

# Release Notes for NorthStar Controller

**Release 4.1.0**  
**17 July 2018**

These release notes accompany Juniper Networks NorthStar Controller Release 4.1.0.

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## Introduction

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The Juniper Networks NorthStar Controller is an SDN controller that enables granular visibility and control of IP/MPLS flows in large service provider and enterprise networks. Network operators can use the NorthStar Controller to optimize their network infrastructure through proactive monitoring, planning, and explicit routing of large traffic loads dynamically based on user-defined constraints.

The NorthStar Controller 4.1.0 release is fully supported with Junos OS Release 17.2R1 and later.

NorthStar Controller 4.1.0 can be deployed with Junos OS Releases 15.1F6, 16.1R1, and 17.1R1, but the segment routing (SPRING) feature would not be available.

The NorthStar Controller Analytics features require specific Junos OS Releases to be able to obtain LSP and interface statistics. This is a Junos Telemetry Interface (JTI) dependency. We recommend Junos OS Release 15.1F6 or later if you plan to use Analytics.

NorthStar Controller 4.1.0 release can be deployed with Junos OS Releases 14.2R6, 15.1F4, and 15.1R4, but the following features would not be available:

- MD5 authentication for PCEP
- P2MP support
- Admin group support

By default, the NorthStar Controller Release 3.0.0 and later requires that the external Junos VM be Release 17.2 or later. If you are using an older version of Junos OS, you can change the NorthStar configuration to support it, but segment routing support will not be available. See the *Known Behavior* section for the configuration steps.

Other Junos OS releases are not supported.



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**NOTE:** The Path Computation Element Protocol (PCEP) configuration on the PCC routers does not persist across upgrades when the SDN package is not part of the installation binary. Before upgrading the Junos OS image to this release, save the existing configuration to a file by using the `save` command. After you upgrade the Junos OS image on each PCC router, use the `load override` command to restore the PCEP configuration.

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The NorthStar Controller is supported on the following Juniper platforms: M Series, T Series, MX Series, PTX Series, QFX10008, and ACX5000.

As of Junos OS Release 17.4R1, NorthStar Controller is also supported on QFX5110, QFX5100, and QFX5200, and on SRX platforms (SRX300, SRX320, SRX340, SRX345, SRX550, SRX550M, SRX1500, SRX4100, SRX4200 devices, and vSRX instances).

Junos OS supports Internet draft draft-crabbe-pce-pce-initiated-lsp-03 for the stateful PCE-initiated LSP implementation (M Series, MX Series, PTX Series, T Series, QFX Series, and ACX Series).

## Contents of this Release

Table 1 on page 3 describes the downloadable files.

Table 1: NorthStar Controller 4.1.0 Downloadable Files

File	Description
NorthStar Application	Northstar_Bundle_4_1_0_.tar.gz
NOTE: E-signature also available.	
NorthStar JunosVM	northstar_junosvm_4_1_0.tar.gz
NOTE: E-signature also available.	



NOTE: VMDK installation is also supported, but the files needed for this type of installation are not available on the NorthStar software download page. Please request the files from your account team or NorthStar Product Line Manager.

NorthStar SKUs were changed as of NorthStar release 4.0.0. If you are upgrading NorthStar from a release prior to NorthStar 4.0.0, you will need to obtain a new license. Consult your account team or NorthStar PLM for more information.

## New Features

The following new features are introduced in NorthStar Release 4.1.0:

• **Netflow Collector**

Netflow collector is a network planning and reporting tool now available in NorthStar Controller. It provides a way to gather and generate reports on detailed network traffic information. NorthStar leverages the Junos OS implementation of flow aggregation using Version 9 and IPFIX flow templates. See the following Junos OS documentation:

- *Configuring Flow Aggregation to Use Version 9 Flow Templates*
- *Configuring Flow Aggregation to Use IPFIX Flow Templates on MX, vMX and T Series Routers, EX Series Switches and NFX250*
- *Configuring Flow Aggregation to Use IPFIX Flow Templates on PTX Series Routers*

Netflow Collector requires:

- Configuration on the routers in the network.
- Initial and periodic NETCONF device collection to create and maintain an accurate VPN model in NorthStar.

You can optionally customize netflow collector settings in the `/opt/northstar/data/northstar/cfg` file on the NorthStar application server.

Netflow Collector features include:

- A new collection type (**Administration > Device Collection**) called Demand Reports.
- New reports generated by the Demand Reports collection task and listed in the Status tab after the collection task has completed. These reports are also available by navigating to **Applications > Reports**. Reports can optionally present data aggregated by groups in your saved topology layouts.
- The Demand tab in the network information table shows aggregated demands based on the flow monitoring of the netflow collector. Four aggregation keys are used: ingress PE, BGP next hop IP address, VPN name, specification of IPv4 or IPv6. The values of the keys are reflected in the names of the demands in the table. Selecting a demand in the table highlights the corresponding routing path in the topology map. Right-clicking a demand presents options for drilling down to greater detail and displaying traffic charts. From the network information table, demands can be deleted, but not added or modified.
- New Service tab in the network information table lists VPNs in the network along with the nodes associated with each. Right-clicking a VPN presents options for displaying greater detail and charts.

See *Netflow Collector* in the *NorthStar Controller User Guide*.

#### • Configurable User Groups

User permissions are determined by the user group to which the user is assigned, and user groups are now configurable. Only the Admin has access to the User Management system where groups are created, permissions are assigned to groups, and users are created. Every user must be assigned to a group.

When you first launch NorthStar, the pre-configured user groups available depend on whether you are installing for the first time or upgrading from an earlier release.

- If you are installing the NorthStar Controller application for the first time (fresh install), one user group is automatically created—Administrators. The Administrators user group, by default, has full permissions in the work order management system—to create, approve or reject, and activate work orders. See *Work Order Management* in the *NorthStar Controller User Guide* for more information about the Work Order management system.

In a fresh install, the only user pre-added to this group is the Admin. The Admin is a special user who can access all features and functionality within NorthStar, including those related to system settings, license management, authentication method control, and user management. Being assigned to the Administrators user group does not make a user an Admin. But the Admin is assigned to the Administrators user group.

- **If you are upgrading from a NorthStar release older than Release 4.1.0**, two user groups are automatically created—Administrators and Viewers.

**IMPORTANT:** All existing full-access users from the older release are pre-added to the Administrators user group during the upgrade process. All existing view-only users from the older release are pre-added to the Viewers user group. We recommend that the Admin immediately access the User Management system (**Administration > Users**) to create additional user groups, assign them appropriate permissions for handling work orders, and re-assign each existing user to the appropriate user group based on those permissions.

See the following topics:

- *User Management (NorthStar Controller User Guide)*
- *Work Order Management (NorthStar Controller User Guide)*
- *User Administration (NorthStar Planner User Guide)*

- **Push Device Configuration and Associated Work Order Enhancements**

You can now create work orders to push device configuration to Juniper routers in the network without leaving the NorthStar application. To access this feature, navigate to **Applications > Device Configuration**. Users with the necessary permissions can create templates (called “configlets”), where you specify which routers should receive the configuration and the specific Junos OS configuration statements to include. Once a template is provisioned, the request enters the Work Order Management system. Logical systems and a view-only mode are supported.

See the following topics in the *NorthStar Controller User Guide*:

- *Push Configuration to Network Devices from Within the NorthStar Application*
- *Work Order Management*
- *User Management*

- **Binding SID Support**

NETCONF SR LSPs are statically provisioned via NETCONF and the associated configuration statements appear in the router configuration file. While SR LSPs can be provisioned via NETCONF, they can be learned by way of either PCEP or NETCONF. In Junos OS Release 18.2 R1, PCEP reporting is limited. The alternative is to learn about the details of the NETCONF-provisioned SR LSPs by way of Device Collection configuration parsing in NorthStar. With this method of provisioning, the primary path details come from device collection configuration parsing, so updates are not provided to NorthStar in real time, and NorthStar reports the operation status for these LSPs as Unknown.

You can provision a pair of binding SID SR LSPs (one going from A to Z and one for the return path from Z to A), and a private forwarding adjacency is automatically generated. The private forwarding adjacency links can optionally be displayed in the topology map. You can then tunnel a non-binding SID SR LSP over a binding SID SR LSP, thereby reducing the number of labels in the label stack (private forwarding adjacency labels can represent multiple hops in the path).

See *Segment Routing* in the *NorthStar Controller User Guide*. Also see the *Known Behaviors* section in this Release Notes document for limitations.

## Changes in Behavior

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The following changes in behavior are introduced with NorthStar Controller Release 4.1.0:

- **Default User Groups:** See the *New Features* section for information about the Configurable User Groups feature and the implications if you are upgrading from an earlier NorthStar Release.

## Known Behavior

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The following behaviors are known to occur in NorthStar Controller Release 4.1.0:

- NorthStar REST API does not return in the REST response the selected routing method:
  - Currently, if a REST API body has routingMethod=Default, the corresponding REST response does not include the routingMethod keyword.
  - NorthStar still computes the ERO properly.
  - In a future NorthStar release, the REST response will properly indicate the selected routingMethod.
- Re-provision LSPs issue:
  - For a Netconf-provisioned P2MP tree, re-provisioning individual sub-LSPs to go around a failed link can fail under the following conditions:
    - The user re-provisions sub-LSPs separately.
    - The user has a mixture of sub-LSPs with a user-specified strict path and paths computed by NorthStar.
  - The workflow is to re-provision all sub-LSPs of a tree together; NorthStar computes sub-LSPs of a tree as a whole, not individually.
- Behaviors and limitations related to NETCONF Provisioning of LSPs and Binding SID Support:
  - Automatic rerouting of NETCONF-provisioned LSPs (including NETCONF-provisioned SR LSPs) due to a failure in the network is not supported.
  - The Preview Path button in the Provision LSP window may return a "Cannot find a path!" error message when in fact a path was found and the SR LSP was successfully provisioned. The error message occurs for certain scenarios such as when an SR LSP makes use of a binding SID SR LSP (privateForwardingAdjacency).
  - Path highlighting for an SR LSP in a network that has two adjacency SIDs per interface is not supported.
  - NorthStar can route a non-binding SID SR LSP over a binding SID SR LSP, but routing a binding SID SR LSP over another binding SID SR LSP is not supported.
- During PCE initiated LSP, some Cisco routers configured with IOS-XR version can return an error code for an unknown reason. Currently NorthStar Application only reports

“NS\_ERR\_GENERIC” when this issue happens. It is planned to improve this behavior and report the exact error code (e.g. PCEP Error Type = 24 error value = 2 ) in future releases.

- Behaviors related to Netflow Collector:
  - It can happen that during a NorthStar upgrade from NorthStar 4.0 to NorthStar 4.1, netflowd cannot be started. If netflowd fails to start, run the following command on the system hosting the netflowd collector:
 

```
sudo -u pcs /opt/northstar/thirdparty/python/bin/pip -q install --upgrade --no-deps --force-reinstall /opt/pcs/lib/python/*.whl
```
  - Elastic Search REST API assumes that LSPs on different routers have different names.
  - In rare case, you might get an empty result in the network information table, Service tab for both summary and detailed information, for example, after a system upgrade. If this happens, you can resolve it by restarting the web process:

```
supervisorctl restart infra:web
```

## Known Issues

Table 2 on page 7 lists known issues in NorthStar Controller Release 4.1.0. The identifier associated with each entry is the tracking number in the Juniper Networks Problem Report (PR) tracking system.

**Table 2: Known Issues in NorthStar Controller 4.1.0**

Identifier	Description
1358245	<p>Junos OS Release 18.2 R1 PCEP reporting limitation: The current Junos OS Release 18.2 R1 release reports the SR LSP name only. Any path names (for multiple primary paths or secondary path) are not reported via PCEP. The implications for NorthStar Controller Release 4.1.0 are:</p> <ul style="list-style-type: none"> <li>Only one primary path is supported. Since Junos OS still requires a path name to be specified, when NorthStar sends a provisioning order for NETCONF-based SR LSPs, the primary path name is set to be the same as the SR LSP name.</li> <li>Support for additional primary paths and secondary path could be added for a later NorthStar release, contingent upon support in Junos OS.</li> <li>The user does have the option to disable PCEP and rely on Device Collection configuration parsing to obtain the SR LSP primary path details. The disadvantage of using configuration parsing is that it is a non-real-time pull model, so the Operation Status for the SR LSPs is set as Unknown.</li> </ul>

## Resolved Issues

Table 3 on page 8 lists resolved issues in NorthStar Controller Release 4.1.0. The identifier associated with each entry is the tracking number in the Juniper Networks Problem Report (PR) tracking system.

*Table 3: Resolved Issues in NorthStar Controller 4.1.0*

Identifier	Description
NA	Common properties for P2MP groups were lost when using REST P2MP diverse tree design. The properties were carried over the leaves but not on the P2MP group itself.
1354427	Web UI does not correctly report P2MP-TE color attributes to REST when adding or modifying the P2MP-TE.

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## Requesting Technical Support

Technical product support is available through the Juniper Networks Technical Assistance Center (JTAC). If you are a customer with an active J-Care or JNASC support contract, or are covered under warranty, and need post-sales technical support, you can access our tools and resources online or open a case with JTAC.

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## Revision History

17 July 2018—NorthStar Controller Release 4.1.0.

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