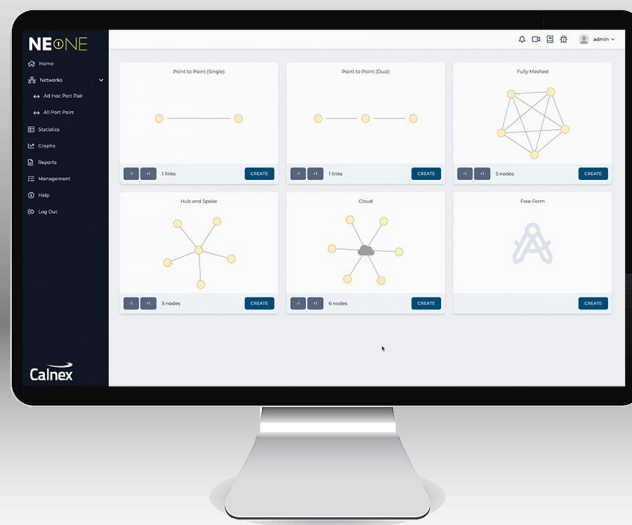




Calnex NE-ONE

Network Emulator for Accurate, Controllable and Repeatable Network Conditions, Capable of both Complex & Simple Network Designs



v2025.08.2338.1 Release Notes

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1 General Information

NE-ONE v2025.08 is the logical successor to:

- NE-ONE v2022, v2023, v2024 & v2025 (all previous versions)
- NE-ONE Enterprise v2021.02
- NE-ONE v5.0
- INE Enterprise/INE Ultra v9.0

Please note that if you use the console's change password feature to change the password for the user `neone`, it will also change the password for `itrinegy` to the same value. This is to prevent `itrinegy` being accidentally left with a legacy insecure password. [The new console username `neone` was introduced in v2022.08.936 and will completely replace the old console username `itrinegy` in future.] Please therefore change to using the username `neone` as soon as possible.

If you are running any v2021, v2022, v2023, v2024, or earlier v2025 versions you should upgrade to this version as it contains many benefits (features and fixes) - see the release details below.

Note for INE v9 and NE-ONE v5 users: NE-ONE v2022, v2023, v2024 & v2025 merge INE v9 and NE-ONE v5 together into one product under a unified Web GUI, in a process that started with NE-ONE Enterprise v2021. The product is called simply **NE-ONE v2025** (previously NE-ONE v2022/v2023/v2024), though you may see it referred to under two names in various documents, websites and publications.

- NE-ONE Enterprise v2025
- NE-ONE Professional v2025

These are the same software base (NE-ONE v2025) with different feature sets enabled.

2 Information for NE-ONE v2022, v2023, v2024 & v2025 users

NE-ONE v2025 will seem very familiar to you. This version is a direct upgrade from NE-ONE v2022/v2023/v2024 and earlier v2025 versions.

2.1 Upgrading

For the smoothest upgrade experience please login to an admin user using the products Web GUI, then stop all running networks - you can right mouse click on them in the active network list (on the home page) and stop them from there. Then refresh the browser (using the browser's refresh button).

The upgrade itself is performed by using the standard method. Use the Web GUI to go to: Management [menu] → Platform Settings → Software Update and then upload the appropriate update file (.itu file). It will take several minutes to complete.



NOTE

It is no longer possible to directly upgrade directly from versions prior to v2024.09.1723.3 to versions later than that. Therefore, if you're running a version older than v2024.09.1723.3 please upgrade to this version first. You can then upgrade to the current release.

2.2 Please also note, when Upgrading

Some customers have observed that the upgrade appears to **time out** with a session timeout message and then offer to refresh or login again from scratch at the end, rather than issue an upgrade completed successfully popup. If this occurs to you, do not be concerned, the upgrade has completed successfully. Just refresh your browser (with the browser refresh button) and you'll be able to login without issue.

[This issue occurs because the GUI may have been issuing requests to the NE-ONE's engine concerning running emulations, the time, graph or status data etc. Now the new version of the software takes over, the login session token is invalid, as opposed to simply getting no reply which is true during the upgrade. It therefore pops up the session timeout dialog. By following the guidelines above for the smoothest upgrade experience, we make sure the GUI is making no such requests and so the upgrade completes without a timeout]

If you're currently using NE-ONE (Enterprise or Professional) v2022.01.630 or lower please read the points below, otherwise skip over them, as it is a standard upgrade including new features, improvements and bug fixes as detailed.

1. Before upgrading, please note the serial number of your system (if hardware) or the current *License Id* (hardware or virtual) - which you can get from Management [menu] → Platform Settings → License)
2. The *License Id* (aka fingerprint) will change after this upgrade. From the homepage please click License Now and email your new *License Id* to support@calnexsol.com together with the serial number or the old *License Id* we will update this on your records so you can get an updated license key

3 Information for NE-ONE v2021 users

If you're currently using NE-ONE (Enterprise) v2021.02.x please read this section, otherwise skip over it.

NE-ONE v2025 will seem very familiar to you.

Note: This version is no longer a direct upgrade from NE-ONE (Enterprise) v2021.02. To get to the current release please upgrade to v2024.09.1723.3 first. You can then upgrade to the current release.

You can upgrade from v2021.02.275 or v2021.02.398 or v2021.02.437 with a standard upgrade kit (.itu file), however please note the following:

1. Before upgrading, please note the serial number of your system (if hardware) or the current *License Id* (hardware or virtual - which you can get from Management [menu] → Platform Settings → License)
2. The upgrade will take quite a lot longer than usual (allow at least 15 minutes after the patch has uploaded). This is because the underlying operating system and associated packages are also upgraded from Ubuntu 18 LTS to Ubuntu 20 LTS
3. The *License Id* (aka fingerprint) will change after this upgrade. From the homepage please click License Now and email your new *License Id* to support@calnexsol.com together with the serial number or the old *License Id* we will update this on your records so you can get an updated license key
4. After the upgrade your admin password will be reset to the default (admin) which should be changed as soon as possible. Other users will require a new password to be set by the admin, which they can later change. This is because we have enhanced password security under Ubuntu 20, and as it is (clearly) not possible to decrypt a user's current password and re-encrypt it, so they must be reset.

4 Information for NE-ONE v5 users

If you're currently using NE-ONE v5 please read this section, otherwise skip over it.

NE-ONE v2025 will seem quite a bit different to you, as it is a big jump from NE-ONE v5, though similar in concept.

To help you, there is a general tutorial video available on the homepage of the system and like NE-ONE v5 there are context sensitive videos and documentation on most of the pages. Recorded and live on-line training are also available.

To upgrade to NE-ONE v2025 please contact technical support (support@calnexsol.com).

5 Information for INE v9 users

If you're currently using INE v9 please read this section, otherwise skip over it.

NE-ONE v2025 will seem quite a bit different to you, as it is a big jump from INE v9, though similar in concept.

To help you, there is a general tutorial video available on the homepage of the system and there are context sensitive videos and documentation on most of the pages. Recorded and live on-line training are also available.

To upgrade to NE-ONE v2025 please contact technical support (support@calnexsol.com).

6 Releases

6.1 Latest Release v2025.08.2338.1 - 2 September 2025



NOTE

This version corrects some issues found since the release of v2025.07.2338 – Beryllium, and updates all necessary packages for security purposes

As with its predecessors after version v2024.09.1723.3 this version contains a major upgrade of the operating system and other related software libraries. To update to it from any version prior to v2024.09.1723.3 you must first update to v2024.09.1723.3. If you are not already running, version 2024.09.1723.3, or higher, you'll receive an error message after uploading the upgrade kit (.itu file) saying:

- Please update to 2024.09.1723.3 or above before updating

After this error message, if the GUI remains with the message “Please wait while the system is updating...” in the centre of the screen. It will need refreshing using the browser's refresh feature to continue.

6.1.1 Security

Reference, if Applicable	Description
	All patches to CVE's (see https://www.cve.org/) relevant to NE-ONE's operating system, layered packages e.g. python, OpenSSL etc. have been applied, up to and including those created on 26th August 2025 We are not noting them individually at this time. Security Scans are now completed with Qualys at each main release and each security release which reports: 5 – Urgent – 0 Issues 4 – Critical – 0 Issues 3 – Serious – 0 Issues 2 – Medium – 5 issues – all resolvable by customer configuration (installation of certificates and ssh configuration) 1 – Minimal – 0 Issues

6.1.2 Improvements

Reference, if Applicable	Description
NODPR-556	When using Internal and External dynamic routing with very frequent (sub second) changes in cost, performed by Network Variables for many hours, internal memory could be exhausted causing the NE-ONE engine to die and restart. This was traced to a memory leak in the JavaScript V8 code. We enhanced memory management to deal with long running processes to remove this issue.
	Miscellaneous minor improvements

6.1.3 Bug Fixes

Reference, if Applicable	Description
NODPR-646	Switching a network from dynamic routing to automated routing does not create a valid route at a leaf node. This was because dynamic routing removed all the routes (as it was in complete control of all routing) and automated routing was expecting valid routes from all nodes with a single link. This is now fixed [Automated routing creates routes for all nodes]
NODPR-617	There was an issue with mpls label testing in (advanced) expressions where it was not possible to properly test an ip address in an mpls packet e.g. <code>ipv4.src=10.200.200.201</code> , <code>mpls.label=18</code> and <code>ipv4.src=10.200.200.201</code> . This is now fixed for IPv4.
NODPR-625	It was not possible to start emulations directly from the LCD panel in Gen1-Gen4A Desktop systems – this was the system with the 2 line LCD display. This is now fixed. [There was no such issue with the Gen5 Desktop – with the 4 line LCD display]
	Miscellaneous minor fixes

6.1.4 Notes

NODPR-385	The Application Report is available only after the Network (Emulation) has stopped. This is to prevent concurrency issues on the database seen in previous versions. A new popup prevents this: The application report can only be generated once the network is stopped. Other reporting functions are not affected by this restriction.
NODPR-126	Setting the link speed to a very low value now generates a warning popup: 'Very low Link Speed set on link'.
NODPR-404	Currently, for performance reasons the Monitoring Dashboard does not resolve host names, and so the systems appear on that dashboard as IP addresses. You can see host names by clicking through into Reports

6.1.5 Known Issues

Reference, if Applicable	Description
NODPR-617	Currently, it is not possible to test an IPv6 field e.g. <code>ipv6.src=<addr></code> in an mpls packet. It is, however, possible to test the mpls label e.g. <code>mpls.label=18</code> where the payload is ipv6.
NODPR-652	Meshed, Hub & spoke and Cloud topologies created by the wizard (New Network) do not have the dynamic routing properties on the links, and so you cannot disable a link. Workaround: save the file and reload it from the saved copy. The 'dynamic routing properties' tab now appears on all links
NODPR-623	When creating a 'Cloud mesh' from the Wizard (New Network) you can select dynamic routing, but packets are not transmitted. This is due to an issue with the way the

	ordering of the cloud object and the routing functions internally which if changed could affect operation in a non-dynamic routing environment. Workaround: create a hub and spoke network instead and then add the 'Cloud object' function through Properties -> Advanced -> Edit on the central node (and optionally change the icon on this node to 'cloud'.
NODPR-600	Playback of certain streams in IPR are causing yellow prints indicating potential issues. These are being actively investigated.
NODPR-296	When creating ports or loading a port config in the port manager, it will sometimes create an extra line connecting the new port with a different port. This is an visual artifact and can be removed by refreshing the browser. It is also possible to switch to List view to avoid this.
NODPR-88	Impairments involving packet duplication should be put at the bottom of the list of functions when in advanced mode. This prevents the duplicated packet being duplicated itself.
NE1-362	Some customers have observed that the upgrade appears to time out with a session timeout message and then offer to refresh or login again from scratch at the end, rather than issue an upgrade completed successfully popup. If this occurs to you, do not be concerned, the upgrade has completed successfully. Just refresh your browser (with the browser refresh button) and you'll be able to login without issue. Workaround For the smoothest upgrade experience stop all running networks - you can right mouse click on them in the active network list (on the home page) and stop them from there. Then refresh the browser (using the browser's refresh button). Now you can upgrade using the standard method. Use the Web GUI to go to: Management [menu]→ Platform Settings→ Software Update and then upload the appropriate update file (.itu file). It will take several minutes to complete. There should now be no timeout.
NE1-333	The Application Performance Report, which is reached when 'drilling down' in the Applications report, does not currently support downloading. This will be added in a future version
NE1-334	If a lot of data has been collected it can take a while to produce the reports. However, there is currently no visual indication of the need to wait. This will be added in a future version
NE1-330	In the 'hardware traffic generation' soft port, if you set up a generating stream without choosing the Stream Type (which visually shows UDP) it errors on Save with 'Could not create port: gen1, Stream: 1- Stream Type must be TCP or UDP' Workaround: Change the Stream Type to TCP then back to UDP
NE1-310	Clicking on an NE-ONE v5 scenario which has already been converted will not convert it again, unless the converted file is first deleted. No message is output.
NE1-281	Launching an 'old' point-to-point network using the new Play feature from the File Browser may generate a 'network Error - Object right: Cannot Open a connection to

	Input port (1) - likely it's already in use'. This is because these older emulations were not 'relocatable', except by the Point-to-Point designer. To solve the issue, load the network into the point-to-point designer and (re)save it - this updates it to be relocatable - then Play from the file browser will work.
NE1-278	On the Azure and AWS platforms, logging on at the console goes directly to the command prompt - this is due to the platform constructing the default username in these cases
NE1-279	On Azure and AWS, the platforms directly take control of the console usernames and Management Port addressing. At this time therefore the console menu does not appear on console login and GUI setting of the management port addresses is not functioning
NE1-222	On Desktop systems Generation 4 and 4A - the LCD will start even without the system being powered on leading to the false impression that the system was not starting. Please 'short' press the power button if it does not appear to be coming on
NE1-100	Due to the large variety of network (emulation) designs customers have reported that certain legacy Emulations or files from both INE v8/V9 and NE-ONE v5.0 have not automatically converted to NE-ONE v2022 format - if this happens please email them to support so that we improve the converter. (Many improvements were already made in this version). Where appropriate we will send back a correctly converted file
NE1-99	The context sensitive entry into the User manual from screens relies on PDF destination markers, however not all browsers support this feature. Chrome, Edge (Recent, non legacy versions) & Firefox support this feature. Safari does not support this feature
NE1-98	There is an issue with removing a function in advanced settings mode and then clicking the Update All button. The function is not removed, and its impairments persist. A workaround for this is to set the function's impairment parameters so that it will not impair.

6.2 Previous Release v2025.07.2338 - 1 July 2025 - Beryllium



NOTE

This version contains a major upgrade of the operating system and other related software libraries. To update to it from any previous version you must first update to (at least) **v2024.09.1723.3**. If you are not already running, version 2024.09.1723.3, or higher, you'll receive an error message after uploading the upgrade kit (.itu file) saying:

- Please update to 2024.09.1723.3 or above before updating

After this error message, if the GUI remains with the message "Please wait while the system is updating..." in the centre of the screen. It will need refreshing using the browser's refresh feature to continue.

6.2.1 Security

Reference, if Applicable	Description
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	All CVE's (see https://www.cve.org/) relevant to NE-ONE's operating system, layered packages e.g. python, openssl etc have been applied, up to and including those created on 5th December 2024 We are not noting them individually at this time. New: Security Scans are now completed with Qualys at each main release and each security release
NODPR-396	LDAPS – Secure LDAP over TLS has been added to this release – see also New Features below

6.2.2 New Features

Reference, if Applicable	Description
NODPR-427	New 'External Dynamic Routing' capability for OSPF and BGP This includes a new type of Soft Port: 'Dynamic Routing IPv4'. While this soft port is broadly similar in operation to the (static) IPv4 soft port it adds the following capability: • Listen for the availability of OSPF/BGP networks from connected routers and 'store' these networks with the soft port • Make a Node with this soft port attached aware of these OSPF/BGP subnets • Publish availability of subnets from NE-ONE to external OSPF/BGP routers • A console to view and configure OSPF and BGP settings with a (Cisco) IOS style command line, supporting commands like 'show ip route' This allows NE-ONE to participate in OSPF and BGP networks dynamically without the need to manually configure static routing in external routers, or manually configure available external subnets in NE-ONE. This is a huge advantage in connecting into networks where OSPF and BGP are in use.
NODPR-428	New 'Internal Dynamic Routing' capability – dynamically finds the best routes Internal dynamic routing routes traffic over the lowest 'total cost' available path within an NE-ONE network. With Internal Dynamic Routing you can, dynamically: • Define the cost on a link – this is the cost of traversing that link • Enable and disable Links – disabled links will not transmit network traffic • Enable and disable Nodes – disabled nodes will not transmit network traffic and so by implication the links connected to them are not usable All these setting can be updated while the network (emulation) is running with the GUI or RESTapi This feature extends the existing 'Automated Routing' concept (found in the GUI option Auto-Configure routes to be fully dynamic This feature can be thought of operating in the same way as a vehicle's Satnav which chooses the fastest route (lowest total cost in NE-ONE terms) and cannot use roads (links in NE-ONE terms) that are blocked or intersections (Nodes in NE-ONE terms) that are blocked

NODPR-427 & NODPR-428	‘External Dynamic Routing’ and ‘Internal Dynamic Routing’ used together – the sum is greater than the parts When both ‘External Dynamic Routing’ and ‘Internal Dynamic Routing’ are used together (which is not mandatory). They will: • Transmit external (OSPF/BGP) subnet information to the Internal network which will if necessary update internal routing • Transmit internal subnet changes to external OSPF/BGP routers • As a corollary connect OSPF/BGP to other OSPF/BGP networks via the NE-ONE’s network receiving and transmitting subnet changes between these networks
NODPR-420	New Curve Driven Interpolation for Network Variables – smoothing out the changes Until now Network Variables changed values at specific times defined by the timeline. Now it’s possible to make gradual changes between the one timeframe and the next. Curve driven interpolation will fit a ‘smooth’ Bezier curve between changes, and you can also manipulate the curve shape manually. Curves can also be straight lines if you prefer to make linear changes between values
NODPR-475	New Gilbert Elliott Loss function – effective simulation of real world bursty packet loss A new Gilbert Elliott Loss function has now been added to the available loss functions. This loss algorithm uses a two-state model to simulate bursty packet loss, switching between "good" and "bad" states to reflect realistic network behavior. This makes it especially useful for evaluating how communication systems handle periods of high loss, helping improve error correction and streaming reliability.
NODPR-419	New Flow Mapping addition to Reporting Easily visualize what IPs are communicating with what other IPs, and where the heavier flows of data are occurring. You can also visualize which parts of the network are independent from each-other based on what conversations are passing through (or if on a switch mirror port to) the NE-ONE. This feature can be found in the ‘Top Talkers and more’ area of reporting.
NODPR-476 & NODPR-487	MPLS Label support – Route and Filter by MPLS Labels New MPLS label support has been added to ‘Link Qualification Criteria’ (Advanced box) in Point to Point networks (emulations), and all expression routing and expression filter functions in Multi Point networks (emulations). All MPLS header fields can be tested: • mpls.label - the MPLS Label • mpls.tc - TC: Traffic Class (QoS and ECN)" • mpls.s - S: Bottom-of-Stack (1 if last MPLS label, 0 if there are more labels) • mpls.ttl - TTL: Time-to-Live These fields refer to the first (outermost) mpls label, the next (second mpls label) if any can be accessed using the prefix mpls_inner e.g. mpls_inner.label, mpls_inner.tc etc. Example: mpls.label=200 selects the link, route or filter is the outermost mpls label is 200. As usual, more sophisticated expressions can be created using and, or, <, > etc.

	NOTES: mpls fields are not available in any non-expression library routing or filter functions and, due to the offset mentioned in 1, tests for layer 3, layer 4 etc. fields will not work correctly. Therefore stick to expression functions where mpls packets are part of the testing. View MPLS packets dynamically It is now also possible to view mpls packets and their labels (to a maximum of 10 levels) in 'Live Packet Monitoring'
NODPR-396	New LDAPS – Secure LDAP over TLS (Transport Layer Security) It is now possible to login to the NE-ONE using your corporate username and password using LDAPS i.e. LDAP over TLS also sometimes called LDAP over SSL. This new feature is part of NE-ONE's Authentication settings. It allows a certificate to be mandated and has a certificate (pem file) upload capability
NODPR-483 & NODPR-479	New Disable (and Enable) Links and Nodes It is now possible disable a link or node in the emulated network. Any traffic directed to that link or node will be dropped. As noted above (in NODPR-428) if dynamic routing is enabled, alternative routes will be calculated to exclude the disabled link.

6.2.3 Improvements

Reference, if Applicable	Description
NODPR-404	Resolved host names (from DNS) are now shown on the monitoring dashboard, rather than just IP addresses (provided DNS reverse lookup is available).
NODPR-79	For users of the NE-ONE Desktop Hardware, which has an LCD panel, it is possible to start networks that are defined in the /Library/Networks/LCD folder directly from the panel. This folder however did not exist by default. It is now created on install, so all that is required is to copy network files into this folder for them to be available to start from the panel.
NODPR-287	The firmware version in use on the NE-ONE's network cards is now written to the ippe.log (aka /Support/system.log when view from the Web GUI)
NODPR-446	It is now possible to enable and disable Nodes and Links in the GUI. A disabled object cannot transmit packets. See also New Feature (NODPR-428) 'Internal Dynamic Routing' for how this affects dynamic routing
NODPR-558	When using the RESTapi the GET operation for javascript would only return the last javascript sent to the engine This could be the update of just a few properties. Now it will return the entire javascript
NODPR-544	When loading a multi-point network containing references to ports that no longer exist, or due to an export from another NE-ONE and subsequent import, never existed, the ports would be blank in drop down menus. Now they show up with their original names but are marked as invalid

NODPR-502	It is now possible to get additional data that impairment functions are monitoring, for example the mean latency in a second imposed by a latency function using the RESTapi. This is supported by two new RESTapi endpoints (calls): 1. GET /ippeapi/networks/{network_id}/ppo/{ppo_id}/function/{function_id}/stats?output=GraphTitles This will provide the names of the statistics that can be obtained 2. GET /ippeapi/networks/{network_id}/ppo/{ppo_id}/function/{function_id}/stats?output={stat name} Where stat name was obtained from the first call For more information on {network_id}, {ppo_id} and {function_id} please see notes on using the RESTapi
NODPR-491	In table views like Statistics and the File Browser the first column i.e. the entity column (port, node, link, file name etc.) has been frozen when scrolling sideways. This makes it much easier to associate data columns on the right with the correct entity
	Miscellaneous minor improvements

6.2.4 Bug Fixes

Reference, if Applicable	Description
NODPR-578	When starting a Network from the File Browser using (right-mouse-click) Play multiple times the Network eventually fails to start without displaying an error in the GUI. Error messages in ippe.log (/Support/system.log from the file browser) indicate "All of the class file descriptors are in use". This is now fixed.
NODPR-452	Saved Labels defined for IP addresses in the reporting feature 'Top Talkers and more' -> Settings -> IP Labels were not being displayed in the reports. This is now fixed.
NODPR-478	A memory leak which would eventually slow down Network Play (start) and stop operations and might eventually lead to the emulator engine being killed due to out of memory has been fixed.
NODPR-488	When many changes were being made to Network variables at short intervals (e.g. <100ms) the changes could 'fall behind the clock'. As this was cumulative the difference could become substantial after a while. This has been fixed.
NODPR-355	Packet Capture on Hardware ports would only capture incoming packets. Packet Capture on Soft ports would only capture outgoing packets. These are now fixed.
NODPR-189	In the Application Performance Report clicking on the triangle symbol to expand and show individual transactions did not work. This is now fixed.
NODPR-385	With the Application Performance Report, there could be concurrency issues with database write if the report was attempted to be generated when the data was being written. It is now only possible to run the report when the network is stopped.
NODPR-435	In dual hop point to point networks where an uneven number of links were used on the left and right the GUI could fail with the 'squiggly man'. This is now fixed.
NODPR-439	Auto generated routing could fail on certain topologies due to cyclical parenting of Nodes. This is now fixed.

NODPR-443	Creating 2 comparison graphs for the same link, but with one set to "packets_per_second" and the other set to "bits_per_second" causes the second graph to not populate with data. This is now fixed
NODPR-444	When a non-comparison graph is produced, i.e. only one item is plotted on the graph, NE-ONE automatically creates a mean line graph. The mean line was being computed incorrectly. This is now fixed and the mean is now calculated on the previous 7 points.
NODPR-602	When a point to point network containing Intelligent Packet Replay is exported to multi-point the resulting network has an illegal filter. This is fixed***
NODPR-598	On the Network Variables definition/update GUI page the data for the network variables could disappear under certain workflows. This is now fixed.
NODPR-583	After completely refreshing the Chrome GUI (ctrl-shift-R) then create a 'full mesh' from the wizard you cannot attach a port to the node - the panel to do this is missing. Performing other operations on the GUI could correct this. This is now fixed.
NODPR-577	Deleting a variable from the timeline before updating the timeline causes the GUI to fail with a 'squiggly man'
NODPR-576	If you click on the cloud button in node -> properties in the multipoint designer and it is greyed out (due to having no cloud function attached) it incorrectly tells you it's an unlicensed feature. This is now fixed.
NODPR-569	If a network fails to start when using multi-point designer, the web GUI could sometimes fail. This is now fixed.
NODPR-511	In Live Packet monitoring clicking the Clear button did not always clear the panel. This is now fixed.
NODPR-492	Granting a non-admin user permission to use a port did not grant access to that port's children and so on. This is now fixed.
NODPR-465	If you attempted to load a port config while running a network (emulation) it would not work (correct as the network will be using one or more of the ports), however no error message was issued. An error message is now issued.
NODPR-462	In the scenario builder it the timeline would not extend correctly beyond 80 seconds. This is now fixed.
NODPR-398	If you minimize the browser window while graphing the graph time starts to fall behind the real-time. This is now fixed.
	Miscellaneous minor fixes

6.2.5 Notes

NODPR-385	The Application Report is available only after the Network (Emulation) has stopped. This is to prevent concurrency issues on the database seen in previous versions. A new popup prevents this: The application report can only be generated once the network is stopped. Other reporting functions are not affected by this restriction.
NODPR-126	Setting the link speed to a very low value now generates a warning popup: 'Very low Link Speed set on link'.
NODPR-404	At this time, for performance reasons the Monitoring Dashboard does not resolve host names, and so the systems appear on that dashboard as IP addresses. You can see host names by clicking through into Reports

6.2.6 Known Issues

Reference, if Applicable	Description
NODPR-556	When using Internal and External dynamic routing with very frequent (sub second) changes in cost performed by Network Variables for many hours internal memory could be exhausted causing the NE-ONE engine to restart. This is being actively investigated.
NODPT-600	Playback of certain streams in IPR are causing yellow prints indicating potential issues. These are being actively investigated.
NODPR-296	When creating ports or loading a port config in the port manager, it will sometimes create an extra line connecting the new port with a different port. This is an visual artifact and can be removed by refreshing the browser. It is also possible to switch to List view to avoid this.
NODPR-88	Impairments involving packet duplication should be put at the bottom of the list of functions when in advanced mode. This prevents the duplicated packet being duplicated itself.
NE1-362	Some customers have observed that the upgrade appears to time out with a session timeout message and then offer to refresh or login again from scratch at the end, rather than issue an upgrade completed successfully popup. If this occurs to you, do not be concerned, the upgrade has completed successfully. Just refresh your browser (with the browser refresh button) and you'll be able to login without issue. Workaround For the smoothest upgrade experience stop all running networks - you can right mouse click on them in the active network list (on the home page) and stop them from there. Then refresh the browser (using the browser's refresh button). Now you can upgrade using the standard method. Use the Web GUI to go to: Management [menu]→ Platform Settings→ Software Update and then upload the appropriate update file (.itu file). It will take several minutes to complete. There should now be no timeout.
NE1-333	The Application Performance Report, which is reached when 'drilling down' in the Applications report, does not currently support downloading. This will be added in a future version
NE1-334	If a lot of data has been collected it can take a while to produce the reports. However, there is currently no visual indication of the need to wait. This will be added in a future version
NE1-330	In the 'hardware traffic generation' soft port, if you set up a generating stream without choosing the Stream Type (which visually shows UDP) it errors on Save with 'Could not create port: gen1, Stream: 1- Stream Type must be TCP or UDP' Workaround: Change the Stream Type to TCP then back to UDP

NE1-310	Clicking on an NE-ONE v5 scenario which has already been converted will not convert it again, unless the converted file is first deleted. No message is output.
NE1-281	Launching an 'old' point-to-point network using the new Play feature from the File Browser may generate a 'network Error - Object right: Cannot Open a connection to Input port (1) - likely it's already in use'. This is because these older emulations were not 'relocatable', except by the Point-to-Point designer. To solve the issue, load the network into the point-to-point designer and (re)save it - this updates it to be relocatable - then Play from the file browser will work.
NE1-278	On the Azure and AWS platforms, logging on at the console goes directly to the command prompt - this is due to the platform constructing the default username in these cases
NE1-279	On Azure and AWS, the platforms directly take control of the console usernames and Management Port addressing. At this time therefore the console menu does not appear on console login and GUI setting of the management port addresses is not functioning
NE1-222	On Desktop systems Generation 4 and 4A - the LCD will start even without the system being powered on leading to the false impression that the system was not starting. Please 'short' press the power button if it does not appear to be coming on
NE1-100	Due to the large variety of network (emulation) designs customers have reported that certain legacy Emulations or files from both INE v8/V9 and NE-ONE v5.0 have not automatically converted to NE-ONE v2022 format - if this happens please email them to support so that we improve the converter. (Many improvements were already made in this version). Where appropriate we will send back a correctly converted file
NE1-99	The context sensitive entry into the User manual from screens relies on PDF destination markers, however not all browsers support this feature. Chrome, Edge (Recent, non legacy versions) & Firefox support this feature. Safari does not support this feature
NE1-98	There is an issue with removing a function in advanced settings mode and then clicking the Update All button. The function is not removed, and its impairments persist. A workaround for this is to set the function's impairment parameters so that it will not impair.

6.3 Previous Release v2025.01.2073.1 - 19 February 2025

**WARNING**

This version contains a major upgrade of the operating system and other related software libraries. To update to it from any previous version you must first update to (at least) **v2024.09.1723.3**. If you are not already running, version 2024.09.1723.3, or higher, you'll receive an error message after uploading the upgrade kit (.itu file) saying:

- Please update to 2024.09.1723.3 or above before updating

After this error message, if the GUI remains with the message "Please wait while the system is updating..." in the centre of the screen. It will need refreshing using the browser's refresh feature to continue.

6.3.1 Bug Fixes

Reference, if Applicable	Description
NODPR-430	File deletion in the (disk) Housekeeping feature was not properly not respecting watermark values. This has now been fixed.
NODPR-439	The recalculate routes feature, in some circular topologies, could crash the NE-ONE. This has now been fixed.
NODPR-443	When multiple comparison graphs were created for the same link, the second graph did not contain data. This has now been fixed.
NODPR-444	On basic graphs, mean average line issue in the graphs has now been fixed.
NODPR-448	The bug that was causing confusion in the Breakpoints Explorer screen is now fixed.

6.4 Previous Release v2024.12.2073 - 05 December 2024 - Argentum

**WARNING**

This version contains a major upgrade of the operating system and other related software libraries. To update to it from any previous version you must first update to (at least) **v2024.09.1723.3**. If you are not already running, version 2024.09.1723.3, or higher, you'll receive an error message after uploading the upgrade kit (.itu file) saying:

- Please update to 2024.09.1723.3 or above before updating

After this error message, if the GUI remains with the message "Please wait while the system is updating..." in the centre of the screen. It will need refreshing using the browser's refresh feature to continue.

**NOTE**

The new reporting and monitoring dashboard features are optional, but available at no cost to existing customers with a current support contract. To get access to the new reporting features please request them via the support portal and they will be added to your license.

6.4.1 Security

Reference, if Applicable	Description
	All CVE's (see https://www.cve.org/) relevant to NE-ONE's operating system, layered packages e.g. python, openssl etc have been applied, up to and including those created on 5th December 2024 We are not noting them individually at this time. New: Security Scans are now completed with Qualys at each main release and each security release

6.4.2 New Features

Reference, if Applicable	Description
NODPR-190	Major New Reports are now available. There are bar charts showing: • Top Talkers – the IP addresses with the most data (both directions) • Top Initiators – the IP addresses initiating most data (both directions) – these are usually clients, or in the case of UDP traffic the IP address to send the first packet • Top Responders – (the opposite of an initiator) - the IP addresses responding to requests with most data (both directions) – usually servers, or in the case of UDP traffic the IP address to reply to the initiator • Top Protocols – the top protocols e.g. ICMP, TCP, UDP etc. (showing both directions of data) • Top Applications – based on the destination TCP/UDP port for an initiator (showing both directions of data) • Top Latencies – shows top the flows (conversations) with the highest latencies The bar charts are stacked separately by sent and received data It is possible to drill down from one chart to the next by clicking on the bar or flows e.g. having located the Top Initiator drill down to find the Top applications for that Initiator IP. This works similarly for all the above. These charts can be found in: Reports & Graphs (menu) → choose Network → choose Run → click on 'Top Talkers and more'
NODPR-190	Application Breakpoints These are a form of trigger which generate alerts. You can create your own

	Breakpoints (triggers) for the following: • Response Time – The time it took the application to respond to a request. This (typically) applies to TCP based protocols • Average Bandwidth falls below a defined level. This (typically) applies to streaming protocols e.g. UDP
NODPR-190	Live Monitoring Dashboard This dashboard shows current traffic levels for Top Initiators, Top Responders, Top Talkers, Top Protocols, Top Applications & Top Latencies – see Major New Reports above for definitions of these items
NODPR-259	Raid 1 in specified Rackmount systems (option) Additional Hardware is added to specified rackmount systems to support ‘hardware raid 1’ (mirroring). Additional software is added to the GUI to monitor the state of the raid e.g. Healthy or Degraded and a separate management tool is added to allow manipulation of the RAID set e.g. replacing a failing drive
NODPR-342	Apply or remove a ‘patch file’ through the Web GUI Patch files are not the same as regular updates (.itu files). They are essentially hot fixes, correcting just one issue. They can now be applied via: Management (menu) → Platform Settings → Software Update
NODPR-372	Generated packets can now exit the emulation environment and be sent to hardware ports. The product now includes a configuration option that enables this. The setting can be found in: Management (menu) → Platform Settings → System Settings → Allow generated packets to leave the emulator
NODPR-275	Generate Traffic from a Node It is now possible to generate traffic from a Node (in addition to a soft port). This traffic generation function is now available as impairment under Packet Input category of the Node’s properties. (Select a Node from the diagram → choose Properties from the sidebar → click Advanced → click Add New Property → open the Packet Input Category

6.4.3 Improvements

Reference, if Applicable	Description
NODPR-315 & NODPR-205	New major operating system version and other software brings the platform fully up to date for operational and security purposes
NODPR-399	The speed of stopping a large network (emulation) has been greatly improved
NODPR-321	Improved statistics collection and database concurrency to support new reporting and monitoring dashboard options

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NODPR-400	Packet sizes larger than 2048 bytes for PCAP files are now supported
NODPR-335	Enhanced stability of the WebSocket client to ensure more reliable and consistent connection with the Web GUI.
NODPR-298	Added the option to add top-level ports directly from the Port Manager list view.
NODPR-243	The housekeeping frequency can now be set via: Management (menu) → Platform Settings → Housekeeping → Run Frequency).
NODPR-346	You are now able to turn on reporting (data collection) before the network (emulation) is started, and this setting can be saved as part of the network file.
	Miscellaneous minor improvements

6.4.4 Bug Fixes

Reference, if Applicable	Description
NODPR-282	The Scenario Builder could incorrectly generate the error message 'network Error - Object right: Cannot Open a connection to Input port (1) - likely it's already in use'. This has now been fixed.
NODPR-371	Applying the 'Random Packet Move Offset' impairment function with the 'Bandwidth' impairment function could cause the emulator to crash. This is now fixed
NODPR-373	The emulation engine could crash if stop was pressed right after start due to a race condition. This has now been fixed.
NODPR-243	Housekeeping was not working properly for non-admin users. This is now fixed.
NODPR-324	Connections could get stuck during the TLS handshake causing the Web GUI to become unresponsive. This appeared to be related to the TLS handshake being incomplete, due to a partial attempt to connect, perhaps by a scanner. This is now fixed.
NODPR-279	Running with a network variable that had a large number of instances for an extended period could occasionally cause the values to become fixed and not update. This is now fixed
NODPR-244	Sometimes the network (emulation) could take a long time to stop. This is now fixed.
NODPR-320	The Optimize Network feature was not working on example networks. This is now fixed.
NODPR-345	Setting system time significantly ahead caused the maintenance thread to use excessive resources. This is now fixed
NODPR-115	Starting multiple diagrams with traffic simultaneously for a certain amount of time could occasionally cause hardware ports to be disabled. This is now fixed.

NODPR-329	Networks started using examples files (/Library/examples) would show up as being in /Private/networks. This is now fixed.
NODPR-299	When creating a top-level port (a child of the system itself, not a child of another port), and then selecting the port type and name would cause an extra popup to appear requesting the port type again. This is now fixed.
NODPR-297	Using a formula on "Max Delay" could cause an error that prevented the network (emulation) from starting. This is now fixed.
NODPR-219	The Port Config dropdown menu could disappear after a port was deleted. This is now fixed.
NODPR-108	The use of the Fragment MTU impairment could crash the emulation engine. This is now fixed.
-	Miscellaneous minor fixes

6.4.5 Notes

NODPR-385	The Application Report is available only after the Network (Emulation) has stopped. This is to prevent concurrency issues on the database seen in previous versions. A new popup prevents this: The application report can only be generated once the network is stopped.
NODPR-336	External Routing has been disabled, as part of a DPDK upgrade. Please enquire if you'd like to discuss the roadmap for this feature.
NODPR-126	Setting the link speed to a very low value now generates a warning popup: 'Very low Link Speed set on link'.
NODPR-404	At this time, for performance reasons the Monitoring Dashboard does not resolve host names, and so the systems appear on that dashboard as IP addresses. You can see host names by clicking through into Reports

6.4.6 Known Issues

Reference, if Applicable	Description
NODPR-296	When creating ports or loading a port config in the port manager, it will sometimes create an extra line connecting the new port with a different port. This is an visual artifact and can be removed by refreshing the browser.
NODPR-88	Impairments involving packet duplication should be put at the bottom of the list of functions when in advanced mode. This prevents the duplicated packet being duplicated itself.

NE1-362	Some customers have observed that the upgrade appears to time out with a session timeout message and then offer to refresh or login again from scratch at the end, rather than issue an upgrade completed successfully popup. If this occurs to you, do not be concerned, the upgrade has completed successfully. Just refresh your browser (with the browser refresh button) and you'll be able to login without issue. Workaround For the smoothest upgrade experience stop all running networks - you can right mouse click on them in the active network list (on the home page) and stop them from there. Then refresh the browser (using the browser's refresh button). Now you can upgrade using the standard method. Use the Web GUI to go to: Management [menu]→ Platform Settings→ Software Update and then upload the appropriate update file (.itu file). It will take several minutes to complete. There should now be no timeout.
NE1-333	The Application Performance Report, which is reached when 'drilling down' in the Applications report, does not currently support downloading. This will be added in a future version
NE1-334	If a lot of data has been collected it can take a while to produce the reports. However, there is currently no visual indication of the need to wait. This will be added in a future version
NE1-330	In the 'hardware traffic generation' soft port, if you set up a generating stream without choosing the Stream Type (which visually shows UDP) it errors on Save with 'Could not create port: gen1, Stream: 1- Stream Type must be TCP or UDP' Workaround: Change the Stream Type to TCP then back to UDP
NE1-310	Clicking on an NE-ONE v5 scenario which has already been converted will not convert it again, unless the converted file is first deleted. No message is output.
NE1-281	Launching an 'old' point-to-point network using the new Play feature from the File Browser may generate a 'network Error - Object right: Cannot Open a connection to Input port (1) - likely it's already in use'. This is because these older emulations were not 'relocatable', except by the Point-to-Point designer. To solve the issue, load the network into the point-to-point designer and (re)save it - this updates it to be relocatable - then Play from the file browser will work.
NE1-277	There are some artifacting issues in the port manager (though a number have also been fixed). A browser refresh to redraw the screen will normally remove them
NE1-278	On the Azure and AWS platforms, logging on at the console goes directly to the command prompt - this is due to the platform constructing the default username in these cases
NE1-279	On Azure and AWS, the platforms directly take control of the console usernames and Management Port addressing. At this time therefore the console menu does not appear on console login and GUI setting of the management port addresses is not functioning
NE1-222	On Desktop systems Generation 4 and 4A - the LCD will start even without the system being powered on leading to the false impression that the system was not starting. Please 'short' press the power button if it does not appear to be coming on

NE1-100	Due to the large variety of network (emulation) designs customers have reported that certain legacy Emulations or files from both INE v8/V9 and NE-ONE v5.0 have not automatically converted to NE-ONE v2022 format - if this happens please email them to support so that we improve the converter. (Many improvements were already made in this version). Where appropriate we will send back a correctly converted file
NE1-99	The context sensitive entry into the User manual from screens relies on PDF destination markers, however not all browsers support this feature. Chrome, Edge (Recent, non legacy) & Firefox support this feature. Safari does not support this feature
NE1-98	There is an issue with removing a function in advanced settings mode and then clicking the Update All button. The function is not removed, and its impairments persist. A workaround for this is to set the function's impairment parameters so that it will not impair

6.5 Previous Release v2024.05.1723.3 - 02 September 2024

This release is a security release with security and bug-fix updates to the Operating system Kernel, its services and modules and layered packages

6.5.1 Security

Reference, if Applicable	Description
	All CVE's (see https://www.cve.org/) relevant to NE-ONE's operating system, layered packages e.g. python, openssl etc have been applied, are per the previous security release v2024.04.1723.2 and are therefore updated as of that version's build date - see below.

6.6 Previous Release v2024.05.1723.2 - 11 July 2024

This release is a security release with security and bug-fix updates to the Operating system Kernel, its services and modules and layered packages

6.6.1 Security

Reference, if Applicable	Description
	All CVE's (see https://www.cve.org/) relevant to NE-ONE's operating system, layered packages e.g. python, openssl etc have been applied, are per the previous security release v2024.04.1723.1 and are therefore updated as of that version's build date - see below.

6.7 Previous Release v2024.05.1723.1 - 24 May 2024

This is an update version made specifically to address a number of issues and makes minor improvements to the brand new 'Network Variables', t.ms and formulas feature introduced in v2024.04.1723. There are also a few small improvements and fixes in other areas. There are no New Features, but there are some minor improvements.

6.7.1 Security

Reference, if Applicable	Description
	All CVE's (see https://www.cve.org/) relevant to NE-ONE's operating system, layered packages e.g. python, openssl etc have been applied, are per the base release v2024.04.1723 and are therefore updated as of that version's build date - see below.

6.7.2 Improvements

Reference, if Applicable	Description
NODPR-217	Starlink has now been separated into separate profiles, for: Starlink - Priority (Fixed), Starlink - Standard (Fixed), Starlink - Mobile Priority, Starlink - Mobile.
NODPR-241	You can now enable/disable the logging of variables in the ippe.log file Management (menu) -> Platform settings -> System preferences -> 'Enable logging for formulas and network variables'
-	Miscellaneous minor improvements

6.7.3 Bug Fixes

Reference, if Applicable	Description
NODPR-195	Using the GUI – Split feature, then changing the right hand side to have different values (asymmetric) then unsplit did not properly return both directions to the same values. This is fixed.
NODPR-118	The City-City feature did not work correctly when updating a running emulation. This is now fixed.
NODPR-217	The parameters for the predefined setting Satellite -> Starlink -> Good were (incorrectly) not asymmetric. This is now fixed. [See also the Starlink settings improvements above]
NODPR-240	After importing a CSV file in the Network Variable feature, then changing the Unit to 's' (seconds) and and the Loop to Hold, it does not keep the change. This is now fixed.
NODPR-218	It was not possible to use a (discrete) Network Variable which was increasing in the Minimum Latency (ms) and Maximum Latency (ms) fields. This was because the minimum was updated fractionally before the maximum causing minimum > maximum which is not allowed. This is now fixed. [They are now updated simultaneously. This has also improved Network Variable performance slightly]

NODPR-226	There was an issue with concurrency in Javascript Custom Code which could cause the Javascript Engine to Crash. This is now fixed.
NODPR-228	Importing a large csv file into the GUI could make the GUI unresponsive. This is now fixed.
NODPR-229	The GUI could auto refresh while trying to update Network Variables. Sometimes the timeline would also disappear. This is now fixed.
NODPR-232	In auto-configure routing if there was more than one path to the subnet, the shortest path would not always be the one chosen. In some cases the forward and back path to the subnet were also different. This is now fixed.
NODPR-245	Attempting to use t.ms and Network Variables in different fields did not work. This is now fixed.
NODPR-249	Using different Network Variables in the Link Speed fields (Left and right) did not work correctly. This is now fixed.
NODPR-250	Small GUI improvements in the Network Variables screens
-	Miscellaneous minor fixes

6.7.4 Notes

NODPR-234	Updating Network Variable timelines is not supported while the emulation is running. A new popup warns of this: "Please note that changes to network variables and timelines will not take effect until the network is restarted"
NODPR-235	Changing a field from using a constant value to a formula after a network is started and vice versa is not supported.
NODPR-236	Updating formulas (or too/from formulas) is not allowed when the network is running - a new popup notifies of this: "Formulas cannot be updated while a network is running"
	It is not supported to use t.ms and Network Variables in the same formula
-	Miscellaneous minor fixes

6.7.5 Known Issues

Reference, if Applicable	Description
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NE1-362	Some customers have observed that the upgrade appears to time out with a session timeout message and then offer to refresh or login again from scratch at the end, rather than issue an upgrade completed successfully. If this occurs to you, do not be concerned, the upgrade has completed successfully. Just refresh your browser (with the browser refresh button) and you'll be able to login without issue. Workaround For the smoothest upgrade experience stop all running networks - you can right mouse click on them in the active network list (on the home page) and stop them from there. Then refresh the browser (using the browser's refresh button). Now you can upgrade using the standard method. Use the Web GUI to go to: Management [menu]→Platform settings→Software Update and then upload the appropriate update file (.itu file). It will take several minutes to complete. There should now be no timeout.
NE1-333	The Application Performance Report, which is reached when 'drilling down' in the Applications report, does not currently support downloading. This will be added in a future version
NE1-334	If a lot of data has been collected it can take a while to produce the reports. However, there is currently no visual indication of the need to wait. This will be added in a future version
NE1-331	If you create a Top Level 'hardware traffic generation' soft port (under the system itself, not a sub-port) it will incorrectly ask twice for the port type. It then goes on to properly set up the soft port
NE1-330	In the 'hardware traffic generation' soft port, if you set up a generating stream without choosing the Stream Type (which visually shows UDP) it errors on Save with 'Could not create port Port: gen1, Stream: 1- Stream Type must be TCP or UDP' Workaround: Change the Stream Type to TCP then back to UDP
NE1-310	Clicking on an NE-ONE v5 scenario which has already been converted will not convert it again, unless the converted file is first deleted. No message is output.
NE1-281	Launching an 'old' point-to-point network using the new Play feature from the File Browser may generate a 'network Error - Object right: Cannot Open a connection to Input port (1) - likely it's already in use'. This is because these older emulations were not 'relocatable', except by the Point-to-Point designer. To solve the issue, load the network into the point-to-point designer and (re)save it - this updates it to be relocatable - then Play from the file browser will work.
NE1-277	There are some artifacting issues in the port manager (though a number have also been fixed). A browser refresh to redraw the screen will normally remove them
NE1-278	On the Azure and AWS platforms, logging on at the console goes directly to the command prompt - this is due to the platform constructing the default username in these cases
NE1-279	On Azure and AWS, the platforms directly take control of the console usernames and Management Port addressing. At this time therefore the console menu does not appear on console login and GUI setting of the management port addresses is not functioning

NE1-222	On Desktop systems Generation 4 - the LCD will start even without the system being powered on leading to the false impression that the system was not starting. Please 'short' press the power button if it does not appear to be coming on
NE1-100	Due to the large variety of network (emulation) designs customers have reported that certain legacy Emulations or files from both INE v8/V9 and NE-ONE v5.0 have not automatically converted to NE-ONE v2022 format - if this happens please email them to support so that we improve the converter. (Many improvements were already made in this version). Where appropriate we will send back a correctly converted file
NE1-99	The context sensitive entry into the User manual from particular screens relies on PDF destination markers, however not all browsers support this feature. Chrome, Edge (Recent, non legacy) & Firefox support this feature. Safari does not support this feature
NE1-98	There is an issue with removing a function in advanced settings mode and then clicking the Update All button. The function is not removed and its impairments persist. A workaround for this is to set the function's impairment parameters so that it will not impair

6.8 Previous Release v2024.04.1723 - 23 Apr 2024

6.8.1 Security

Reference, if Applicable	Description
	All CVE's (see https://www.cve.org/) relevant to NE-ONE's operating system, layered packages e.g. python, openssl etc have been applied, up to and including those created on 22nd April 2024 We are not noting them individually at this time.

6.8.2 New Features

Reference, if Applicable	Description
NE1-336	New network configuration data for Oneweb, Starlink and Iridium. This adds to the existing database of 2G, 3G, 4G, 5G, Wifi, GEO and WAN configuration data already present in NE-ONE.
NE1-355	Optionally set Latency and Loss asymmetrically on the Basic link settings page It is now possible to set these parameters asymmetrically by using the new split feature next to the Common link parameters label. Previously you had to go into advanced link settings to accomplish this
NE1-356	New feature to Swap Latency, Loss and Bandwidth parameters from one direction in a link to the other Sometimes when using Asymmetric settings in the Basic settings dialog e.g. for Starlink, Oneweb or Iridium (see NE1-336) or perhaps an Asymmetric DSL (ADSL) link the

	direction would be incorrect. This new button, positioned next to the link name, swaps the values between the link's directions
NE1-337	Support for Moving Objects e.g. Vehicles, Aircraft, Trains and LEO Satellites etc. When you set parameters like Bandwidth, Linkspeed, Latency, Loss, Bit Errors, even routing, these have, up to now, been fixed values, until updated manually by a GUI user, automatically by a scenario, or automatically via the RESTful API. We have aimed to make the places you can use these variables as ubiquitous as possible: in numeric parameter fields (including in TDMA and cloud rows), in routing and filter statements, in enable/disable checkboxes Now, just like in Microsoft® Excel you can put in a variable that you define, or a formula involving time, that you define (and optionally variables) and it's automatically computed and set. More information on the specific features are outlined in NE1-338, NE1-339, NE1-340 and NE1-341 below. [The Software engineers amongst you will recognise that NE1-337 is in fact an 'Epic'] The features are fully documented, with many useful examples (for you to cut-paste), in the new Operator Manual which can be found onboard the NE-ONE in Help → Documentation in the new Chapter (16 currently): "Dynamic Formulas and Network Variables"
NE1-338	Enter dynamic formulas into fields, in a similar way that spreadsheets, like Microsoft® Excel allow formulas in cells. NOTE this feature is not available in all editions of NE-ONE Wherever you could previously enter a parameter e.g. ● a number like a value for latency ● a text field, like a route destination ● A check box, like an enable, disable on a route you can now enter a formula, by right mouse clicking on the field. A Formula box will open up where you enter a formula. The language of the formula is JavaScript and you can use: ● JavaScript native functions e.g. Math.floor() etc. ● some additional functions we have provided, ● a special variable 't.ms' which has the value in milliseconds since the emulation was started ● discrete variables defined by you - see NE1-339 A simple formula for latency, then, could be: t.ms / 1000 which would raise the latency by 1ms* every second, but: ● *Note that this formula can produce fractions, so after 500ms have elapsed it would produce $500/1000 = 0.5$, so if you only want whole numbers of latency you can use: Math.floor(t.ms/1000) which rounds the computation down to the nearest whole number ● But this would still allow the latency to grow continuously (in whole millisecond increments) with no upper boundary, so using Math.max() can limit this (to 100ms in this example): Math.min(Math.floor(t.ms/1000),100)

	What if we'd like the latency to go back to 0ms after it got to 100ms and start counting up again. Then we could use JavaScripts modulo (remainder) operator '%': Math.floor(t.ms/1000) % 101 [why 101? because modulo (%) delivers a maximum value 1 less than the divisor (101)] Math.floor(), Math.max() etc. are functions from the standard JavaScript Math library. / and % are standard JavaScript operators. A formula's value is recomputed by default every 100ms, but this is settable (per Network) in the Point-to-Point or Multi-Point/Mesh designers' File → Network Variables → Time Recalculation Rate option The above are clearly just a few examples of what's possible, see the documentation chapter referenced in NE1-337 for details and examples
NE1-339	Define (discrete) time based, network variables which can be used wherever fixed parameter values were entered or in formulas (see NE1-338) NOTE this feature is not available in all editions of NE-ONE When defining a network (Point-to-Point or Multi-Point/Mesh) on the File menu, there is a new option called Network Variables. This is where you can define your own variables. It works by first adding one or more named Timelines which consist of time sequences (time 0 and other times you want to update the variables at). For each Timeline you can define one or more Variables and give the variables a value at each time offset. The variables, e.g. x can then be used standalone (just the variable) or in combination e.g. Math.sin(x)*2 in formulas - see NE1-338 Sometimes you may already have variables or parameters you want to use from another product e.g. Microsoft® Excel or MathWorks® MATLAB, in this case you can upload a csv file exported by those products using the Import from CSV feature These are clearly just a few examples of what's possible, see the documentation chapter referenced in NE1-337 for details and examples
NE1-340	Define Custom Code Sometimes simple one line formulas (see NE1-338) aren't sufficient and you need to write a block of code, or create a new function that you want to use in a formula. For this we've provided a place you can enter custom (JavaScript) code which is stored and executed with the emulation NOTE this feature is not available in all editions of NE-ONE When defining a network (Point-to-Point or Multi-Point/Mesh) on the File menu, there is a new option called Custom Code. This is where you can define your own custom JavaScript code. The Custom Code dialog box permanently adds the custom JavaScript code to the network which is stored with the network definition and is executed automatically each time the network is started. Custom code can be used with or without variables or formulas and it therefore is documented in its own chapter in the new Operator Manual which can be found

	onboard the NE-ONE in Help → Documentation in the new Chapter (14 currently): " Using the Script Editor and Custom Code "
NE1-341	Built-In Formulas Sometimes the JavaScript Math library doesn't quite have what you need, and while you could add more functionality with custom code (see NE1-340 above) - there are some useful functions we thought would save you and us a lot of time, so we pre-defined them: ● lerp (linear interpolation) ● lerpOverTime (linear interpolation) over time ● sinewave - you define the frequency, amplitude etc ● convergentSine - a sinewave that converges to amplitude 0 ● PingPong - switch between a pair of values over time NOTE this feature is not available in all editions of NE-ONE The features are fully documented, with many useful examples (for you to cut-paste), in the new Operator Manual which can be found onboard the NE-ONE in Help → Documentation in the new Chapter (16 currently): "Dynamic Formulas and Network Variables" - section 4
NE1-342	Optimize Network Packet Performance by skipping unnecessary nodes (optional) When data is sent from a Link to a Node and the only thing the node is going to do is to send it directly to a port (Hardware or Soft Port) then the node can be (optionally) skipped and the data sent directly to the port from the link. The option to enable this can be found when defining a network (Point-to-Point or Multi-Point/Mesh) on the File menu, there is a new option called Optimize Network - a simple checkbox to turn it on. There are implications, all correct behavior when you consider them: ● The statistics for the node no longer show the data from that link, because it skips the node ● a Packet capture on the node will not show packets from the link, because it skips the node ● Live Packet Monitoring on the node will not show packets from the link, because it skips the node The benefits are clear though, the node which is acting as router no longer has to handle or make a routing decision on the skipped packets reducing a potential bottleneck. If tracing routing paths through a network using Live Packet Monitoring or taking Packet Captures from nodes it would be best to turn this feature off. You can then turn it on again when tracing is complete for efficiency.
NE1-345	Auto Generated Routes You can now define which subnets are attached to which nodes in the Multi-Point Designer by clicking the Node and choosing the Subnets option from the sidebar. It's a list of subnets in CIDR notation per node.

	Then when all the subnets are defined choose the Auto-Configure Routes → Recalculate Routes and it will calculate all the routes required in every node to make the routing to the destination correct. A big-time saver and mistake eliminator over doing it manually. This works for all topologies - mesh, hub and spoke, cloud (including TDMA mesh), multi-hop, free form and mixtures of these. If more than one path is available to a target subnet then the shortest path (literally, per the network drawing is chosen), so you can adjust the path by moving nodes on the diagram and recalculating again.
NE1-346	Populate subnets from soft ports This is a time saving feature which goes hand in hand with NE1-345. Rather than defining the subnets manually, if you've already attached IPv4 softports to the nodes then the subnets will be automatically set up using the soft ports IP address and subnet mask. To use this, from the Multi-Point Designer choose Auto-Configure Routes → Populate subnets from soft ports - the subnets will be added to the subnet list (see NE1-345) of every node with an IPv4 Soft Port attached. (Note if more subnets are needed then you can add them using the procedure outlined in NE1-345). Then when done you can use Auto-Configure Routes → Recalculate Routes to build the routing tables as per NE1-345
NE1-358	The Port Manager now has an optional list view mode This feature is there to support easier use of large numbers of soft ports which could cause this non-list view to need a lot of panning etc. To switch on list view navigate to Management → Preferences and toggle the switch Use List Port Manager. The port manager will now be in list view mode until switched back. List view is a combination of expandable/collapsible port hierarchies with a scrollable display. There is also a search box to locate a port by name in its hierarchy

6.8.3 Improvements

Reference, if Applicable	Description
NE1-343	An option for Packet Replay (both PPR and IPR) which gets around the 100 streams selection limit This is provided by a new workflow in the Packet Reply Dialog → Select Streams Feature called Custom filtering and routing.
NE1-344	Filter which packets to send in Packet Replay using our powerful Expression Syntax

NE1-347	The diagnostic process invoked by the Management → Platform Settings → Diagnostics Gui option now provides additional data on Port statistics, Port Status, Packet Pools and Object status.
NE1-349	Support for the new 4 line LCD screen in the Generation 5 Desktop system has been enhanced Initial support was first added for this new LCD panel in v2024.02.1556.2 - this has been enhanced: ● A section on how to use the new LCD has been added to the Operator manual ● Some Timeout values on dialogs have been improved for easier use ● The display now shows an NE-ONE, starting message on start up not the default LCD Manufacturers Logo ● Many minor improvements The operation of this screen and buttons is documented as the V2 LCD Panel Operation, section 3 in the LCD Panel Chapter (17, currently) of the Operator Guide
-	Miscellaneous minor improvements

6.8.4 Bug Fixes

Reference, if Applicable	Description
NE1-348	City-to-city latency would not change values if a city was changed in an update. This is now fixed.
NE1-349	In build 1556, versions: v2023.12.1556, v2024.01.1556.1 and v2024.02.1556.2, under certain workflows, parameters could be incorrectly written back to the Network with incorrect quotation marks involving backticks ` and quotes marks (" , '). This prevented the network from running until edited to be correct. Patches were supplied to affected customers. This is now fixed.
NE1-350	There were issues with using very large strings > 2047 characters which meant large 'Expressions' e.g. in Expression routes or Expression Filters would not work. This is now fixed
NE1-351	The boot splash screen would display as text, rather than graphic. This is fixed
NE1-352	If a child port was added to a port in a port pair the port-pair was invalidly left pointing to the parent port, which is no longer directly usable as it has a child. The port pair is now deleted if a child is added, with a warning message.
NE1-353	PCAP files with packet sizes > 2048 bytes were not properly being handled in Packet Replay and Live Packet Monitoring. This is now fixed
NE1-354	The 1st digits in large numbers are not visible in reports. This was due to field width restrictions. This is now fixed.
NE1-357	In advanced link settings it was not possible to change the link name. This is now fixed.

NE1-359	Changing Linkspeed to 1.0 Mbps in Basic settings caused it to be replaced by 1 - this was a little troublesome if incrementally reducing bandwidth by 0.1 Mbps at a time while manually goal seeking, for example. This is now fixed.
NE1-360	An engine crash could occur if a routing table was updated at the precise moment it was routing a packet. This is now fixed
NE1-361	Attempting to change a hardware port status via the RESTful API call <code>requests.put('https://<IP address>/ippeapi/ports/0', ...)</code> could cause the engine to crash if the json body supplied to the put request was incorrect. This is now fixed.
-	Miscellaneous minor fixes

6.8.5 Known Issues

Reference, if Applicable	Description
NE1-362	Some customers have observed that the upgrade appears to time out with a session timeout message and then offer to refresh or login again from scratch at the end, rather than issue an upgrade completed successfully popup. If this occurs to you, do not be concerned, the upgrade has completed successfully. Just refresh your browser (with the browser refresh button) and you'll be able to login without issue. Workaround For the smoothest upgrade experience stop all running networks - you can right mouse click on them in the active network list (on the home page) and stop them from there. Then refresh the browser (using the browser's refresh button). Now you can upgrade using the standard method. Use the Web GUI to go to: Management [menu]→ Platform Settings→ Software Update and then upload the appropriate update file (.itu file). It will take several minutes to complete. There should now be no timeout.
NE1-333	The Application Performance Report, which is reached when 'drilling down' in the Applications report, does not currently support downloading. This will be added in a future version
NE1-334	If a lot of data has been collected it can take a while to produce the reports. However, there is currently no visual indication of the need to wait. This will be added in a future version
NE1-331	If you create a Top Level 'hardware traffic generation' soft port (under the system itself, not a sub-port) it will incorrectly ask twice for the port type. It then goes on to properly set up the soft port

NE1-330	In the 'hardware traffic generation' soft port, if you set up a generating stream without choosing the Stream Type (which visually shows UDP) it errors on Save with 'Could not create port Port: gen1, Stream: 1- Stream Type must be TCP or UDP' Workaround: Change the Stream Type to TCP then back to UDP
NE1-310	Clicking on an NE-ONE v5 scenario which has already been converted will not convert it again, unless the converted file is first deleted. No message is output.
NE1-281	Launching an 'old' point-to-point network using the new Play feature from the File Browser may generate a 'network Error - Object right: Cannot Open a connection to Input port (1) - likely it's already in use'. This is because these older emulations were not 'relocatable', except by the Point-to-Point designer. To solve the issue load the network into the point-to-point designer and (re)save it - this updates it to be relocatable - then Play from the file browser will work.
NE1-277	There are some artificing issues in the port manager (though a number have also been fixed). A browser refresh to redraw the screen will normally remove them
NE1-278	On the Azure and AWS platforms, logging on at the console goes directly to the command prompt - this is due to the platform constructing the default username in these cases
NE1-279	On Azure and AWS, the platforms directly take control of the console usernames and Management Port addressing. At this time therefore the console menu does not appear on console login and GUI setting of the management port addresses is not functioning
NE1-222	On Desktop systems Generation 4 - the LCD will start even without the system being powered on leading to the false impression that the system was not starting. Please 'short' press the power button if it does not appear to be coming on
NE1-100	Due to the large variety of network (emulation) designs customers have reported that certain legacy Emulations or files from both INE v8/V9 and NE-ONE v5.0 have not automatically converted to NE-ONE v2022 format - if this happens please email them to support so that we improve the converter. (Many improvements were already made in this version). Where appropriate we will send back a correctly converted file
NE1-99	The context sensitive entry into the User manual from particular screens relies on PDF destination markers, however not all browsers support this feature. Chrome, Edge (Recent, non legacy) & Firefox support this feature. Safari does not support this feature
NE1-98	There is an issue with removing a function in advanced settings mode and then clicking the Update All button. The function is not removed and its impairments persist. A workaround for this is to set the function's impairment parameters so that it will not impair

6.9 Previous Release v2024.02.1556.2 - 9 Feb 2024

6.9.1 New Features

Reference, if Applicable	Description
NE1-335	Full hardware support for the new NE-ONE Gen 5 Desktop system, and in particular the new LCD display which that hardware features. This is the new shipping version on all new NE-ONE Desktop Gen 5 systems Otherwise, this release has identical features to v2024.01.1556.1 i.e. all the security enhancements which were applied on top of the functionality of v2023.12.1556 (see below)

6.10 Previous Release v2024.01.1556.1 - 15 Jan 2024

This release is primarily a security release with security and bug-fix updates to the Operating system Kernel, its services and modules and layered packages e.g. OpenSSL, OpenSSH etc.

It is based on the previous release v2023.11.1556 and so you should read the release notes for that version (below) if you are upgrading from a version prior to that.

6.10.1 Security

Reference, if Applicable	Description
	The operating system and layered packages have been updated to include all available security patches. These are provided in this NE-ONE update kit which, as usual, does not reach out to the Internet for any components. Of particular note is: Protection against the recently identified SSH Vulnerability CVE-2023-48795. With this vulnerability, the SSH transport protocol with certain OpenSSH extensions, found in OpenSSH before 9.6 and other products, allows remote attackers to bypass integrity checks such that some packets are omitted (from the extension negotiation message), and a client and server may consequently end up with a connection for which some security features have been downgraded or disabled, aka a Terrapin attack. More information is available on the NIST web site: https://nvd.nist.gov/vuln/detail/CVE-2023-48795 Many other vulnerabilities have been closed in this update. We mention here only those which may have an impact on the NE-ONE Intel microcode: CVE-2023-23583 Linux Kernel: CVE-2023-45871 and others SQLite: CVE-2023-7104 and 1 other OpenSSH: CVE-2021-41617, CVE-2023-51385, CVE-2023-48795 (already mentioned), tar: CVE-2023-39804 glibc: CVE-2023-4806, CVE-2023-4813, CVE-2023-5156 Python: CVE-2023-40217

6.11 Previous Release v2023.12.1556 - 6 Dec 2023

6.11.1 Security

Reference, if Applicable	Description
NE1-313	The operating system has been updated to include all available security patches. All of these are provided in this NE-ONE update kit which does not reach out to the Internet for any components. In this release Python has been upgraded to the latest supported release v3.9.18 (which features security support until 05 Oct 2025 and directly fixes CVE-2023-40217 - see security release note for v2023.10.1377.1 below - NE1-312)

6.11.2 New Features

Reference, if Applicable	Description
NE1-318	New 'TDMA Mesh' feature. This is a 'Cloud' type impairment function i.e. where multiple impairments are combined in a single (node) object. As the name suggests this feature allows emulation of Time Division Multiple Access (TDMA) networks such as those found in commercial Networks and also Military Tactical Networks (like Link 11, Link 16 [TADIL J], Link22 and many more. Examples networks for Link 11, Link 16 and Link 22 are included in the /Library/examples folder. Parameters you can specify include: ● The number of slots ● The slot duration For each internal 'link' (which may correspond to a Platform): ● Which slots will be used ● Transmission speed (bps) [often called bandwidth] ● Queue size ● Latency (additional to any slot wait time) ● Loss and more... See documentation for details
NE1-322	A new Impairment function called 'Pause Transmission Repeat' has been added to the Pause impairment function category. This function features parameters: ● Time Before First Pause ● Pause Time ● Time to Next Pause ● ...and whether or not to repeat. It is designed for regular pausing and buffering of communication such as in LEO satellite handover.
NE1-319	Support for new new 4 line LCD display in Generation 5 (Gen 5) Desktop System added in preparation for the future release of these systems

NE1-326	Allow Personalisation of the Login screen. You can use your own graphic or choose from a selection of provided graphics (see Management --> Platform Settings --> Personalisation). You can also upload and force acceptance of your organisation's terms of use in a pdf file. This might be as simple as an 'Unauthorized Access Not Permitted' message or a much more substantial document (see Management --> Platform Settings --> Compliance and audit)
NE1-327	New defence icons have been added (these may not be available in all product variants). The included TDMA ring icon automatically adds the TDMA Mesh function - see NE1-318

6.11.3 Improvements

Reference, if Applicable	Description
NE1-314	It could take a long time for Emulation scenarios to stop. This happened when in a long segment, as the emulation would only stop at the end of the segment. It will now stop the scenario quickly even if the start of a long segment
NE1-316	Improved details on messaging when a network cannot be started, or a soft port could not be created.
NE1-325	The maximum default pcap file size has been increased to 20 Gbytes
NE1-328	The Point-to-Point Designer and Multi Point Designers both now allow the addition of a description for the network under File --> Description. This was provided to allow the user to add information on the use of a particular network which would be attached to the network design itself
-	Miscellaneous minor improvements

6.11.4 Bug Fixes

Reference, if Applicable	Description
NE1-315	A few user rights were not enforced or enforced incorrectly. Max networks and max objects are not enforced ability to create networks which is fundamental is now not policed
NE1-317	There could be issues if a network segment in a scenario was changed in the scenario. This is now prevented - Network segments should be modified outside the scenario builder
NE1-320	The IP soft port creation/update could fail, and possibly crash the emulation engine if the IPv4 address or IPv4 network mask was 0.0.0.0, not setup i.e. blank, or a bad value. This is now prevented.

NE1-321	When network packets contained a vlan tag the packet was not properly decoded for the application report and application performance report leaving a blank report file. This is fixed.
NE1-322	Live Packet Monitoring did not properly decode packets when vlan tagged This is now fixed
NE1-324	Attempting to download a folder from the NE-ONE file system would create an error . This operation is not currently possible and has therefore been blocked.
NE1-329	When upgrading from NE-ONE v5 or INE v9 some legacy settings for ntp in the operating system would interfere with NE-ONE's docker implementation of ntp. This has been fixed
-	Miscellaneous minor fixes

6.11.5 Known Issues

Reference, if Applicable	Description
NE1-333	The Application Performance Report, which is reached when 'drilling down' in the Applications report, does not currently support downloading. This will be added in a future version
NE1-334	If a lot of data has been collected it can take a while to produce the reports. However, there is currently no visual indication of the need to wait. This will be added in a future version
NE1-331	If you create a Top Level 'hardware traffic generation' soft port (under the system itself, not a sub-port) it will incorrectly ask twice for the port type. It then goes on to properly set up the soft port
NE1-330	In the 'hardware traffic generation' soft port, if you set up a generating stream without choosing the Stream Type (which visually shows UDP) it errors on Save with 'Could not create port Port: gen1, Stream: 1- Stream Type must be TCP or UDP' Workaround: Change the Stream Type to TCP then back to UDP
NE1-310	Clicking on an NE-ONE v5 scenario which has already been converted will not convert it again, unless the converted file is first deleted. No message is output.
NE1-281	Launching an 'old' point-to-point network using the new Play feature from the File Browser may generate a 'network Error - Object right: Cannot Open a connection to Input port (1) - likely it's already in use'. This is because these older emulations were not 'relocatable', except by the Point-to-Point designer. To solve the issue load the network into the point-to-point designer and (re)save it - this updates it to be relocatable - then Play from the file browser will work.

NE1-277	There are some artifacting issues in the port manager (though a number have also been fixed). A browser refresh to redraw the screen will normally remove them
NE1-278	On the Azure and AWS platforms, logging on at the console goes directly to the command prompt - this is due to the platform constructing the default username in these cases
NE1-279	On Azure and AWS, the platforms directly take control of the console usernames and Management Port addressing. At this time therefore the console menu does not appear on console login and GUI setting of the management port addresses is not functioning
NE1-222	On Desktop systems Generation 4 - the LCD will start even without the system being powered on leading to the false impression that the system was not starting. Please 'short' press the power button if it does not appear to be coming on
NE1-100	Due to the large variety of network (emulation) designs customers have reported that certain legacy Emulations or files from both INE v8/V9 and NE-ONE v5.0 have not automatically converted to NE-ONE v2022 format - if this happens please email them to support so that we improve the converter. (Many improvements were already made in this version). Where appropriate we will send back a correctly converted file
NE1-99	The context sensitive entry into the User manual from particular screens relies on PDF destination markers, however not all browsers support this feature. Chrome, Edge (Recent, non legacy) & Firefox support this feature. Safari does not support this feature
NE1-98	There is an issue with removing a function in advanced settings mode and then clicking the Update All button. The function is not removed and its impairments persist. A workaround for this is to set the function's impairment parameters so that it will not impair

6.12 Previous Release 2023.10.1377.1 - 13 Oct 2023

6.12.1 Security

Reference, if Applicable	Description
NE1-312	The operating system has been updated to include all available security patches except Python (see below). All of these are provided in this NE-ONE update kit which does not reach out to the Internet for any components. We still regard the operational risk of updating Python v3.7.17 to a later, security fix supported, version of Python to be large at this time and so have decided to provide security support for Python's 3.7.17, SSL run time module ourselves. We have therefore backported the fix for CVE-2023-40217 (the only security fix made) from Python v3.8.18/v3.9.18 (which were identical) into Python v3.7.17's SSL module and have tested this. This fix mitigates the issue and will bring Python v3.7.17, together with our fix, up to the same security level as Python v3.8.18 and 3.9.18, which are under support by the python team.

6.13 Previous Release 2023.09.1377 - 21 Sept 2023

6.13.1 Bug Fixes

Reference, if Applicable	Description
NE1-311	After installing v2023.07.1376 the NE-ONE Professional Desktop Generation 4 appliance could run very slowly. This release fixes that problem. If you are running v2023.07.1376, on that appliance, and are experiencing this slowness, please contact support for the procedure to apply this release. [How do you know if you have NE-ONE Professional Desktop Generation 4? Answer, it is the only Desktop appliance with two Ethernet ports on the back (one of them blanked to prevent incorrect use).] Details: In version v2023.07.1376 the operating system, its packages, run time libraries etc.were updated to include all available security and bugfix patches. The operating system kernel was updated as part of this process. Unfortunately there was an incompatibility between that new kernel/drivers and the NE-ONE Professional Desktop Generation 4 hardware which resulted in disk I/O being very slow. This slows down the boot and all aspects where NE-ONE reads and writes from the disk. No other hardware or virtual platform was found to be affected. This problem is fixed in this version. Other functionality is as per v2023.07.1376

6.14 Previous Release 2023.07.1376 - 17 July 2023

6.14.1 New Features

Reference, if Applicable	Description
NE1-282	Intelligent Packet Replay of PCAP files (IPR) i.e. replay pcap files based on the original timing (or a multiplier) of the packets in the file, but also handle latency and losses correctly, as real systems would. This is designed to maintain 'causality' (i.e. that a web response, for example, could not occur before the request) in the event of packet loss or packet delay. This has also been referred to as Stateful Packet Replay. The number times the pcap file is to be replayed can be specified and the GUI will pop up with how long the run(s) have taken, allowing as assessment of how the network changes (bandwidth, latency, loss etc) have affected the pcap playback. A selection mechanism allows the user to select which IP addresses appear from which nodes in the diagram. For more see the User Documentation. NOTE. The documentation also covers Intelligent Packet Replay (IPR) and Passive Packet Replay (PPR)
NE1-283	The operating system, its packages, run time libraries etc. have been updated to include all available security and bugfix patches. All of these are provided in the NE-ONE update kit which does not reach out to the Internet for any components

NE1-284	There is a new Automated Disk Space Housekeeping Feature (Management -> Platform Settings -> Housekeeping which allows you to specify when the disk space falls below a minimum amount (user definable) that certain logging and statistics files (user definable) should be removed and also how long certain file types should be kept
NE1-285	Physical Ports can now be brought (Electrically) up and down with the Port Manager (Port Status). The port manager also notes the status of a port with a Green (Up) or Red (Down) indicator. Note disconnection by the connected device (e.g. switch etc) will also change the indicator.
NE-1-286	Protocol definition files were added to support PPPoE (Ethernet protocol hex 8864) in Expression selections. (PPPoE fields are PPPoE.version, PPPoE.tos, PPPoE.code, PPPoE.Session_ID and PPPoE.Payload_Length). This also handles IPv4 and IPv6 within a PPPoE packet

6.14.2 Improvements

Reference, if Applicable	Description
NE1-280	More specific errors have been added in the event of a failure to create a Soft Port
NE1-287	A new statistics RestAPI call has been added - /ippeapi/reporting/running/network_all_ppo_timed_stats - this allows all object statistics for a specified time period to be retrieved
NE1-288	A non-Admin user could reach the Port Settings page in the Point-to-Point designer and attempt a change which was then correctly refused due to a lack of privilege to make this change. The user is now prevented from accessing the Port Settings page in the GUI
NE1-289	ippe.log would show RestAPI times in local time but internal times in UTC. All times are now written in UTC
NE1-290	Certain operating system packages would reach out to the Internet. These were deemed unnecessary to the correct operation of NE-ONE and have been removed
NE1-291	It is possible to turn on additional RESTapi request logging using the file /ippe/config/logging_request.json. The default is off. To turn it on change the key of "log on request" to be "on" and restart the NE-ONE
NE1-292	If the management port is not connected the system will now continue to boot without waiting for 2 minutes to see if the port will become available
NE1-293	There is a new /ippe/config/ippe config parameter called portpair_sql_query_len. The default if no setting is present is 512 bytes. You can increase this in the event of having a large number of Ports e.g. 100s of Soft Ports, which leads to a large query, create a file in this folder called portpair_sql_query_len with contents portpair_sql_query_len =<value>.

NE1-294	There is a new /ippe/config/ippe config parameter called <code>override_fd_number</code>. The default if no setting is present is 128 (FD's). If you use a lot of links (internally called FDs) both internal to the product as well as on the diagram then this can be increased by creating a file in this folder called <code>override_fd_number</code> with contents <code>override_fd_number=<value></code>.
-	Miscellaneous minor improvements

6.14.3 Bug Fixes

Reference, if Applicable	Description
NE1-295	A large 70 link Point-toPoint network would not start due to a memory restriction in the Expression handler which is used for 'Link Qualification Criteria'. This is now fixed
NE1-296	Mini Graphs could fail to appear, or be out of date, in the Point-to-Point Designer if the time on the user's PC and the time on the NE-ONE did not match. This is now fixed
NE1-297	Packets dropped by a link would be counted as dropped in their 'parent' node' rather than in the link itself. This is now fixed
NE1-298	The 'Pause Transmission' impairment function could fail to resume transmission after the specified time. This is fixed
NE1-299	A fault in the (SSL) Certificates feature (Management -> Platform Settings -> Certificates) prevented the certificates and Private Key from uploading. This is now fixed
NE1-300	There was a low probability issue in the POST JavaScript RestAPI call used to start and update running networks. These would cause the emulation engine to reject a properly constructed request from time to time. This is now fixed.
NE1-301	Sometimes Networks would be slow or very slow (minutes) to stop. This could be interpreted as them failing to stop. This has been fixed Note: Scenarios will always take longer to stop than regular networks
NE1-302	It was not possible for a user to be able to run more than 1 network of (exactly) the same name. While they would start the Point-to-Point & Multi-Point designers could update the incorrect network. This is now fixed
NE1-303	In Live Packet Monitoring the Clear button would not always clear the pane. This is now fixed
NE1-304	In Reports, timings in the time of a report folder and the times written into the report could mix UTC with local timezones. These are now written in local time

NE1-305	There was a problem with the conversion of scenarios from NE-ONE v5 which required the converted file to be edited after conversion before use. This is now fixed.
NE1-309	Omitting "IPv4_Interfaces[0].DHCP_Helper_Service_Name": "" from a RESTapi ippeapi/ports POST causes the emulation engine to fail. This problem only affects RESTapi users. This is now fixed
-	Miscellaneous minor fixes

6.14.4 Known Issues

Reference, if Applicable	Description
NE-310	Clicking on an NE-ONE v5 scenario which has already been converted will not convert it again, unless the converted file is first deleted. No message is output.
NE1-281	Launching an 'old' point-to-point network using the new Play feature from the File Browser may generate a 'network Error - Object right: Cannot Open a connection to Input port (1) - likely it's already in use'. This is because these older emulations were not 'relocatable', except by the Point-to-Point designer. To solve the issue load the network into the point-to-point designer and (re)save it - this updates it to be relocatable - then Play from the file browser will work.
NE1-277	There are some artifacting issues in the port manager (though a number have also been fixed). A browser refresh to redraw the screen will normally remove them
NE1-278	On the Azure and AWS platforms, logging on at the console goes directly to the command prompt - this is due to the platform constructing the default username in these cases
NE1-279	On Azure and AWS, the platforms directly take control of the console usernames and Management Port addressing. At this time therefore the console menu does not appear on console login and GUI setting of the management port addresses is not functioning
NE1-222	On Desktop systems Generation 4 - the LCD will start even without the system being powered on leading to the false impression that the system was not starting. Please 'short' press the power button if it does not appear to be coming on
NE1-100	Due to the large variety of network (emulation) designs customers have reported that certain legacy Emulations or files from both INE v8/V9 and NE-ONE v5.0 have not automatically converted to NE-ONE v2022 format - if this happens please email them to support so that we improve the converter. (Many improvements were already made in this version). Where appropriate we will send back a correctly converted file
NE1-99	The context sensitive entry into the User manual from particular screens relies on PDF destination markers, however not all browsers support this feature. Chrome, Edge (Recent, non legacy) & Firefox support this feature. Safari does not support this feature
NE1-98	There is an issue with removing a function in advanced settings mode and then clicking the Update All button. The function is not removed and its impairments persist. A

	workaround for this is to set the function's impairment parameters so that it will not impair
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6.15 Previous Release 2023.02.1194 - 28 Feb 2023

6.15.1 New Features

Reference, if Applicable	Description
NE1-239	Passive Replay of PCAP files (PPR) i.e. replay pcap files based on the original timing (or a multiplier) of the packets in the files. A selection mechanism allows the user to select which IP addresses appear from which nodes in the diagram. For more see the User Documentation. NOTE. The documentation also covers Intelligent Packet Replay (IPR) which in addition to the above is designed to maintain 'causality' (i.e. that a web response, for example, could not occur before the request) in the event of packet loss or packet delay. This IPR feature will be available in a future release
NE1-240	Graphing and getting Statistics from Historical data can now be performed. This is found in the Reports & Graphs menu option by clicking on the new tile Historical Statistics and then navigating to the correct Network folder and then the correct run folder. A display similar to the statistics menu option is shown with a summary of the statistics for the entire run. To graph a particular value use the 'Launch graph' icon which appears when you hover over the relevant statistic value. This feature is supported by a new RESTapi call: /ippeapi/reporting/summary_stats_for_run which can be used directly by RESTapi users
NE1-241	Microsoft Azure Cloud is supported by NE-ONE in this release

6.15.2 Improvements

Reference, if Applicable	Description
NE1-242	Several improvements to graphing including not exceeding the widget bounds when resizing the browser window
NE1-243	Allow the same (impairment) function to be used more than once in a link or node
NE1-244	In addition to highlighting the file 'Find in file browser' now also ensures that the file is at the top of the list to make it easy to spot
NE1-245	Statistics page improvement: A new 'column' selection menu lets you hide/unhide columns
NE1-226	You can now hide the subtree of a port in the Port Manager to make the display more manageable by right clicking on the port (avoiding the port name itself) whose sub-tree you wish to hide. The sub-tree is then replaced by a + indicating that there are hidden

	elements. Right click on the port (not the +, again avoiding the port name) to unhide the tree
NE1-246	The Composite routing function now has a new route field called Spoof Port In which allows it to 'change' the import port associated with the packet. This is created to allow Packet Replay to direct packets through the diagram as though they originated from that port. It can be used for other purposes with care
NE1-247	All routing functions have a new route checkbox 'Only Allow Replay Traffic'. This is used by Packet Replay to only route packets created by the replay feature
NE1-248	A new Copy File Path feature in the File Browser allows the copying of the file's path to the clipboard
NE1-249	To visualise when data is flowing through a link in the Multi-point (mesh) designer the lines are coloured green, if the traffic is only in one direction then the line is coloured orange and dashed
NE1-250	Several improvements to Live packet decode now gives significantly more detail on UDP, TCP, IPv6 and ARP packets
NE1-251	Improved the file browser to refresh automatically on changes
NE1-252	Removed the need for fixed names of the DHCP Relay - DHCP Helper service. Any name can now be used for these services
NE1-253	Added a 'Freeze' on the ID and Name column in the statistics display so that they remain fixed when scrolling horizontally
NE1-254	Restrict the DHCP Help service to only show IPv4 soft ports instead of any leaf ports
NE1-255	Allow IPv4 softports to be used in DHCP Relay services even if they have child ports (usually filter ports)
NE1-256	When Links=0 in the licence key it will now be hidden in My Model (on the homescreen) to avoid confusion, as this means that Links does not apply in this case
NE1-257	LDAP Authentication - a new file /ippe/config/user_list.json can be used to include valid ldap users for the NE-ONE which will then be created on first login according to the json parameters. This makes it easier to create the users initially. Once a user is created this way the user name does not need to be kept in the json file. Passwords in this file should be specified as * - it is ldap that controls the user authentication the password in the json file is there for future use with other authentication methods
NE1-258	On startup of the NE-ONE's emulation engine ports and services are now read from json files called: /ippe/config/default_ports.json and default_services.json respectively. This replaces the legacy method of command lines in the file /ippe/jail/scripts/default_ports.sh which will be deprecated in future. An automatic upgrade feature converts from the legacy method

NE1-259	It is now possible to scroll the Edit Port sidebar in the Port Manager when it is too deep for the current window size
NE1-262	You can now directly run a network from the file browser using: File Browser -> <select MP Network> -> <Right Mouse> -> Play [see also a limitation in known issue NE1-281 below]
NE1-260	There could be too many 'Network Updated by API' messages when a network was frequently updated by the API. A new user preference 'Allow the API to silently overwrite unsaved GUI changes on running networks' can suppress these
NE1-261	If the scenario builder detects incompatible networks, it will be more specific in indicating the incompatibility
-	Miscellaneous minor improvements

6.15.3 Bug Fixes

Reference, if Applicable	Description
NE1-263	A difference in time of day between the NE-ONE and the users web gui could cause graphs and mini-graphs to be plotted based on old data or not appear at all (no data). This is now fixed
NE1-264	Disk Usage pie charts could display the pie segments in the wrong color. This is now fixed
NE1-265	When opening multiple graphs on same node from statistics page, and then clicking close on one incorrectly closes them all. This is now fixed
NE1-266	The DHCP Relay service would not properly pass requests to the ports, preventing DHCP Relay working properly. This is now fixed
NE1-236, NE1-237	Some conversion NE-ONE v5 and INE emulation files were incomplete/incorrect. This is now fixed See also NE1-100 in known issues below
NE1-267	A few crashes when Live packet decode did not properly handle certain packet types are now fixed
Ne1-268	The NE-ONE v5 (impairment) functions Fragment_MTU, Random_Packet_Move_Offset, Random_Packet_Time_Reorder and Packet_Reorder_1_in_x were incorrectly omitted in NE-ONE v2022 Professional Edition. This is now fixed
NE1-269	Radius authentication did not correctly handle alt_server (alternate server) and the use_tls fields. The latter leading to a crash. These are now fixed

NE1-210	The SSL certificate details in Management→ Platform Setings → Certificate incorrectly always showed the information for an iTrinegy certificate, not the currently uploaded one. This is now fixed
NE1-270	Packet Capture could incorrectly make huge (corrupt) files under certain circumstances. This is now fixed
NE1-271	Reports could not be downloaded to docx files. This is now fixed
NE1-272	The (scenario) outage transition did not work correctly for the impairment random_drop. This is now fixed
NE1-273	Decreasing loss and bandwidth in transitions were not working correctly. This is now fixed.
NE1-274	Issues with the KNI layer would stop the management console appearing for External Networks. This is now fixed
NE1-275	The default transmission service would not restart when a network was stopped when a non admin user was running the network. This is now fixed
NE1-276	A crash could happen if the routing object id was changed in a link using a routing function. This is now protected against.
-	Miscellaneous minor fixes

6.15.4 Known Issues

Reference, if Applicable	Description
NE1-281	Launching an 'old' point-to-point network using the new Play feature from the File Browser (see NE1-262 above) may generate a 'network Error - Object right: Cannot Open a connection to Input port (I) - likely it's already in use'. This is because these older emulations were not 'relocatable', except by the Point-to-Point designer. To solve the issue load the network into the point-to-point designer and (re)save it - this updates it to be relocatable - then Play from the file browser will work.
NE1-277	There are some artificing issues in the port manager (though a number have also been fixed). A browser refresh to redraw the screen will normally remove them
NE1-278	On Azure and AWS the platforms logging on at the console goes directly to the command prompt - this is due to the platform constructing the default username in these cases
NE1-279	On Azure and AWS the platforms directly take control of the console usernames and Management Port addressing. At this time therefore the console menu does not appear on console login and GUI setting of the management port addresses is not functioning

NE1-222	On Desktop systems Generation 4 - the LCD would start even without the system being powered on leading to the false impression that the system was not starting. Please short press the power button if it does not appear to be coming on
NE1-100	Due to the large variety of network (emulation) designs customers have reported that certain legacy Emulation files from both INE v8/V9 and NE-ONE v5.0 have not automatically converted to NE-ONE v2022 format - if this happens please email them to support so that we improve the converter. (Many improvements were already made in this version). Where appropriate we will send back a correctly converted file
NE1-99	The context sensitive entry into the User manual from particular screens relies on PDF destination markers, however not all browsers support this feature. Chrome, Edge (Recent, non legacy) & Firefox support this feature. Safari does not support this feature
NE1-98	There is an issue with removing a function in advanced settings mode and then clicking the Update All button. The function is not removed and its impairments persist. A workaround for this is to set the function's impairment parameters so that it will not impair

6.16 Previous Release 2022.08.936 - 1 Aug 2022

6.16.1 New Features

Reference, if Applicable	Description
NE1-225	The console login user has changed from itrinegy to neone with default password neone. The username itrinegy remains operational but is deprecated - in a future version it will be removed. The change password feature in the console program changes the password for both the neone and itrinegy users to the same value. The console login screen has been changed to just have the banner NE-ONE (plus the IP address, as before)

6.16.2 Improvements

Reference, if Applicable	Description
-	Miscellaneous minor improvements

6.16.3 Bug Fixes

Reference, if Applicable	Description
NE1-224	Where the link name(s) were different in two or more work in progress scenarios (i.e. loaded in the scenario builder), the scenario changeover to the second network element could fail with an invalid link message. This is now fixed

NE1-223	Basic link settings dropdowns not repopulating from loaded active network, or load from file system network. This is now fixed
-	Miscellaneous minor fixes

6.16.4 Known Issues

Reference, if Applicable	Description
NE1-222	On Desktop systems Generation 4 - the LCD would start even without the system being powered on leading to the false impression that the system was not starting. Please short press the power button if it does not appear to be coming on
NE1-100	Due to the large variety of network (emulation) designs customers have reported that certain legacy Emulation files from both INE v8/V9 and NE-ONE v5.0 have not automatically converted to NE-ONE v2022 format - if this happens please email them to support so that we improve the converter. (Many improvements were already made in this version). Where appropriate we will send back a correctly converted file
NE1-99	The context sensitive entry into the User manual from particular screens relies on PDF destination markers, however not all browsers support this feature. Chrome, Edge (Recent, non legacy) & Firefox support this feature. Safari does not support this feature
NE1-98	There is an issue with removing a function in advanced settings mode and then clicking the Update All button. The function is not removed and its impairments persist. A workaround for this is to set the function's impairment parameters so that it will not impair

6.17 Previous Release 2022.07.882 - 28 June 2022

6.17.1 New Features

Reference, if Applicable	Description
NE1-219	New facility to be able to Live Packet Monitor through objects/links in the Web GUI - like an internal tcpdump. NOTE this is for ease of tracing network paths and should not be left on at higher packet rates due to performance overhead. See new option in Designers (Link & Node) and also the Statistics page
NE1-220	In Expressions a new @packet.loc[<offset>] is now available to test the value of a byte at a specific packet offset. See documentation for details

6.17.2 Improvements

Reference, if Applicable	Description
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NE1-184	Add graphs page (links, comparison) now shows direction of link (from node)
NE1-212	Mean average line now shown on basic graphs
NE1-216	Added ability to update running network json via RESTapi by putting in filename. This is in addition to being able to update in a direct post
NE1-218	Branding - Certificate Organisation changed to Calnex
-	Several Minor improvements

6.17.3 Bug Fixes

Reference, if Applicable	Description
NE1-170	When launching a graph from a link in a dual hop network, incorrect elements were graphed. This is fixed
NE1-181	In a pair of emulations, one on ports 0-1 and one on ports 2-3 with same node names leads to graphing ambiguity. This is now fixed
NE1-182	Changing node names were not re-evaluated by the graph tool, leading to them not being available for graphing. This is now fixed
NE1-183	When going to the new graphs page it did not reevaluate ports and links available from the currently running emulations. This is now fixed
NE1-185	When changing link names that have already been graphed the name doesn't update on the graph. This is now fixed
NE1-211	Licensed topologies not showing properly in my model. This is now fixed
NE1-193	First field in link basic settings not updating properly in RESTapi. This is now fixed
NE1-201	Comparison graph in multi point designer does not distinguish between the directions. This is now fixed.
NE1-214	GUI could get unwanted "changed by API" when you press Update All in main MP designer screen. This is now fixed
NE1-215	Occasionally GUI could hang with RESTapi calls not being serviced. Added timeouts to SSL sockets to prevent this
NE1-217	Supplying an invalid link index e.g. in a RESTapi call could cause the engine to crash. This is now prevented

NE1-221	For the Desktop systems with LCD, the LCD would not always initialise properly, especially on cold start (power applied). This is now fixed
-	Many minor fixes to graphs
-	Miscellaneous minor fixes

6.18 Previous Release 2022.05.825 - 20 May 2022

6.18.1 New Features

Reference, if Applicable	Description
NE1-154	This is the first Calnex Solutions branded version of NE-ONE
NE1-155	NE-ONE is now available as an AMI for AWS directly from the AWS Marketplace (search for NE-ONE)
NE1-155	You can now directly upgrade from INE v9 to NE-ONE v2022 via the INE's patch feature. This upgrades the software and the operating system and packages. INE v9 now uses the same patch files as NE-ONE v5.
NE1-156	NE-ONE now supports running on Microsoft Azure. Please contact support for the machine (VM) image

6.18.2 Improvements

Reference, if Applicable	Description
NE1-158	New padlocks in Mesh Designer and Port Manager prevent accidental change of the diagram. Click to Lock/Unlock
NE1-159	Notification of GUI users by events generated by changes to running networks by other GUIs or RESTful API is improved
NE1-160	Start and stop operations can sometimes take a little time - there are now waiting messages to show that the process is happening - these are removed when the operation is complete
NE1-161	It is now possible to suppress minigraphs (graphs that automatically are shown in the PTP single and PTP dual designers
NE1-152	Large improvements made to network update speed, by multithreading and using differencing for both Point-to-Point and Multi-Point designs

NE1-162	Miscellaneous improvements to Software Update process in the GUI
NE1-163	Miscellaneous improvements to graphing
NE1-164	The GUI now ignores out of date session expiry events. Preventing old session expiry popups that are delivered after newly logging in
NE1-165	Hover over in Port Manager now suppressed when the mouse is moving
NE1-166	A few new waiting "spinners" were introduced where wait time on an operation is noticeable
NE1-167	If a network is opened multiple times it gets an increasing suffix e.g. _1 _2 to show the different instances. Returning to an active network opens the appropriate one
NE1-168	The software upgrade button is now greyed out if maintenance (which includes software updates) has expired, this prevents rejection of the update in the update process itself
NE1-169	Many miscellaneous improvements to the Port Manager
-	Several Minor improvements

6.18.3 Bug Fixes

Reference, if Applicable	Description
NE1-126	Newly created scenarios did not work with "find file in file browser". This is now fixed
NE1-171	Miscellaneous fixes to the INE file converter
NE1-172	The GUI could receive multiple notifications of a change of the status of a network. This is now fixed.
NE1-173	Packets from the KNI (used for dynamic routing services) could be incorrectly labelled. This is now fixed
NE1-174	Changing the link qualifications in the RESTful API or another GUI would not be sent to the GUI of another user running that network. This is now fixed
NE1-175	Sometimes you would receive multiple notifications when returning from Advanced Link settings to Basic Link settings. This is now fixed
NE1-176	Port 0 could not be moved (dragged) in the port manager. This is now fixed

NE1-177	Clicking on the "Play" button in a port pair in the menu bar could cause the GUI to fail. This is now fixed
NE1-178	In the RESTful API an additional space could be introduced in a post depending on the encoding, this could cause the API call to fail. This is now fixed
NE1-179	The GUI could fail on playing a newly created scenario (not saved and reloaded) under certain conditions. This is now fixed
NE1-180	Several fixes in packet handling and packet disposal to improve product resilience in very unusual packet flows
-	Miscellaneous minor fixes

6.18.4 Known Issues

Reference, if Applicable	Description
NE1-222	On Desktop systems Generation 4 - the LCD would start even without the system being powered on leading to the false impression that the system was not starting. Please short press the power button if it does not appear to be coming on
NE1-100	Due to the large variety of network (emulation) designs customers have reported that certain legacy Emulation files from both INE v8/V9 and NE-ONE v5.0 have not automatically converted to NE-ONE v2022 format - if this happens please email them to support so that we improve the converter. (Many improvements were already made in this version). Where appropriate we will send back a correctly converted file
NE1-99	The context sensitive entry into the User manual from particular screens relies on PDF destination markers, however not all browsers support this feature. Chrome, Edge (Recent, non legacy), Firefox support this feature. Safari does not support this feature
NE1-98	There is an issue with removing a function in advanced settings mode and then clicking the Update All button. The function is not removed and its impairments persist. A workaround for this is to set the function's impairment parameters so that it will not impair

6.19 Previous Release 2022.04.732 - 28th March 2022

6.19.1 New Features

Reference, if Applicable	Description
NE1-128	individual JavaScript updates through the RESTapi are now applied to the json view of the network, so that a reload into the GUI will have the complete up to date settings

NE1-130	Automatically update the running network in the GUI when updated incrementally through the RESTapi with JavaScript - this is related to NE1-128
NE1-144	AWS Certified. This version has passed AWS certification

6.19.2 Improvements

Reference, if Applicable	Description
NE1-127	Improved conversion of INE and NE-ONE v5 files to NE-ONE v2022
NE1-137	Several improvements were made to the GUI's handling of events to ensure that all events will pop up when they should
NE1-138	Some https agents did not correctly fill in the host field in the header leading to an exception which could delay RESTapi call handling while recovering from the exception. This is now handled.
NE1-139	In VM installations it is possible to set up large numbers of processor sockets e.g. 8. Only 4 are supported. you are now informed of too many sockets rather than experiencing issues later.
NE1-140	If the NE-ONE was restarted then on re-login the GUI could incorrectly show the "old" status of networks in the toolbar. It now checks to see what is actually running and adjusts the status accordingly
NE1-141	If you have not installed a certificate, then in the web browser you have to accept the generic certificate as OK to use. However this permission is not permanent in the browser. When it expires there is some mystery as to the reason your login credentials no longer work. We now detect this and aim to inform you.
NE1-142	For RESTapi users json part of a network is now updated when a JavaScript update is sent, allowing visualisation of changes from the RESTapi using the GUI
NE1-145	A confirm password box has been added to the change password screens to prevent typing errors
NE1-145	Vertical animation of graph lines has been removed to make graphs easier to read when they are being updated
NE1-147	The user's preference for file browser mode - Tile or List is now remembered across sessions
NE1-149	It is now possible to use Find in File browser from the Point to Point Designer and Multi Point Designer in List mode (only tile mode was previously supported)
-	Several Minor improvements

6.19.3 Bug Fixes

Reference, if Applicable	Description
NE1-129	Turning packet capture on and off (which used events) would interfere with the delivery of network start stop events etc. This is now fixed
NE1-131	Y-Axis Labels on graphs could exceed the available width when values were large. They are now scaled by dividing by 1000, 1000000 etc (as appropriate) and labelled respectively K, M, G etc.
NE1-132	The GUI did not properly set up the nested properties in the Generic and Composite Filter causing these not to work. This is now fixed
NE1-133	There was a memory leak in packet processing. This is now fixed
NE1-134	JavaScript garbage collection was not functioning correctly, leading to out of memory conditions if a lot of JavaScript updates were made, such as in a scenario with a tight loop or looping JavaScript RESTapi calls. This is now fixed
NE1-135	An ipperte engine crash referencing <code>ippe_virtual_out_process_packet_with_classes_and_bandwidth</code> has been protected against
NE1-136	There was a problem with capturing packets on soft ports. This is now fixed
NE1-143	Clicking on an active emulation when it is already in the toolbar would cause a duplicate to appear in the toolbar. This is now fixed
NE1-148	When using Save As on a scenario the "internal name" would not be changed from the original scenario. This is now fixed
NE1-150	There was an issue with packets not being initialized correctly when received via KNI, and also of packets not being released when only receiving on KNI. These are both now fixed
-	Miscellaneous minor fixes

6.19.4 Known Issues

Reference, if Applicable	Description
NE1-100	Due to the large variety of network (emulation) designs customers have reported that certain legacy Emulation files from both INE v8/V9 and NE-ONE v5.0 have not automatically converted to NE-ONE v2022 format - if this happens please email them to support so that we improve the converter. Where appropriate we will send back a correctly converted file

NE1-99	The context sensitive entry into the User manual from particular screens relies on PDF destination markers, however not all browsers support this feature. Chrome, Edge (Recent, non legacy), Firefox support this feature. Safari does not support this feature
NE1-98	There is an issue with removing a function in advanced settings mode and then clicking the Update All button. The function is not removed and its impairments persist. A workaround for this is to set the functions impairment parameters so that it will not impair
NE1-126	For a newly created scenario file, if you click on "find in file browser" it does not highlight the file. If you reload the file later then this is not an issue
NE1-152	Sometimes in the multi-point designer update is slow from pressing the button to receiving the popup
NE1-153	Packet drops does not count up in Internal Drops in graphs and statistics

6.20 Previous Release 2022.01.699 - 7th March 2022

This version has a designation of Limited Availability (LA)

6.20.1 New Features

Reference, if Applicable	Description
NE1-121	In order to be able to see the network diagram in the Multi Point Designer while configuring routing a new PEEK button has been created. Hovering over this button shows the diagram below

6.20.2 Improvements

Reference, if Applicable	Description
NE1-120	Minor updates to LCD software (Desktop Hardware) messaging when IP address cannot be determined
NE1-101	Several Improvements to External Routing, BGP, OSPF, RIP, etc. RIPv6 has been renamed to the technically more precise RIPng in menus etc
NE1-105	fixed_delay_with_jitter function now appears in both Default and Labs libraries for compatibility with both NE-ONE v4/v5 and INE v9
NE1-109	Added Desktop System Motherboard GA-H17TN-00
NE1-110	An SSL problem introduced in some recent browsers could cause the built in Webserver to crash with an SSL length error. It now restarts itself automatically in this case

NE1-112	In basic link settings it is now possible to select the dropdowns for Subtype and Link Quality out of order to change just these values without altering the Type. Previously they were greyed out.
NE1-113	Software Update improvements: 1. On uploading a software update the spinning wheel has been replaced by a percentage progress bar. 2. The GUI holds on a waiting page while checking that the new version has started. 3. after the update the running GUI checks if it needs to upgrade itself and if so forces an update (rather than using the current cached copy) Note, these changes will be seen for the next update, not this update.
NE1-117	opening a network from the recent file list (e.g. on another port pair) twice now behaves in the same way as opening from the file browser and _n (e.g. _1, _2) is added to the subsequent instances.
NE1-119	After using "Upload from PC" the uploaded file now appears immediately in the recent files list
NE1-122	Miscellaneous Performance improvements
NE1-123	Updated Operator manual
-	Other minor miscellaneous improvements

6.20.3 Bug Fixes

Reference, if Applicable	Description
NE1-102	Change to upgrade procedure to ensure that when operating system components or packages are installed they will not look to the Internet for repositories
NE1-106	When Link Speed bit speed units were changed from bps to Mbps, Gbps etc the multiplication factor would also be applied to the congestion %. This is now fixed
NE1-107	On the statistics page the lights for packet capture and reporting capture could flash incorrectly in the wrong colour. This is now fixed
NE1-108	On session expiry the GUI could produce multiple session expired popups. This is now fixed
NE1-111	If packet capture was turned on at high packet rates it would lead to memory exhaustion, causing the product to stop functioning, including processing RESTapi calls. This would make it look like the GUI was not functioning. This is now fixed
NE1-114	There was an issue with updating, disabling and then enabling ip addressing on port pairs. This is now fixed

NE1-116	Attempting to (sideways) upgrade from a version to exactly the same version (i.e. all 3 parts of the version match) could cause an issue. This is now prevented.
NE1-118	In scenario builder shrinking segments down to 1 second could not be resized up again. This is now fixed
NE1-124	If a scenario was slow to start then a message could appear that the scenario had not started successfully, even though it was running. This was due to a timing issue. This is now fixed.
NE1-125	If a link is deleted from within the link parameters, the GUI would crash with a "squiggly man" graphic. This is now fixed
-	Other minor miscellaneous bug fixes

6.20.4 Known Issues

Reference, if Applicable	Description
NE1-100	Due to the large variety of network (emulation) designs customers have reported that certain legacy Emulation files from both INE v8/V9 and NE-ONE v5.0 have not automatically converted to NE-ONE v2022 format - if this happens please email them to support so that we improve the converter. Where appropriate we will send back a correctly converted file.
NE1-99	The context sensitive entry into the User manual from particular screens relies on PDF destination markers, however not all browsers support this feature. Chrome, Edge (Recent, non legacy), Firefox support this feature. Safari does not support this feature
NE1-98	There is an issue with removing a function in advanced settings mode and then clicking the Update All button. The function is not removed and its impairments persist. A workaround for this is to set the functions impairment parameters so that it will not impair
NE1-126	For a newly created scenario file, if you click on "find in file browser" it does not highlight the file. If you reload the file later then this is not an issue.

6.21 Previous Release 2022.01.656 - 18th February 2022

This version has a designation of Release Candidate

6.21.1 New Features

Reference, if Applicable	Description
-	None

6.21.2 Improvements

Reference, if Applicable	Description
-	Improved console boot screen
-	Port Pairs are now always shown in alphabetical order
-	License policing changed to allow addition/removal of Processors (CPUs) and addition/removal of NICs (vNICs/Networks) in VM versions without requiring a license update
-	Other minor miscellaneous improvements

6.21.3 Bug Fixes

Reference, if Applicable	Description
NE1-104	Sidebar (object properties) are now closed when changing between editing networks, as otherwise an attempt to change the (out of scope) sidebar properties would causes a GUI failure
-	On a cold start (power cord removed/attached) the Desktop G4 hardware could arbitrarily switch network management port device name. Our startup software now looks for this change and updates the operating system files to allow continued access by the IP address
-	other minor miscellaneous bugfixes

6.21.4 Known Issues

Reference, if Applicable	Description
-	Per version 2022.01.632

6.22 Previous Release 2022.01.632 - 9th February 2022**6.22.1 New Features**

Reference, if Applicable	Description
-	Added Support for Desktop System Motherboard GA-H170TN-00

6.22.2 Improvements

Reference, if Applicable	Description
-	Desktop LCD - Improved handling if IP details cannot be obtained
NE1-103	Maximum MTU is now increased from 9018 to the largest a card can handle. Exact details may vary with NIC card firmware - check /Support/system.log (aka ippe.log) for exact values
-	Improved choice of portpair colours for professional (point-to-point) versions
-	ISO Installer improved to support UEFI for Generation 4 Desktop hardware
-	Other minor miscellaneous improvements

6.22.3 Bug Fixes

Reference, if Applicable	Description
-	minor miscellaneous bug fixes

6.22.4 Known Issues

Reference, if Applicable	Description
NE1-102	It has been reported (and verified by us) that some operating system packages provided in the v5.0 v2022 upgrade process attempt to access repositories via the Internet to resolve missing dependencies. We are investigating whether this affects other software updates e.g. v2021.x to v2022.n. We are investigating with the aim to remove all external dependencies.
NE1-101	There is an issue with configuring the new external routing feature i.e. (external BGP, OSPF and RIP) - we are researching this.
NE1-100	Certain legacy Emulation files from both INE V8/V8 and NE-ONE V5.0 have not automatically converted to NE-ONE v2022 format - if this happens please email them to support so that we can investigate
NE1-99	The context sensitive entry into the User manual from particular screens relies on PDF destination markers, however not all browsers support this feature. Chrome, Edge (Recent, non legacy), Firefox support this feature. Safari does not support this feature
NE1-98	There is an issue with removing a function in advanced settings mode and then clicking the Update All button. The function is not removed and its impairments persist. A workaround for this is to set the functions impairment parameters so that it will not

	impair
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6.23 Previous Release 2022.01.622 - 4th February 2022

6.23.1 New Features

Reference, if Applicable	Description
NE1-82	On first login it will be a requirement to change the admin user's password from admin
NE1-83	A new force password change on next login feature in the User manager has been created for user admin

6.23.2 Improvements

Reference, if Applicable	Description
-	Disk space check performed at an earlier point in Software Update with message indicating that update cannot be performed if too little space available
-	The OVA disk size for VMware has been increased to 100GB to ensure sufficient space available for report data storage etc
NE1-95	LCD now flashed with initial System Starting message for Desktop NE-ONEs
NE1-97	Improperly started networks will now show up in the active networks list allowing them to be closed and so free their resources

6.23.3 Bug Fixes

Reference, if Applicable	Description
NE1-86	If a link name was changed and then Advanced features were immediately selected without OK, the GUI would fail and need refreshing - this is now fixed
NE1-87	Occasionally the city to city latency function would show in link advanced settings but this is reserved for the built-in location function - this is now suppressed
NE1-88	A few Issues with the traffic generation soft port have been fixed
NE1-89	An issue with changing the node icon in the point to point designer would cause the GUI to fail - this has now been fixed

NE1-90	a link with advanced settings would not go directly into advanced mode without the user clicking advanced settings - this is now fixed
NE1-91	A few issues caused by language support have been fixed
NE1-92	The LCD could hang if the IP address of the management port could not be determined. This is now fixed
NE1-93	A non privileged user could not start an emulation on ports assigned specifically to them in the port manager - this is now fixed
NE1-94	Enabling, then disabling, then re-enabling Default Transmission for a Port Pair would not work. This is now fixed

6.23.4 Known Issues

Reference, if Applicable	Description
-	It is possible that certain legacy Emulation files from both INE V8/V8 and NE-ONE V5.0 will not automatically convert to NE-ONE v2022 format - if this happens please email them to support so that we can investigate
-	The context sensitive entry into the User manual from particular screens relies on PDF destination markers, however not all browsers support this feature. Chrome, Edge (Recent, non legacy), Firefox support this feature. Safari does not support this feature
NE1-98	There is an issue with removing a function in advanced settings mode and then clicking the Update All button. The function is not removed and its impairments persist. A workaround for this is to set the functions impairment parameters so that it will not impair

6.24 Previous Release 2022.01.596 - 21st January 2022

6.24.1 New Features

Reference, if Applicable	Description
	None

6.24.2 Improvements

Reference, if Applicable	Description
	None

6.24.3 Bug Fixes

Reference, if Applicable	Description
NE1-77	When clicking application reports it would say that the feature was unlicensed, even when this property was in the licence. This is now fixed.
NE1-80	There was an issue in the Port Pair ports settings dialog box where the time spinner would keep spinning after an upgrade. This is now fixed
NE1-78	There was an issue upgrading port settings from NE-ONE v5 to NE-ONE v2022 which meant that Port Pairs were not properly built. These are now no longer brought forward in the upgrade - this is documented in the upgrade guide.
NE1-79	There was an issue with pinging local ports from a non-local subnet. This is now fixed.
NE1-80	There was an issue where having no advanced functions in a licence file would invalidate the licence file. This is now fixed.

6.24.4 Known Issues

Reference, if Applicable	Description
	As per 2022.01.587

6.25 Previous Release 2022.01.587 - 17th January 2022**6.25.1 New Features**

Reference, if Applicable	Description
	Support for NE-ONE (Professional) v5 upgrades - see separate upgrade guide
	Stop networks without opening them by right clicking on their name in the active emulations tab on the home page dashboard
	Added ability to save, load and clear (erase all soft ports) port configurations in Port Manager function
	New Multi widget/multi tab graphs with basic and comparison graph types and layout choices. You can now have multiple graphs open on one page. Each graph page can have multiple tabs, each with a different set of widgets. Each widget can be of type basic graph or comparison graph

	Language support added. First languages - French and German are in Beta: most menu items are translated but Event messages and advanced function values are not yet translated. We welcome your feedback
	New External routing support added for BGP, OSPF, OSPF-v6, RIP, RIP-v6 - see Management → Platform Settings → External Routing and the context sensitive documentation from that page for details. Setup uses the web console on that page
	Port Pairs are automatically created where soft ports do not exist. They are not automatically favorited for users though

6.25.2 Improvements

Reference, if Applicable	Description
	Improved error popups if network won't start
	Many miscellaneous improvements to packet processing
	Many miscellaneous improvements to logging in /ippe/logs/ippe.log (Internal File Browser name /Support/system.log) including removing spurious messages, and downgrading error messages that were in fact just information
	For NE-ONE Desktop systems with an LCD Panel, the LCD software has been updated. Operation is similar in general terms but there are many detailed improvements including context sensitive help on F5
	Edit User screen layout improved
	Unlicensed features will be shown "greyed out" by default, but can be completely hidden. It is possible to later unhide them via Management → Preferences
	More details about the current licence displayed on the Home page Model Information section
	Clicking "More..." on the Model Information area on the homepage goes directly to the License Manager to display all the licence features
	Several Improvements to the user documentation in addition to those required to describe the new features for NE-ONE v2022
	Several miscellaneous improvements to the GUI look and feel, including icons
	A new /Public/networks folder has been created for users to openly share network files with other users. Initially there are no networks present in it

6.25.3 Bug Fixes

Reference, if Applicable	Description
	Depending on timing ipperte (the emulation engine) could fail on Soft Port Deletion - This is now fixed
	Depending on timing ipperte (the emulation engine) could fail on Network (Emulation) Stop - This is now fixed
	In point-to-point networks the choice of Mbps as a unit for the right hand node was not saved in the save file - This is now fixed

6.25.4 Known Issues

Reference, if Applicable	Description
	It is possible that certain legacy Emulation files from both INE V8/V8 and NE-ONE V5.0 do not automatically convert to NE-ONE v2022 format - if this happens please email them to support so that we can investigate
	The context sensitive entry into the User manual from particular screens relies on PDF destination markers, however not all browsers support this feature. Chrome, Edge (Recent, non legacy), Firefox support this feature. Safari does not support this feature
	Users are unable to re-enable "Default Transmission" after disabling it - fixed by a reboot.

6.26 Previous Release 2021.02.437 - 14th September 2021**6.26.1 New Features**

Reference, if Applicable	Description
	None in this release

6.26.2 Improvements

Reference, if Applicable	Description
NE1-71	For multipoint networks files can now be imported only if all of the node and link names match. If they do not match an error is displayed

NE1-72	Unsaved changes on networks and scenarios is now preserved on session timeout
NE1-73	Point to Point and Dual Hop now have the names normalized
	Other miscellaneous minor improvements

6.26.3 Bug Fixes

Reference, if Applicable	Description
NE1-74	Could not add new nodes after node 10 in multipoint designer unless you rename the nodes as you go - This is fixed
NE1-75	On stopping a scenario - it would show outdated error popups - thi is now fixed
NE1-76	Several issues with creating, running and stopping automatic scenarios have been fixed
	Additional Minor Fixes

6.26.4 Known Issues

Reference, if Applicable	Description
	None in this release

6.27 Previous Release 2021.02.398 - 14th September 2021

6.27.1 New Features

Reference, if Applicable	Description
NE1-48	New Management feature: Diagnostics - gathers diagnostics information for support purposes
NE1-47	Radius Authentication support - initial version
NE1-46	OVA now VMware certified
NE1-41	Added AWS support - including drivers

6.27.2 Improvements

Reference, if Applicable	Description
NE1-65	ipmicfg added to product for configuring /checking ipmi (BMC) IP address etc
NE1-63	User manager now has a check all to select all ports and port groups
NE1-59	New tutorial videos added with choices of which video to view where more than 1 choice is valid
NE1-58	Software Update files are now .itu files, not tar files
NE1-57	Virtual platforms will set IP address to DHCP if an invalid netplan file is detected
NE1-56	Greatly enhanced applications and application performance reports with improved expert rule base for determining latency and bandwidth sensitivity, now also collapsing requests into transactions for ease of use
NE1-55	Several improvements to entering an emulation that is part of a scenario, including ensuring that on exit you are returned to the parent scenario
NE1-54	Alerts (Events) add links to filenames where appropriate
NE1-50	Host id removed from console menu as it is no longer the licence i
NE1-49	Advanced menu improved to include additional diagnostics and repair items
NE1-45	Date time in all log files is now in UTC - this was previously only true for ippe.log (system.log)
NE1-44	Core files in /ippe/logs are now compressed on restart
NE1-38	Added drivers to support updated kernels
NE1-39	Improved recognition of file types in file browser
NE1-40	Improved running of scenarios including keeping the link names of the first element
NE1-42	improved port manager - allowing ports to be repositioned

6.27.3 Bug Fixes

Reference, if Applicable	Description
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NE1-35	* When there are 3 DNSservers in a DHCP environment the console menu option 0 gives an error - This is fixed
NE1-64	* The file browser would display times of files incorrectly due to a date/time formatting issue - This is fixed
NE1-62	* Out of order functions were dropping the re-ordered packets, due to a failure to re-insert them the packet flow - This is fixed
NE1-61	* The reboot and shutdown functions in the Management --> Platform Settings -> Control did not work - they were acting on the container not the operating system - This is fixed
NE1-60	* On changing your password, it was temporarily shown in a confirmation popup. - This has been removed
NE1-53	* Link sub-array editor did not save changes - this affected any arrayed (table) link property - This is fixed
NE1-51	* After visiting the statistics screen these statistics would continue to be gathered after navigating away - This is fixed
NE1-31	* Disabling ntp stops snmpd service not ntpd - This is fixed
NE1-25	* Scenario Builder issues where user is not notified when the scenario did not start or is not running - This is fixed
NE1-34	* Error changing itrinegy password in console menu - Error message "Unable to Change your password, please contact your support representative" - This is fixed
NE1-33	* You cannot start an emulation as a non-admin user - This is fixed
NE1-36	* INE V9 Upgrade procedure did not remap soft port names from old libraries to new libraries - This is fixed
	* There was an issue opening existing scenarios in the scenario builder. They would open from the recent files list or the file browser - This is fixed NE1-37
	* In multipoint designer and statistics, you only get one direction when graphing a link and the link direction is called "right" when no concept of right or left exists - This is fixed - NE1-67

6.27.4 Known Issues

Reference, if Applicable	Description
NE1-69	When Launching graphs from Graphs you do not get the choice of nodes

NE1-70	In statistics you only get one direction when graphing a link
NE1-26	Issue with timezones of dates in embedded filenames

6.28 Previous Release 2021.02.275 - 18th June 2021

Release Candidate 2.1

6.28.1 New Features

Reference, if Applicable	Description
	Added table function "Staged Tables" to advanced latency choices - the table can be populated via a JavaScript table or JavaScript function simulating a table. This is primarily for REST API callback use in simulating user defined latency and loss patterns
	New in place INE V9 to NE-ONE V2021 update kit available - no need to re-image the disk
	upgrade preserves username and passwords from INE V9
	INE V9 files are automatically preserved and copied to /Private/INEv9, similarly for /Public
	upgrade kit preserves the complete version history from INE V9 to NE-ONE V2021
	There is no need for backup and restore of INE V9 files (though backup is recommended)

6.28.2 Improvements

Reference, if Applicable	Description
	After the upgrade from V9 the Web UI now automatically goes to the login page
	Event requests which could be numerous in the system.log (ippe.log) are now suppressed
	Splash screen now also provided on boot of rack mount systems
	Software update now moves hot fix patches to a temporary area to avoid any potential conflict
	Apache and snmpd from the operating system could interfere with our web server and snmpd server - - these have been prevented from running

	In advanced mode new functions (Edit) and existing functions display hover over help
	log and error messages in system.log (ippe.log) are improved

6.28.3 Enhancements

Reference, if Applicable	Description
	New in place INE V9 to NE-ONE V2021 update kit available - no need to re-image the disk
	upgrade preserves username and passwords from INE V9
	INE V9 files are automatically preserved and copied to /Private/INEv9, similarly for /Public
	upgrade kit preserves the complete version history from INE V9 to NE-ONE V2021
	There is no need for backup and restore of INE V9 files (though backup is recommended)
	NE-ONE V5.0 Scenario conversion is now supported
	INE Emulation file conversion is complete and covers most cases - please submit any that won't convert to support@itrinegy.com

6.28.4 Bugfixes

From previous Release Candidate & Beta Test Versions

Reference, if Applicable	Description
	An issue with 1GB (Intel i350) card could cause a crash- this has been fixed
	An issue with de-tagging a vlan tagged packet could corrupt the output packet - this is now fixed
	A problem with packet capture not always working has been fixed
	An issue could preventing some dual-hop (point-to-point) networks working - this is now fixed
	An issue preventing city-to-city latencies working has now been fixed

	A number of issues affecting the scenario (timeline) builder are now fixed
	Renaming Nodes/Links in Multi-point editor would restore old node name if field was made empty - this is now fixed
	Links were not shown in the (scalar) Port Out routing field, only ports were shown - this is now fixed
	Link fields which could be True or False were not displaying with check boxes (tick boxes) - this is now fixed
	Going to the port manager & manipulating a soft port, from the Multi-point editor, and then back to the multi-point editor would cause the GUI to crash (squiggly person symbol) - this is now fixed

6.28.5 Known Issues

Reference, if Applicable	Description
	The Performance Report is still undergoing improvements to its formatting and content
	Not all INE V8/V9 files will convert automatically to V2021 - - please submit any that won't convert to support@itrinegy.com
	When using networks in scenarios their links are changed to generic names to ensure compatibility between segments. We are working to improve the names for reporting, statistics etc
	Management -> Platform Settings -> Control -> Shutdown and Reboot only shut down the product container, not the system (VM or Hardware). To shutdown/reboot the entire system use the console menu instead: <code>ssh itrinegy@<NE-ONE IP Address></code> - enter password, then choose option S from the menu

Calnex Solutions plc
 Oracle Campus
 Linlithgow
 West Lothian EH49 7LR
 United Kingdom
 tel: +44 (0) 1506 671 416
 email: info@calnexsol.com

calnexsol.com

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