

# Release Notes: Junos<sup>®</sup> OS Release 15.1X53-D51 for EX2300 and EX3400 Switches

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## Junos OS Release Notes for EX Series Switches

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These release notes accompany Junos OS Release 15.1X53-D51 for EX2300 and EX3400. They describe new and changed features, limitations, and known problems in the hardware and software.

- [New and Changed Features on page 3](#)
- [Changes in Behavior and Syntax on page 7](#)
- [Known Behavior on page 7](#)
- [Known Issues on page 8](#)
- [Resolved Issues on page 10](#)
- [Documentation Updates on page 12](#)
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- [Product Compatibility on page 13](#)

### New and Changed Features

This section describes the new features and enhancements to existing features in Junos OS Release 15.1X53-D51 for the EX Series.



**NOTE:** The following EX Series platforms are supported in Junos OS Release 15.1X53-D51: EX2300 and EX3400.

- [Hardware on page 3](#)
- [Junos OS Software Features on page 4](#)

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#### Hardware

- **EX2300 switches**—Starting with Junos OS Release 15.1X53-D50, EX2300 switches are available as fixed configuration switches that provide connectivity for low-density environments. They are available in models with 12 or 24 built-in network ports with 10/100/1000 BASE-T connectors that provide Power over Ethernet (PoE) or Power over Ethernet Plus (PoE+) on all network ports (in PoE-capable models). The compact, fanless EX2300-C switches have 12 network ports.

EX2300-C switches have two 10-Gigabit Ethernet uplink ports that support 1-gigabit small form-factor pluggable (SFP) transceivers and 10-gigabit small form-factor pluggable plus (SFP+) transceivers. EX2300 switches except the EX2300-C switch model have four 10-Gigabit Ethernet uplink ports that support SFP and SFP+ transceivers. You can use these uplink ports as network ports or configure these ports as Virtual Chassis ports (VCPs) and use them to connect up to four switches by using SFP+ transceivers to form a *Virtual Chassis*.

- **EX3400 switches**—Starting with Junos OS Release 15.1X53-D50, EX3400 switches are available as fixed configuration switches that provide connectivity for low-density environments. They are available in models with 24 or 48 built-in network ports with 10/100/1000 BASE-T connectors that provide Power over Ethernet (PoE) or Power over Ethernet Plus (PoE+) on all network ports (in PoE-capable models).

EX3400 switches have four 10-Gigabit Ethernet uplink ports that support SFP transceivers and SFP+ transceivers and two 40-Gigabit Ethernet uplink ports that support quad small form-factor pluggable plus (QSFP+) transceivers. You can use these ports as network ports or as VCPs to connect up to ten switches to form one Virtual Chassis. The 40-Gigabit Ethernet uplink ports are configured as VCPs by default. To use these uplink ports as network ports, you must configure them as network ports. The 10-Gigabit Ethernet uplink ports are configured as network ports by default. To use these uplink ports as VCPs, you must configure them as VCPs.

Starting with Junos OS Release 15.1X53-D51, the DC-powered EX3400 model EX3400-24T-DC switch with 24 built-in network ports with 10/100/1000 BASE-T connectors is also available as a fixed configuration switch that provides connectivity for low-density environments.

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## Junos OS Software Features

### *Interfaces and Chassis*

- **Link aggregation**—Link aggregation enables you to use multiple network cables and ports in parallel to increase link speed and redundancy.

### *Layer 2 Features*

- **VLAN support**—VLANs enable you to divide one physical broadcast domain into multiple virtual domains.
- **Link Layer Discovery Protocol (LLDP) support**—LLDP enables a switch to advertise its identity and capabilities on a LAN, as well as receive information about other network devices.
- **Q-in-Q tunneling support**—This feature enables service providers on Ethernet access networks to extend a Layer 2 Ethernet connection between two customer sites. By using Q-in-Q tunneling, providers can also segregate or bundle customer traffic into fewer VLANs or different VLANs by adding another layer of 802.1Q tags. Q-in-Q tunneling is useful when customers have overlapping VLAN IDs, because the customer's 802.1Q (dot1Q) VLAN tags are prepended by the service VLAN (S-VLAN) tag.
- **Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), Multiple Spanning Tree Protocol (MSTP), and VLAN Spanning Tree Protocol (VSTP) support**—These protocols enable a switch to advertise its identity and capabilities on a LAN and receive information about other network devices.

### *High Availability*

- **Graceful Routing Engine Switchover (GRES), Nonstop Active Routing and Nonstop Bridging**—High availability features refer to the hardware and software components that provide redundancy and reliability for network communications. EX2300 switches

support GRES. EX3400 switches support GRES, Nonstop Active Routing and Nonstop Bridging.

- **Virtual Router Redundancy Protocol (VRRP) support**—VRRP enables you to provide alternative gateways for end hosts that are configured with static default routes. You can implement VRRP to provide a high availability default path to a gateway without the need to configure dynamic routing or router discovery protocols on end hosts.

### ***Layer 3 Features***

- **OSPF support**—The IPv4 OSPF protocol is an interior gateway protocol (IGP) for routing traffic within an autonomous system (AS). EX2300 and EX3400 switches support OSPFv1 and OSPFv2. You can configure OSPF at the **[edit protocols ospf]** hierarchy level.
- **Bidirectional Forwarding Detection (BFD) support for static routes and the OSPF, PIM, and RIP protocols**—BFD uses control packets and shorter detection time limits to rapidly detect failures in a network. Hello packets are sent at a specified, regular interval by routing devices. A neighbor failure is detected when a routing device stops receiving a reply after a specified interval.

You can configure BFD for static routes and for the OSPF, PIM, and RIP protocols.

### ***Multicast Protocols***

- **Internet Group Management Protocol (IGMP) support**—IGMP manages the membership of hosts and routers in multicast groups. IP hosts use IGMP to report their multicast group memberships to any immediately neighboring multicast routers. Multicast routers use IGMP to learn, for each of their attached physical networks, which groups have members.
- **IGMP snooping support**—IGMP snooping regulates multicast traffic in a switched network. With IGMP snooping enabled, a LAN switch monitors the IGMP transmissions between a host (a network device) and a multicast router, keeping track of the multicast groups and associated member interfaces. The switch uses that information to make intelligent multicast-forwarding decisions and forward traffic to the intended destination interfaces.

### ***Network Management and Monitoring***

- **SNMP support**—SNMP support includes versions 1, 2, and 3 for monitoring system activity.
- **System logging (syslog) support**—Syslog enables you to log system messages into a local directory on the switch or to a syslog server.
- **sFlow technology support**—This feature provides monitoring technology for high-speed switched or routed networks. You can configure sFlow technology to monitor traffic continuously at wire speed on all interfaces simultaneously. sFlow technology also collects samples of network packets, providing visibility into network traffic information.

You configure sFlow monitoring at the **[edit protocols sflow]** hierarchy level. sFlow operational commands include **show sflow** and **clear sflow collector statistics**.

- **Port mirroring support**—Port mirroring copies packets entering or exiting a port or entering a VLAN and sends the copies to a local interface for local monitoring. You can use port mirroring to send traffic to applications that analyze traffic for purposes such as monitoring compliance, enforcing policies, detecting intrusions, monitoring and predicting traffic patterns, correlating events, and so on.

### **Security**

- **Firewall filter support**—You can provide rules that define whether to accept or discard packets. You can use firewall filters on interfaces, VLANs, integrated routing and bridging (IRB) interfaces, link aggregation groups (LAGs), and loopback interfaces.
- **Policing support**—You can use policing to apply limits to traffic flow and to set consequences for packets that exceed those limits.
- **Storm control support**—You can enable the switch to monitor traffic levels and take a specified action when a specified traffic level—called the storm control level—is exceeded, preventing packets from proliferating and degrading service. You can configure a switch to drop broadcast and unknown unicast packets, shut down interfaces, or temporarily disable interfaces when a traffic storm occurs.

### **System Management**

- **Login authentication using RADIUS and TACACS+**—You can use RADIUS and TACACS+ authentication to validate users who attempt to access the switch.
- **System utilization alarms support**—This feature provides system alarms to alert you of high disk usage in the **/var** partition on the switch. You can display these alarm messages by issuing the **show system alarms** operational mode command if the **/var** partition usage is higher than 75 percent. A usage level between 76 and 90 percent indicates high usage and triggers a minor alarm condition, whereas a usage level over 90 percent indicates that the partition is full and triggers a major alarm condition.

### **Traffic Management**

- **Class of service (CoS)**—When a packet traverses a switch, the switch provides the appropriate level of service to the packet using either default class-of-service (CoS) settings or CoS settings that you configure. On ingress ports, the switch classifies packets into appropriate forwarding classes and assigns a loss priority to the packets. On egress ports, the switch applies packet scheduling and any rewrite rules to re-mark packets.
- **Class-of-service (CoS) rewrite rules and classifier support**—You can use rewrite rules to set the value of the CoS bits within a packet header, and thereby alter the CoS settings of incoming packets. Packet classification maps incoming packets to a particular class-of-service (CoS) servicing level. You can use classifiers to map packets to a forwarding class and a loss priority and to assign packets to output queues based on the forwarding class.
- **Port scheduling with queue shaping support**—You can manage excess traffic and avoid congestion on a network interface where traffic might exceed the maximum port

bandwidth. You can manage parameters such as transmit rate, shaping rate, and priority on each queue.

- Related Documentation**
- [New and Changed Features on page 3](#)
  - [Changes in Behavior and Syntax on page 7](#)
  - [Known Behavior on page 7](#)
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## Changes in Behavior and Syntax

There are no changes in default behavior and syntax in Junos OS Release 15.1X53-D50 for EX2300 and EX3400 switches.

- Related Documentation**
- [New and Changed Features on page 3](#)
  - [Changes in Behavior and Syntax on page 7](#)
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## Known Behavior

This section lists known behavior, system maximums, and limitations in hardware and software in Junos OS Release 15.1X53-D50 for EX2300 and EX3400 switches.

For the most complete and latest information about known Junos OS defects, use the Juniper Networks online [Junos Problem Report Search](#) application.

- [Class of Service](#)
- [Infrastructure](#)
- [Routing Policy and Firewall Filters](#)

### Class of Service

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- EX2300 switches do not support CoS over integrated routing and bridging (IRB) interfaces.

### Infrastructure

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- EX2300 switches do not support virtual routing and forwarding (VRF) instances on VPNs.
- EX2300 and EX3400 switches do not support IPv4 or IPv6 source guard.
- On EX2300 and EX3400 switches, protocol hello timers for LACP, VRRP, and BFD must be configured to more than 2 seconds to prevent protocol flaps during system events such as Routing Engine switchover and interface flaps.
- EX2300 switches do not support URPF.
- EX2300 switches do not support neighbor discovery inspection.

### Routing Policy and Firewall Filters

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- EX3400 switches do not support filter-based forwarding (FBF) of IPv6 traffic.
- EX2300 switches do not support a combination of (router) firewall filters, ingress port firewall filters, and ingress VLAN firewall filters on the same interface.

#### Related Documentation

- [New and Changed Features on page 3](#)
- [Changes in Behavior and Syntax on page 7](#)
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### Known Issues

This section lists the known issues in hardware and software in Junos OS Release 15.1X53-D51 for EX2300 and EX3400 switches.

For the most complete and latest information about known Junos OS defects, use the Juniper Networks online [Junos Problem Report Search](#) application.

- [Class of Service](#)
- [High Availability](#)
- [Infrastructure](#)



- [Layer 2 Features](#)
- [Layer 3 Protocols](#)
- [Network Management](#)
- [Routing Policy and Firewall Filters](#)
- [Virtual Chassis](#)

### [Class of Service](#)

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- On EX2300 switches, a packet loss priority (PLP) of medium-low PLP is not supported for firewall filter configurations. [\[PR1180586\]](#)
- EX2300 and EX3400 switches do not support weighted random early detection (WRED) profiles. [\[PR1187354\]](#)

### [High Availability](#)

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- DHCP renew or release packets might not be forwarded to the server when the EX2300 switch acts as a VRRP node. [\[PR1157056\]](#)

### [Infrastructure](#)

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- On an EX3400 switch, CLI upgrades might fail with an **insufficient space** error. As a workaround, if there is not enough space for an upgrade, use the **request system storage cleanup** command to clear up space.  
[\[PR1148911\]](#)
- The EX3400 switch might shift to debug mode prompt or initiate an autoreboot after multiple reboots and switchovers. [\[PR1172524\]](#)
- EX2300 and EX3400 switches do not support VRRP authentication. [\[PR1172775\]](#)
- On EX3400 switches, the console response might become slow when ARP requests are sent at 5% of the line rate to the management interface. [\[PR1181891\]](#)
- On EX3400 and EX2300 switches, Junos OS volume recovery might not work after the switch is booted from a USB recovery snapshot. [\[PR1186127\]](#)

### [Layer 2 Features](#)

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- On EX3400 and EX2300 switches, for the **mac-move-limit** statement, the **drop** and **drop-and-log** actions might not work. [\[PR1178693\]](#)
- On EX2300 and EX3400 switches, the **hash-mode** option is not available at the **[forwarding-options enhanced-hash-key]** hierarchy. [\[PR1188866\]](#)
- On EX3400 and EX2300 switches, LLDP, LACP, and MVRP protocol options are not available under the **mac-rewrite** configuration statement. [\[PR1189353\]](#)

### Layer 3 Protocols

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- On EX2300 and EX3400 switches, LLDP neighbors might not be formed over Layer 3 tagged interfaces. [\[PR1190585\]](#)

### Network Management

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- Real-time performance monitoring (RPM) probe-server for ICMP or UDP might not work for EX2300 and EX3400 switches. [\[PR1188841\]](#)

### Routing Policy and Firewall Filters

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- On EX3400 switches, filter bind might fail because of TCAM unavailability when:
  - a filter that has more than the supported number of terms is applied on an ingress or egress interface
  - the extra terms are removed from such a filter and the configuration is committed again

As a workaround, unbind the filter and bind it again to the interface. [\[PR1181501\]](#)

### Virtual Chassis

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- On an EX2300 Virtual Chassis, the **request system reboot all-members at now** command might reboot only that particular switch in the Virtual Chassis from which the command is issued. [\[PR1188016\]](#)

#### Related Documentation

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### Resolved Issues

This section lists the issues fixed in the Junos OS main release and the maintenance releases.

For the most complete and latest information about known Junos OS defects, use the Juniper Networks online [Junos Problem Report Search](#) application.

- [Class of Service](#)
- [Layer 2 Features](#)

- [Infrastructure](#)
- [Network Management](#)
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### [Class of Service](#)

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- On EX3400 switches, CoS rewrite does not work on IRB interfaces. [\[PR1190361\]](#)

### [Layer 2 Features](#)

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- On EX2300 switches, rate-limiting is observed on 10-Gigabit ports after storm control configuration is removed. [\[PR1189027\]](#)

### [Infrastructure](#)

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- EX2300 switches do not support the Energy Efficient Ethernet (EEE) feature. [\[PR1178790\]](#)
- On EX3400 and EX2300 switches, the **request system zeroize media** command might not erase USB snapshot. [\[PR1183830\]](#)
- On EX3400 switches, the output of the **show macsec statistics** command might not display MACsec counter details. [\[PR1189042\]](#)
- On an EX3400 switch, if *N+N* PSU redundancy is configured, the switch might not revert to the *N+0* mode. [\[PR1191731\]](#)
- On EX3400 and EX2300 switches, when the client is authenticated in either dynamic, server-fail, server-reject, or guest VLAN multiple supplicant modes, ping failure might be seen between the client and switch. [\[PR1192363\]](#)

### [Network Management](#)

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- On EX2300 and EX3400 switches, sFlow sampling might not work for egress traffic. [\[PR1185677\]](#)

### [Virtual Chassis](#)

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- On an EX3400 switch, the virtual management ethernet (VME) interface might not be reachable after a reboot or switchover. As a workaround, enter the **ifconfig me0 down** command at the shell prompt. [\[PR1187433\]](#)

#### Related Documentation

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## Documentation Updates

There are no errata or changes in Junos OS Release 15.1X53-D50 for the EX Series switches documentation.

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## Migration, Upgrade, and Downgrade Instructions

This section contains the upgrade and downgrade support policy for Junos OS for the EX Series. Upgrading or downgrading Junos OS can take several hours, depending on the size and configuration of the network.

For information about software installation and upgrade, see the [Installation and Upgrade Guide](#).

- [Upgrade and Downgrade Support Policy for Junos OS Releases on page 12](#)

### Upgrade and Downgrade Support Policy for Junos OS Releases

Support for upgrades and downgrades that span more than three Junos OS releases at a time is not provided, except for releases that are designated as Extended End-of-Life (EEOL) releases. EEOL releases provide direct upgrade and downgrade paths—you can upgrade directly from one EEOL release to the next EEOL release, even though EEOL releases generally occur in increments beyond three releases.

You can upgrade or downgrade to the EEOL release that occurs directly before or after the currently installed EEOL release, or to two EEOL releases before or after. For example, Junos OS Releases 10.0, 10.4, and 11.4 are EEOL releases. You can upgrade from Junos OS Release 10.0 to Release 10.4 or even from Junos OS Release 10.0 to Release 11.4. However, you cannot upgrade directly from a non-EEOL release that is more than three releases ahead or behind. For example, you cannot directly upgrade from Junos OS Release 10.3 (a non-EEOL release) to Junos OS Release 11.4 or directly downgrade from Junos OS Release 11.4 to Junos OS Release 10.3.

To upgrade or downgrade from a non-EEOL release to a release more than three releases earlier or later, first upgrade to the next EEOL release and then upgrade or downgrade from that EEOL release to your target release.

For more information about EEOL releases and to review a list of EEOL releases, see <http://www.juniper.net/support/eol/junos.html>.

For information about software installation and upgrade, see the [Installation and Upgrade Guide](#).

**Related  
Documentation**

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## Product Compatibility

- [Hardware Compatibility on page 13](#)

### Hardware Compatibility

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To obtain information about the components that are supported on the devices, and the special compatibility guidelines with the release, see the Hardware Guide for the product.

To determine the features supported on EX Series switches in this release, use the Juniper Networks Feature Explorer, a Web-based application that helps you to explore and compare Junos OS feature information to find the right software release and hardware platform for your network. Find Feature Explorer at <http://pathfinder.juniper.net/feature-explorer/>.

**Related  
Documentation**

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## Documentation Feedback

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We encourage you to provide feedback, comments, and suggestions so that we can improve the documentation. You can provide feedback by using either of the following methods:

- Online feedback rating system—On any page at the Juniper Networks Technical Documentation site at <http://www.juniper.net/techpubs/index.html>, simply click the stars to rate the content, and use the pop-up form to provide us with information about your experience. Alternately, you can use the online feedback form at <http://www.juniper.net/techpubs/feedback/>.
- E-mail—Send your comments to [techpubs-comments@juniper.net](mailto:techpubs-comments@juniper.net). Include the document or topic name, URL or page number, and software version (if applicable).

## Requesting Technical Support

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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 postsales technical support, you can access our tools and resources online or open a case with JTAC.

- JTAC policies—For a complete understanding of our JTAC procedures and policies, review the JTAC User Guide located at <http://www.juniper.net/us/en/local/pdf/resource-guides/7100059-en.pdf>.
- Product warranties—For product warranty information, visit <http://www.juniper.net/support/warranty/>.
- JTAC Hours of Operation —The JTAC centers have resources available 24 hours a day, 7 days a week, 365 days a year.

## Self-Help Online Tools and Resources

For quick and easy problem resolution, Juniper Networks has designed an online self-service portal called the Customer Support Center (CSC) that provides you with the following features:

- Find CSC offerings: <http://www.juniper.net/customers/support/>
- Search for known bugs: <http://www2.juniper.net/kb/>
- Find product documentation: <http://www.juniper.net/techpubs/>
- Find solutions and answer questions using our Knowledge Base: <http://kb.juniper.net/>
- Download the latest versions of software and review release notes: <http://www.juniper.net/customers/csc/software/>
- Search technical bulletins for relevant hardware and software notifications: <http://kb.juniper.net/InfoCenter/>

- Join and participate in the Juniper Networks Community Forum:  
<http://www.juniper.net/company/communities/>
- Open a case online in the CSC Case Management tool: <http://www.juniper.net/cm/>

To verify service entitlement by product serial number, use our Serial Number Entitlement (SNE) tool located at <https://tools.juniper.net/SerialNumberEntitlementSearch/>.

## Opening a Case with JTAC

You can open a case with JTAC on the Web or by telephone.

- Use the Case Management tool in the CSC at <http://www.juniper.net/cm/>.
- Call 1-888-314-JTAC (1-888-314-5822 toll-free in the USA, Canada, and Mexico).

For international or direct-dial options in countries without toll-free numbers, visit us at <http://www.juniper.net/support/requesting-support.html>.

If you are reporting a hardware or software problem, issue the following command from the CLI before contacting support:

```
user@host> request support information | save filename
```

To provide a core file to Juniper Networks for analysis, compress the file with the **gzip** utility, rename the file to include your company name, and copy it to **ftp.juniper.net/pub/incoming**. Then send the filename, along with software version information (the output of the **show version** command) and the configuration, to **support@juniper.net**. For documentation issues, fill out the bug report form located at <https://www.juniper.net/cgi-bin/docbugreport/>.

## Revision History

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9 June 2016—Revision 1, Junos OS for EX2300 and EX3400 Switches, Release 15.1X53-D50

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