Document	
Release Notes WeOS 5.31.1	
Date November 5, 2026	Document No 224004-gacf94e7

WeOS 5.31.1
Release Notes

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Important User Information

This section details important user information, directed in particular to new users of WeOS 5:

For help with getting started using WeOS 5, refer to the Quick Start Guide in section 5.

User Guide

In WeOS 5, the primary user documentation is referred to as the WeOS 5 *User Guide* which you can find as a PDF document in the release Zip file in the sub-directory: `docs/weos/`.

The *User Guide* is also available online at `https://docs.westermo.com/weos/weos-5/`.

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1 Summary of Changes

This section details new features added in this minor release.

Users new to WeOS 5 are recommended to read section 7 carefully, as it high-lights some of the major differences between WeOS 4 and WeOS 5.

1.1 News in 5.31.1

The subsection below describes news in WeOS 5.31.1. In addition, section 2.1 includes information on fixed issues.

1.1.1 Security Patched Boot Loader

WeOS 5.31.1 is delivered with a security patched boot loader, Barebox v2024.03.0-6, to remediate a vulnerability in the handling of signed ITB (FIT image) files, where in very specific situations, the boot loader could verify the signature of one image and potentially start a different one. The boot loader now always starts the image whose signature was verified.

Please note that this release will require a boot loader upgrade if running a Barebox version older than v2024.03.0-6. Details about upgrading the firmware is available in section 6.3.

1.1.2 Boot Loader Downgrade Prevention

Because of the boot loader upgrade as mentioned in section 1.1.1, WeOS 5.31.1 will block downgrades of Barebox to versions older than v2024.03.0-6.

1.2 News in 5.31.0

The subsection below describes news in WeOS 5.31.0. In addition, section 2.2 includes information on fixed issues.

1.2.1 Per-Architecture Firmware Packages

As of this release, WeOS firmware is delivered as a set of separate packages, one per product architecture, in addition to the previously available package covering every device (with the exception of Lynx RedBox). This can dramatically reduce the storage and bandwidth requirements when doing a firmware upgrade.

For more information, and how to find out which package a device needs, see section 6.1.

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1.2.2 Provisioning - Increased Max Timeout

The max configurable timeout of Provisioning has been increased from 1800 seconds (30 minutes) to 3600 seconds (1 hour).

1.2.3 Application Hosting - AppArmor and Seccomp support

Application Hosting now supports AppArmor and Seccomp profiles for applications. These profiles provide an additional layer of security isolation by restricting the system resources, files, and system calls available to applications running in containers.

For more information see the WeOS User Guide section *Configuration Guides → Application Hosting*.

1.2.4 LDAP Client Support

This release introduces native LDAP client support in WeOS, enabling centralised authentication and role-based authorisation through external directory services such as Microsoft Active Directory and OpenLDAP. Authentication is integrated into the existing WeOS PAM framework and supports both LDAP and secure LDAP (LDAPS and Start-TLS), with TLS-protected communication for secure credential handling. WeOS supports multiple LDAP servers to provide redundancy and failover capabilities.

Authorisation is implemented using a hybrid LDAP/RBAC model. LDAP user groups are mapped to locally defined WeOS roles, combining centralised identity management with deterministic, device-local access control. After successful authentication, the user's LDAP group membership is evaluated and mapped to a single WeOS role. If multiple groups match configured roles, the first matching role is selected. Access is denied if no valid role mapping exists.

Assigned roles are enforced by the existing WeOS RBAC framework across CLI, WebUI, configuration functions and operational actions. To improve availability, WeOS supports for offline operation through locally defined fallback accounts to maintain administrative access during LDAP server outages.

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2 Fixed Issues

2.1 WeOS 5.31.1

Fixed issues in WeOS 5.31.1 (as relative to 5.31.0).

Issue	Category	Description
WEOS5-6545	WEB	Input fields for Password and Timeout in Remote Authentication Server are missed
WEOS5-6364	System	Lynx 5000 and RedFox 5000 & 7000 series could sometimes enter unclear state during boot
WEOS5-6346	System	Device boots up without assigning its own static IP address to itself when SSH is disabled
WEOS5-6304	System	netd can't restart
WEOS5-6289	Documentation	Firmware-Packages.txt misses RedFox-7000 series
WEOS5-6224	WEB	VPN & Tunnel webpages are still listed on the Redundancy Box
WEOS5-6130	SNMP	SNMP reboot command triggers a configuration save/reconfigure, risking config-file corruption
WEOS5-6062	System	Secure Boot Vulnerability: Prevent bootloader downgrade

2.2 WeOS 5.31.0

Fixed issues in WeOS 5.31.0 (as relative to 5.30).

Issue	Category	Description
WEOS5-6013	Logging	Operator cannot export log via CLI
WEOS5-5991	General	GNS3 appliances does not work with Ubuntu 26.04
WEOS5-5789	Logging	Audit log entry missing when SSH is disabled via SSH
WEOS5-5786	Logging	Audit log entry missing when web access is enabled or disabled via Web UI
WEOS5-5781	System	Tagged VLAN traffic from CPU does not transmit on HSR/PRP interface
WEOS5-5766	Any	Segfault when upgrading pkg:s on specific hardware
WEOS5-5759	Logging	Unclear syslog message output and format from the periodic watchdogd meminfo monitor
WEOS5-5693	SNMP	Syntax error in WESTERMO-RICO-MIB
WEOS5-5582	RSTP	MSTP crashes when configured with ssl if there were multiple creation/deletion of ssl port
WEOS5-5525	SNMP	SNMP WESTERMO-EVENT-MIB file has typo error on line 140

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Issue	Category	Description
WEOS5-5521	SNMP	SNMP eventStatusTriggerMessage missing information
WEOS5-5506	Alarm	Unsupported alarm types exposed
WEOS5-5496	Documentation	Alarm Types CLI output under Alarm is out of date in the User Guide
WEOS5-5488	Alarm	Wrong eventStatusTriggerStatus for Storm-detection and Link Health Monitor alarm triggers
WEOS5-5487	Alarm	eventStatusTriggerType fails to return correct values for storm-detection and Link Health Monitor alarm triggers
WEOS5-5486	Documentation	Health link monitor is not listed as alarm source (Type) in the User Guide
WEOS5-5481	Documentation	SNMP Notifications in the User guide is incomplete
WEOS5-5480	WEB	Unexcpected Clish logline shows every time the user signs in via web
WEOS5-5476	OSPF	Unrelated configuration change disturbs network connectivity
WEOS5-5467	Logging	Unexpected index.cgi logs when the user signs in on WEB
WEOS5-5446	System	Unexpected kernel logs on Lynx 5000 and RedFox 5000 & 7000 series
WEOS5-5445	LED	Port LED not reflecting FRNT status
WEOS5-5411	TCN	TTDP UUIDs with leading NULL bytes handled incorrectly
WEOS5-5367	Ports	SFP information unavailable in WebGUI
WEOS5-5348	General	(R)STP OIDs present in SNMP when (R)STP isn't configured
WEOS5-5242	Ports	Jumbo Frame Switching does not work in some specific scenarios
WEOS5-5062	TCN	TTDP set lag-port as not using Auto-negotiate but without setting a static speed value leading to ports not coming up properly
#17907	TCN	When TTDP is activated, auto neg is disabled and fastlink for 100MB is enabled
#21115	Ports	RedBox: IRQ spam sometimes when SFP is inserted but not in use
#20361	General	CLI validation of https certs doesn't match JSON schema validation
#20510	WEB	Packet vs. Byte Counters Not Aligning
#20799	WEB	The Environment status webpage does not list and display DDM SFPs
#21164	WEB	VPN & Tunnel webpage is presented on the Redundancy Box
#21161	WEB	Status webpage for HSR/PRP does not display status section
#21158	Ports	Unable to configure egress rate limit when a LAG exists

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Issue	Category	Description
#21131	DHCP	VETH interfaces not in validation list for DHCP Relay Agent

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2.2.1 Vulnerabilities

Fixed vulnerabilities in 5.31.0

- CVE-2026-45447
- CVE-2026-45446
- CVE-2026-45445
- CVE-2026-42771
- CVE-2026-42770
- CVE-2026-42769
- CVE-2026-42768
- CVE-2026-42767
- CVE-2026-42766
- CVE-2026-42765
- CVE-2026-42764
- CVE-2026-35188
- CVE-2026-34183
- CVE-2026-34182
- CVE-2026-34181
- CVE-2026-34180
- CVE-2026-28532
- CVE-2026-9076
- CVE-2026-7383
- CVE-2026-5172
- CVE-2026-4893
- CVE-2026-4892
- CVE-2026-4891
- CVE-2026-4890
- CVE-2026-2291

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- CVE-2025-61107
- CVE-2025-61106
- CVE-2025-61105
- CVE-2025-61104
- CVE-2025-61103
- CVE-2025-61102
- CVE-2025-61101
- CVE-2025-61100
- CVE-2025-61099

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3 Known Limitations

This section describes known limitations in WeOS.

3.1 Ring Coupling version 2 not supported

Support for FRNT Ring Coupling (RiCo) version 2 was removed in 5.15.0 due to problems with the stability of the function. Most of the use cases for RiCo version 2 can be covered today through the use of FRNTv2 and RiCo v3.

For information around FRNT v2 and RiCo v3 usage please contact local Westermo support.

3.2 Port Access Control (IEEE 802.1X and MAC Authentication)

Wake-on-LAN is currently not possible on controlled ports. The reason is that broadcast traffic is not allowed to egress a controlled port until there is at least one MAC address authenticated on the port.

3.3 RMON

Some Hardware platforms are unable to provide certain RMON counters due to problems with the hardware chipset.

- RCV Error counter does not work on Viper 3512 and 3520
- FC Received (rx_pause) does not work on Lynx 5000 and Redfox

3.4 Login

Known limitations related to the Login service.

Side-effect of disabling console login

When disabling login from console, login via telnet is also prohibited (even when telnet login is enabled).

SSH Public Key Lost When Disabling Built-in User

WeOS 5.13.0 introduces support for importing SSH public key for built-in users, as well as the ability to enable/disable a user. When disabling a user, the intention is that the user shall be prohibited from logging in, while other user configuration is till kept in the configuration file.

However, the disabling of a user currently implies that any SSH public key associated with the user is removed and needs to be imported again upon enabling the user.

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3.5 Setting Date Manually

Setting a manual date on the WeOS unit before 1 January 2000 will render an error message.

3.6 Available ports for boot specific functionality

The boot loader rescue mode only supports regular copper ports, not SFP ports. On RedFox-5528, ports 1-4 are also not supported until the system has booted. This is also true for the expander ports on the Lynx-3518 platform.

3.7 Routing Hardware Offloading

The routing Hardware Offloading support for Viper-TBN introduced in WeOS 5.8 has shown to have instabilities. In particular, when used with dynamic routing, there are issues not yet solved. Therefore hardware offloading has temporarily been Disabled by default.

```
viper:/#> configure
viper:/config/#> ip
viper:/config/ip/#> offload
viper:/config/ip/#> leave
```

When Offloading is Enabled, regular IPv4 forwarding is handled in hardware with some exceptions, see the WeOS 5 User Manual for details (section 'Configuration Guides'/'Routing'/'Offloading').

For Redfox and Lynx-5000 initial Offloading support in 5.23.0. Functionality only cover a very small subset of use cases yet and has a list of restrictions.

The Known limitations for offloading on Redfox and Lynx-5000:

- Routed IPv6 traffic is handled by the CPU
- IP multicast traffic will be routed by the CPU
- Firewall forwarding chain will not impact any routed Unicast traffic
- NAT will not be performed on any routed traffic
- Only VLAN interfaces can be used, usage of Port-interfaces will not perform any traffic forwarding
- Policy-Based Routing will not function
- SSL-tunnel will function to some extent via the CPU but is strongly discouraged from being used in this release

Tracking vrrp instances with mroutes is not supported when offloading is enabled. If this feature is used it is recommended to disable offloading. (opposite steps to the example above).

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Use of the WeOS Firewall together Hardware Offloading is not supported and the behaviour of doing so is undefined. The exception is when firewall configuration is limited to *filter input* rules.

Hence, if the Firewall is use to configure *filter forwarding* rules, *NAPT* rules or *port forwarding* rules on a Viper-TBN, it is necessary to disable the Hardware Offloading (opposite steps to the example above).

```
viper:/#> configure
viper:/config/#> ip
viper:/config/ip/#> no offload
viper:/config/ip/#> leave
viper:/#>
```

3.8 Redundancy protocols on Relay ports

It is only supported to run link-aggregation as the selected option for redundancy on Relay ports. This is due to the fact that any other protocol can end up in very uncertain situations in cases where the bypass-relays are used.

In the future WeOS may refuse enabling these protocols on relay ports.

3.9 FRNT

Fastlink must be enabled manually for FRNT (gigabit Ethernet) ring ports.

Fastlink is a unique feature of Westermo products to optimise gigabit Ethernet link-down fail-over times in layer-2 redundancy protocols such as FRNT.

3.10 RSTP

WeOS 5 supports RSTP, compliant to IEEE 802.1D-2004. Due to limitations in the WeOS 4 implementation of RSTP, a WeOS 4 unit will keep ports in blocking mode longer than needed when connected to a WeOS 5 node.

Hence, mixing WeOS 4 and WeOS 5 units in RSTP topologies may exhibit relatively long periods with limited connectivity during topology changes, this applies to both link failure and when a link comes up again.

Link aggregate path-cost use the configured port speed value(s) and not the negotiated speed value. This can lead to RSTP making the non-optimal path selection. Work-around this issue by setting a fixed path-cost in the spanning-tree port configuration.

3.11 IEC 61375

In this release, not all of the recovery use cases, nor the optional cases, are supported.

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TTDP and non-TTDP multicast can be used simultaneously in this release, but is considered unstable and is strongly recommended to be avoided.

"Automatic Gap Insertions", when several vehicles have the same name, can lead to unexpected behaviour.

When recovery-mode is set to deferred/wait, an ECSC must be running on the configured multicast address. If no ECSC is running and sending data on the configured multicast address, no node will come up at all.

It is strongly recommended to enable inauguration inhibition on all nodes to reduce spurious re-inaugurations and guarantee a stable train communication.

The “ECSP inhibit sync” function should only be enabled in consists with simple or straightforward ECN configurations. In complex configurations with non-symmetric ETBN/ECN connections and/or configurations where different ETBNs are master routers for different ECNs simultaneously, the backup ETBNs will not be able to unambiguously determine which ETBN is the master router/ECSP, which can in turn lead to unexpected behaviour with regards to the local inauguration inhibition value. In these cases, manually setting the local inauguration inhibition values on the backup ETBNs, via the ETBN_CTRL telegram, should instead be performed.

VRRP virtual IP address ("VIP") is primarily intended to be used as a gateway/router address, and not as a host address. However, using the VIP as a host address, that at any one time belongs to the currently active ECSP is a common use case. When using the VIP in this way, for ECSC-ECSP communication, it is recommended that the "vmac" option in the VRRP configuration be turned off for all VRRP instance whose VIPs are used in this way.

3.12 Custom TRDP telegrams

The implementation of Custom TRDP telegrams has some limitations:

- Data from up to 32 device ports can be included across all defined datasets.
- Data from up to 8 VLANs can be included across all defined datasets.
- Data from up to 4 FRNTv2 rings can be included across all defined datasets. FRNTv2 is the only supported ring protocol for which data can be included.

3.13 LLDP

When using Link Aggregation, the individual member ports will transmit LLDP frames using the MAC address of the link aggregation interface, i.e. all member links in an aggregate will be using the same MAC address.

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3.14 Port Monitoring

It is not possible to utilise port monitoring directly on a link aggregation port interface. However it is still fully possible to monitor the individual member ports that constitute any given link aggregate.

Therefore, in order to fully monitor an aggregate, monitoring must be configured for each of the aggregate member ports.

3.14.1 Cross switch core limitation

It is not possible to use port-monitor where the source and destination ports are splitt between switchcore 2 and 3 on Viper-120 and Viper-220 products.

Having the source and Destination port on the same switch core or one of the source or destination ports on ports ethX7, ethX8, ethX14 or ethX20 while the other resides on one of the other switchcores is possible.

3.14.2 Resource allocation

Thresholds for dropping packets going through Port Mirroring instances may be lower than for regular streams during network congestion. Drops may therefore occur earlier (with lower load) for port mirroring instances.

3.15 Media Redundancy Protocol (MRP)

- *MRM not supported for MRP 30 profile:* WeOS 5 units can be configured to operate in MRP 200 or MRP 30 profile. However, for MRP 30 profile, configuring the WeOS 5 unit as MRP Master (MRM) is not supported. A WeOS 5 unit can be used as MRP Client (MRC) with MRP 30 profile with MRMs from other vendors.

  More details: When a link comes up between two MRP clients, the clients send *link-up* messages to the MRP master. The MRP 30 ms profile only gives the MRP master 4 ms to block its secondary port from the time the MRP clients send their first *link-up* message. The WeOS 5 MRP Master is not always capable of doing that, resulting in a short transient loop in the MRP ring when the ring is healed.

  To avoid this, it is recommended to use the MRP 200 ms profile instead. For link-down scenarios, MRP 200 ms profile conducts failover as fast as the 30 ms profile, given that MRCs in the ring are capable of sending MRP *link-down* messages (WeOS units have this capability).

- *Use of MRP with virtual L2 ports (SSL VPN ports):* MRP is specified for use with Ethernet ports (full duplex, 100 Mbit/s or higher). WeOS enables the use of running MRP over SSL L2 VPNs, but requires the VPN to run over a high-performance network to work well. Furthermore, only the MRP ’200 profile’ can be used with SSL VPNs.

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3.16 10G SFP Ports

The 10G SFP ports on RedFox-7528 have the following limitations:

- IEEE 1588/PTP is currently not supported on 10G SFP ports.
- 10G SFP ports are only to be used for 10G Fiber SFPs or 1G Fiber SFPs, not copper SFPs or 100 Mbit/s Fiber SFPs.
- Status of MDI/MDIX and polarity shows value 'Invalid' ('N/A' or 'Not Applicable' would be more appropriate).

3.17 RedBox PTP Boundary Clock

RedBoxes running Boundary Clock in an HSR ring must be connected with all A ports in the same direction. As the BC prioritizes synchronizing from the A port, if two BC are synchronizing towards each other neither of them may end up in a stable state.

Connect devices as shown below:

```
ethA-RB-ethB <-> ethA-RB-ethB <-> ethA-RB-ethB ....
```

3.18 Ingress rate limiting

On Viper-3000 series and Lynx-3000 series, ingress rate limiting of multicast traffic includes broadcast.

3.19 Static unicast MAC filters for link aggregates

Static unicast FDB filters are known to not work as expected when the port associated with the filter is a link aggregate that spans multiple switch cores.

3.20 Barebox System Recovery ports

The Lynx-3518 family has limitations on which ports can be used in Barebox System Recovery, only eth11-eth16 are valid.

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4 Known Issues

4.1 List of known issues

Issue	Category	Description
WEOS5-6389	Firewall	Firewall does not accept "lo" and "any" as iface
WEOS5-6324	System	Configuration of VLAN tagging is not fully correct handled as expected when HSR-PRP type is changed
WEOS5-6296	NTP	NTP listening interface filter block all request
WEOS5-6295	DHCP	DHCP static leases based on clientID unreliable
WEOS5-6242	System	Deadlock in finit
WEOS5-6199	System	HTTPS service do not validate server during FW download
WEOS5-6147	System	Unexpected logs when port monitor is configured
WEOS5-6128	System	SCEP re-enrollment fails
WEOS5-6017	DHCP	Preempt on DHCP server with option 82 doesn't work
WEOS5-5986	Kernel	Kernel BUG on Dagger when deleting clsact qdisc
WEOS5-5963	WEB	NTP web page is broken
WEOS5-5864	SNMP	SNMP user OID filter does not work and must always have value empty to get accepted
WEOS5-5835	System	PCP of OSPF is low
WEOS5-5798	GRE	GRE tunnels with same remote and local IP address does not work and produces errors
WEOS5-5788	HW	[Dagger] - Subsequent FDB dumps prevents learned entires from aging out
WEOS5-5785	HW	[Dagger] - Subsequent FDB dumps seemingly removes some learned entires
WEOS5-5774	Firewall	Device selects FALLBACK configuration in special circumstances
WEOS5-5771	Firewall	Device selects FALLBACK configuration in special circumstances
WEOS5-5473	System	jumbo-frame-switching on Lynx-3000 series does not switch frames with larger than 1932 bytes in buffer size
WEOS5-5472	System	Metrics fails to collect data on Lynx-3518 sometimes
WEOS5-5462	System	Some of FRNTv0 packets do not have P7 and/or DSAP and/or SSAP 0xAA
WEOS5-5458	FRNT	FRNT v0 copes with routing loads less reliably than v2
WEOS5-5441	Offloading	Viper-TBN fails to offload unicast 1-1-NAT traffic both with and without TCN active
WEOS5-5440	Offloading	DPAAD keep setting syslog entries with error 2

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Issue	Category	Description
WEOS5-5436	DHCP	dhcpc doesn't always manage to start
WEOS5-5409	TCN	-2-3 inauguration started too early in -2-5 process
WEOS5-5392	Routing	Blackhole routes are always set to Administrative distance 255 in configuration file
WEOS5-5384	System	Hardware offloading only work on Viper-TBN in combination with TCN active
WEOS5-5330	VPN	Unable to configure MTU size for ssl tunnel interfaces
WEOS5-5320	System	Configuration not applied properly on boot with broken SD-card
WEOS5-5017	Routing	During routing of packets a single packet is frequently lost on viperA
WEOS5-4970	DHCP	DHCP relay not working due to VLAN is down
#21198	System	netd generates segfault and cause system to lose default gateway at boot
#21197	System	FW upgrade towards a HTTPS server does not work
#21194	IP Multicast	MROUTE tracking maps to interface set as tracking and not input vlan making rule fail on system level
#21193	System	During long term test with link down/up the device lose it's static ip address
#21191	System	Active SSH session remains active after disabling SSH
#21184	System	Installing invalid wmopkg in package context can lead to soft-locked device
#21183	General	Symlink on external media can point to internal files and allow modifying them
#21178	General	Arbitrary command execution through ddns hostname
#21148	System	System start input validation for system hostname refuse under-score
#21141	Alarm	Files in config validation may break system from storing config
#21140	Alarm	Alarm fails to map to frntv0 service on configuration restore
#21134	VPN	IPsec: selecting bundle as local-cert might not work
#21123	Offloading	Offloading of multicast fails within 1min after streams start on Viper platform
#21122	Port Access Control	Authorized entries can become black hole in software bridge fdb
#21086	System	Show fdb includes unexisted enteries
#21078	System	Setting static speed/duplex works only the first time (Viper 3000)
#21068	Alarm	Alarm instance is not restarted when doing a config restore
#21040	VLAN	Creating lots of VLANs can lose LAN settings

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Issue	Category	Description
#21037	Link Aggregation	"no lag <X>" does not removing lag <X> from "show running configuration"
#21016	Ports	Redfox and Lynx 5000 autoneg to 1Gbps/s may fail and fall back to 100Mbps
#20957	System	Lynx 5000 and Redfox inconsistent hotswap of External media disk without partitions
#20936	Ports	Hot Swap does not work on Lynx-5612 port eth10
#20919	General	certificate store isn't findable by client utilities
#20896	Any	mDNS discovery not working on Redbox
#20891	Kernel	Port priority does not work across switchcores (DSA)
#20828	System	Deactivating Watchdog in Lynx + RedFox 5000 & 7000 series reboots the unit continuously
#20771	WEB	WEB page is sporadically not updated after configuration
#20749	TCN	TCN can fail to build TTDB properly in the extremity 2 backup TBN when cstinfo have same cstID and/or vehID
#20748	System	RMON does not show Filtered/Discarded values
#20662	Any	no boot does not reset allow-untrusted/unlock-license
#20627	Port Access Control	Inconsistent and delay in MAC Address Authentication
#20603	System	Upgrade command can hang device forever in runlevel 9
#20578	NTP	RTC may lock at wrong time at power down if backwards time jump has happened
#20410	DHCP	Unable to bind IP address when short DHCP leasetime is provided
#20312	AAA	Possible to get locked out if lockout policy is set and no valid connection to Radius server
#20309	System	Firmware upgrade could reset the user password
#20281	System	The error message "Failed to add audit entry to audit daemon" is spammed when applying large configs
#20249	System	Repeated connections via telnet may cause the telnet service to become unresponsive
#20233	HW	RTC: System time might not be stored correctly
#20231	WEB	Fail with restoring config in WEB but no fault messages
#20201	System	Rebooting after disabling offloading will remove all traffic policies
#20150	System	DHCP Reply seems to be offloaded, cannot accept address
#20047	WEB	The user is redirected to the login page when editing firewall rules is tried
#19958	Boot Loader	Envoy Barebox uses precompiled ATF

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Issue	Category	Description
#19928	TCN	Offloading with TCN does not allow for fragmented packets to be forwarded
#19903	System	configuration restore do not clear previous added route from system
#19880	WEB	Refreshing page when upgrade of bootloader or secondary restarts the upgrade if it's done
#19878	CLI	Config abort do not work correctly with an in valid configuration
#19870	IGMP	Multicast Snooping Boundary for MLD does not work on Dagger based systems
#19826	System	Large amount of authenticated SSH sessions causes denial-of-service condition
#19777	WEB	Upgrading primary image from web ui does not report flashing done in http response
#19756	VRRP	The vmac of VRRP causes strange log messages and VRRP not to work properly
#19711	WEB	Cannot access help in some menus in webGUI when browser tree menu has gone past the bottom of the screen
#19517	Logging	When PoE-chip goes repetitively down many Kernel logs is generated and stored
#19410	IGMP	Missmatch between MDB and ATU for mc group 239.193.0.1 when etbn is acting as router, sender and consumer of data
#19323	FRNT	FRNT Focal point Topology Counter rush with LACP links (Dagger)
#19262	Ports	Traffic not handled on Envoy ports using Copper SFPs
#19251	PoE	Lynx 3510 PoE leds continuously blinking in case of LV supply
#18675	Link Aggregation	Long failover time (aggregate member link up/down) in link-aggregate interoperability case (WeOS5 'Dagger' vs WeOS4)
#18163	OSPF	Routes to 'redistributed connected E1 routes' lost within NSSA areas upon topology change
#18151	Logging	Long-running programs log events to syslog with the wrong time stamp on timezone changes
#18076	MRP	Probing MRP status (30 ms profile) during heavy load may cause reboot (Viper-TBN)
#18069	QoS	ARP packets treated with lowest priority and may be missed/dropped under load
#17995	System	Service discovery not available in safe-config

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4.2 #18163: Work-around for OSPF NSSAs convergence issue

When using OSPF Not-So-Stubby Areas (NSSAs), failover when a router goes down may take a lot longer time than expected. There are two possible work-arounds until this bug is fixed:

- Alternative 1: Let each router get an address on its loopback interface, and include them in the OSPF area, e.g., use OSPF setting “network 192.168.1.5/32 area 1” for a router in (NSSA) area 1 with address 192.168.1.5/32 assigned to its loopback interface (lo).
- Alternative 2: Use ’regular’ OSPF areas instead of NSSA areas.

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5 Quick Start Guide

WeOS 5 devices are intended to be usable out-of-the-box as a switch. All access ports are assigned to the same VLAN (untagged) and the device tries to acquire a management IP address via DHCP. It also acquires a link-local address (in the 169.254.x.x range). These addresses are advertised with mDNS (Linux/Apple), SSDP (Windows), and LLDP.

5.1 Default User and Password

user: admin

password: admin

5.2 General

Apple, Linux, and Windows users with mDNS installed, can either use an mDNS client to find the device's IP address, or connect using a web browser:

- `http://weos.local`
- `http://redfox-4d-3b-20.local`

The first example is not available if there are many WeOS devices on the same LAN. The latter, and more reliable address, is a combination of the hostname and the last three octets of the device's MAC address in that LAN. In this example the hostname is `redfox` and the MAC address is `00:07:7c:4d:3b:20`.

Windows users without mDNS have SSDP to discover WeOS devices. In Windows 7 there is the *Network and Sharing Center* where a clickable icon for each discovered WeOS device should appear under *Network Infrastructure*. The PC must, however, be in the same subnet (DHCP or link-local) for this to work. Windows users also have the Westermo WeConfig tool to manage their WeOS devices.

Expert users can also use nmap, a port scanner, to scan the network for the device. Be aware though that this might be frowned upon should your device be located on a shared network.

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5.3 CLI

WeOS comes with a Command Line Interface (CLI) that can be accessed via a console port at 115200@8N1, or Secure Shell (SSH). Only SSH protocol version 2 is supported. To gain access to the CLI using SSH you need:

- An SSH client, see below
- The device's IP address or DNS/mDNS name, see above
- The user name and password, default user: admin, password: admin

SSH Clients

There are many of SSH clients available, some of them can even be used to connect to the devices using a (USB) serial console port. A few free clients are listed below. Please follow the directions for installation and usage applicable to your operating system and client.

UNIX, Linux, Apple macOS OpenSSH, `https://www.openssh.com`

Apple macOS Termius, `https://www.termius.com`

Windows PuTTY, `https://www.chiark.greenend.org.uk/~sgtatham/putty/`

CLI Overview

The CLI has two main scopes: admin-exec and configure context. The former is what the user lands in after initial login.

```
redfox-4d-3b-20 login: admin
Password: *****
.--.--.--.-----.-----.------.-----.-.--.--------.-----.
|  |  |  |  -__|__ --|_    _|  -__|   _|  .  .  |  _  | http://www.westermo.com
 \__/\__/|_____._____| |__| |_____|__| |__|__|__|_____|        info@westermo.se
   Robust Industrial Data Communications -- Made Easy

\\/ Westermo WeOS v5.3 5.3.x-g7890bde -- Oct 24 19:30 CEST 2018
Type: 'help' for help with commands, 'exit' to logout or leave a context.

redfox-4d-3b-20:/#> help
```

Central concepts in WeOS are: ports, VLANs, and interfaces. To see status of each in admin-exec context, use `show ports`, `show vlans`, and `show ifaces`.

To change settings, enter the configuration context with the command `config`. The same commands as above also apply here, but now display the configured settings. Notice how the CLI prompt changes to show the current scope.

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`redfox-4d-3b-20:/config/#>` **iface vlan2**

To show or change the interface and VLAN properties the user enters the command: `iface vlan2` and `vlan 2`, respectively, with an optional "show" as prefix. E.g. `show iface vlan2`.

`redfox-4d-3b-20:/config/iface-vlan2#>` **help inet**

The help command is always available. Use it stand-alone or with a context-specific setting to get more detailed help.

To leave a level use the command `end` to save or `abort` (or Control-D) to cancel. To save and exit all levels, and go back to admin-exec, use `leave` (or Control-Z).

```
redfox-4d-3b-20:/config/iface-vlan2#> leave
Applying configuration.
Configuration activated.  Remember "copy run start" to save to flash (NVRAM).
```

The CLI, unlike the WebUI and WeConfig, has a concept of a running configuration. This is an activated but volatile (RAM only) file that must be saved to built-in flash (non-volatile storage) before rebooting. Many separate config files can be saved, but only one can be the selected startup-config. For details, see the built-in help text for the admin-exec copy and show commands.

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6 Firmware Upgrade

Firmware upgrade is supported from the CLI, WebUI, and WeConfig tool. The CLI only supports FTP/TFTP upgrade but the WebUI and WeConfig tool can also upgrade via CGI upload – making them the ultimate choice if you have no FTP/TFTP server available or do not care to set one up.

6.1 Firmware Packages

WeOS firmware is delivered as a set of separate packages, one per product architecture, as well as a single package covering every device (with the exception of Lynx RedBox). All packages are individually signed and can be downloaded directly to a device using HTTP/HTTPS, FTP, TFTP, SFTP, or SCP.

For architecture packages, pick the package that matches your product family. If you are unsure which package a device needs, the WeOS CLI and web interface report the package that matches the running unit.

Package	Architecture	Product Families
`WeOS-armv7-<VER>.pkg`	ARMv7	Lynx 5000, RedFox 5000
`WeOS-armv8-<VER>.pkg`	ARMv8	Lynx 3000
`WeOS-ppc-<VER>.pkg`	PowerPC	Viper 3000
`WeOS-armv5-<VER>.pkg`	ARMv5	Lynx RedBox

Here <*VER*> is replaced by the WeOS version number, for example `WeOS-armv7-5.31.1.pkg`.

The per-architecture packages can be found in the release ZIP under the folder `firmware-packages` while the large package covering all devices has the name `WeOS-<VER>.pkg` and can be found in the root folder.

Every package is self-contained and includes everything needed to upgrade a matching device, both the firmware image and the compatibility conditions used to verify the upgrade before it is applied. If the package does not match the device, the upgrade is refused and the current firmware is left untouched, so downloading the wrong package cannot leave a unit in a broken state.

To find out which package a device needs, look at the `Architecture` of the device. In the web interface this is shown under *Status* → *System* → *Details*.

Alternatively, in the CLI, run `show system-information` and look at the `Architecture` field:

```
redfox-6e-32-a0:/#>:/#>  show system-information
SYSTEM INFORMATION
System Name         : redfox-6e-32-a0
[...]
Product             : RedFox-5528-E-T28G-LV
```

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```
Architecture        : ARMv7
[...]
```

In this example the `Architecture` is `ARMv7`, so the device uses the `WeOS-armv7-<VER>.pkg` package.

6.2 Upgrading from WeOS 5.21 or earlier

WeOS 5.22 introduced a new firmware image format to support secure boot products, something that resulted in significant changes in the upgrade process and affecting all products. To upgrade from 5.21 or earlier, please review our *WeOS 5 Upgrade and Transition Guide* that you can find on *westermo.com* by selecting *Solutions* → *WeOS* → *WeOS firmware history* and then clicking the link in the top paragraph.

6.3 WeOS Image

WeOS devices run from a built-in flash disk and usually comes with three partitions: primary, secondary, and boot. The latter is for the boot loader (see below) and the primary is the main WeOS image partition. Should this ever get corrupted, e.g. due to power-loss during upgrade, the device will boot using an image from the secondary (or backup) partition. This is a very appreciated, but mostly unknown, robustness feature.

Starting with this WeOS release, a **boot loader upgrade is required** if you are running Barebox v2024.03.0-5 or earlier to remediate a vulnerability affecting devices with Secure Boot. This means you need to run `upgrade boot` before running `upgrade primary` or `upgrade secondary`. See section 6.4 for details about `upgrade boot`.

Please note that a bug in WeOS versions 5.27.0, 5.27.1 and 5.28.0 will set the device in a state that requires a power cycle if you try to upgrade WeOS without first having upgraded the boot loader. Doing so might also trigger a success or error message that does not accurately reflect the upgrade status.

An alternative is to run `upgrade all` which upgrades all partitions in the correct sequence, not triggering the bug described above, regardless of which WeOS version you are currently running.

To upgrade the primary partition, run:

`redfox-4d-3b-20:/#>` **upgrade primary <SERVER-ADDRESS> WeOS-5.31.1.pkg**

The system must reboot when upgrading the partition image the system started on. This protects against flash corruption issues seen in earlier releases, caused by simultaneous access to the flash during programming or when starting new processes after an upgrade. Also, WeOS warns when one of the partitions has an image with invalid CRC. Attempting to upgrade the partition with the OK CRC is discouraged, upgrade the partition with the invalid CRC first.

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As usual, when upgrading from an earlier release, we always recommend backing up your configuration beforehand.

Note: The version string listed in the output from the `show system-information` command in the CLI, or the System Details page in the WebUI, is only updated after reboot.

Note: Starting with this WeOS release, if you try to downgrade both WeOS and the boot loader from a WeOS package including a Barebox version older than v2024.03.0-6 by running `upgrade all`, you will in effect only downgrade the secondary partition as the `upgrade all` command installs partitions in the following sequence:

- Secondary
- Boot loader
- Primary

Since it is not possible to downgrade the boot loader to a vulnerable version starting in this WeOS release, the upgrade process will stop after having downgraded the secondary partition.

6.4 Boot Loader

The boot loader firmware has its own version numbering scheme and is CPU platform specific. Unless the release notes explicitly recommend it, there is usually no need to upgrade the boot loader. This and future WeOS releases, however, require a boot loader upgrade if the device is running Barebox v2024.03.0-5 or earlier.

The boot loader firmware is included in the WeOS-5.31.1.pkg.

- Viper-3000 Series (Coronet): Barebox 2024.03.0-6
- RedFox-5000/7000 and Lynx-5000 Series (Dagger): Barebox 2024.03.0-6
- Lynx-3000 Series (Envoy): Barebox 2024.03.0-6
- Lynx-RB (Byron): Uboot 2024.04.0-1

```
redfox-4d-3b-20:/#> upgrade boot <SERVER-ADDRESS> WeOS-5.31.1.pkg
```

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7 Significant differences between WeOS 4 and WeOS 5

Some aspects of the CLI are different between WeOS 4 and WeOS 5. Here are some examples:

- Access port names have changed, e.g. `Eth 1` is now `eth1`. Similarly, on products with M12 ports, `Eth X1` is now `ethX1`.
- Port ranges (lists) have changed, e.g. `Eth 1-8` is now `eth1..eth8`
- Server and Internet port settings are now usually input as ADDR:PORT
- IGMP settings have been renamed from `igmp-foo` to `multicast-foo` due to the included MLD snooping support. Hidden compatibility aliases exist to ease the transition
- Stateless NAT (NAT 1-to-1) has moved out from the firewall context
- Enabling management services per interface has moved to each specific service
- Configuration of management services have moved to a separate management sub-context
- New discovery services, in addition to LLDP, are mDNS and SSDP. The latter is for discovery on Windows systems, see also section 5
- The DHCP relay agent CLI syntax has changed considerably
- The `show running-config` command now lists an actual file, in JSON format as mentioned previously. An optional keyword now lists the first level JSON object, and more advanced keywords can also be given in `jq` syntax[1]. For more information, see the CLI online help text for `help running-config`

[1] For more information on jq, a JSON query tool, see https://stedolan.github.io/jq/

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