

# OpenNMS Release Notes

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# What's New in OpenNMS Horizon 22

## System Requirements

- **Java 8:** OpenNMS Horizon 22 requires Java 8 as the runtime environment. To run Horizon 22, we recommend the most recent version of Oracle JDK 8 for your platform.
- **PostgreSQL 9 or higher:** Horizon 22 requires Any supported version PostgreSQL 9 or higher. As of this writing, PostgreSQL 9.3 is the earliest version under active support, but OpenNMS is known to work with at least PostgreSQL 9.1 and up.

## Important Upgrade Notes

- All collectors using the `JMXSecureCollector`, `MX4JCollector` or `JBossCollector` must be migrated to use the `Jsr160Collector` instead.
- All monitors using the `JBossMonitor` or `JMXSecureMonitor` must be migrated to use the `Jsr160Monitor` instead.
- All detectors using the `JBossDetector` or `MX4JDetector` must be migrated to use the `Jsr160Detector` instead.
- The configuration of the *Elasticsearch ReST plugin* has changed. Please refer to [Changed Properties with new defaults](#).
- The index creation of the *Elasticsearch ReST plugin* has changed and is now configurable. Please refer to [Index Properties](#).
- The *Elasticsearch ReST plugin* no longer supports Elasticsearch version 2.4. A version  $\geq 5.x$  must be used.
- All JavaScript code in OpenNMS has been unified under a single build system. While we did quite a bit of testing of the resulting changes, it's possible something was missed. If you run into any JS-related issues in the UI please [create an issue](#).
- The default database access implementation is now using *HikariCP*, rather than *C3P0*. This will probably not affect you (other than give better performance) but could affect unusual workloads.
- Backshift is now the default rendering engine for graphs.

## Configuration of the *Elasticsearch ReST plugin*

The configuration of the *Elasticsearch ReST plugin* has been changed. Some properties have new defaults and have been renamed. It is now also possible to define index settings and provide a index strategy to have more control over the index creation.

### Changed Properties with new defaults

Some properties of the plugin have changed. The following table shows the old (no longer supported) and the new property name, as well as the new default, which is used if the configuration is not updated manually. Please update the configuration file

`etc/org.opennms.plugin.elasticsearch.rest.forwarder.cfg` accordingly. For more details on how to configure the plugin to use elasticsearch refer to [Configure Elasticsearch](#).

Old parameter	New parameter	Default Value
<code>elasticsearchUrl</code>	<code>elasticUrl</code>	<code>http://localhost:9200</code>
<code>esusername</code>	<code>globalElasticUser</code>	-
<code>espassword</code>	<code>globalElasticPassword</code>	-
<code>timeout</code>	<code>connTimeout</code>	<code>5000</code>
<code>socketTimeout</code>	<code>readTimeout</code>	<code>30000</code>

Besides that the following default values have been changed:

Parameter	Old default	New default
<code>batchSize</code>	<code>1</code>	<code>200</code>
<code>batchInterval</code>	<code>0</code>	<code>500</code>
<code>connTimeout</code>	<code>3000</code>	<code>5000</code>
<code>readTimeout</code>	<code>3000</code>	<code>30000</code>

## Index Properties

It is now possible to define index-related properties, e.g. the number of shards and replicas. It is also possible to define a property `elasticIndexStrategy` to determine if a `hourly`, `daily`, `monthly` or `yearly` index should be created. It defaults to `monthly`.

For more details please refer to [Configure Elasticsearch](#).

## Breaking Changes

- `JMXSecureCollector`, `MX4JCollector` and `JBossCollector` have been removed. Please use the `Jsr160Collector` instead.
- `JBossMonitor` and `JMXSecureMonitor` have been removed. Use the `Jsr160Monitor` instead.
- `JBossDetector` and `MX4JDetector` have been removed. Use the `Jsr160Detector` instead.
- The configuration of the *Elasticsearch ReST plugin* has changed. Please refer to [Changed Properties with new defaults](#).
- The index creation of the *Elasticsearch ReST plugin* has changed and is now configurable. Please refer to [Index Properties](#).
- The *Elasticsearch ReST plugin* no longer supports Elasticsearch version 2.4. A version  $\geq 5.x$  must be used.
- By default the data collection gathered data twice from SNMP agents supporting the MIB-II with 32bit and 64bit counter on network interfaces. The default 32bit interface counters are now disabled by default and only 64bit counters are collected.



If you have legacy SNMP agents which only support 32bit interface counters, the data collection for this interfaces will stop after you upgraded to 22.0.0. To get them enabled, you have to create a data collection package and add the `mib2-interfaces` data collection group manually for this devices with the example below.

*Example to collect 32bit MIB-2 Interface counter from nodes in a category configured in `collectd-configuration.xml`*

```
<package name="Legacy-MIB2-Interfaces" remote="false">
  <filter>categoryName == 'Legacy-MIB2-Interfaces'</filter>
  <include-range begin="1.1.1.1" end="254.254.254.254"/>
  <include-range begin="::1" end="ffff:ffff:ffff:ffff:ffff:ffff:ffff:ffff"/>

  <service name="SNMP" interval="300000" user-defined="false" status="on">
    <parameter key="collection" value="legacy-32bit-mib2"/>
    <parameter key="thresholding-enabled" value="true"/>
  </service>
</package>
```

*Load the Legacy MIB-2 Interfaces metrics configured in the `datacollection-config.xml`*

```
<snmp-collection name="legacy-32bit-mib2" snmpStorageFlag="select">
  <rrd step="300">
    <rra>RRA:AVERAGE:0.5:1:2016</rra>
    <rra>RRA:AVERAGE:0.5:12:1488</rra>
    <rra>RRA:AVERAGE:0.5:288:366</rra>
    <rra>RRA:MAX:0.5:288:366</rra>
    <rra>RRA:MIN:0.5:288:366</rra>
  </rrd>
  <include-collection dataCollectionGroup="Legacy_MIB2-Interfaces"/>
  <include-collection dataCollectionGroup="REF_MIB2-Interfaces"/>
</snmp-collection>
```

## New Features

### Telemetryd (Drift)

The focus of OpenNMS Horizon 22 is the introduction of support for consuming and indexing flow data in a new subsystem called *Telemetryd* (code name: Drift).

Telemetryd supports receiving real-time telemetry data in a variety of formats, including JTI (Junos Telemetry Interface), Netflow 5 and 9, IPFIX, SFlow, and Cisco NX-OS. Data is then stored in Elasticsearch for display using the OpenNMS Grafana-based companion application, [Helm](#).

Accessing flow data from Helm requires Helm 2.0 or higher.

## SNMP Session Tracking

To aid in debugging problematic SNMP hosts, an SNMP session tracker/logger has been added.

By default it will print a summary of the top 10 oldest threads every 60 seconds to the SNMP debug log.

It can be enabled by adding `org.opennms.core.snmp.trackSessions=true` in `opennms.properties` (or a file in `opennms.properties.d`).

To change how often the summary is printed, set `org.opennms.core.snmp.trackSummaryDelay=number-of-seconds`.

To change how many sessions are posted to the debug log, set `org.opennms.core.snmp.trackSummaryLimit=number-of-sessions`.

## New/Updated Device Support (Data Collection and/or Traps)

- AsyncOS Mail
- Cisco Virtual CallManager
- Dell (OpenManage cooling devices, temperature probe, and power usage)
- Net-SNMP disk I/O and load

## Changelog

### Release 22.0.4

Release 22.0.4 is the latest stable release of OpenNMS. It contains a number of bug fixes and enhancements, including fixes in upgrades, flows, date handling, topology UI performance, and minion management. For a high-level overview of what's changed in OpenNMS 22, see [What's New in OpenNMS 22](#).

The codename for 22.0.4 is *Power*.

### Bug

- `maxRetCode` in `HttpDetector` does not work (Issue [NMS-3974](#))
- Content-Type tag wrong in emailed reports (Issue [NMS-9027](#))
- The upgrade task for `magic-users.properties` fails because of the read-only attribute (Issue [NMS-9267](#))
- `NoClassDefFoundError` for `net.sf.json.JSONSerialize` with the JSON collector on Minion (Issue [NMS-10286](#))
- Flow: Ingress/egress traffic is improperly reported when filtering by `ifIndex` (Issue [NMS-10319](#))
- Minions can't be deleted from minion menu (Issue [NMS-10321](#))

- Flow: Classification should not depend on direction (Issue [NMS-10329](#))
- Minions without nodes should show "unknown" status (Issue [NMS-10338](#))
- navbar.ftl not rendering (Issue [NMS-10342](#))

## Enhancement

- UI stack trace is truncated (Issue [NMS-7555](#))
- add polling interval definition on service UI (Issue [NMS-9747](#))
- Normalize date formats across the WebUI (Issue [NMS-10072](#))
- render dateformat for AngularJS (Issue [NMS-10232](#))
- render date for Javascript with moment.js (Issue [NMS-10233](#))
- implement minion "status" field (Issue [NMS-10295](#))
- Manage Minions page should link to the node for the minion (Issue [NMS-10296](#))
- Improve CDP topology calculation performance (Issue [NMS-10317](#))
- Set the default resource graph time range to "Last Day" (Issue [NMS-10324](#))
- Memory related env-variables from /etc/sysconfig/minion are not honored (Issue [NMS-10332](#))

## Release 22.0.3

Release 22.0.3 is the latest stable release of OpenNMS. It contains a critical fix for RADIUS support, as well as a number of smaller bug fixes and enhancements. For a high-level overview of what's changed in OpenNMS 22, see [What's New in OpenNMS 22](#).

The codename for 22.0.3 is *Time*.

## Breaking Changes

A security issue in the `RadiusAuthenticatinProvider` has been fixed (Issue [NMS-10212](#)). This requires changes to the `radius.xml` file located in `${OPENNMS_HOME}/jetty-webapps/opennms/WEB-INF/spring-security.d`. Now instead of providing a bean for the `authTypeClass` property, it is sufficient to just provide the class name:



## Before

```
<?xml version="1.0" encoding="UTF-8"?>
<beans:beans xmlns="http://www.springframework.org/schema/security"
  xmlns:beans="http://www.springframework.org/schema/beans"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.springframework.org/schema/beans
    http://www.springframework.org/schema/beans/spring-beans-3.0.xsd
    http://www.springframework.org/schema/security
    http://www.springframework.org/schema/security/spring-security-3.1.xsd">
  <beans:bean id="externalAuthenticationProvider" class=
    "org.opennms.protocols.radius.springsecurity.RadiusAuthenticationProvider">
    <!-- ... -->
    <beans:property name="authTypeClass"><beans:bean class=
    "net.jradius.client.auth.PAPAuthenticator"/></beans:property>
    <!-- ... -->
  </beans:bean>
</beans:beans>
```

## After

```
<?xml version="1.0" encoding="UTF-8"?>
<beans:beans xmlns="http://www.springframework.org/schema/security"
  xmlns:beans="http://www.springframework.org/schema/beans"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.springframework.org/schema/beans
    http://www.springframework.org/schema/beans/spring-beans-3.0.xsd
    http://www.springframework.org/schema/security
    http://www.springframework.org/schema/security/spring-security-3.1.xsd">
  <beans:bean id="externalAuthenticationProvider" class=
    "org.opennms.protocols.radius.springsecurity.RadiusAuthenticationProvider">
    <!-- ... -->
    <beans:property name="authTypeClass" value="
    net.jradius.client.auth.PAPAuthenticator"/>
    <!-- ... -->
  </beans:bean>
</beans:beans>
```

Supported values for `authTypeClass` are:

- `net.jradius.client.auth.TunnelAuthenticator`
- `net.jradius.client.auth.PAPAuthenticator`
- `net.jradius.client.auth.EAPMSCHAPv2Authenticator`
- `net.jradius.client.auth.MSCHAPv2Authenticator`
- `net.jradius.client.auth.EAPMD5Authenticator`
- `net.jradius.client.auth.CHAPAuthenticator`
- `net.jradius.client.auth.MSCHAPv1Authenticator`

- `net.jradius.client.auth.RadiusAuthenticator`
- `net.jradius.client.auth.EAPAuthenticator`

If no value is provided `net.jradius.client.auth.PAPAuthenticator` is used.

## Bug

- warnings and exceptions in `telemetryd.log` with `sflow` (Issue [NMS-1329](#))
- Wrong descriptions for Quantile in Percentile and Outlier measurement filters (Issue [NMS-1363](#))
- VMWare-Center-Monitoring make for every virtual machine a login/logout (Issue [NMS-8204](#))
- LDAPMonitor causes Errors in ldap logfiles (Issue [NMS-8891](#))
- Topology on Map is not properly displayed (Issue [NMS-9288](#))
- Failed to run Jasper report `local_Serial-Interface-Utilization-Summary`: Key receive rate is duplicated in pie dataset (Issue [NMS-9875](#))
- Radius Login Problem (Issue [NMS-10212](#))
- Trapd does not validate config against XSD (Issue [NMS-10242](#))
- Drools correlation engine do not always respond to targeted `reloadDaemonConfig` events (Issue [NMS-10257](#))
- Change in JMS NBI Date Format (Issue [NMS-10282](#))
- `DefaultProvisionService` logs noisily for monitored service having state "N" (Issue [NMS-10291](#))
- Doughnut chart shows certain closed outages as "current" (Issue [NMS-10293](#))
- SNMP monitor doesn't take service down (Issue [NMS-10308](#))

## Enhancement

- Make `isUseDebugger()` return false instead of true to fix flapping Camel Tests (e.g. `HeartbeatBlueprintPerfIT`) (Issue [NMS-1361](#))
- Make `hawtio` available for OpenNMS as installable RPM/DEB (Issue [NMS-9858](#))
- Support customizing the default time zone when parsing dates in syslog messages (Issue [NMS-10164](#))
- Supporting flow records without direction field (ingress/egress) (Issue [NMS-10221](#))
- use user defined time zone for date formatting (Issue [NMS-10228](#))
- apply centralized datetime rendering to freemarker template(s) (Issue [NMS-10239](#))
- Update `log4j2.xml` with kafka logging (Issue [NMS-10269](#))
- Syslog messages should default to using the time at which they were received (Issue [NMS-10271](#))
- Syslog messages should default to being associated with the hosts from which they were received (Issue [NMS-10272](#))
- expose `datetimeformat` in InfoService REST Endpoint (Issue [NMS-10301](#))

## Release 22.0.2

Release 22.0.2 is the latest stable release of OpenNMS. It contains a number of bug fixes and enhancements, including partial support for custom date formatting in the web UI. This will be expanded to cover the entire web UI in an upcoming release. For a high-level overview of what's changed in OpenNMS 22, see [What's New in OpenNMS 22](#).

The codename for 22.0.2 is *Mind*.

### Bug

- bridge topology is wrong on nodelink.jsp (Issue [NMS-8295](#))
- Config-tester not validating varbind matching in event files (Issue [NMS-9821](#))
- IllegalStateException when restoring persisted sessions in Drools (Issue [NMS-9907](#))
- Can't install OpenNMS on Ubuntu 18.04 (Issue [NMS-9925](#))
- The KSC Dashlet for the Ops-Board is not working (Issue [NMS-10191](#))
- MIB2 interface errors are missing (Issue [NMS-10195](#))
- BsonInvalidOperationException on Telemetryd with Sflow (Issue [NMS-10240](#))
- MIB2 SNMP Interface counters missing from Windows data collection (Issue [NMS-10247](#))
- newSuspect events do not get processed when they reference a missing system id (aka distpoller) (Issue [NMS-10261](#))
- Heatmap stopped working in centerUrl after upgrading to 22.0.0 (Issue [HZN-1316](#))
- AbstractAdapter always logs 0 packets (Issue [HZN-1336](#))

### Enhancement

- Optionally persist the results when calling collectors:collect (Issue [NMS-10173](#))
- write custom tag for date time formatting (Issue [NMS-10229](#))
- repace current formatting in JSPs by custom tag (Issue [NMS-10230](#))
- define a property in opnnms.properties for date formatting (Issue [NMS-10231](#))
- plpgsql IPLIKE does not behave the same as the C version (Issue [NMS-10238](#))
- apply custom tag to ncs-alarms.jsp (Issue [NMS-10243](#))
- Add additional fields to the alarms and events generated by the Kafka Producer (Issue [NMS-10263](#))

## Release 22.0.1

Release 22.0.1 is the latest stable release of OpenNMS. It contains a number of bug fixes and enhancements, including an update to Drools 7, performance improvements to the flow exporter ReST endpoint, and new karaf shell tools for diagnosing nodes. For a high-level overview of what's changed in OpenNMS 22, see [What's New in OpenNMS 22](#).

The codename for 22.0.1 is *Reality*.

## Bug

- ConcurrentModificationException in DefaultEventHandlerImpl (Issue [NMS-8413](#))
- The ReST API used to return XMLs with namespace, and now it doesn't (Issue [NMS-8524](#))
- config-tester doesn't check opennms.properties (Issue [NMS-9117](#))
- Event-Analysis Report shows incorrect numbers for big values in Top25 Events (Issue [NMS-9202](#))
- Exceptions in Bridge Discovery (Issue [NMS-9557](#))
- MBean "TasksCompleted" for Collectd and Pollerd returns wrong counters (Issue [NMS-9741](#))
- Unregistered product specification (Issue [NMS-9913](#))
- The auto-acknowledge-alarm tag with no content doesn't work on notifd-configuration.xml (Issue [NMS-10085](#))
- Asset record is not being updated with user name that performed the update (Issue [NMS-10087](#))
- wrong statement in event description for serviceDeleted (Issue [NMS-10148](#))
- The KSC Dashlet for the Ops-Board is not working (Issue [NMS-10191](#))
- Incorrect Release Notes Link (Issue [NMS-10204](#))
- AlarmChangeNotificationClient - Unable to parse time value (Issue [HZN-1282](#))

## Enhancement

- Upgrade Drools to 7.x (Issue [NMS-9923](#))
- Provide a way to configure the date formats used by the Syslog NBI (Issue [NMS-10158](#))
- Typos in Horizon 22.0.0 release notes (Issue [NMS-10161](#))
- Support customizing the default time zone when parsing dates in syslog messages (Issue [NMS-10164](#))
- Consolidate Kafka client library versions (Issue [NMS-10165](#))
- Link to privacy policy from Data Choices UI elements (Issue [NMS-10169](#))
- Karaf shell command to enumerate nodes that match a given filter (Issue [NMS-10172](#))
- Ubiquiti AirMax 8 support (Issue [NMS-10210](#))
- Improve performance of /rest/flows/exporters endpoint (Issue [HZN-1280](#))

## Release 22.0.0

Release 22.0.0 is the latest stable release of OpenNMS. It contains a large number of bug fixes and enhancements, most notably adding support for real-time telemetry flow processing. For a high-level overview of what's changed in OpenNMS 22, see [What's New in OpenNMS 22](#).

The codename for 22.0.0 is *Space*.

## Bug

- MockLogAppender.setupLogging() doesn't override default log level (Issue [NMS-8905](#))
- ONMS starts with broken threshold configuration file (Issue [NMS-9064](#))
- rescan-exitsing attribute of requisition-def tag in provisiond-configuration.xml is not passed to scanNode() in CoreImportActivities (Issue [NMS-9492](#))
- Interface delete from a node does not work (Issue [NMS-9506](#))
- Topology map node icons vanish (IE10, IE11 only) when alarm status unchecked (Issue [NMS-9614](#))
- Access Denied With Surveillance View In Ops Board (Issue [NMS-9678](#))
- Topology Default Theme has too many dependencies (Issue [NMS-9716](#))
- Karaf client shell script fails on missing inc directory (Issue [NMS-9728](#))
- Release notes are duplicated with every release (Issue [NMS-9807](#))
- Karaf opennms-es-rest Plugin - Creating OID mappings causing ES index mappings to exceed 1000 (Issue [NMS-9831](#))
- Enlinkd startup fails due to NPE in BroadcastDomain class (Issue [NMS-9852](#))
- opennms-flows feature does not depend on opennms-web-api (Issue [NMS-9865](#))
- Inconsistent handling of keyboard navigation on top menu (Issue [NMS-9867](#))
- Error message is not cleared in Test Classification Panel (Issue [NMS-9880](#))
- PageSequenceMonitor broken in Minion (Issue [NMS-9882](#))
- Cached values interfere with typeahead functionality in "Test Classification" form (Issue [NMS-9883](#))
- collection:collect command fails with ClassCastException (Issue [NMS-9885](#))
- Value of \${nodeLabel} for PSM services apparently not eagerly updated (Issue [NMS-9900](#))
- Thousands of non harmful errors on ipc.log when using Kafka (Issue [NMS-9910](#))
- JasperStudio extension dependency error (Issue [NMS-9915](#))
- SNMP Interface Poller shows wrong information on the logs (Issue [NMS-9917](#))
- Flows API doesn't recognize the exporters (Issue [NMS-9919](#))
- Possible StackOverflow in DefaultRequestExecutor (Issue [NMS-9920](#))
- Backshift graph fails to load with jQuery error (Issue [NMS-9927](#))
- Wrong initial message displayed on AngularJS based tables. (Issue [NMS-9932](#))
- Alarm favorite link URL does not have AddRefreshHeader-30 applied (Issue [NMS-9938](#))
- webpack compilation fails on Windows (due to invalid path separator) (Issue [NMS-9942](#))
- Cannot see StrafePing graphs when using Backshift. (Issue [NMS-9946](#))
- Vaadin Maven Plugin fails on Windows (Issue [NMS-9948](#))
- The JDBC Collector doesn't work (Issue [NMS-9952](#))
- Correct sysoidmask lines in default datacollection files (Issue [NMS-9958](#))

- foreign-id with space (%20) at end causes issues with Newts (Issue [NMS-9961](#))
- Kafka Producer: Alarm datasync does not respect alarm filter (Issue [NMS-9964](#))
- perfddata-receiver doesn't compile (Issue [NMS-9967](#))
- Home Page Map does not display node details (Issue [NMS-10008](#))
- Downtime model documentation is deprecated (Issue [NMS-10069](#))
- /rest/flows/exporters throws NPE when no flows are found (Issue [NMS-10134](#))
- Add button is not working in "Add Ranges" in opennms (Issue [NMS-10135](#))
- Remove Dell Open-Manage from all Net-SNMP devices (Issue [NMS-10136](#))
- Remove default PoE data collection (Issue [NMS-10138](#))
- Remove Checkpoint Firewall data collection from all Windows devices (Issue [NMS-10142](#))
- Remove default data collection for Compaq Insight Manager stats from all Windows Server (Issue [NMS-10143](#))
- Remove Cisco Call Manager statistics from all Windows Servers (Issue [NMS-10144](#))
- wrong statement in event description for serviceDeleted (Issue [NMS-10148](#))
- NPEs when making REST requests to the /flows endpoints when no data is present (Issue [NMS-10149](#))

## Enhancement

- Installer should check DB time (Issue [NMS-9448](#))
- Refactor the compatibility matrix in the documentation (Issue [NMS-9684](#))
- Admin Guide Typos (Issue [NMS-9707](#))
- Refactor JavaScript Web Assets to Share Code (Issue [NMS-9761](#))
- Split Help/Support in "Documentation" and "Support" (Issue [NMS-9771](#))
- Suppress HTTP Basic Auth Requests for AJAX Calls (Issue [NMS-9783](#))
- Add Ironport AsyncOS Mail Gateway Events (Issue [NMS-9794](#))
- Monitor Linux disk performance with Net-SNMP by default (Issue [NMS-9816](#))
- Improve spaces and label in the Test Classification panel (Issue [NMS-9878](#))
- Improve placeholder in Test Classification field (Issue [NMS-9879](#))
- Add filtering support to events forwarded to kafka (Issue [NMS-9898](#))
- Make NodeCache configurable (Issue [NMS-9931](#))
- Datacollection for Cisco Call Manager has old OID (Issue [NMS-9936](#))
- Improve performance of newts.indexing to avoid overwhelm Cassandra cluster (Issue [NMS-9959](#))
- Enhance SSLCertMonitor.java warning message (Issue [NMS-9962](#))
- Can't receive SNMP v3 Trap (Issue [NMS-10009](#))
- Enhance AlarmPersisterImpl to support updating acknowledgment values on reduction (Issue

[NMS-10067](#))

- Make interface octet counter 64bit as default instead of 32bit (Issue [NMS-10139](#))
- Remove overlapping data collections for MIB2-X-Interfaces (Issue [NMS-10141](#))
- Make Backshift the Default Graph Strategy (Issue [NMS-10152](#))