

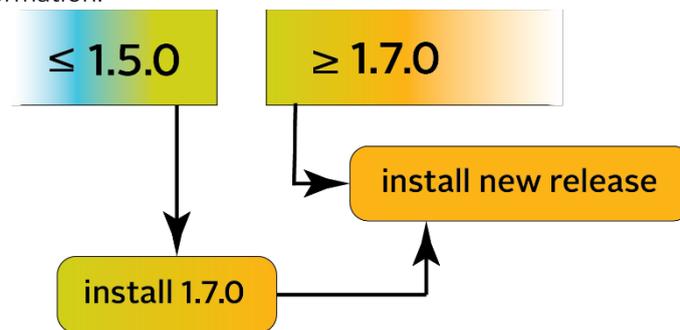
# VersaSync

## Software Version 1.11.0: Release Notes

Safran Trusted 4D (Orolia/ Spectracom) released a software update for VersaSync. Customers can download this software update at no charge from the Safran Trusted 4D website (see [Downloading the Software Update](#)). This software update will upgrade the unit's system software to **Version 1.11.0**.

This update provides added benefits through new features, enhancements to existing functionality, as well as software fixes and security updates, as described in this document.

**Note:** if your unit is currently on a software version below 1.7.0, it is necessary to upgrade to 1.7.0 before proceeding further (see image below). The upgrade to 1.7.0 includes significant system changes and does not allow downgrading to earlier versions. Refer to the upgrade warnings section of the 1.7.0 release notes in this document for specific information.



For your convenience, older legacy releases are also described in this document.

# Table of Contents

Table of Contents.....	2
Version 1.11.0 .....	3
Version 1.10.0.....	6
Version 1.9.0.....	9
Version 1.8.0.....	12
Version 1.7.0.....	14
Version 1.5.0.....	18
Version 1.4.3.....	20
Version 1.4.2.....	21
Version 1.4.1.....	22
Version 1.3.1k.....	23
Version 1.3.1h.....	24
Version 1.3.1g .....	25
Version 1.3.1d .....	26
Version 1.3.1 .....	27
Version 1.1.5 .....	28
Version 1.1.0.....	29
Version 1.0.2.....	30
Version 1.0.2.....	31
Which SW version is installed on my VersaSync? .....	32
How to download and install the new SW .....	33
How to contact Safran Technical Support .....	34

# Version 1.11.0

**Note:**

The VersaSync Web UI will no longer support Internet Explorer, due to Microsoft no longer supporting the product and the limitations of the age of the browser.

**Note:**

The 1.11.0 software version is only being released for VersaSync; this software has not been designed for, or tested on, VersaPNT models.

**Note:** The 1.11.0 software version should only be applied to the following VersaSync models:

- 1228-0110
- 1228-0410
- 1228-1110
- 1228-1311
- 1228-1410
- 1228-2114

All other models should contact Customer Service for upgrade guidance.

## Newly released features

- Redesigned the Web UI appearance to use Safran colors and UI design. All organization and controls are in the same location.
- Improvements to the PTP page of the Web UI: added a new Port Monitor graph, two graphs to demonstrate the Offset and Path Delay of PTP Slave Ports, and added a new *last* figure to the PTP Statistics, which is the length of time a particular message type was last received.
- Added support in the Web UI for multiple PTP Unicast masters for a configured slave port.
- Added AGNSS server support (can be configured via the Web UI, REST API, and CLI) for use with an OPT-AGP license.
- Added `gettemp board|cpu|osc` commands to obtain the temperature of different sensors in the system.

## Enhancements and fixes

The following improvements were applied to existing features and functions:

- Added support for NTP Anycast on VLAN interfaces.
- Custom configurations of iptables can now persist over reboot using `iptables-save` CLI command (the `iptables-restore` command will conversely return iptables to default settings).
- Improved time drift of Web UI display when minimized in a window.
- Updated HSTS Web UI configuration to improve user experience.
- Updated Web UI display for the Quick Align feature from Automatic Restart Tracking (One Time) to Always Restart Tracking After Sync.

The following defects were corrected:

- Fixed the Known Issue: *ASCII time code format ICD-153c is no longer supported (from 1.5.0)*. ASCII time code ICD-153c is now available on the main I/O interface.
- Fixed an issue with the NMEA over UDP Input Status field.

- Corrected an “interface not activated” message when using the `net4` command if `eth0` was not configured.
- Repaired `gpsdserviceportset` command in circumstances where port information changed.
- Fixed `ptpcfgload` command not loading new configuration properly.

## Security enhancements and fixes

- Updated several packages:
  - Upgraded Apache from 2.4.57 to 2.4.58
  - Upgraded JQuery version from 3.7.0 to 3.7.1
  - Upgraded OpenSSL from 1.1.1u to 1.1.1w
  - Upgraded PHP from 8.2.6 to 8.2.12
- SNMPv3 passphrases are now hidden via REST API.

## REST API enhancements and fixes

The latest REST API documentation (revision 7) for this release contains the following changes:

- Added new endpoints
  - Added `REST_API_Features -> A-GNSS Server -> Get AGNSS Server Status` to see AGNSS server and data status when enabled and license installed.
  - Added `REST_API_Features -> A-GNSS Server -> Get AGNSS Server Settings` to see current AGNSS server configuration if license installed.
  - Added `REST_API_Features -> A-GNSS Server -> Set AGNSS Server Settings` to enable and set AGNSS server configuration if license installed.
- Changes to existing endpoints
  - `REST_API_Logs -> Get Specific Status Logs` now returns results for `LogPtpStats` for PTP port stats and `LogPtpSlaveStats` for PTP Slave stats when entered into `statusLog` variable.
  - `REST_API_Logs -> Clear Specific Status Logs` now clears `LogPtpStats` for PTP port stats and `LogPtpSlaveStats` for PTP Slave stats when entered into `statusLog` variable.
  - `REST_API_Network -> Interfaces -> Get Interface Configuration` updated to correct response's data structure misspelling of "Ethernert" by adding properly spelled section "Ethernet" and deprecating old.
  - `REST_API_Network -> Interfaces -> Configure Interface` updated to correct response's data structure misspelling of "Ethernert" by adding properly spelled section "Ethernet" and deprecating old.
- Updated documentation
  - Updated `REST_API_PTP -> Get Settings` doc to include an example showing how to configure 1 or more unicast masters.
  - Updated `REST_API_PTP -> Set Settings` doc to include an example showing how to configure 1 or more unicast masters.
  - Updated `REST_API_SecurityIssues -> List Security Issues` doc to point to correct URL for Security Issues information.
  - Updated `REST_API_SecurityIssues -> Reset Security Issue` doc to point to correct URL in request and example.
  - Updated `REST_API_TimeManagement -> Delete Local Clock` doc to remove unnecessary body section in both request and example responses.

## Known Issues

- This software version DOES NOT ALLOW downgrades before version 1.6.0.

- The clean command does not reset the GNSS position. It is recommended to unplug the receiver, reset the receiver in the Web UI, and then run the clean command to reset the GNSS position (from 1.5.0). The Sanitize functionality can also serve this purpose.
- PTP over a VLAN interface can only be configured through the CLI (see an app note on this topic for more information) (from 1.7.0).
- PTP Power Profile (IEEE C37.238) is unable to pass the Alternate Time Offset Indicator and Total Time Inaccuracy TLVs through the system when PTP interfaces are configured as both a master and a slave (from 1.7.0).
- PTP Power Profile (IEEE C37.238) is only able to sync to an EdgeSync master when set to mixed Unicast mode (from 1.7.0).
- Changing the system timescale will require PTP to be manually restarted (from 1.8.0).
- Telecom Quality Level clock classes are not supported for G.8265.1 PTP masters (from 1.9.0).
- GNSS receiver constellation configuration changes may intermittently fail to succeed. Customers are advised to confirm constellation selections and retry the operation if the changes were not successful (from 1.9.0).
- SNMP V1 may not function correctly if a SNMP V2c server is also configured on the unit (from 1.10.0).

# Version 1.10.0

**Note:**

The 1.10.0 software version is only being released for VersaSync; this software has not been designed for, or tested on, VersaPNT models.

**Note:** The 1.9.0 software version should only be applied to the following VersaSync models:

1228-0110  
 1228-0410  
 1228-1110  
 1228-1311  
 1228-1410  
 1228-2114

All other models should contact Customer Service for upgrade guidance.

## Newly released features

- Redesigned the PTP Web UI page to include new configuration and data, including a datasets page, a drop-down panel with network information for both Slave and Master ports, and an updated PTP Statistics page.
- Added a PTP-specific tcpdump functionality on the Web UI PTP page.
- Updated Web UI front panel images to increase visibility and modularity.
- Updated Orolia-branded Web UI logos, MIBs and website links to reflect Safran Trusted 4D branding.
- Added PTP SNMP dataset retrieval and PTP base MIB.
- Added a new Download Logs & Configs Web UI feature in the Tools > Upgrade/Backup page that will bundle both logs and configuration data into one package for Technical Support.
- Added an Automatic Restart Tracking (OneTime) option to the disciplining configuration (MANAGEMENT > Disciplining) checkboxes. This feature allows the algorithm to make a large alignment leap (instead of small adjustments over time) to quickly align the oscillator to a significantly offset timing source.
- The SSH timeout setting is now user-configurable, rather than being hard-set to 60 minutes. To adjust your SSH timeout settings in the Web UI, navigate to MANAGEMENT > SSH Setup.

## Enhancements and fixes

The following improvements were applied to existing features and functions:

- The `spfactory` account has some elevated privileges and is now deleted from the unit by default. In units upgrading from older software versions, `spfactory` will remain on the unit until deleted. The Security Issues panel will provide a notification if the `spfactory` account is still on your unit.
- Added Announce and Sync interval settings support for PTP unicast
- Added CLI configuration support for the `logAnnounceInterval` on a PTP slave using the `ptpifaceset` command.
- Reduced logging via PTP to only critical portion of reports.
- Corrected Web UI constellation selection to limit incompatible choices.
- Changed Web UI representation of tcpdump removal button from a toggle to a Remove button.
- Users are now redirected to the login page when logging out.

The following defects were corrected:

- Corrected a PTP SNMP resource usage issue.

- Fixed a problem with the oscillator disciplining Restart Tracking feature.
- Fixed an issue with the rollback feature.
- Altered PTP validity reporting to ensure PPS only displays as valid if the time is valid for the PTP reference.
- Corrected an error with certain Broadshield alarms triggering Hot Swap Power Supply alarms.
- Fixed the functionality to clear PTP statistics.
- Repaired the Network Access Control feature.
- Fixed a reporting problem in which SNMP did not reflect a hostname change.
- Fixed an error with NTP Access Restrictions with IPv4 addresses containing "127".
- Corrected a rsyslog.service and syslog.socket crash caused by toggling local logging.
- Repaired a display issue with SNMP OID ssSysUpdateFile to support our new squash.fs upgrade format.
- Fixed a failure to create a new user via the CLI when RADIUS or TACACS+ are enabled.
- Fixed an error with PTP L2 E2E MAC address default.
- Fixed a problem with the rollback feature that prevented the unit from switching software partitions.
- Corrected an issue with duplicate users on the system preventing upgrade.
- Fixed an error when connected to DHCP, the network interface didn't properly switch to a static IP.
- Repaired LED brightness setting not persisting after upgrade.

### *Security enhancements and fixes*

- Updated several packages:
  - Updated the Linux kernel from 5.10.104 to 6.1.32
  - Upgraded Apache from 2.4.54 to 2.4.57
  - Upgraded OpenSSL from 1.1.1q to 1.1.1u
  - Upgraded NetSNMP from 5.9 to 5.9.3
  - Upgraded OpenSSH from 8.9p1 to 9.3p2
  - Upgraded PHP from 8.0.2 to 8.2.6
- Repaired [CVE-2023-4911](#) (called "Looney Tunables") via a software patch to glibc.
- Repaired [CVE-2023-38408](#) via OpenSSH update.
- Repaired [CVE-2012-6708](#) via JavaScript update.
- Switched password storage from MD5 to SHA-512. Users with older-style encryption will be notified via the Security Issues panel to change their password in order to use the new encryption method.
- Added a Web UI Change Password dialog and Security Issues notification to prompt password updates.
- Increased Broadshield security to limit unwanted access to features.
- Corrected a problem with reboot auto-resolving the self-signed certificates Security Issue notification.
- Disabled X11 forwarding on the SSH configuration.
- Limited access to the Security Issues Web UI panel to restrict access via the User profile.
- Added a new system recovery feature to recover units in distress.

### *REST API enhancements and fixes*

The latest REST API documentation (version 6) for this release contains the following changes:

- Changes to existing endpoints
  - `del_pos` field no longer when editing GNSS Reference at `Features/edit/0000-0029-00.json` for `Features` -> `Edit Feature`
  - `Authentication` -> `Edit User` endpoint no longer returns error on success
  - `Authentication` -> `Logout` no longer returns 500 error when using while logged out.
  - `bgp_neighbor_as` and `bgp_as` in NTP -> `Set Anycast Configuration` endpoint now accept integer and string values

- Can now edit individual entries in the Reference Priority table in References -> Configure References endpoint
- Updated documentation
  - Added documentation for the contacts page Tools -> Get Support Contact Link
  - Added documentation for manuals page Tools -> Get Online Manuals Link

## Known Issues

- This software version DOES NOT ALLOW downgrades before version 1.6.0.
- ASCII time code format ICD-153c is no longer supported (from 1.5.0).
- The clean command does not reset the GNSS position. It is recommended to unplug the receiver, reset the receiver in the Web UI, and then run the clean command to reset the GNSS position (from 1.5.0). The Sanitize functionality can also serve this purpose.
- PTP over a VLAN interface can only be configured through the CLI (see an app note on this topic for more information) (from 1.7.0).
- PTP Power Profile (IEEE C37.238) is unable to pass the Alternate Time Offset Indicator and Total Time Inaccuracy TLVs through the system when PTP interfaces are configured as both a master and a slave (from 1.7.0).
- PTP Power Profile (IEEE C37.238) is only able to sync to an EdgeSync master when set to mixed Unicast mode (from 1.7.0).
- Changing the system timescale will require PTP to be manually restarted (from 1.8.0).
- Telecom Quality Level clock classes are not supported for G.8265.1 PTP masters (from 1.9.0).
- GNSS receiver constellation configuration changes may intermittently fail to succeed. Customers are advised to confirm constellation selections and retry the operation if the changes were not successful (from 1.9.0).
- The Web UI has significant performance issues with IE and an alternate browser may be necessary (from 1.10.0).
- SNMP V1 may not function correctly if a SNMP V2c server is also configured on the unit (from 1.10.0).

# Version 1.9.0

**Note:**

The 1.9.0 software version is only being released for VersaSync; this software has not been designed for, or tested on, VersaPNT models.

**Note:** The 1.9.0 software version should only be applied to the following VersaSync models:

1228-0110  
 1228-0410  
 1228-1110  
 1228-1311  
 1228-1410  
 1228-2114

All other models should contact Customer Service for upgrade guidance.

## Newly released features

- Increased password policy security, authentication constraints, and lockout responses.
- Corrected the Secure LDAP (LDAPS) path and filenames for security certificates functionality, made LDAPS the default setting, and added a warning message if LDAP is configured to not use the secure settings. Adjusted settings to match LDAP password permissions. Added a Disable Server Certificate Checks option to authenticate, if necessary, LDAPS without proper security certificates.
- Added support for default user groups to configure permission levels of RADIUS, TACACS+, and LDAP users.
- Added the SNMP variables `ssSysStaDisciplining`, `ssSysSetManualTime`, and `ssSysStaSyncState` to the unit MIB to query the disciplining state.

## Enhancements and fixes

The following improvements were applied to existing features and functions:

- Added support for the DER file type for uploading HTTPS certificates.
- Repaired inconsistencies in the REST API variables and documentation.
- Added support for special characters “:” “;” and “-“ to SNMP contact field.
- PTP status is now recorded in the daemon log.
- Expanded NTP Symmetric Key Strings to allow up to 40 hexadecimal characters. MD5 keys can optionally allow up to 20 ASCII characters instead.

The following defects were corrected:

- Corrected PTP slave functionality within the G.8265 profile.
- Fixed issue performing SNMP GET on the `sysSetManualTime` object.
- Corrected allowed constellation combination inconsistencies on the Web UI and CLI so that settings align with receiver capabilities.
- Repaired time jumps occurring on PTP masters when applying leap seconds.
- On multicast, a PTP master now properly enters passive mode when not best in domain.
- Added prompting error messages for incomplete Web UI fields on the NTP setup page.
- Fixed an issue with units not completing Sanitization state as expected.
- Fixed issue with the timing system to reduce errors during receiver configuration.
- Corrected an intermittent LDAP certificate upload path issue.
- Repaired HAVE QUICK Input validity issue.
- Corrected oscillator disciplining on mRO-50 units.

## Security enhancements and fixes

- Web UI logins and logouts are now recorded in the Auth log.
- Changes to Web UI passwords or password policy are now recorded in the Journal log.
- Changes to LDAP, TACACS+, and RADIUS server configurations are now recorded in the journal log (sensitive data such as passwords are not logged directly, but the action of change is noted).
- Added security to Web UI to prevent cross-site scripting attacks.
- Increased login security for user enumeration attacks and bad user lockdowns.
- Repaired PKCS7 http certificate uploads in the .der and .pem file formats.
- The LDAP bindpw field is no longer automatically populated on the Web UI or in the REST API. Users are now required to reenter the password during configuration changes.

## REST API enhancements and fixes

The latest REST API documentation (version 5) contains the following changes to endpoints:

- Added endpoints
  - Added Set Global TACACS+ Configuration endpoint with required variable `user_group` to configure user permission level.
- Changes to existing endpoints
  - LDAP bindpw field is no longer automatically populated on Get LDAP Settings and Set LDAP Settings responses.
- Added required variables
  - When adding a TACACS+ server in Add TACACS+ Server endpoint, the button variable is now required in the request body with the value `"add_tacacs_server"`.
  - Added required variable `user_group` to the Set Global RADIUS Configuration endpoint for user permission levels.
  - Added required variable `disable_cert_check` to Configure LDAP Settings endpoint to enable LDAP-S without a valid certificate.
  - Added required variable `user_group` to Configure LDAP Settings endpoint for user permission level.
- Updated documentation
  - Added documentation for Set Global RADIUS Configuration endpoint.
  - Corrected misspelling of URL in PTP collection's Set Settings endpoint.
  - Corrected inconsistencies in "success" field of response body for PTP collection's Restore Settings and Clear Statistics endpoints.
  - Changed collection to reflect validation correction for Get Symmetric Keys and Add Symmetric Key endpoints.
  - Added documentation for the Delete Interface IPv6 Address endpoint.
  - Corrected typos in field names in the request and response bodies for the Edit Symmetric Key endpoint.

## Known Issues

- This software version DOES NOT ALLOW downgrades before version 1.6.0.
- ASCII time code format ICD-153c is no longer supported (from 1.5.0).
- The clean command does not reset the GNSS position. It is recommended to unplug the receiver, reset the receiver in the Web UI, and then run the clean command to reset the GNSS position (from 1.5.0). The Sanitize functionality can also serve this purpose.
- PTP over a VLAN interface is not currently functional (from 1.7.0).
- PTP Power Profile (IEEE C37.238) is unable to pass the Alternate Time Offset Indicator and Total Time Inaccuracy TLVs through the system when PTP interfaces are configured as both a master and a slave (from 1.7.0).
- PTP Power Profile (IEEE C37.238) is only able to sync to an EdgeSync master when set to mixed Unicast mode (from 1.7.0).
- Changing the system timescale will require PTP to be manually restarted (from 1.8.0).

- Telecom Quality Level clock classes are not supported for G.8265.1 PTP masters (from 1.9.0).
- GNSS receiver constellation configuration changes may intermittently fail to succeed. Customers are advised to confirm constellation selections and retry the operation if the changes were not successful (from 1.9.0).

# Version 1.8.0

**Note:**

The 1.8.0 software version is only being released for VersaSync; this software has not been designed for, or tested on, VersaPNT models.

**Note:** The 1.8.0 software version should only be applied to the following VersaSync models:

1228-0110  
 1228-0410  
 1228-1110  
 1228-1311  
 1228-1410  
 1228-2114

All other models should contact Customer Service for upgrade guidance.

## Newly released features

- Added NMEA-over-UDP functionality. For more information, see the App Note <https://www.orolia.com/document/nmea-over-udp/>. Note: multicast frames can only be sent on Eth0 (not Eth1).

## Enhancements and fixes

The following improvements were applied to existing features and functions:

- Upgraded several packages:
  - o Updated the Linux kernel to 5.10.104
  - o Upgraded Apache to 2.4.54
  - o Upgraded Openssl to 1.1.1q
  - o Upgraded NetSNMP to version 5.9
  - o Upgraded OpenSSH to version 8.9p1
  - o Upgraded PHP to version 8.0.20
  - o Upgraded GPSD to version 3.23.1
  - o Upgraded CakePHP to 4.3.10
- Added password entry to Open LDAP server configuration.
- Enabled configuration of the alternate timescale displayname for a PTP Power System profile master.
- Added support for querying the Broadshield jamming and spoofing state via SNMP.
- Added the speed over ground measurement to the RMC NMEA message type.
- In order to support vlan network tasks, users are now encouraged to use interface names (eth0, eth1) instead of indexing via CLI commands.
- Added IPv6tables editing to admin accounts.
- Removed filtered offset thresholding in PTP to limit reference invalidation and increase fidelity. Network instability is noted in the logs instead of the filtered offset.
- Spaces are now accepted characters in all compatible fields for LDAP setup in the Web UI.

The following defects were corrected:

- Fixed the Known Issue: The restore factory defaults function clean does not currently reset the Network Access control rule (from 1.7.0).
- Fixed an issue in which DHCPv6 may not perform as expected with network time distribution. The fix limits support to the default DHCPv6 prefix length of 64.
- Corrected a PTP UTC offset of 0 sent from master to slave.

- Repaired an error in which disabling a master Ethernet port did not end the synchronization of slaves to that port appropriately.
- Fixed the removal of local clocks in the unit configuration via the clearcfg command.
- Removed the smooth offset feature for PTP to limit reference invalidation and increase fidelity. Network instability is noted in the logs instead of smoothed.
- Fixed an issue with Ethernet connectivity if the default interface is not enabled
- Corrected an incorrect 37 s PTP offset timestamp from master to slave when adjusting the timescale setting.
- Repaired upgrade logging functionality to ensure record on non-clean upgrade.
- Removed the possibility of creating a local clock without a name.
- Fixed an error with authentication logs not reaching the remote logging server.
- Fixed a failure of an NTP client to sync to another server.
- Fixed an incorrect 37 s PTP offset seen on the slave after loss of connection to master.
- Corrected an issue with PPS Output settings persisting while disabled.

### *Security enhancements and fixes*

- Updated SSH functionality to limit weak MAC algorithms.

### *Known Issues*

- This software version DOES NOT ALLOW downgrades before version 1.6.0.
- ASCII time code format ICD-153c is no longer supported (from 1.5.0).
- The clean command does not reset the GNSS position. It is recommended to unplug the receiver, reset the receiver in the Web UI, and then run the clean command to reset the GNSS position (from 1.5.0). The Sanitize functionality can also serve this purpose.
- PTP over a VLAN interface is not currently functional (from 1.7.0).
- PTP Power Profile (IEEE C37.238) is unable to pass the Alternate Time Offset Indicator and Total Time Inaccuracy TLVs through the system when PTP interfaces are configured as both a master and a slave (from 1.7.0).
- PTP Power Profile (IEEE C37.238) is only able to sync to an EdgeSync master when set to mixed Unicast mode (from 1.7.0).
- Changing the system timescale will require PTP to be manually restarted.

# Version 1.7.0

**Note:**

The 1.7.0 software version is only being released for VersaSync; this software has not been designed for, or tested on, VersaPNT models.

**Note:** The 1.7.0 software version should only be applied to the following VersaSync models:

1228-0110  
 1228-0410  
 1228-1110  
 1228-1311  
 1228-1410  
 1228-2114

All other models should contact Customer Service for upgrade guidance.

## Newly released features

- Added support for downgrades and software rollback. This feature alters the file formats of the upgrades (from .tar.gz to .squashfs) and has important effects:
  - When upgrading from any earlier software version, you are REQUIRED to first upgrade to version 1.7.0 in order to move to a later version.
  - Users will be able to use the “rollback” feature following this software update; however, the rollback feature will simply switch to the simultaneously installed version of this software extant within the other partition.
  - All subsequent software versions will allow downgrading to this version, but will not allow customers to go below 1.7.0.
- Added support for Linux PTP profiles IEEE C37.238-2017 (power systems profile) and IEC 61850-9-3:2016 (power utility profile).
- Added support for the ED25519 host key algorithm for SSH.
- Added support for mRO-50 oscillators.
- Added the rbxostatus check (to query if backup power has been interrupted) and rbxostatus reset (to reset the lost backup power flag) commands for mRO-50 units.
- Implemented a new Web UI Security Issues page and added warning messages related to common web security concerns (some of these warnings may arise after upgrade if conditions are present).
- Added full Sanitization support in the Web UI and CLI. Sanitizing the unit will remove all user-related data, location history, usage statistics, etc., rewrite both partitions with clean software, and return the unit to a state completely without user data. Full status reporting of the sanitization process is available through the serial connection.
- Added support for HSTS (HTTP Strict Transport Security).
- Enabled Broadshield SNMP traps for jamming and spoofing monitoring.
- Created new REST API documentation (found at <https://www.rolia.com/portal/public-downloads/rest-api-for-securesync-netclock-9400-and-versasync/>) to clearly outline endpoints for the user. This documentation is also available within the Web UI on the HELP page.

## Enhancements and fixes

The following improvements were applied to existing features and functions:

- Upgraded packages:
  - Updated the Linux kernel to 5.10.84
- Added missing journal logging for pin configuration, network settings, and NTP and PTP configuration changes.

- Added statistics database to log bundles.
- The Authentication logging option was added to the Local Logging panel of the Web UI to allow user configuration.
- Improved the performance and stability of network timing.
- Set System Time Message, Daytime Protocol, and Time Protocol settings to default to OFF. Configuration enabling these features will persist through this upgrade.
- Added the ability for the user to reset PTP statistics.
- Improved Web UI behavior for PTP configuration.
- Repaired non-functioning SNMP queries to objects in the UCD-SNMP-MIB file
- Fixed a problem with the SNMPv3 EngineID changing between reboots.

The following defects were corrected:

- Fixed the Known Issue: When configured as a slave, the on-unit PTP will sometimes incorrectly remain in a Sync state when the Master has gone out of sync (found in 1.5.0).
- Fixed the Known Issue: Any changes to the Logging Configuration (for instance, turning on Local Logging) will not take effect without restarting the unit (found in 1.5.0).
- Fixed the Known Issue: The Reference Priority configuration is sometimes not restored properly from configuration bundles and will have to be reconfigured following upgrades or application of a config bundle from pre-1.5.0 software (found in 1.5.0).
- Corrected a defect with duplicate log entries in the oscillator log.
- Limited simultaneous UI selection of QZSS with incompatible GNSS signals in order to prevent cross-correlation.
- Corrected an issue occurring when changing certain network settings that required resetting DHCP to resolve.
- Fixed a Web UI 500 error seen when setting the default network interface for IPv6.
- Fixed a Web UI issue that allowed users to incorrectly set the PPS source field for ASCII inputs delivered through the multi-I/O connector.
- Edited Web UI settings to correct outdated branding.
- Repaired an issue with the detection of the General Purpose Output being incorrectly identified as a Square Wave output.
- Corrected a Web UI error providing users with an incorrect “pulse width” field which does not apply to 1PPS and 1PPM Output modes.
- Fixed an issue with the pin matrix failing to reset on a clean upgrade.
- Resolved an omission in the Web UI upgrade log in which upgrade validation failures were not displaying correctly.
- Fixed a problem with the receiver mode reporting incorrectly.
- Fixed an issue wherein usernames were not being carried over by config bundles.
- Corrected an error that prevented deletion of config bundles created through the CLI.
- Corrected a corrupt database problem sometimes caused by power removal during the boot sequence.
- Added the unit serial number to the manifest log.
- Fixed an issue with timescale adjustments on ASCII references set via the Web UI.
- Added the In Sync message to the Events log.
- Fixed a problem with NTP peers, configured using hostnames instead of IP addresses, not appearing correctly.
- Corrected an error in a chart on the Web UI GSPD Setup page that incorrectly sorted elevation values.
- Fixed an issue with the tcpdump command functionality, which was found to have incorrect ownership, thereby preventing users from deleting files, even with admin rights.
- Fixed a bug occurring on cold boot that incorrectly provided PTP slaves an incorrect offset.

### *Security enhancements and fixes*

- Applied kernel patch to mitigate the Dirty Pipe vulnerability (CVE-2022-0847).

- Removed support for the SSH DSA algorithm due to insufficient key length. Customers are advised to use RSA or equivalent. (DSA configuration will not be removed upon update or while in use unless the user deletes the configuration).
- Added a console (serial) port connection timeout (60 minutes).
- Enhanced the REST API security by verifying the user's privilege at expected points in order to limit tampering.
- Enhanced SNMP security by requiring higher permission levels to read configuration files.
- Limited access to databases without full REST API credentials.
- Fixed an error with HTTPS certificate generation in which the Organization and Organization Unit fields were flipped.
- Disabled HTTP functionality by default (preferencing HTTPS) when upgrading via the clean option. Security warnings are included in the Web UI when HTTP is enabled.
- Corrected a problem with Web UI username rules not being enforced.
- Limited NTP symmetric key string field to 16 ASCII characters.
- Reconfigured validation of the private key passphrase and challenge password fields on the HTTPS Setup dialog.
- Credentials are now required to view the User Manual and REST API kit from the HELP menu of the Web UI.
- The password field is now entirely cleared following a failed entry attempt.
- Confirmation dialogs have been implemented for certain Submit functions within the Web UI, including Upgrade, Clean, and Sanitize.
- Corrected an error in which the hostname was not correctly removed by the Restore Default Configuration function.
- Implemented a confirmation dialog to the option to permanently remove tcpdump services from the Web UI.
- Removed support for lower-security FTP connections in favor of SFTP or SSH.

## Known Issues

- This software version DOES NOT ALLOW downgrades. If you put this software on your system, and later need to return your unit to a software version that came before version 1.7.0, it will be necessary to return your unit to Orolia for reprogramming (from 1.5.0). However, downgrade support has been repaired in this version for all subsequent releases.
- ASCII time code format ICD-153c is no longer supported (from 1.5.0).
- The clean command does not reset the GNSS position. It is recommended to disconnect the receiver, perform a cold reset of the receiver in the Web UI, and then run the clean command in order to reset the GNSS position. It is also possible to use the Sanitize functionality for this purpose (from 1.5.0).
- The restore factory defaults function (clean) does not currently reset the Network Access control rule.
- Upgrade warnings for loss of or altered configurations:
  - On software versions before 1.5.0, SNMP, GPSD, and LDAP settings are preserved on upgrade but not correctly transferred in configuration bundles. These services will need to be re-enabled following the application of a configuration bundle.
  - Upon upgrading to 1.7.0 or applying a configuration bundle from an earlier version, the System Time Message feature will be set to ON, regardless of previous setting. Following a Clean upgrade to 1.7.0, the System Time Message, Daytime Protocol, and Time Protocol features will be configured to OFF (the new default state).
  - If your current software is on 1.4.3 or earlier, a direct upgrade to 1.7.0 will change your NTP state to ON after upgrade, regardless of previous settings.
  - The new Security Issues page and warning system in the Web UI may produce new warnings based on your current settings after upgrade (for instance, if you have HTTP services enabled or a self-signed certificate, a new warning will appear).

- PTP Power Profile (IEEE C37.238) is unable to pass the Alternate Time Offset Indicator and Total Time Inaccuracy TLVs through the system when PTP interfaces are configured as both a master and a slave.
- PTP Power Profile (IEEE C37.238) is only able to sync to an EdgeSync master when set to mixed Unicast mode.
- The rollback feature does not currently reset the reference priority table or the pin layout configuration to their default settings.

# Version 1.5.0

**Note:**

The 1.5.0 software version is only being released for VersaSync; this software has not been designed for, or tested on, VersaPNT models.

**Note:** The 1.5.0 software version should only be applied to the following VersaSync models:

1228-0110  
1228-0410  
1228-1110  
1228-1410  
1228-2114

All other models should contact Customer Service for upgrade guidance.

## Newly released features

- Improved PTP functionality. PTP now has an updated software subsystem, has full functionality on both eth0 and eth1, more PTP profile options, supports both Slave and Master configurations, Unicast, Multicast, and Hybrid settings, and both IPv4 and IPv6 connections, and is no longer limited to 1 GB/s network connections.
- Added support for significant security protocols: LDAP, RADIUS, and TACACS+.
- Added VLAN support.
- The IRIG-AM option card software is now fully integrated into the mainline software. IRIG-AM customers can upgrade through the standard procedure.
- Added IRIG-AM usability fixes to the Web UI.
- Added support for the STANAG 4430 HVK EXTENDED EDITION.
- Created a manifest log for troubleshooting.

## Enhancements and fixes

The following defects were corrected and improvements were applied to existing features and functions:

- Upgraded several packages:
  - o Upgraded Apache to 2.4.46
  - o Upgraded NTP to version 4.2.8p15
  - o Upgraded Openssl to 1.1.1j
  - o Upgraded NetSWP to version 5.8
  - o Upgraded OpenSSH to version 8.1p1
  - o Upgraded PHP to version 7.4.15
  - o Upgraded GPSD to version 3.23

NOTE: this upgrade contains a bug fix for the anticipated GPS week rollover issue on 2021-10-23.

Networking:

- Added parameters to the rt4add command (nexthop, metric).

NTP & PTP:

- Fixed a Known Issue: “PTP is currently limited to 1 GB/s networks and to the ETH1 interface.”
- PTP architecture has been redesigned.
- PTP is now available on both ETH0 and ETH1 interfaces.
- Fixed a problem using IPv6 as an NTP server or peer.

WebUI:

- Improved the function of the clearlogs, clearstats, and clean commands in the Web UI.
- Added a missing timescale selection field in the IRIG Output configuration.
- Improved the user experience of the configuration page of the GP Output.
- Corrected the Signature Control functionality in GP Output configurations.
- Added a missing toggle to enable/disable the System Time Message.

Misc:

- Fixed a Known Issue: “There is a known problem wherein the NTP and database logs fail to rotate properly.”
- Improved Galileo configuration to follow ublox receiver recommendations.
- Due to stability issues, the rollback feature has been disabled.
- Fixed an issue where HAVEQUICK Input was incorrectly validating the time.
- Fixed an issue with the command clearlogs causing a break in the NTP stats recording process
- Repaired an observed offset when switching references between GNSS and user0.
- Corrected an error when applying license bundles.
- Fixed an error with the gpsreset command
- Resolved an issue where occasionally the system would hold up when altering a pin configuration.
- Corrected an error in which the temperature alarm configuration was not properly transferred on upgrade.
- Corrected an issue with certain services (LDAP, GPSD) that were preserved on an upgrade but not during configuration bundle upload.

## Known Issues

- This software version DOES NOT ALLOW downgrades. If you put this software on your system and later need to return your unit to a software version that came before version 1.5.0, it will be necessary to return your unit to Orolia for reprogramming.
- The on-unit PTP has a known issue after network connectivity loss (for instance, due to an Ethernet cable being temporarily disconnected). After the occurrence, PTP masters and slaves may not sync properly to each other. When this happens, it is necessary to restart the PTP master.
- ASCII time code format ICD-153c is not supported in this software version.
- Changes in the Web UI to the Logging Configuration (for instance, turning on Local Logging) will not take effect without restarting the unit.

## Version 1.4.3

**Note:**

The 1.4.3 software version is only being released for VersaSync; this software has not been designed for, or tested on, VersaPNT models.

**Note:** The 1.4.3 software version should only be applied to the following VersaSync models:

1228-0110  
1228-0410  
1228-1110  
1228-1410

All other models should contact Customer Service for upgrade guidance.

### *Enhancements and fixes*

The following defects were corrected and improvements applied to existing features and functions:

- Repaired a bug in which NTP was not correctly selected as the primary reference when needed.

# Version 1.4.2

**Note:**

The 1.4.2 software version is only being released for VersaSync; this software has not been designed for, or tested on, VersaPNT models.

**Note:** The 1.4.2 software version should only be applied to the following VersaSync models:

1228-0110  
1228-0410  
1228-1110  
1228-1410

All other models should contact Customer Service for upgrade guidance.

## *Enhancements and fixes*

The following defects were corrected and improvements applied to existing features and functions:

- Fixed the ability to clone unit configurations, including the IP address, across multiple units.
- Repaired a known issue with NTP and database logs failing to rotate.
- Resolved an issue with Broadshield incompatibility under version 1.4.1.

# Version 1.4.1

**Note:**

The 1.4.1 software version is only being released for VersaSync; this software has not been designed for, or tested on, VersaPNT models.

**Note:** The 1.4.1 software version should only be applied to the following VersaSync models:

1228-0110  
1228-0410  
1228-1110  
1228-1410

All other models should contact Customer Service for upgrade guidance.

## *Enhancements and fixes*

The following defects were corrected and improvements applied to existing features and functions:

- Repaired an issue with clean upgrade when performed through the Web UI.
- Integrated minor Web UI bug fixes into current release.
- Fixed an issue when disabling DHCP from the Web UI; the software now allows a return to default by accepting a blank gateway value.
- Fixed a problem with the login screen version display showing incorrect information.
- Corrected an issue wherein restore defaults and clean did not reset the pin configuration on the multi-I/O connector.
- Fixed an intermittent bug that occasionally caused reboot to fail.
- Repaired a problem with PTP not working when both network interfaces were connected to the same subnet.
- Fixed a problem with the PTP ceasing operation under certain conditions.
- Corrected an intermittent error with some PTP users experiencing a one-second offset.
- Reduced latencies on RX network packets.

## *Known Issues*

- PTP is currently limited to 1 GB/s networks and to the ETH1 interface.
- There is a known problem wherein the NTP and database logs fail to rotate properly. Units which are not updated out of this software version to newer versions may experience performance failure after approximately 2 years of average usage.

Customers may use the clearlogs and clearstats commands through the CLI to mitigate this effect.

# Version 1.3.1k

## *Enhancements and fixes*

The following defects were corrected and improvements applied to existing features and functions:

- Fixed a bug where a configuration bundle, saved on a 1.1.X version, and applied on a 1.3.X version or later, wouldn't work as expected, making it mandatory to clean config and manually reapply settings.

# Version 1.3.1h

## *Enhancements and fixes*

The following defects were corrected and improvements applied to existing features and functions:

- Fixed a condition in which a unit configured with SNMP could erroneously report alarms as pending.

# Version 1.3.1g

## *Newly released features*

- To reflect popular customer configuration and remove instability, the default IP configuration for both interfaces is now static, rather than DHCP. The new default static IP addresses are:

Eth0: 192.168.1.1

Eth1: 192.168.1.2

Settings are retained after upgrading unless the “clean” upgrade is selected, or the user chooses to restore default settings.

It is still possible to activate DHCP through the Web UI or CLI.

- A new rollback feature has been implemented to allow users to switch back to the software version that was installed on their unit before the last upgrade. The previous version’s software will be stored in the unit until activation. Since both software versions are held in the unit memory, it is also possible to undo the rollback by activating the rollback feature a second time. This will switch the in-use software to the newer version.

To activate the rollback feature, log in to the Web UI, and navigate to Tools > System > Upgrade/Backup.

## *Enhancements and fixes*

The following defects were corrected and improvements applied to existing features and functions:

- Fixed an issue with the 10MHz output signals on certain device configurations.
- Fixed a freezing issue resulting from incorrect entries into the pin configuration matrix.
- Fixed an issue with static IP retention during an update.
- Repaired minor Web UI display bugs.

# Version 1.3.1d

## *Enhancements and fixes*

The following defects were corrected and improvements applied to existing features and functions:

- Fixed an issue in which the NTP service could stop operation after encountering large time shifts.

## *Notes*

This software version is designed as a software patch for version 1.3.1, but operates as an independent software release. It is therefore not necessary to upgrade to version 1.3.1 before upgrading your unit to 1.3.1d.

## *Known Issues:*

When updating from an earlier release, static IP configuration settings may be lost. The VersaSync should be on a network with DHCP capabilities or have a direct serial connection prior to applying the update to ensure connectivity post update.

# Version 1.3.1

## Newly released features

- Added GPSD support and GSPD configuration and display via VersaSync/VersaPNT CLI and WebUI. GPSD displays the status of the ublox receiver.
- Added Event Time Stamper availability without requiring the application of a license file in order to provide the service to all users.
- Added support for SAASM (for authorized customers only) and CSAC.
- Enabled BroadShield service support and WebUI functionality.
- Added support for VersaPNT.

## Enhancements and fixes

The following defects were corrected and improvements were applied to existing features and functions:

### Networking:

- Improvements made to Versa-specific SNMP MIB, including increased clarification of alarm messages and KTS commands.
- Repaired and reconfigured the HTTP and HTTPS management method.
- Altered settings in both the Web UI and CLI to allow the system to retain DNS information after DHCP is disabled.
- Verified and adjusted timing reference distribution to GNSS, internal 1PPS, external 1PPS, DCLS, RS485, and IRIG.
- Upgraded to long-term stable Buildroot kernel (2018.02.3 LTS: 4.9.76-rt61-ltsi).

### WebUI:

- Added 'Save Config' and 'Load Config' buttons on the pin layout page.
- Repaired defect with the saving pin layout function.
- Configured Web UI to correctly identify product model on startup.
- Refreshed a warning dialog to alert the user of an attempt to roll back the system firmware.
- The installed software license information is now displayed in the upgrades section.
- Fixed issue with SNMP restart after disabling and re-enabling services.
- Fixed issue with reflecting the Netmask changes in the Web UI.
- Incorporated x410 high-precision OCXO models into Web UI functionality.
- Repaired issue with WebUI report of positioning of the dial name at less than 1 degree.
- Restored System Time Message functionality

### Misc:

- Corrected CLI model and model options commands to correctly identify VersaSync and VersaPNT.
- Included “\*cfg” and “\*get” CLI commands that will display the current configuration of the interface.
- Repaired problem setting GNSS position in the CLI.
- Fixed defect with CLI “clean” command to reset the pin configuration to default settings.
- Implemented RTC at boot-up of unit in order to reduce errors during setup.
- Redesigned log files
- Included the hostname in the list of items affected by the “config restore” command.

## Known Issues:

- The “release4” and “release6” CLI commands are not currently functional.
- A few CLI commands have syntax which differs from the helpcli file. These commands display correctly in the inline help instructions.

# Version 1.1.5

## *Newly released features*

- The Galileo constellation is now supported.
- The brightness of the front panel LEDs is now adjustable. To turn OFF the LEDs, set the brightness to zero.
- The GNSS configuration now supports the Manual Position option which, in Standard receiver mode and Stationary dynamics, allows the user to manually set the geographic position. This may be necessary if the GNSS receiver could not complete a survey e.g., if GNSS reception is poor.
- In Standard receiver mode and Stationary dynamics setting, on startup of the unit, a GNSS resurvey will now be performed automatically.
- The default GNSS mode is now Mobile mode, rather than Stationary. SW upgrades will not change the user-set configuration.

## *Enhancements and fixes*

The following defects were corrected and improvements were applied to existing features and functions:

### Networking:

- Improvements made to Versa-specific SNMP MIB, including increased clarification of alarm messages and KTS commands.
- Fixed issues with services failing to start when ETH1 was disconnected on startup.
- Fixed issues with services failing to start on bootup when DHCP was disabled.
- When using the 'net' command, the MAC address will now be displayed correctly.

### NTP & PTP:

- Fixed startup issues with NTP (previously released patch).

### WebUI:

- The FAULT indicator in the Web UI will now be ON only if a fault condition is present.
- The Saving Logs functionality now saves all logs at the same time (in the Web UI, navigate to Management > Log Configuration).

### Misc:

- The output on pins 1 & 2 will no longer be lost after a power cycle.
- Fixed an issue with the system time being 1/1/2000 until a valid reference was found.
- The MIB now displays the product name "VERSASYNC".
- Fixed an issue with the deletion of logs.

# Version 1.1.0

## *Newly released features*

- Added support for event timestamping (paid license option)
- Blackout mode for front panel Status LEDs (NOTE: lights are ON temporarily during startup)
- Added hardware timestamping to PTP (NOTE: In 1.1.0 PTP is restricted to ETH1. The interface for PTP data will likely change in a future release.)
- Added support for zero-configuration networking

## *Enhancements and fixes*

The following defects were corrected and improvements were applied to existing features and functions:

### Networking:

- Fixed an issue with creating static routes
- Fixed an issue with handling DHCP leases
- Fixed an issue with handling traffic on ETH1
- Allow pinging with sudo (e.g., sudo ping 192.168.1.1)
- Now provide a unique dynamic hostname for device

### PTP:

- Improved status reporting in PTP
- Improved PTP compatibility with certain slaves
- Fixed incorrect timescale in PTP

### WebUI:

- Performance improvements
- Validation of pin configuration
- Page cleanup
- Fixed an issue with viewing GNSS satellite data

### Misc:

- LED behavior now matches the documented behavior.
- Improvements to the configuration restoration
- Fixed an issue causing pin configuration changes to require a reboot to take effect
- Fixed an issue with applying leap seconds to NTP/PTP packets late
- Improved runtime hardware monitoring
- Added signing of upgrade bundles for robustness
- Cleanup of logging, removing erroneous log messages
- Improved system stability
- Applied improvements to system cleaning functionality
- Fixed an issue with creating user accounts

## *Known Issues:*

- Pin configuration is not restored in a configuration restore.
- Issue updating from versions older than 1.0.2
- Fault indicator in Web UI is always illuminated
- Constant -10  $\mu$ s offset in PTP packets on ETH0
- System time is sometimes reset on power-up
- 10 MHz outputs cannot be disabled
- Incorrect default GNSS configuration (should be 'Mobile')

# Version 1.0.2

## *Newly released features*

- It is now possible to generate xPPS signals.
- A REST API for VersaSync is now available.

## *Enhancements and fixes*

The following defects were corrected and improvements were applied to existing features and functions:

- Ethernet1 is now available.
- sshd is now supported
- The Havequick input is now available.
- The default 1PPS output pulse width is now 200ms.
- It is now possible to configure PTP via the Web UI.
- It is now possible to use 2 reference inputs of the same type.
- The default mux configuration does work now.
- A defect with the network configuration has been fixed.

# Version 1.0.2

## *Enhancements and fixes*

The following defects were corrected:

- Fixed an issue with Rubidium units skipping the warmup fix.

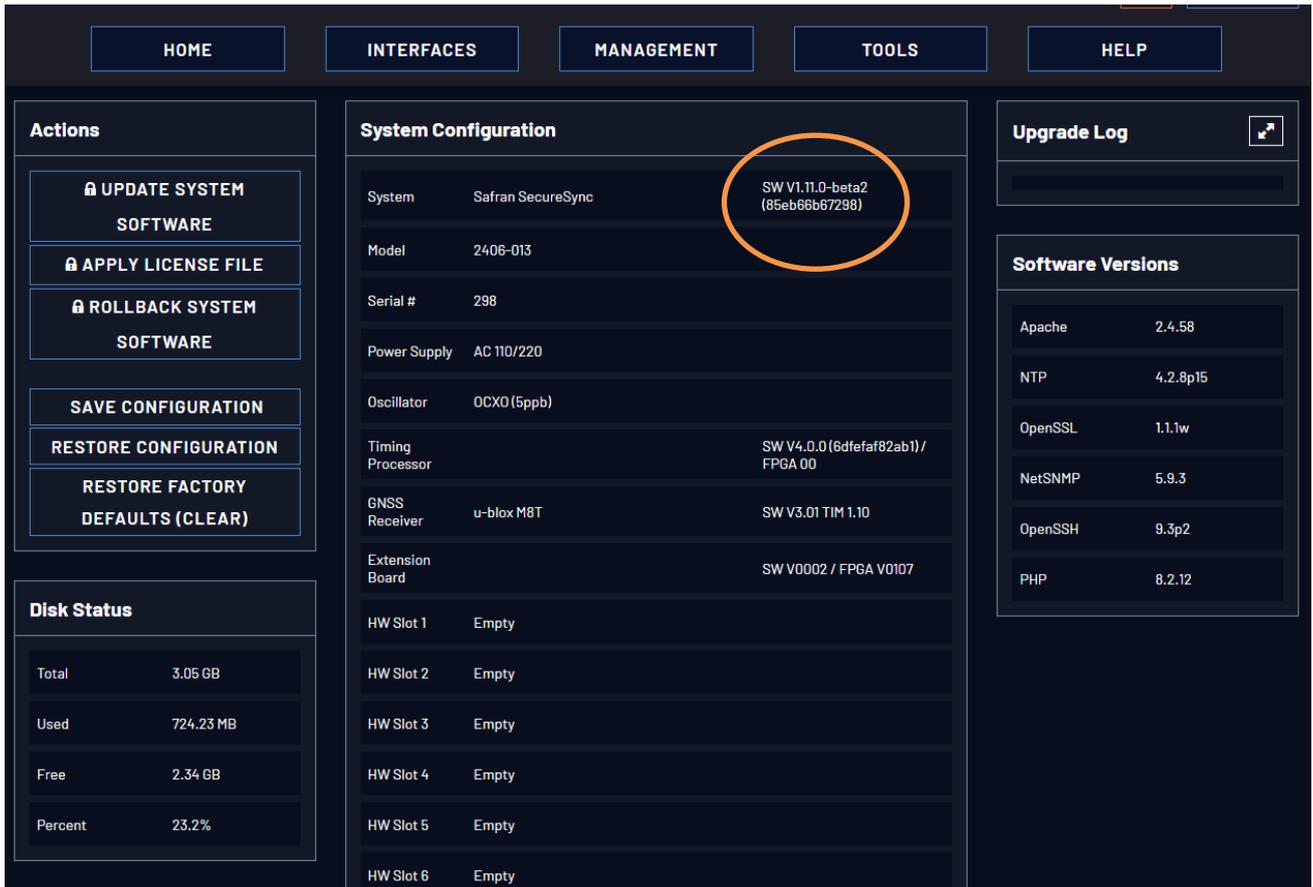
## *Security enhancements and fixes*

- No major vulnerabilities are currently known or repaired in this release.

# Which SW version is installed on my VersaSync?

*To determine the software version currently installed on your unit:*

1. Login to the unit's Web UI
2. Navigate to Tools > Upgrade/Backup. The System Configuration panel in center of the screen displays the current version number under System:



The screenshot displays the VersaSync Web UI interface. At the top, there are navigation tabs: HOME, INTERFACES, MANAGEMENT, TOOLS, and HELP. The main content area is divided into three columns. The left column contains 'Actions' (UPDATE SYSTEM SOFTWARE, APPLY LICENSE FILE, ROLLBACK SYSTEM SOFTWARE, SAVE CONFIGURATION, RESTORE CONFIGURATION, RESTORE FACTORY DEFAULTS (CLEAR)) and 'Disk Status' (Total: 3.05 GB, Used: 724.23 MB, Free: 2.34 GB, Percent: 23.2%). The middle column is titled 'System Configuration' and lists various system parameters. The 'System' parameter is circled in orange and shows 'Safran SecureSync' with the version 'SW V1.11.0-beta2 (85eb68b67298)'. Other parameters include Model (2408-013), Serial # (298), Power Supply (AC 110/220), Oscillator (OCX0 (5ppb)), Timing Processor (SW V4.0.0 (8dfefaf82ab1) / FPGA 00), GNSS Receiver (u-blox M8T, SW V3.01 TIM 1.10), Extension Board (SW V0002 / FPGA V0107), and HW Slot 1-6 (all Empty). The right column contains 'Upgrade Log' and 'Software Versions' (Apache: 2.4.58, NTP: 4.2.8p15, OpenSSL: 1.1.1w, NetSNMP: 5.9.3, OpenSSH: 9.3p2, PHP: 8.2.12).

Parameter	Value
System	Safran SecureSync SW V1.11.0-beta2 (85eb68b67298)
Model	2408-013
Serial #	298
Power Supply	AC 110/220
Oscillator	OCX0 (5ppb)
Timing Processor	SW V4.0.0 (8dfefaf82ab1) / FPGA 00
GNSS Receiver	u-blox M8T SW V3.01 TIM 1.10
Extension Board	SW V0002 / FPGA V0107
HW Slot 1	Empty
HW Slot 2	Empty
HW Slot 3	Empty
HW Slot 4	Empty
HW Slot 5	Empty
HW Slot 6	Empty

Figure 1: Software revision reported under Tools > Upgrade/Backup.

# How to download and install the new SW

## *Installing the Software Update*

To upgrade the software installed on your unit, download the latest version from the Safran website:  
<https://safran-navigation-timing.com/portal/public-downloads/latest-versasync-update-files/>

Log on to the Web UI and navigate to **Tools > Upgrade/Backup** and click on **Update System Software** in the Actions panel.

Click the **Choose File** button and select the upgrade file location; click Upload.

Click the Perform Upgrade checkbox. If desired, select the Clean Upgrade checkbox as well.

Click on the **Submit** button. The upgrade will begin immediately. The unit will reboot during this process; it will be necessary to begin a new Web UI session.

For more information on this process or any other feature or function of the VersaSync, refer to the main user manual at <https://safran-navigation-timing.com/manuals/>.

# How to contact Safran Technical Support

Should you have any questions or comments regarding any of the above-mentioned features or fixes, please contact Technical Support:

<https://safran-navigation-timing.com/support-hub/>

Information furnished by Safran is believed to be accurate and reliable. However, no responsibility is assumed by Safran for its use, nor for any infringements of patents or other rights of third parties that may result from its use. Safran reserves the right to make changes without further notice to any products herein. Safran makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does Safran assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation consequential or incidental damages. No license is granted by implication or otherwise under any patent or patent rights of Safran. Trademarks and registered trademarks are the property of their respective owners. Safran products are not intended for any application in which the failure of the Safran product could create a situation where personal injury or death may occur. Should Buyer purchase or use Safran products for any such unintended or unauthorized application, Buyer shall indemnify and hold Safran and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable legal fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that Safran was negligent regarding the design or manufacture of the part.

Safran Electronics & Defense

- End of document -