



Release Notes

NEMO 4.1.13

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1 Introduction

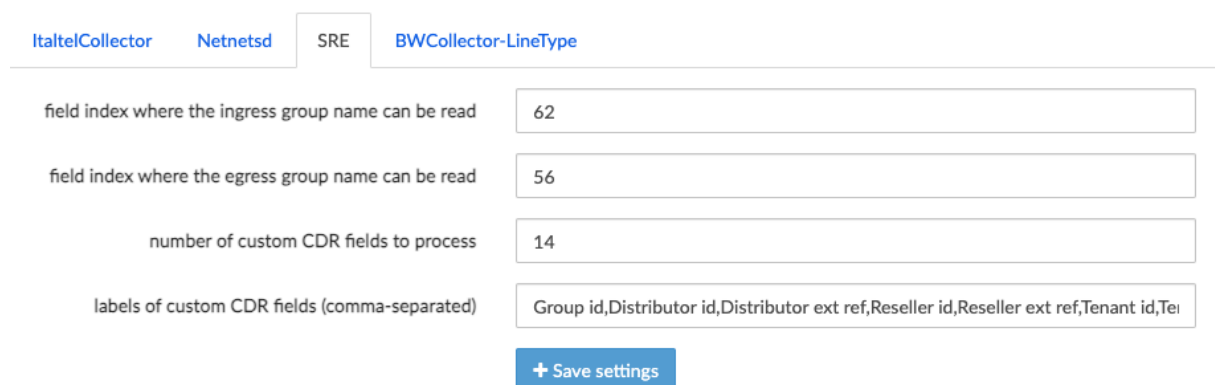
These release notes provide a comprehensive overview of the new features, enhanced functionalities, and resolved issues found in version 4.1 of NEMO. Additionally, it includes the details of the patch versions associated with release 4.1.

2 What’s new in NEMO 4.1

2.1 Devices Support

2.1.1 SRE Support

Support has been added for the Netaxis Solutions Session Routing Engine (SRE). CDRs produced by this equipment can now be processed by NEMO. Moreover, it is possible to define which fields are to be used to identify the ingress/egress context. In combination with the custom CDR fields of SRE, this feature allows the service provider to choose the right level of granularity. A new collector has been implemented to collect the CDRs in CSV format.



ItaltelCollector Netnetsd **SRE** BWCollector-LineType

field index where the ingress group name can be read:

field index where the egress group name can be read:

number of custom CDR fields to process:

labels of custom CDR fields (comma-separated):

Figure 1: SRE Plugin Parameters

2.1.2 VXLAN-Based Virtual Tapping

The probes have been improved to support VXLAN-based virtual tapping. In virtualized and cloud environments where it is often impossible to set up physical port mirroring, the probes are now able to capture traffic forwarded through the VXLAN protocol to their interface and decode this traffic.

2.1.3 Probe NAT Mapping Table

It is now possible to supply a NAT mapping file for SDP addresses through the use of the probe option `-natMapping` followed by the CSV filename of the mapping file (that should be stored in `/opt/nemo/etc/` on the probe). This file must be a valid CSV file (comma-separated) without headers. First column is the IP address found in the SDP and second column is the translated IP address to be captured for RTP packets.

Example file:

```
1 187.32.17.43,10.50.0.23
2 187.32.17.47,172.16.2.7
3 187.32.17.41,192.168.3.7
```

In this example, if the probe captures an SDP where the connection IP address is `187.32.17.43` and RTP capture is active for that call, the probe will instead activate RTP capture for the IP address `10.50.0.23`.

This feature is useful in NATed environment where the SBC is aware of the NAT being applied and thus use public IP addresses in SDP but the probe itself, being behind the NAT device, captures packets with private (i.e. NATed) IP addresses.

2.2 Graphs

2.2.1 New Number Analysis Graphs

The sources and destinations breakdown graphs have been completed to provide statistics about all possible combinations of these criteria:

- direction: ingress or egress
- party: calling party number (caller) or called party number (callee)
- metric type: volume (number of minutes) or count (number of calls)

From the base 3 types of charts: National vs. International, National, and International breakdowns, 24 different charts are available.

Ingress national vs international callee distribution (calls count)	<input checked="" type="checkbox"/>
Ingress national callee distribution (calls count)	<input checked="" type="checkbox"/>
Ingress International callee distribution (calls count)	<input checked="" type="checkbox"/>
Egress national vs international callee distribution (calls count)	<input type="checkbox"/>
Egress national callee distribution (calls count)	<input type="checkbox"/>
Egress international callee distribution (calls count)	<input type="checkbox"/>
Ingress calls national vs international callee distribution (volume)	<input checked="" type="checkbox"/>
Ingress calls national callee distribution (volume)	<input checked="" type="checkbox"/>
Ingress calls International callee distribution (volume)	<input checked="" type="checkbox"/>
Egress national vs international callee distribution (volume)	<input type="checkbox"/>
Egress national callee distribution (volume)	<input type="checkbox"/>
Egress international callee distribution (volume)	<input type="checkbox"/>
Ingress national vs international caller distribution (calls count)	<input type="checkbox"/>
Ingress national caller distribution (calls count)	<input type="checkbox"/>
Ingress international caller distribution (calls count)	<input type="checkbox"/>
Egress national vs international caller distribution (calls count)	<input checked="" type="checkbox"/>
Egress national caller distribution (calls count)	<input checked="" type="checkbox"/>
Egress international caller distribution (calls count)	<input checked="" type="checkbox"/>
Ingress national vs international caller distribution (volume)	<input type="checkbox"/>
Ingress national caller distribution (volume)	<input type="checkbox"/>
Ingress international caller distribution (volume)	<input type="checkbox"/>
Egress national vs international caller distribution (volume)	<input checked="" type="checkbox"/>
Egress national caller distribution (volume)	<input checked="" type="checkbox"/>
Egress international caller distribution (volume)	<input checked="" type="checkbox"/>

Figure 2: Number Analysis Graphs

2.3 Operational Tools

2.3.1 New SFTP Synchronisation Process

A new generic SFTP synchronization process has been added to NEMO. In previous deployments, there has often been a need to develop custom scripts to retrieve CDR files from devices or IT systems. This new process is generic enough to cover most file transfer scenarios.

2.3.2 Improved nemo-admin Tool

The nemo-admin tool has been completely redesigned to provide several functions to help troubleshoot issues or gather information about the system.

Example:

```
1 $ /opt/nemo/bin/nemo-admin calls daily-count broadsoft
2 Start      End          Count
3 -----
4 2023-08-23 2023-08-24  815587
5 2023-08-24 2023-08-25  762182
6 2023-08-25 2023-08-26  493739
7 2023-08-26 2023-08-27  223498
8 2023-08-27 2023-08-28   59421
9 2023-08-28 2023-08-29  591160
10 2023-08-29 2023-08-30  580230
```

2.4 APIO Integration

2.4.1 Broadworks Line Type

Broadworks CDRs do not contain any information about the line type of users (e.g. call-center, auto-attendant, ...). NEMO can now perform an API query to APIO to retrieve the user line type and inject this information into the DB. The new data is then available to compute fine-grained statistics about Broadworks users. These improved stats are queried by the self-care portal to provide advanced statistics and filtering.

2.5 Authentication & Security

2.5.1 Brute Force Login Attempts

The authentication mechanisms have been improved to detect brute-force login attempts. When a client performs too many failed authentication attempts (configurable) during 1 minute, that client is black-listed for 1 minute.

2.5.2 Improved Cookies Security

Releases 4.1.4+

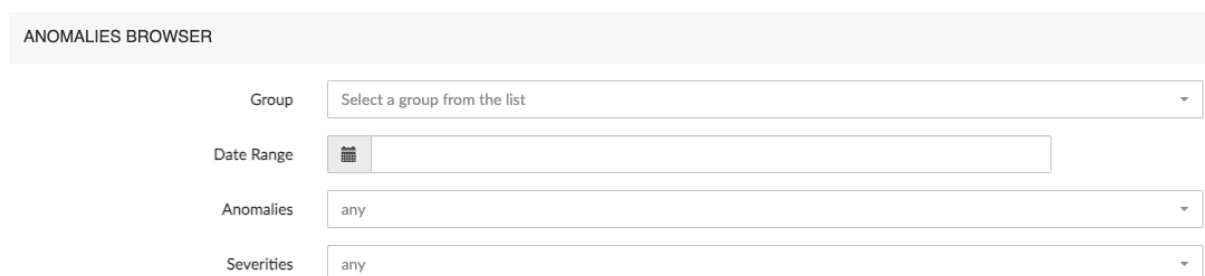
The cookie security parameters *httponly* and *secure* can now be enabled in the file `/opt/nemo/gui/main.conf`. These parameters improve the security by preventing session cookie leakage. HTTPS must be enabled on Nemo or the reverse proxy in front of it to enable the parameter *secure*. ### Improved LDAP Authentication Layer

The LDAP authentication layer has been improved so that the username entered for authenticating can be manipulated through the user of regular expressions to perform complex authentication operations and filtering (to allow only a subset of users to access NEMO).

2.6 GUI Improvements

2.6.1 Improved Anomalies Browser

The anomalies browser has been improved to let the user filter anomalies on severity and type.



The screenshot shows a web interface titled "ANOMALIES BROWSER". It contains four filter fields:

- Group:** A dropdown menu with the text "Select a group from the list".
- Date Range:** A date range selector with a calendar icon and an empty input field.
- Anomalies:** A dropdown menu with the value "any" selected.
- Severities:** A dropdown menu with the value "any" selected.

Figure 3: Anomalies Browser

2.7 Miscellaneous Enhancements

The following is a list of minor enhancements which do not affect the main functionality of NEMO:

- added configurable calls search query window
- added possibility to select labels in stats exports
- added actual value in pie chart labels
- cached call count per day for page platform statistics
- implemented caching of APIO layer
- improved period parsing of APIO layer
- improved logging with performance
- added grand sum/avg in export data
- added custom metrics for plugin Italtel
- added log rotation for GUI and REST API
- added post-insert plugin for Italtel collector to insert records in Engo format
- implemented batch inserts for Metaswitch plugin
- added pluggable framework to post read record for Italtel collector
- added post-insert plugin for Metaswitch collector to insert records in Engo format
- adapted mongo connection to work with URI
- added SFTP directory synchronization process
- added support for Italtel equipment
- enhanced stats exports access rights
- improved LDAP authentication layer to handle non-empty filter results in case of search failure
- adapted search calls groups input to list only groups from selected plugin
- improved APIO layer with BHCA metric and multi-groups stats retrieval
- added remote IP and port to audit log
- added indentation of sub-page privileges in user access settings

3 Patch Versions Release Notes

3.1 Release 4.1.1

Pull id	Fix
574	fixed check on STATS_INTENSITY presence in plugin
572	added parameter stars on search calls API to mask the end of numbers for GDPR compliance
570	added distinct files to track already transferred files for each instance of nemo-sftp-sync

Pull id	Fix
568	improved Broadsoft line type identification performance based on production experience
566	added mechanism to limit stats engine max processed call OID
564	added mechanism to compute distinct stats for internal and external calls for Broadsoft
561	fixed search calls API in case of Broadsoft group filter
556	fixed computation of Mediant jitter distribution stats

3.2 Release 4.1.2

Pull id	Fix
581	added pluggable IPFIX collector [experimental]
577	fixed anomalies user access rights when multiple plugins are active

3.3 Release 4.1.3

Pull id	Fix
597	fixed src/dst IP for IPFIX collector; added support for several SBC's
590	fixed Broadworks line type augments if API URL is not defined
586	fixed search when normalized number length is greater than 15 digits

3.4 Release 4.1.4

Pull id	Fix
627	updated Javascript libraries
625	explicitly declared maskable fields for calls search API; added Broadsoft option to return normalized numbers as unnormalized

Pull id	Fix
622	added command daily-count to nemo-admin
621	fixed trace analysis to support IPv6; fixed RTP decoding in case of dual VLAN layer
618	improved cookies security: manage httponly and secure attributes

3.5 Release 4.1.5

Pull id	Fix
635	fixed escape of CDR details
632	added option to supply NAT mapping CSV file to probe
630	fixed extraction of RTP payload for audio playback in case of VXLAN mirroring

3.6 Release 4.1.6

Pull id	Fix
639	fixed calls columns escape; fixed Broadsoft escaping through REST API
593	fixed search query for CDR search API

3.7 Release 4.1.7

Pull id	Fix
641	fixed XSS vulnerability for labelled groups and tags assignment

3.8 Release 4.1.8

Pull id	Fix
662	fixed REST API CDR search to prevent finding Broadsoft calls with calling line identity presentation set to Anonymous
656	masked calling & callingNormalized if CLIR detected
654	fixed selection of visible data series in graph legend
645	added support for insecure TLS for Broadworks line augment
610	fixed stats exports fallback to Nemo-computed MOS when CDR-provided MOS is not present
606	fixed probe MOS computation with payload type
604	fixed clear of dropdowns when clicking clear form in search calls
602	fixed call search results columns formatting when fields are missing from the docs

3.9 Release 4.1.9

Pull id	Fix
669	fixed API CDR search query when searched group is not found
666	fixed queue runner auto-enable stats

3.10 Release 4.1.10

Pull id	Fix
712	removed display of internal calls in graph legend for traffic intensity and max simultaneous calls when not enabled
697	added new APIO layer stats orig_calls_redirected_answered and orig_calls_redirected_not_answered
687	adapted Broadsoft line type augmenter to resolve user id both with FQDN and without
683	added record id export to netnetsd objects exports
680	added selective stats removal to nemo-admin

Pull id	Fix
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3.11 Release 4.1.11

Pull id	Fix
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722	improved datatables performance for groups with assignments
718	improved of datatables operations (caching, loading, sorting and filtering)
716	added new computed statistics to APIO layer for redirected calls and follow-me calls

3.12 Release 4.1.12

Pull id	Fix
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730	added line type filter hunt-group to APIO layer
727	added call type filter internal to APIO layer; improved Broadworks XML collector resiliency in presence of CDRs without service provider field
724	added query parameters to filter periods of days for APIO stats

3.13 Release 4.1.13

Pull id	Fix
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757	fixed parsing of Broadworks CSV CDR special characters escaping
744	added mechanism to filter out duplicate TCP segments

4 Upgrade from 4.0

If you are coming from a release prior to 4.0, refer to the release notes for that release to perform the intermediate steps

The upgrade of the 4.1 platform can be done by using the new rpm.

4.1 NEMO RPM Update

To launch the upgrade, on all servers do:

```
1 # yum install /<path>/nemo-4.1.x.-y.x86_64.rpm
```

After you need to restart NEMO with:

```
1 # systemctl restart nemo
```

5 Downgrade from 4.1 to 4.0

Install the previous rpm on all servers with the command:

```
1 # yum downgrade /<path>/nemo-4.0.x.-y.x86_64.rpm
```

6 Patch Upgrade Path from 4.1.x

To upgrade to a target patch release, the Admin needs to check the upgrade path to know which actions to take. > It is important to highlight that an action needed at a patch level 4.1.N is also needed for direct upgrade to 4.1.N+1, 4.1.N+2, ...

Patch release	Needed actions
4.1.1	None
4.1.2	None
4.1.3	None
4.1.4	main.conf was updated and will be installed as /opt/nemo/gui/main.conf.rpmnew in case of RPM update: new options need to be copied over to the existing main.conf file
4.1.5	None

Patch release	Needed actions
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4.1.6	None
-------	------

4.1.7	None
-------	------

4.1.8	None
-------	------

4.1.9	None
-------	------

4.1.10	None
--------	------

4.1.11	None
--------	------

4.1.12	None
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4.1.13	None
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In addition to the listed needed actions:

On all servers, do as root:

```
1 # yum update /<path>/nemo-4.1.x.-y.x86_64.rpm
```