). Store the backup tar file outside of `/var/opt/ncs` to prevent data loss.
- Ensure you have downloaded the required NSO 6.4.8.1 installer and CWM Solutions 2.1.0 packages from the Cisco software portal.

Install new NSO version and update configuration

Follow these steps to stop the current NSO instance and install the new version in **system install** mode.

Procedure

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- Step 1** Run the following command to stop the NSO service:
- ```
$ sudo systemctl stop ncs
```
- Step 2** Run the installer with the system install flag to install the new NSO version:
- ```
$ sudo sh nso-6.4.8.1.linux.x86_64.installer.bin --system-install
```
- Step 3** Switch to the NSO directory and update the "current" symbolic link to point to the new version:
- ```
$ sudo -s
cd /opt/ncs
rm -f current
ln -s ncs-6.4.8.1 current
exit
```
- Step 4** Update `ncs.conf`.
- a) Back up the current `/etc/ncs/ncs.conf`.
  - b) Locate the new template at `/opt/ncs/ncs-6.4.8.1/etc/ncs/ncs.conf.install`.
  - c) Modify the template to include custom configurations from your original `ncs.conf`.
- Important**  
Ensure you carry over all <encrypted-strings> values to maintain device connectivity.
- Step 5** Replace `/etc/ncs/ncs.conf` with the modified version.
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## Manage CWM Solution packages

Follow this procedure to uninstall old package links and install the CWM Solution 2.1.0 core and supporting packages.

### Procedure

**Step 1** Remove old symbolic links by deleting the links for the 6.4.1.1 packages in the runtime directory.

#### Caution

Do not remove existing NED packages at this stage.

```
$ sudo rm /var/opt/ncs/packages/ncs-6.4.1.1-cisco-ztp-2.0.0.tar.gz
$ sudo rm /var/opt/ncs/packages/ncs-6.4.1.1-dlm-svc-7.1.0-74.tar.gz
$ sudo rm /var/opt/ncs/packages/ncs-6.4.1.1-fleet-upgrade-2.0.0.tar.gz
$ sudo rm /var/opt/ncs/packages/ncs-6.4.1.1-goldenconfig-2.0.0.tar.gz
$ sudo rm /var/opt/ncs/packages/ncs-6.4.1.1-inventory-2.0.0.tar.gz
$ sudo rm /var/opt/ncs/packages/ncs-6.4.1.1-inventory-junos-2.0.0.tar.gz
$ sudo rm /var/opt/ncs/packages/ncs-6.4.1-resource-manager-4.2.9.tar.gz
```

**Step 2** Install CWM Solutions 2.1.0 core packages.

- a) Unpack the CWM Solutions 2.1.0 tarball.
- b) Copy the packages to /opt/ncs/packages/.
- c) Create symbolic links to /var/opt/ncs/packages/.

For example, to link the Zero Touch Provisioning package:

```
$ sudo cp ncs-6.4.8.1-cisco-ztp-2.1.0.tar.gz /opt/ncs/packages
$ sudo ln -s /opt/ncs/packages/ncs-6.4.8.1-cisco-ztp-2.1.0.tar.gz /var/opt/ncs/packages
```

- d) Repeat these steps for the Fleet Upgrade, Golden Config, Inventory, and Resource Manager packages.

**Step 3** Install DLM function pack and NEDs.

- a) Install the DLM CFP package (ncs-6.4.7-dlm-svc-7.2.0-85.tar.gz).
- b) Install the required NEDs (for example, Cisco IOS-XR 7.70, IOS-XE 6.107, and Juniper JunOS 4.18.26).

**Step 4** Install the Backup Restore scripts.

Copy these scripts from the CWM Solutions 2.1.0 package to the NSO scripts folder to support Crosswork Infrastructure functions:

```
$ sudo cp ncs_backup.sh /var/opt/ncs/scripts/
$ sudo cp ncs_migrate.sh /var/opt/ncs/scripts/
$ sudo cp ncs_restore.sh /var/opt/ncs/scripts/
```

## NSO startup and validation

Perform a controlled restart of NSO to force package reloading and ignore initial validation errors during the transition.

## Procedure

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- Step 1** Modify the `ncs.service` file by adding the `--ignore-initial-validation` flag to the `ExecStart` line in `/etc/systemd/system/ncs.service`:
- ```
ExecStart=/bin/sh -ac '. ${NCSDIR}/ncsrc; exec ${NCSDIR}/bin/ncs --cd ${NCS_RUN_DIR} --heart
--ignore-initial-validation -c ${NCS_CONFIG_DIR}/ncs.conf'
```
- Reload systemd: `$ sudo systemctl daemon-reload`
- Step 2** Force a package reload by editing `/etc/ncs/ncs.systemd.conf` and setting `NCS_RELOAD_PACKAGES=force`. Then, restart NSO:
- ```
$ sudo systemctl restart ncs
```
- Step 3** Once NSO is running, revert `NCS_RELOAD_PACKAGES` to `false` in `ncs.systemd.conf` and remove the `--ignore-initial-validation` flag from `ncs.service`. Reload systemd again.
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## Verification and device migration

Verify the upgrade and migrate devices to the new NED versions.

## Procedure

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- Step 1** Verify the NSO version.
- Run the following command and confirm the output:
- ```
$ ncs --version
# Expected Output: 6.4.8.1
```
- Step 2** Check package status.
- Log in to the NSO CLI and verify that all packages show `UP` in the operational status:
- ```
user@ncs> show packages package oper-status up
```
- Step 3** Migrate devices to the new NED versions (`NED_ID`). Always perform a dry-run first to check for schema changes:
- ```
user@ncs% request devices device <DEVICE_NAME> migrate new-ned-id <NEW_NED_ID> dry-run verbose
user@ncs% request devices device <DEVICE_NAME> migrate new-ned-id <NEW_NED_ID> no-networking
```
- Step 4** Perform a **sync-from** to pull new capabilities and verify backpointers:
- ```
user@ncs% request devices device <DEVICE_NAME> sync-from
user@ncs% show devices device <DEVICE_NAME> config | display service-meta-data
```
- Step 5** (Optional) After successful migration, remove the old NED packages and their symbolic links from `/opt/ncs/packages/` and `/var/opt/ncs/packages/`.
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## Restore the CWM Solutions data backup

After deploying Crosswork platform infrastructure version 7.2, follow these steps to restore the CWM Solutions data backup.

### Procedure

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- Step 1**    **Verify instance readiness:**
- Go to **Administration > Crosswork Manager > Crosswork health**.
  - Confirm all applications and microservices/pods are in **healthy** status.
  - Ensure the NSO provider is reachable.
- Step 2**    **Configure destination for restore:**
- Go to **Administration > Backup and Restore**.
  - Click **Destination** and provide information on the host or server where the Crosswork platform 7.1 backup is stored (use the same details as in [Back up the CWM Solutions data, on page 1](#)).
- Step 3**    **Restore the data backup file:**
- Go to **Administration > Backup and Restore**.
  - Select **Actions > Data migration** and enter the name of the backup file created in [Back up the CWM Solutions data, on page 1](#).
  - Click **Start migration**. The system creates a migration job set and adds it to the job list. The **Job details** panel reports the status of each migration step.
- Step 4**    **Verify migration completion:**
- Monitor the job progress in the **Job details** panel.
  - Select the job entry and confirm that the status is **Completed successfully** and all sub-tasks are finished.
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## Post-migration checks

Perform these checks to ensure data integrity and functionality in CWM Solutions version 2.1.

*Table 1: Post-migration checks*

| Feature       | Navigation path                                                            | Verification criteria                                                                                                                                                       |
|---------------|----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Workers       | <b>Administration &gt; Workflow</b><br><b>Administration &gt; Workers</b>  | Confirm that all workers display <ul style="list-style-type: none"> <li>• <b>Admin state</b> as <b>UP</b></li> <li>• <b>Operational Status</b> as <b>running</b></li> </ul> |
| Adapters      | <b>Administration &gt; Workflow</b><br><b>Administration &gt; Adapters</b> | Ensure both old and new adapters are present; verify the current version is <b>Set as default</b> , and <b>In Use</b> is set to <b>True</b> .                               |
| NSO providers | <b>Administration &gt; Manage</b><br><b>Provider Access</b>                | Verify that the provider is present and in <b>Reachable</b> status.                                                                                                         |

| Feature                 | Navigation path                                                                            | Verification criteria                                                                                                                                                         |
|-------------------------|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CWM Solutions resources | <b>Administration &gt; Workflow</b><br><b>Administration &gt; Resources</b>                | Confirm that resources are present and accessible.                                                                                                                            |
| Network devices         | <b>Device Management &gt; Network Devices</b>                                              | Ensure all previously onboarded devices show <ul style="list-style-type: none"> <li>• <b>Admin state</b> as <b>UP</b></li> <li>• <b>NSO state</b> as <b>Synced</b></li> </ul> |
| MOP list                | <b>CWM Solutions &gt; MOPs</b>                                                             | Confirm that previously created MOPs are imported and accessible.                                                                                                             |
| Image policy            | <b>CWM Solutions &gt; Fleet Upgrade &gt; Software conformance &gt; Image policies</b>      | Verify that existing image policies are present.                                                                                                                              |
| Conformance reports     | <b>CWM Solutions &gt; Fleet Upgrade &gt; Software conformance &gt; Conformance reports</b> | Confirm that previous reports are carried over and can be re-run.                                                                                                             |
| Image repository        | <b>CWM Solutions &gt; Fleet Upgrade &gt; Image repository &gt; Local repository</b>        | Validate that uploaded image artifacts are intact.                                                                                                                            |
| Fleet upgrade           | <b>CWM Solutions &gt; Fleet Upgrade</b>                                                    | Select images and initiate a "New Software Update" job to test operational soundness.                                                                                         |

