

**Oracle Communications IP Service Activator™ Cartridge
Version 5.2.4**

Juniper JUNOS Cartridge Guide

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ORACLE®

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About this Guide

The Juniper JUNOS Cartridge Guide provides detailed technical information about the IP Service Activator Juniper JUNOS cartridge, including supported features, device configuration information, and a sample device configuration.

Audience

This guide is intended for network managers and technical consultants responsible for implementing Oracle Communications IP Service Activator within a network using Juniper routers.

Before contacting Oracle Global Customer Support (GCS)

If you have an issue or question, Oracle recommends reviewing the product documentation and articles on MetaLink in the Top Technical Documents section to see if you can find a solution. MetaLink is located at <http://metalink.oracle.com>.

In addition to MetaLink, product documentation can also be found on the product CDs and in the product set on Oracle E-Delivery.

Within the product documentation, the following publications may contain problem resolutions, work-arounds and troubleshooting information:

- Release Notes
- Oracle Installation and User's Guide
- README files

Contacting Oracle Global Customer Support (GCS)

You can submit, update, and review service requests (SRs) of all severities on MetaLink, which is available 24 hours a day, 7 days a week. For technical issues of an urgent nature, you may call Oracle Global Customer Support (GCS) directly.

Oracle prefers that you use MetaLink to log your SR electronically, but if you need to contact GCS by telephone regarding a new SR, a support engineer will take down the information about your technical issue and then assign the SR to a technical engineer. A technical support representative for the Oracle and/or former Oracle Communications products will then contact you.

Note that logging a new SR in a language other than English is only supported during your local country business hours. Outside of your local country business hours, technical issues are supported in English only. All SRs not logged in English outside of your local country business hours

will be received the next business day. In order to obtain the broadest access to skilled technical support, Oracle advises you to log new SRs in English.

Oracle GCS can be reached locally in each country. Refer to the Oracle website for the support contact information in your country. The Oracle support website is located at <http://www.oracle.com/support/contact.html>.

Downloading products and documentation

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You can purchase a hard copy of Oracle product documentation on the Oracle store site, located at <http://oraclestore.oracle.com>.

For a complete selection of Oracle documentation, go to the Oracle documentation site, located at <http://www.oracle.com/technology/documentation>.

Downloading a media pack

To download a media pack from Oracle E-Delivery:

1. Go to <http://edelivery.oracle.com>.
2. Select the appropriate language and click **Continue**.
3. Enter the appropriate **Export Validation** information, accept the license agreements and click **Continue**.
4. For **Product Pack**, select **Oracle Communications Applications**.
5. For **Platform**, select the appropriate platform for your installation.
6. Click **Go**.
7. Select the appropriate media pack and click **Continue**.
8. Click **Download** for the items you wish to download.
9. Follow the installation documentation for each component you wish to install.

IP Service Activator publications

The IP Service Activator documentation suite includes a full range of publications. Refer to the IP Service Activator *Release Notes* for more information.

Cartridge Overview

Oracle Communications IP Service Activator cartridges enable you to quickly, cost-effectively, and seamlessly support your existing services, and also continuously evolve to support emerging services and business needs. The cartridges operate in conjunction with IP Service Activator core product. These cartridges offer the following benefits:

Reduced Time to Market—time to market of new services is reduced through simplified development, implementation, and extension of cartridges on customer sites.

Extendable—cartridges can be extended to include additional services and components that deliver business value, without requiring changes to the original cartridge.

Simplified Effort—the effort and technical knowledge that is required to perform customizations is reduced.

Ease of Installation—cartridges can be installed without interfering with the existing IP Service Activator install base.

Features

This chapter outlines IP Service Activator support of Juniper devices. The IP Service Activator supported features are listed in the following tables.

Legend

Feature support is indicated in each table, according to the following legend:

Icon	Definition
●	Supported
◐	Partially supported
○	Not supported

General IP Service Activator features

IP Service Activator Feature	Juniper JUNOS Cartridge
Configuration Protocol Support	
Telnet	●
SSH	●
SNMP	○
Vendor Proprietary	○
Device Discovery	
SNMP	●
Discovery Module	○
Device Configuration	
Configuration Audit	●
Command Re-issue	○
Auto ID Migration	○
Save Running Configuration	● ¹
Configuration Version	○
Configuration Options	○
Synonyms	○
Command Thresholding	●
Threshold Activated Configuration Control	○
Supported Services	
Interface Configuration Management	◐
QoS	◐
Layer 3 MPLS VPN	●
Point-to-Point CCC	○
Point-to-Point VLL Martini	○
VPLS	○
SAA	○
Netflow	○
Dynamic User VPN	○

¹ Transactional commits

IPSec	○
VRF-aware IPSec	○
LSP	○
VLAN	○
Base Configuration Policies	●
Layer 2 QoS	○
QoS Attachment	●
VRF Route Maps	●
VPN and IP Multicast Module	○
Configuration Template Manager	●
SDK	
Service Cartridge SDK	○
Configuration Policy SDK	○

Layer 3 MPLS VPN

IP Service Activator Feature	Juniper JUNOS Cartridge
Layer 3 MPLS VPN Support	●
Topology	
Mesh	●
Hub and spoke	○
Management	○
Addressing	
Public IP	○
Private IP	●
Unnumbered	○
Interface description	○
VRF Table	
VRF export map reference	●
VRF import map reference	●
VRF DHCP Helper	○
VRF Description	●
VRF Label	●
VRF Route Targets	●
VRF Table Name	●
VRF Route Distinguisher	●
VRF route limit (max routes)	○
EIBGP Multi-path load sharing	○
EBGP Multi-path load sharing	○
EIGRP Multi-path load sharing	○
IBGP Multi-path load sharing	○
IBGP unequal-cost	○
VRF Import (max paths)	○
VRF Target	●
VRF Reduction	●
Force install	○
Shareable	○
OSPF Router ID	○
Interface-less VRF	○
Static routing	●
Static Global routes	●
Static Local Routes (redistribution)	●
Static Permanent routes	●
Static Tag Value	●

Static next hop IP address	●
Static next hop interface	●
Static next hop IP and interface	●
Static Route to Null0	●
BGP	
BGP Network Statements	○
BGP Aggregate Statements	○
eBGP	○
EBGP AS override	○
EBGP Site of Origin	○
Remove private AS	○
EBGP Update source	○
EBGP Multihop	○
EBGP Allow AS in	○
EBGP PE-CE MD5 authentication	○
EBGP Local AS	○
EBGP Local AS No prepend	○
EBGP Neighbor Description	○
EBGP Soft Reconfiguration	○
EBGP Prefix Limit	○
EBGP Prefix Limit Restart	○
EBGP Prefix filters	○
EBGP Standard community attributes	○
EBGP Extended community attributes	○
EBGP Timers	○
Keep alive	○
Hold Timer	○
EBGP Neighbor Advertisement Interval	○
EBGP Inbound Route Map	○
External Route Map	○
Generated Route Map	○
EBGP Local preference	○
EBGP Site of Origin route-map	○
Route Map Name	○
EBGP Outbound Route Map	○
External Route Map	○
EBGP Route dampening	○
Redistribution into BGP	○
BGP Redistribution Metric and Policy from Connected	○
BGP Redistribution Metric and Policy from Static	○
BGP Redistribution Metric and Policy from RIP	○
BGP Redistribution Metric and Policy from OSPF	○
BGP Redistribution Metric and Policy from EIGRP	○
Default Route	○
OSPF	○
OSPF Area Type	○
OSPF NSSA Type 7 Redistribution	○
OSPF Maximum Paths	○
OSPF Cost	○
OSPF BGP Redistribution tag	○
OSPF Distribute in filter	○
OSPF Distribute out filter	○
OSPF SPF Throttling	○
OSPF MD5 authentication	○
OSPF Summary Addresses	○
Suppress Advertise	○

Tag Value	<input type="radio"/>
Redistribution into OSPF	<input type="radio"/>
OSPF Redistribution Metric and Policy from Connected	<input type="radio"/>
OSPF Redistribution Metric and Policy from Static	<input type="radio"/>
OSPF Redistribution Metric and Policy from RIP	<input type="radio"/>
OSPF Redistribution Metric and Policy from BGP	<input type="radio"/>
OSPF Redistribution Metric and Policy from EIGRP	<input type="radio"/>
Default Route	<input type="radio"/>
RIP	<input type="radio"/>
RIP Ignore Routes from Source	<input type="radio"/>
RIP Passive Interface	<input type="radio"/>
Redistribution into RIP	<input type="radio"/>
RIP Redistribution Metric and Policy from Connected	<input type="radio"/>
RIP Redistribution Metric and Policy from Static	<input type="radio"/>
RIP Redistribution Metric and Policy from OSPF	<input type="radio"/>
RIP Redistribution Metric and Policy from BGP	<input type="radio"/>
RIP Redistribution Metric and Policy from EIGRP	<input type="radio"/>
Default Route	<input type="radio"/>
EIGRP	<input type="radio"/>
EIGRP Device ASN	<input type="radio"/>
EIGRP Site ASN	<input type="radio"/>
EIGRP Site of Origin	<input type="radio"/>
EIGRP Route-map name for SOO	<input type="radio"/>
EIGRP MD5 Authentication	<input type="radio"/>
EIGRP Maximum Paths	<input type="radio"/>
EIGRP Redistribution	<input type="radio"/>
EIGRP Redistribution Metrics and Policy from Connected	<input type="radio"/>
EIGRP Redistribution Metrics and Policy from Static	<input type="radio"/>
EIGRP Redistribution Metrics and Policy from BGP	<input type="radio"/>
EIGRP Redistribution Metrics and Policy from OSPF	<input type="radio"/>
EIGRP Redistribution Metrics and Policy from RIP	<input type="radio"/>

Layer 2 QoS

IP Service Activator Feature	Juniper JUNOS Cartridge
catOSPolicingRule Configuration Policy	<input type="radio"/>
Policing Rule IP Classification Criteria	<input type="radio"/>
Classification based on Trust Type	<input type="radio"/>
Classification based on DiffServ Code Point	<input type="radio"/>
Classification based on Source IPv4 Address	<input type="radio"/>
Classification based on Source IPv6 Address	<input type="radio"/>
Classification based on Destination IPv4 Address	<input type="radio"/>
Classification based on Destination Ipv6 Address	<input type="radio"/>
Policing Rule MAC Classification Criteria	<input type="radio"/>
Classification based on Trust Type	<input type="radio"/>
Classification based on DiffServ Code Point	<input type="radio"/>
Classification based on Source MAC Address	<input type="radio"/>
Classification based on Destination MAC Address	<input type="radio"/>
Policing Rule IPX Classification Criteria	<input type="radio"/>
Classification based on Trust Type	<input type="radio"/>
Classification based on DiffServ Code Point	<input type="radio"/>

Classification based on Source MAC Address	○
Classification based on Destination MAC Address	○
Classification based on Protocol	○
Classification based on Source IPX Address	○
Classification based on Destination IPX Address	○
rate-limit Configuration Policy	○
juniperQosCosAttachment Configuration Policy	●
qosCosAttachment Configuration Policy	○

Interface Configuration Management

IP Service Activator Feature	Juniper JUNOS Cartridge
Subinterface Creation	
atmSubInterfaceData	●
frSubInterfaceData	●
vlanSubInterfaceData	●
Interface Decoration	
plPosInterfaceData	●
plSerialInterfaceData	●
ciscoUniversalInterface	○
ciscoEthernetPortCharacteristics	○
Interface Creation and Decoration	
loopbackInterfaceData	●
virtualTemplateInterface	○
basicRateInterfaceData	○
dialerInterface	○
multilinkInterface	○
Channelized Interface Creation	
e1ChannelizedInterface	○
e1Controller	○
e3ChannelizedSerialInterface	○
e3Controller	○
stm1ChannelizedSerialInterface	○
stm1Controller	○
t1ChannelizedSerialInterface	○
t1Controller	○
t3ChannelizedSerialInterface	○
t3Controller	○
Other	
backUpInterfacePolicy	○
dialerList	○
dswDevice	○
dswEthernetInterface	○
dswTokenRingInterface	○
hsrp	○
pppMultilink	○
sGBP	○

Base Configuration Policies

IP Service Activator Feature	Juniper JUNOS Cartridge
banners Configuration Policy	○
ipPools Configuration Policy	○
keyChains Configuration Policy	○
prefixListEntries Configuration Policy	●
snmpCommunities Configuration Policy	○
snmpHosts Configuration Policy	○
staticRoutes Configuration Policy	●
userAuth Configuration Policy	○
userData Configuration Policy (provided for generic data model annotation only)	○

Unsupported features

The following features are not currently supported with the IP Service Activator Juniper JUNOS Cartridge:

Layer 2 VLL

VLAN

VPLS

QoS

Service Assurance

Netflow

DU VPN

LSP

IPSec

VRF-aware IPSec

VRF and IP Multicast

VRF Route Maps

Juniper hardware and software

Refer to the IP Service Activator *Release Notes* for complete information on the Juniper platforms supported with the Juniper JUNOS cartridge.

Operating systems

Refer to the *Release Notes* for complete information about supported operating systems for the Juniper JUNOS cartridge.

Installing the Cartridge

Refer to the IP Service Activator *Setup Guide* for the cartridge installation and un-installation procedures.

Installing configuration policies

IP Service Activator supports extensible configuration policies that are seen through the GUI. Each configuration policy includes one CFG file and one or more zipped HTML files.

Refer to the IP Service Activator *Setup Guide* for the configuration policy installation procedure.

Refer to the IP Service Activator *Online Help* for more information on configuration policies, interface policy registration and interface/sub-interface creation.

Device Configuration

Supported authentication methods

The supported authentication methods are listed in the following table as an example.

Device Access		All Devices
Telnet	TACACS+	✓
	None	
SSH	SSH	✓

Manual pre-configuration

Perform the following activities to pre-configure devices.

General activation and discovery

Identify the items that need to be configured on the device, for example: SNMP and Telnet. Refer to the appropriate Juniper documentation for configuration details.

MPLS BGP

IP Service Activator supports:

- Basic MPLS core configuration
- BGP configuration, such as OSPF, in the MPLS core network

Refer to the appropriate Juniper documentation for more information. Go to:

<http://www.juniper.net/techpubs/>

Setting up a Juniper system group

This procedure explains how to set up a Juniper system group.

To specify the name of the system group to use when pushing configurations to Juniper devices, you must edit the Network Processor **default.properties** file available in:

```
/<SERVICE_ACTIVATOR_HOME>/Config/networkProcessor/com/metasolv/serviceactivator/networkprocessor
```


Modify the value of **groupName** if necessary. This value indicates the group that IP Service Activator will be installed under. The default value for **groupName** is 'oracle'.

For example, if you wish to modify the value of **groupName** to 'system', make the change as follows:

```
groupName = system
```

To configure the new system group audit template XML file, you must modify the 'deletable' attributes by setting them to 'true' or 'false' in the **MIPSA.registry.xml** file.

Note: The default value for a 'deletable' attribute is 'true'.

To change the system group, you must first remove all configurations from the Juniper devices, shutdown IP Service Activator, change the **groupName** in the **default.properties** file, and restart IP Service Activator before pushing the new configuration. Oracle recommends selecting the system group at installation to avoid having to switch at a later time.

Setting up configuration thresholding

Configuration thresholding provides a safety mechanism that blocks any device configuration action by IP Service Activator that exceeds certain user-specified parameters. For information on how to set up configuration thresholding, see *Managing Configuration Thresholding* in the IP Service Activator *Online Help*.

Setting up other properties

This procedure explains how to set up different properties for the IP Service Activator Juniper JUNOS Cartridge.

To specify the name of the property to use when pushing configurations to Juniper devices, you must edit the Network Processor **default.properties** file available in:

```
/ <SERVICE_ACTIVATOR_HOME>/Config/networkProcessor/com/metasolv/serviceactivator/networkprocessor
```

Set the value of **lockConfiguration** if necessary. You can set the attribute to 'true' or 'false' to enable or disable this property. If enabled **lockConfiguration** locks the configuration on the router instead of opening a private configuration.

Set the value of **junosCommitSync** if necessary. You can set the attribute to 'true' or 'false' to enable or disable this property. If this property is enabled, the synchronize option is used on any commit or commit checks. This enables the router to synchronize configurations between multiple routing engines.

Set the value of **juniperCommitCheckWarningValidation** if necessary. You can set the attribute to 'true' or 'false' to enable or disable this property. If enabled, this property allows performing commit checks before each commit. This process determines if there are any warnings which may stop the transaction. It allows failing and rolling back without committing the changes to the router. This property is enabled by default.

Appendix A: Options Framework

By using the options framework in the Juniper XML Cartridge, you can control the variations in configuration style for different device types and IOSs. These options are registered by the cartridge in the **MIPSA_registry.xml** file. A sample file is displayed below:

```

...
<!-- JUNOS 7.1 -->
<cartridgeUnit>
<name>com.metasolv.serviceactivator.cartridges.juniperXML.units.cul.M20.7.1</name>
<driverType>juniper</driverType>
<deviceType>Juniper JuniperM20</deviceType>
<osVersion>7.1</osVersion>
<smToDmQuery>com/metasolv/serviceactivator/cartridges/juniperXML/units/cul/sm2dm.xq</smToDmQuery>
<dmValidation/>
<dmToCliQuery>com/metasolv/serviceactivator/cartridges/juniperXML/units/cul/annotatedDm2Cli.xq</dmToCliQuery>
<auditQuery>com/metasolv/serviceactivator/cartridges/juniperXML/units/cul/auditTransform.xq</auditQuery>
<capabilities>juniperXML/capabilities/juniper_cap.xml</capabilities>
<options>juniperXML/options/juniperXML_options.xml</options>
<commandExecutor>com.metasolv.serviceactivator.cartridges.juniperXML.commandExecutor.JuniperXMLCommandExecutor</commandExecutor>
<errorMessages></errorMessages>
<warningMessages>juniperXML/messages/warningMessages.xml</warningMessages>
<successMessages></successMessages>
</cartridgeUnit>
...

```

The **<options>** entry references an option configuration file in the **classpath** application.

For example, the file **JuniperM20-7.1.xml** is located in the following directory:

<SERVICE_ACTIVATOR_HOME>/Config/networkProcessor/com/oracle/ipsa/options

A sample file is displayed below:

```

<base:options xsi:type="CartridgeOptions"
xmlns="http://www.metasolv.com/serviceactivator/juniperXML/options"
xmlns:base="http://www.metasolv.com/serviceactivator/options"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">

<cartridge.juniperXML.vpn.addInterfaceToProtocolMpls>false</cartridge.juniperXML.vpn.addInterfaceToProtocolMpls>
</base:options>

```

Configuration options

The following table lists the configuration options for the Juniper XML Cartridge. Oracle recommends configuring the option at deployment. For the options file to be valid, you must enter the options definition in the order documented below. The default value is used if an options entry is not defined.

Note: If you change an options value for a device that has existing configurations provisioned by IP Service Activator, the configurations are removed and re-added using the new configuration style.

Option	Default Value	Description	SM2DM	DM2CLI
cartridge.juniperXML.vpn.addInterfaceToProtocolMpls	false	<p>JuniperXML Add VPN interface to Protocol MPLS</p> <p>Add VPN interface to Protocol MPLS</p> <p>Impact: When enabled as 'true' this would generate the VPN interface name inside "protocol mpls interface".</p>	Supported	Not Supported