

Release Notes

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Juniper Networks NorthStar Controller/Planner 6.2.5

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Introduction

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 6.2.5 release is qualified to work with Junos OS 18.3R2.4 and later releases. [Table 1 on page 1](#) lists feature-specific Junos OS requirements. The NorthStar features listed have been qualified with the specified Junos OS release and are intended to work with that release onwards.

Table 1: Feature-Specific Junos OS Requirements

| NorthStar Feature | Junos OS Release |
|---|------------------|
| Analytics | 15.1F6 |
| Segment Routing (SPRING), MD5 authentication for PCEP, P2MP, Admin groups | 17.2R1 |
| PCEP-Provisioned P2MP Groups | 18.3R2 |
| PCEP-Provisioned P2MP Groups with MVPN (S,G) Service Mapping via Flowspec | 19.4R1 |
| EPE | 19.2R1.8 |
| Bandwidth sizing and container LSPs for SR-TE LSPs | 19.2R1.2 |
| PCC Delegated LSP Support for SR LSPs | 19.4R3, 20.1R1 |
| SR traversing binding SID support | 19.2R1, 20.1R1 |
| Path preemption | 20.1R2 |

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.

NorthStar Controller supports PCEP, BGP-LS, Netconf, and JT1 which currently are supported on MX and PTX Series devices. For PCEP capability on specific JUNOS OS versions, refer to specific [Release Notes](#) for that specific Junos OS version.

Junos OS supports Internet draft draft-crabbe-pce-pce-initiated-lsp-03 for the stateful PCE-initiated LSP implementation.

NorthStar Controller is Federal Information Processing Standard (FIPS) compliant (except for MD5 algorithm for PCEP messages). This only affects, and is a benefit to, users with FIPS enabled on their Linux servers.

Supported Browsers

We recommend the use of the most recent Chrome and Firefox browsers for accessing NorthStar Controller and NorthStar Planner. Other browsers such as Edge or Internet Explorer or older versions of Chrome or Firefox may also work; however, recent Chrome and Firefox browsers would offer the best compatibility.

Important: Before You Upgrade to NorthStar 6.2.5

Consider the following important notes before you upgrade to NorthStar 6.2.5 from a release earlier than 6.0.0:

- As of NorthStar 6.0.0, we no longer support CentOS or Red Hat Enterprise Linux (RHEL) 6.x. To help with your operating system migration, we are providing a procedure for upgrading your operating system in so that your clusters and data remain intact. See [Guidance for Migrating to CentOS 7.x for NorthStar 6.0.0 and Later](#) in the [NorthStar Controller/Planner Getting Started Guide](#).

NOTE: If you are already using CentOS or RHEL 7.x, please disregard this section.

- As of NorthStar 6.0.0, due to a change in the way the netflowd parameters are stored in NorthStar, you must copy all netflowd-related configuration in the **northstar.cfg** file to the **northstar.cfg** file on all your application servers. There are two exceptions: “netflow_collector_address” and “netflow_port” should remain on the analytics servers.

Contents of this Release

[Table 2 on page 3](#) describes the downloadable files.

Table 2: NorthStar Controller 6.2.5 Downloadable Files

| File | Description |
|--|--------------------------------|
| NorthStar Application, including NorthStar Ansible playbook NOTE: E-signature also available. | NorthStar_Bundle_6_2_5.tar.gz |
| NorthStar JunosVM NOTE: E-signature also available. | northstar_junosvm_6_2_5.tar.gz |

New Features

IN THIS SECTION

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Support for RHEL 8.6 for Installing NorthStar Controller

Starting from NorthStar Controller Release 6.2.5, you can install Northstar Controller on RHEL 8.6.

Supported PCEP Standards

NorthStar supports the following RFCs and Internet drafts, which define standards for PCEP.

- RFC 5440, Path Computation Element (PCE) Communication Protocol (PCEP)—Stateful PCE
- RFC 8231, Path Computation Element Communication Protocol (PCEP)—Extensions for Stateful PCE
- RFC 8281, Path Computation Element Communication Protocol (PCEP)—Extensions PCE-Initiated LSP Setup in a Stateful PCE Model
- RFC 8408, Conveying Path Setup Type in PCE Communication Protocol (PCEP) Messages
- RFC 8664, Path Computation Element Communication Protocol (PCEP) Extensions for Segment Routing
- RFC 7470, Conveying Vendor-Specific Constraints in the Path Computation Element Communication Protocol
- RFC 8356, Experimental Codepoint Allocation for Path Computation Element communication Protocol (PCEP)
- draft-ietf-pce-stateful-pce-07, PCEP Extensions for Stateful PCE
- draft-crabbe-pce-pce-initiated-lsp-03, PCEP Extensions for PCE-initiated LSP Setup in a Stateful PCE Model
- draft-ietf-pce-segment-routing-06, PCEP Extensions for Segment Routing
- draft-ietf-pce-stateful-pce-p2mp-02, Path Computation Element(PCE) Protocol Extensions for Stateful PCE usage for Point-to-Multipoint Traffic Engineering Label Switched Paths
- draft-cbrt-pce-stateful-local-protection-01, PCEP Extensions for RSVP-TE Local-Protection with PCE-Stateful (excluding support for bypass LSP mapping)
- draft-ietf-pce-pcep-flowspec-05, PCEP Extension for Flow Specification

- draft-ietf-pce-binding-label-sid-05, Carrying Binding Label/Segment-ID in PCE-based Networks
- draft-ietf-pce-segment-routing-policy-cp-04, PCEP extension to support Segment Routing Policy Candidate Paths

Changes in Behavior

The following changes in behavior are introduced with NorthStar Controller Release 6.2.5.

- If you are upgrading to NorthStar 6.2.5 from a NorthStar release earlier than 4.3 *and you are not using analytics*, you can upgrade using the procedure described in [Installing the NorthStar Controller](#) in the *NorthStar Controller Getting Started Guide*.

If you *are* using NorthStar analytics, you must manually upgrade to NorthStar 6.2.5 using the procedure described in [Upgrading from Pre-4.3 NorthStar with Analytics](#) in the *NorthStar Controller Getting Started Guide*.

- From NorthStar Controller Release 6.2.5, you can configure link utilization threshold only by using the NorthStar Controller GUI.

Known Behavior

The following behaviors are known to occur in NorthStar Controller Release 6.2.5:

- **PCEP P2MP:** NorthStar automatically reroutes PCEP P2MP groups around a network element failure. After the failed element comes back up, the group might not be automatically restored to the original path, even if the user chooses to optimize LSP paths. In a future NorthStar release, the concept of what constitutes an optimal P2MP group will be addressed.
- Behaviors and limitations related to PCEP-provisioned P2MP Groups:
 - This feature requires that you use Junos OS Release 18.3R2 or later, in which the following Junos OS PRs have been fixed:
 - Junos OS PR 1412649

The fix for this PR enables you to define a separate template for P2MP (separate from the one used for P2P), one that does not allow “adaptive” to be configured. To define the new

template, configure the following statements on the head end PE of the PCE-initiated P2MP LSP:

```
set protocols mpls lsp-external-controller pccd label-switched-path-template
pccd_default_template
set protocols mpls label-switched-path pccd_default_template template
set protocols mpls label-switched-path pccd_default_template adaptive
set protocols mpls lsp-external-controller pccd label-switched-path-p2mp-template
pccd_p2mp_default_template
set protocols mpls label-switched-path pccd_p2mp_default_template template
set protocols mpls label-switched-path pccd_p2mp_default_template p2mp
```

- Junos OS PR 1412490

The fix for this PR ensures that deletion of P2MP PCEP branches is properly reported.

- Junos OS PR 1358245 (not specific to P2MP).

The fix for this PR ensures that segment routing (SR) path names are properly reported in Junos OS Release 18.3R2.

- When viewing P2MP groups in the network information table, be aware that the refresh button at the bottom of the table periodically turns orange to prompt you for a refresh. When you click the refresh button, the web UI client retrieves the latest P2MP sub-LSP status from the NorthStar server.

- **NETCONF P2MP (Reprovisioning LSPs):**

- For a NETCONF-provisioned P2MP tree, reprovisioning individual sub-LSPs to go around a failed link can fail under the following conditions:
 - The user reprovisions 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 reprovision all sub-LSPs of a tree together; NorthStar computes sub-LSPs of a tree as a whole, not individually.

- **Automatic rerouting:** Automatic rerouting of NETCONF-provisioned LSPs (including NETCONF-provisioned SR LSPs) is supported as follows:

- If an LSP is provisioned through NETCONF in the router and not delegated to NorthStar by PCEP, the LSP is controlled by the Junos OS configuration; that is, if link protection is enabled for the LSP (dynamic LSP) in Junos OS, the LSP is rerouted when the link over which the LSP is traversing

fails. Junos OS does not reroute the LSP if link protection is not configured for the LSP (static LSP) in Junos OS. NorthStar does not control routing of an LSP when the LSP is not delegated to it.

- If a dynamic LSP is provisioned through NETCONF in Junos OS and later delegated to NorthStar through PCEP, NorthStar controls the LSP instead of Junos OS; that is NorthStar will reroute the LSP, whenever the link over which the LSP traverses fails. If a static LSP is delegated, NorthStar will not reroute it.
- **PCE-initiated LSP:** 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 (for example, PCEP Error Type = 24 error value = 2) in future releases.
- **Netflow Collector:** Sometimes, during a NorthStar upgrade, 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
```

After running the command, restart the Netflow process:

```
supervisorctl restart analytics:netflowd
```

- **NorthStar Planner Web UI:** Network spec files will be overwritten if an existing network name exists when using Save or Save As. A warning dialog appears if an existing name is found using Save As.
- **ODN LSP Delegation** To delegate an on-demand next hop (ODN) LSP to NorthStar, you must add the `lsp-external-controller pccd` statement to the router configuration. To delete the ODN LSP from the router, you must explicitly delete the LSP by using the router CLI.
- **SR-TE LSP:** In Junos OS releases older than 19.1.R1.1, the operational state of an SR-TE LSP is down if the SR-TR LSP is provisioned through NETCONF and has:
 - `routeByDevice` as the routing method, and
 - Allow any SID at first hopenabled on the ingress node

Known Issues

This section lists the known issues in NorthStar Controller Release 6.2.5. If an identifier is reported, it is the assigned identifier in the GNATS problem report tracking system.

- SR-LSP is not supported in BGP confederation topology.

Workaround: There is no known workaround.

- TE-Tunnel should use SIGNAME, if available, to prevent creation of duplicate or deactivated tunnels in NorthStar Planner. [PR 1594351]

Workaround: There is no known workaround.

- Audit logs are not generated for REST API calls made for reset topology, sync topology, and optimize now operations.

Workaround: There is no known workaround.

- Filter is not working properly for audit log path, description, and status.

Workaround: There is no known workaround.

- The routing method is CSPF for P2MP groups which are configured from devices (as opposed to from within NorthStar), when the expected routing method is routeByDevice.

Workaround: There is no known workaround.

- NorthStar Planner Desktop: There is no validation on the NorthStar Planner Desktop when a license is uploaded.

Workaround: There is no known workaround.

- Elastic Search cleanup task should remove LSP events more frequently.

Workaround: There is no known workaround.

- P2MP: NorthStar cannot process different operations that modify a single device/LSP (POST and PATCH, POST and DELETE, PATCH and DELETE) simultaneously. To work around this issue, complete the first request and verify success in the NorthStar UI or on the device before submitting the next request.

Workaround: There is no known workaround.

- Interface name is copied over to a persisted state when you add delay to a link.

Workaround: There is no known workaround.

- TopoServer fails to remove LSP config state.

Workaround: There is no known workaround.

- Nodes, links, and SRLGs that are moved to maintenance might be lost during a TopoServer restart event such as HA switchover, sync network model, or reset network model. [POC-6196]
- Some TE++ tunnel specifications for NorthStar Planner Live Network Archive do not include the explicit required path PR.

Workaround: There is no known workaround.

- NETCONF color SR towards remote ASBR for Junos OS Release 19.1R1.1 and above is not working due to NETCONF template issue. The SR LSP Op status is showing as Up in NorthStar while the router shows the Op status as Down.

Workaround: There is no known workaround.

- Topology filter might not work properly for all nodes after performing process restart (on bmpMonitor, topoServer and topoFilter).

Workaround: You can delete the impacted topology filter and add it back in again.

- After issuing a service northstar restart command, logstash might show an unexpected error message.

Workaround: Restart the logstash process.

- Scheduling for P2MP LSP is lost after a Path Computation Server (PCS) restart. This can cause an inactive P2MP LSP to be reactivated.

The PCS restarts when you sync or reset the topology, during an HA switchover, when you upgrade NorthStar or install a patch.

Workaround: There is no known workaround.

- When the NorthStar Controller is in High Availability (HA) mode, a timeout error might occur when deleting a dummy node.

Workaround: There is no known workaround.

- NorthStar does not support provisioning of Netconf inter-AS SR LSP that has ECMP paths towards its destination with routeByDevice as routing method.

Workaround: There is no known workaround.

- When you change the time zone and date/time user preferences in NorthStar, the changes do not take effect.

Workaround: There is no known workaround.

- If there is area multiple paths with equal cost existing towards a destination, you cannot provision an inter-AS SR LSP with routing method routebydevice by using the NETCONF provisioning method.

- The RSVP Utilization of links carrying Container sub-LSP could be incorrectly computed.

Workaround: There is no known workaround.

- The RSVP Utilization of links carrying Container sub-LSPs is incorrectly computed when you sync the network model (by clicking the Sync option under the Sync Network Model in Advanced Settings).

Workaround: There is no known workaround.

- NorthStar is creating P2MP diverse tree designs without a calculated explicit route object (ERO) under planned properties.

Workaround: There is no known workaround.

- Path computation server (PCS) is not updating demand parameters in the database correctly leading to incorrect mapping of LSP to demands.

Workaround: There is no known workaround.

- Rest handler is not updating destination IP address for LSP correctly in the database.

Workaround: There is no known workaround.

- Top N demand prefixes are not working in NorthStar Controller.

Workaround: There is no known workaround.

- The demand aging task is not completing execution.

Workaround: There is no known workaround.

- When link loss threshold is set for a link, the link is put into maintenance when the link is brought up during device reboot.

Resolved Issues

This section lists the resolved issues in NorthStar Controller Release 6.2.5.

- SR LSP may not establish in an SR network in which RSVP is not enabled.
- You cannot modify an LSP originating from a Cisco IOS-XR device through NorthStar Controller after running device collection as follows:

1. LSP is discovered through PCEP.
2. LSP is modified from the controller.
3. Device collection is run on the ingress router.

This issue is occurring because, in the API call to modify the LSP, `path_name` for the LSP is null.

- The OSPF area information is not saved in NorthStar Planner. Also, any links created in an area are not associated with that area.
- Bandwidth reservation for PCC-controlled RSVP TE-LSPs with non-routeByDevice routing method is not accounted.
- Sometimes, the analytics for path types might not display correctly.
- Demands might not be deleted correctly when the demands are deleted through the GUI.
- The Get Optimization REST API shows incorrect TimeStamp.
- The OS version of a device might not be removed correctly when the OS version is cleared from device profile.
- A PCC delegated LSP might not reroute traffic when link utilization threshold is crossed if the LSP is reprovisioned through GUI.
- The password of an administrator user might not update correctly when the password is updated by using `net_setup.py`.
- The PCS might lose the LSP delegation status when there is an error in device collection.
- The PCS does not update the MPLS attribute correctly when the MPLS attribute is cleared in the GUI.
- PCS rejects link labels with ERO going over a link that has one of its ends migrated after an old link is deleted.
- When a link is modified, the OSPF area in which the link is modified is not saved.
- LDP demand traffic graph does not appear when LDP traffic collection is used to collect the demand data.

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