
SNMP MONITORING GUIDE

APPLICABLE TO: SRX Platforms

SUMMARY:

This document describes guidelines on monitoring SRX Devices for health and stability via SNMP.

PROCEDURE:

1. Download Junos Enterprise MIBs from Junos Download site by selecting a Junos product and Junos version. Select the Software Tab and under Application & Tools you will locate the Enterprise Mibs. (Note the Junos MIB file is applicable to all Junos products and contains a TGZ of both Standard as well as Junos Enterprise MIBs)

<http://www.juniper.net/support/downloads/junos.html>

2. The specific MIBs used by the below OIDs are: mib-jnx-chassis, mib-jnx-js-spu-monitoring, mib-jnx-js-nat, and mib-jnx-jsrpd.
3. Install MIBs to monitoring device
4. Setup Junos for SNMP Queries

<http://www.juniper.net/techpubs/software/junos-security/junos-security10.2/mib-srx3400-srx3600-service-gateway/topic-21513.html>

<http://kb.juniper.net/InfoCenter/index?page=content&id=KB16545>

NOTES:

- Safe and critical values are essentially guides to assist in establishing some monitoring. Adjustments may be necessary depending on configurations to be done on the devices but most of the values are known best practice values and recommendations.
- SNMP OID query responses may include responses for different parts of the device. To understand the mapping correlation of the response IDs to device components use SNMP OID jnxOperatingDescr (1.3.6.1.4.1.2636.3.1.13.1.), part of the Juniper Enterprise MIB mib-jnx-chassis.

Example:

Using OID jnxOperatingDescr a user can locate the system component IDs to allow mapping to SNMP query outputs.

```

root@srx_650> show snmp mib walk 1.3.6.1.4.1.2636.3.1.13.1.5
jnxOperatingDescr.1.1.0.0 = node0 midplane
jnxOperatingDescr.2.1.0.0 = node0 PEM 0
jnxOperatingDescr.4.1.0.0 = node0 SRXSME Chassis Fan Tray
jnxOperatingDescr.7.1.0.0 = node0 FPC: FPC @ 0/*/*
jnxOperatingDescr.7.2.0.0 = node0 FPC: FPC @ 1/*/*
jnxOperatingDescr.7.3.0.0 = node0 FPC: FPC @ 2/*/*
jnxOperatingDescr.7.7.0.0 = node0 FPC: FPC @ 6/*/*
jnxOperatingDescr.7.8.0.0 = node0 FPC: FPC @ 7/*/*
jnxOperatingDescr.7.9.0.0 = node0 FPC: FPC @ 8/*/*
jnxOperatingDescr.8.1.1.0 = node0 PIC: 4x GE Base PIC @ 0/0/*
jnxOperatingDescr.8.3.1.0 = node0 PIC: 16x GE POE gPIM @ 2/0/*
jnxOperatingDescr.8.7.1.0 = node0 PIC: 2x 10G xPIM @ 6/0/*
jnxOperatingDescr.8.8.1.0 = node0 PIC: 2x CT1E1 gPIM @ 7/0/*
jnxOperatingDescr.8.9.1.0 = node0 PIC: 4x CT1E1 gPIM @ 8/0/*
jnxOperatingDescr.9.1.0.0 = node0 Routing Engine
jnxOperatingDescr.9.1.1.0 = node0 USB Hub
jnxOperatingDescr.9.1.2.0 = node0 Removable Compact Flash

```

Using the above knowledge of the Routing Engine having ID 9.1.0.0, it can be applied when looking at responses for queries related to the Routing Engine such as SNMP polling for CPU usage.

```

root@srx_650> show snmp mib walk 1.3.6.1.4.1.2636.3.1.13.1.8
jnxOperatingCPU.1.1.0.0 = 0
jnxOperatingCPU.2.1.0.0 = 0
jnxOperatingCPU.4.1.0.0 = 0
jnxOperatingCPU.7.1.0.0 = 0
jnxOperatingCPU.7.2.0.0 = 0
jnxOperatingCPU.7.3.0.0 = 0
jnxOperatingCPU.7.7.0.0 = 0
jnxOperatingCPU.7.8.0.0 = 0
jnxOperatingCPU.7.9.0.0 = 1
jnxOperatingCPU.8.1.1.0 = 0
jnxOperatingCPU.8.3.1.0 = 0
jnxOperatingCPU.8.7.1.0 = 0
jnxOperatingCPU.8.8.1.0 = 0
jnxOperatingCPU.8.9.1.0 = 1
jnxOperatingCPU.9.1.0.0 = 9 <---9% usage
jnxOperatingCPU.9.1.1.0 = 0
jnxOperatingCPU.9.1.2.0 = 0

```

```

root@srx_650> show chassis routing-engine | find "CPU utilization"
CPU utilization:
  User           5 percent
  Background     0 percent
  Kernel         4 percent
  Interrupt      0 percent
  Idle           91 percent
  Model          RE-SRXSME-SRE6
  Serial ID      ZQZQ7481
  Start time     2013-10-31 18:57:06 UTC
  Uptime         19 hours, 26 minutes, 5 seconds
  Last reboot reason 0x200:normal shutdown
  Load averages: 1 minute 5 minute 15 minute
                  0.10 0.08 0.08

```

COMMON OBJECTS FOR SNMP MONITORING:

Below are objects that can be used for monitoring the health of an SRX device and capacity.

NOTE: A full list of objects that can be monitored for SRX devices is available at the following locations:

SRX Branch MIB Reference

http://www.juniper.net/techpubs/en_US/junos11.4/information-products/topic-collections/srx100-srx210-srx220-srx240-srx650-snmp-mib-reference/book-mib-srx100-srx210-srx220-srx240-srx650-service-gateway.pdf

SRX 1400 & SRX-3X00 MIB Reference

http://www.juniper.net/techpubs/en_US/junos11.4/information-products/topic-collections/srx1400-srx3400-srx3600-snmp-mib-reference/index.html?book-snmp-mib-srx1400-srx3400-srx3600-service-gateway.html

SRX 5X00 MIB Reference

http://www.juniper.net/techpubs/en_US/junos11.4/information-products/topic-collections/srx5600-srx5800-snmp-mib-reference/index.html

JUNIPER MIB:

COMPONENT	OID	DESCRIPTION	TRAP	POLL	MORE INFORMATION
SESSIONS	1.3.6.1.4.1.2636.3.39.1.12.1.1.1.9 (jnxJsSPUMonitoringMaxCPSession)	SRX-HE Maximum CP Session availability CLI: <code>show security</code>		Y	Maximum Device Session capacity (Dependent upon # of SPCs installed in system)

		flow cp-session summary			
	1.3.6.1.4.1.2636.3.39.1.12.1.1.1.8 (jnxJsSPUMonitoringCurrentCPSession)	SRX-HE Current CP Session Count CLI: show security flow cp-session summary		Y	Current CP Session usage. < 80% of Max CP sessions 80-90% of Max may be considered normal depending upon network traffic but requires investigation if increase is sudden >90% Reaching Device limits ACTION: Review traffic patterns Review sessions numbers on PFE Review SRX Device type for capacity needs
	1.3.6.1.4.1.2636.3.39.1.12.1.1.1.7 (jnxJsSPUMonitoringMaxFlowSession)	SRX HE & Branch Maximum session availability per PFE CLI:		Y	SRX-HE has multiple SPU forwarding engines SRX-Branch has 1 PFE with maximum device capability based this value

		show security flow session summary			
	1.3.6.1.4.1.2636.3.39.1.12.1.1.1.6 (jnxJsSPUMonitoringCurrentFlowSession)	SRX HE & Branch Current PFE Session Count CLI: show security flow session summary		Y	< 80% of Max PFE Sessions Normal 80% –90 of Max PFE Sessions may be considered normal depending upon network traffic but requires investigation if increase is sudden >90% Reaching Device limits ACTION: Review traffic patterns Look for sessions with high inactivity timeouts Review Device type For SRX HE– Review SPC needs
CPU USAGE	1.3.6.1.4.1.2636.3.1.13.1.8 (jnxOperatingCPU)	SRX HE & Branch CPU usage of Routing Engine CLI: show chassis		Y	<85% No Action 85–95% Active Investigation recommended if increase is sudden or sustained on upper range >95% Device responsiveness for self traffic is likely

		routing-engine			<p>to be impacted</p> <p>ACTION:</p> <p>Disable traceoptions</p> <p>Clean up storage,</p> <p>Verify system processes</p>
	1.3.6.1.4.1.2636.3.39.1.12.1.1.1.4 (jnxJsSPUMonitoringCPUUsage)	<p>SRX HE & Branch</p> <p>CPU Usage of Packet Forwarding Engine</p> <p>CLI:</p> <p>show security monitoring fpc X</p>		Y	<p>< 80% No Action</p> <p>85–95% Active Investigation recommended if increase is sudden or sustained on upper range</p> <p>>95% Device responsiveness for transit traffic is likely to be impacted including session buildup</p> <p>ACTION:</p> <p>Review Traffic pattern</p> <p>Review PPS</p> <p>Review Session counts</p>
MEMORY	1.3.6.1.4.1.2636.3.1.13.1.11 (jnxOperatingBuffer)	<p>SRX-HE</p> <p>Used memory % for Routing Engine</p> <p>CLI:</p>		Y	<p>< 80% No Action</p> <p>80–95% Memory usage high and may impact system updates such as IDP route table additions</p>

		show chassis routing-engine			<p>>95% Device will begin active memory clean up attempts</p> <p>ACTION:</p> <p>Verify routing table size</p> <p>Verify System Processes in use</p> <p>Review system logs</p>
	1.3.6.1.4.1.2636.3.1.13.1.11 (jnxOperatingBuffer)	<p>SRX-Branch</p> <p>Used memory % for Routing Engine</p> <p>CLI:</p> <p>show chassis routing-engine</p>		Y	<p>Output is Total Device Memory usage including PFE Usage.</p> <p>To Calculate RE Usage</p> <p>For 1GB Systems</p> <p>RE Usage=((jnxOperatingBuffer *1024)-(jnxJsSPUMonitoringMemoryUsage *464))/560</p> <p>For 2GB Systems</p> <p>RE Usage=((jnxOperatingBuffer *2048)-(jnxJsSPUMonitoringMemoryUsage *944))/1104</p> <p>< 80% No Action</p> <p>80-95% Memory</p>

					<p>usage high and may impact system updates such as IDP route table additions</p> <p>>95% Device will begin active memory clean up attempts</p> <p>ACTION:</p> <p>Verify routing table size</p> <p>Verify System Processes in use</p> <p>Review system logs</p>
	1.3.6.1.4.1.2636.3.39.1.12.1.1.1.5 (jnxJsSPUMonitoringMemoryUsage)	SRX HE & Branch Packet Forwarding Memory Usage CLI: show security monitoring fpc X		Y	<p>< 80% No Action</p> <p>80–95% Investigation and monitoring needed as may indicate memory leak if usage is constant</p> <p>>95% Transit traffic may be impacted due to inability for forwarding operations</p> <p>ACTION:</p> <p>Review system logs</p> <p>Verify configuration for unused features</p>

					that be removed Disable non needed ALGs
NAT-SOURCE	1.3.6.1.4.1.2636.3.39.1.7.1.0 (jnxJsNatAddrPoolThresholdStatus)	SRX HE & Branch Configurable trap for Source NAT when using pools without PAT. (setup using “pool- utilization- alarm”)	Y		Recommendation to set trap for rising threshold of 80%. ACTION”: Verify traffic patterns Check for sessions with high timeout values Increase NAT IPs Implement Active/Passive PFE (for Chassis Clusters) Implement overflow-pool usage
	1.3.6.1.4.1.2636.3.39.1.7.1.1.3.1.2 (jnxJsNatIfSrcPoolTotalSinglePorts)	SRX HE & Branch Maximum Ports per Overload Pool when using Interface Nat translation CLI: show security nat interface- nat-ports		Y	Amount of available pools dependent upon device type
	1.3.6.1.4.1.2636.3.39.1.7.1.1.3.1.3	SRX HE &		Y	<80% of ports in

	(jnxJsNatIfSrcPoolAllocSinglePorts)	<p>Branch</p> <p>Amount of Ports per Overload Pool in use when using Interface Nat translation</p> <p>CLI:</p> <pre>show security nat interface- nat-ports</pre>			<p>use</p> <p>>80% of ports in use</p> <p>Monitor if usage is always in this range, active investigation needed if sudden spike</p> <p>100% of ports in use</p> <p>Session creation failure will be seen</p> <p>ACTION:</p> <p>Verify Traffic Pattern</p> <p>Check for sessions with high timeout values</p> <p>Implement Active/Passive PFE (for Chassis Clusters)</p> <p>Move to Source Nat with Pool Usage including Overflow Pool usage</p>
	1.3.6.1.4.1.2636.3.39.1.7.1.1.4.1.1 (jnxJsNatSrcPoolName)	<p>SRX HE & Branch</p> <p>Source Nat Pool Name.</p> <p>CLI:</p> <pre>show security</pre>		Y	Used to match Pool usage to Source Pool Name

		nat pool all			
	1.3.6.1.4.1.2636.3.39.1.7.1.1.4.1.5 (jnxJsNatSrcNumPortInuse)	SRX HE & Branch Ports in use when using Source-Nat Pool with PAT CLI: show security nat pool all		Y	<80% of ports in use >80% of ports in use Monitor if usage is always in this range, active investigation needed if sudden spike 100% of ports in use Session creation failure will be seen ACTION: Verify Traffic Pattern Check for sessions with high timeout values Implement Active/Passive PFE (for Chassis Clusters) Increase IPs in pool Implement source pool port- overloading-factor Implement Pool Overflow

TEMPERATURE	1.3.6.1.4.1.2636.4.1.3 (jnxOverTemperature)	SRX HE & Branch Trap raised when a device is reading high temperatures CLI: show chassis environment	Y		ACTION: Review ambient temperature Verify fan status Verify if all components reporting high temperatures
	1.3.6.1.4.1.2636.4.2.3 (jnxTemperatureOK)	SRX HE & Branch Recovery of Temperature CLI: show chassis environment	Y		ACTION: Monitor for repeat occurrence of high temperature reporting
	1.3.6.1.4.1.2636.3.1.13.1.7 (jnxOperatingTemp)	SRX HE & Branch Temperature of device and modules CLI: show chassis environment		Y	Spikes in temperature are expected as device will vary fan speeds based on temperature and length of temperature There are many temperature thresholds values depending upon device and module Important items to watch for are: SRX5k- RE, FPC (SPC/IOC) SRX3k - CB, SFB(FPC0),

				<p>NPC/IOC/SPC (FPC 1-7(12))</p> <p>SRX1k- CB, SYSIO</p> <p>SRXBranch-RE</p> <p>Use cli '>show chassis temperature-thresholds' to view thresholds for recommended thresholds</p> <p>ACTION:</p> <p>Check status of Fans</p> <p>Check ambient temperature and device spacing requirements</p> <p>For SRX3k - Re-arrange card placement (Avoid SPC next to SPC in left to right fashion , or place SPC next to fan input edge if possible)</p>
POWER SUPPLY	1.3.6.1.4.1.2636.4.1.1 (jnxPowerSupplyFailure)	SRX-HE and SRX-650-550 The status of a power supply	Y	<p>Investigation is needed.</p> <p>ACTION:</p> <p>Verify power input</p>

		has changed CLI: show chassis environment pem			Re-seat power supply, RMA may be needed
FAN	1.3.6.1.4.1.2636.4.1.2 (jnxFanFailure)	SRX HE & Branch The status of the fans has changed CLI: show chassis fan	Y		Investigation is needed ACTION: Re-seat fan tray Verify if trap is intermittent, RMA may be needed
CHASSIS CLUSTER FAILOVER	1.3.6.1.4.1.2636.3.39.1.14.1 (jnxJsChassisClusterMIB)	SRX HE & Branch Indicates chassis cluster RG group has failed over CLI: show chassis cluster status		Y	ACTION: Investigation of JSRPD and Messages log files

SYSTEM LOGGING

Monitoring system log events augments the polling and trapping values obtained from the available OIDs supported in the system. Recommendation for system level logging is to maintain system log messages to Any Facility and Severity at a minimum of Critical. If possible we recommend external syslog server with Any Facility and Any Severity setting.

```
root@SRX# show system syslog
```

```
file messages {
    any critical;
    authorization info;
}
host 192.168.1.10 {
    any any;
}
```

NOTES:

1) When opening up Juniper SRX technical cases it is recommended to collect the following information from the SRX.

a. Request Support Information

```
request support information | save /var/tmp/rsi.txt
```

b. System Logs

```
>start shell
```

```
% su (enter in root password)
```

```
% tar -cvzf /root/log.tgz /var/log/*
```

```
%exit
```

A log.tgz file will be created in the /cf/root/ folder that you can upload to the support case.

2) Some MIBs require Lsys Name when being polled in Junos 11.2 and higher versions and will not show output on CLI outputs while using >show snmp mib walk Refer to KB23155 (Recommendation is to use default@<communityname> for community entry on MIB Manager unless polling for specific Lsys outputs.