

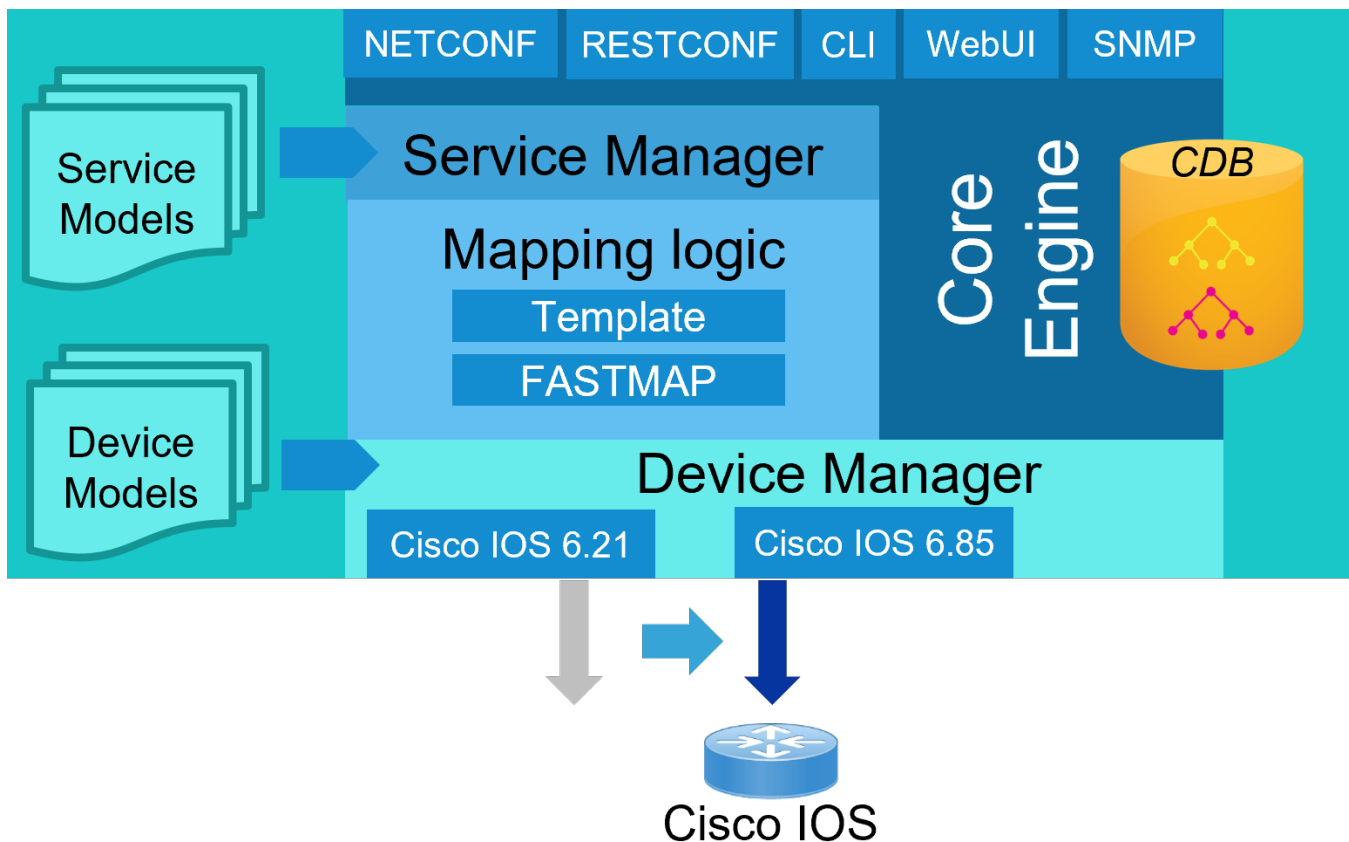
## CDM Migration

With the Common Data Model (CDM), it is now possible to have different versions of Network Element Drivers (NEDs) loaded in an NSO environment with a specific version for each device. CDM migration is the process of migrating a device and its service data between different NED versions. It affects existing service instances, so this is another service management task.

The process of migrating devices to a new NED version consists of these steps:

- Load a new version of the NED in NSO (for example, Cisco IOS 6.85).
- Adapt services to support any backward-incompatible changes.
- Migrate devices and the service data to the new NED.

As you can see from the following figure, you have two Cisco IOS NEDs loaded side by side. Service packages must support both devices—those using the old version of the NED and those using the new version. The service package must be modified to support the CDM.



If the NED contains backward-incompatible changes affecting existing services, the **packages reload** command will fail for those packages. The templates must be updated for the *netflow* package to ensure that NSO applies the correct configuration based on the NED version that the device is using. The figure displays the output of the **packages reload** command.

```
admin@ncs# packages reload

>>> System upgrade is starting.
>>> Sessions in configure mode must exit to operational
mode.
>>> No configuration changes can be performed until
upgrade has completed.
>>> System upgrade has completed successfully.
reload-result {
  package cisco-ios-cli-6.21
  result true
}
reload-result {
  package cisco-ios-cli-6.85
  result true
}
reload-result {
  package netflow
  result false
  info netflow-template.xml:12 the tag: version is
different for ned-ids: cisco-ios-cli-6.21:cisco-ios-cli-
6.21, cisco-ios-cli-6.85:cisco-ios-cli-6.85
}
```



## Migrate a Device

To migrate a device to a new version of NED, the command **devices migrate device [ device-name ] new-ned-id ned-id** is used. With the *dry-run* verbose option, you can see changes between the NED versions before the actual switch. Services affected by migration are also listed in the output. Note that those services must be adapted and existing service instances must be re-deployed for a service to work after migration.

```
admin@ncs# devices migrate device [ CE40 ] old-ned-id cisco-ios-  
cli-6.21 new-ned-id cisco-ios-cli-6.85 verbose dry-run  
migrate-result {  
  device CE40  
  result true  
}  
modified-path {  
  path /ios:spd/headroom  
  info leaf/leaf-list type has changed  
}  
modified-path {  
  path /ios:transceiver/type/all/monitoring/interval  
  info leaf/leaf-list type has changed from uint16 to uint32  
}  
...  
...  
modified-path {  
  path /ios:platform/punt-policer/rate  
  info leaf/leaf-list type has changed  
}  
modified-path {  
  path /ios:foobar  
  info sub-tree has been deleted  
}  
affected-services [/services/netflow:netflow[device='CE40']]  
admin@ncs#
```



## Adapt a Service Template to CDM

Services that are affected during NED migration need to be fixed to support both versions of configuration. In the figure, you can see how the NetFlow configuration has changed, the port is now part of the mandatory configuration, and there is an additional tag around the version parameter. By using conditional statements, a different configuration will be applied based on the NED ID configured for the device.

```
<?xml version="1.0"?>
<config-template xmlns="http://tail-f.com/ns/config/1.0"
servicepoint="netflow">
  <devices xmlns="http://tail-f.com/ns/ncs">
    <device>
      <name>{/device}</name>
      <config>
        <ip xmlns="urn:ios">
          <flow-export>
            <source>
              <GigabitEthernet>1/0</GigabitEthernet>
            </source>
            <?if-ned-id cisco-ios-cli-6.21:cisco-ios-cli-6.21?>
              <version>5</version>
              <destination>
                <ip>{/destination}</ip>
              </destination>
            <?elif-ned-id cisco-ios-cli-6.85:cisco-ios-cli-6.85?>
              <version>
                <version>5</version>
              </version>
              <destination>
                <ip>{/destination}</ip>
                <port>2055</port>
              </destination>
            <?end?>
          </flow-export>
        </ip>
      </config>
    </device>
  </devices>
</config-template>
```

