

Prepared by Magnus Öberg	Document Release Notes WeOS 4.6.2	
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Release Notes WeOS 4.6.2

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1 About

Westermo WeOS is a network operating system specifically designed for industrial grade rugged Ethernet switches and routers. It is based on the Cricket 3rd generation software platform with support for RedFox, 2nd generation Wolverine and Viper, Lynx+ switches, and the Falcon VDSL2 router.

The Linux based platform has been in operation since 2006 on custom made RedFox Mil, RedFox Aero and RedFox Rail products. With the advent of the RedFox Industrial line of products the platform was given a major overhaul to improve standards compliance as well as compatibility requirements with existing Westermo product offerings. The result is WeOS, the Westermo Operating System.

Westermo has several projects underway to boost hardware capability to be able to roll out WeOS on even more products than the current offering. There is also a wide range of software features on the road map for WeOS itself.

For more information about Westermo and our product offerings see <http://westermo.com>.

Version Number Format

WeOS version numbers have three digits. The main reason for the third digit is to emphasize the difference between feature and bug fix releases.

The generally available (GA) releases are named 4.X.Y. The number four (4) denotes the platform generation, which currently is Cricket. The X is the feature release number, where new functionality is introduced, and Y is the patch revision number, reserved for security and bug fix releases. E.g., 4.6.1 would be the first patch release in the 4.6.0 series.

For customers in our beta release program it is worth pointing out that previously version numbers 9.00 – 9.99 were used for beta releases and developer builds. This custom has now been replaced by the more common –betaN notation, for internal and limited distribution beta releases, and –rcN, for release candidates. We believe this to be easier to keep track of since the base release version is visible in all stages of the release cycle.

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2 Summary of Changes

WeOS 4.6.0 is the first release with support for the new *Lynx DSS*, a Lynx with two serial ports, one RS-232 only and one capable of RS-232/422/485. Several new serial port related features are included: Dual TCP support in Serial/IP, DTR control, as well as a full-featured Modbus gateway!

Other notable changes include dynamic priority adjustment in VRRP, also known as VRRP+, VPN failover support, 1-to-1 NAT, multinetting, TCP MSS clamping per interface, Telnet server support, GRE tunnels, loopback interface and DHCP Relay with support for Option 82.

More changes and additions are listed below. Also, see section 5, for details on bug fixes and other changes not mentioned here.

2.1 Extended Port Ingress Rate Limiting

The ingress rate limit functionality on ports has been extended in version 4.6.2 with the possibility to select the type of packets to be limited.

The selectors are: broadcast, multicast, unknown unicast and “all”.

The “all” selector is the default and corresponds to the rate limits configurable in earlier releases. It will rate limit all types of packets.

The new selectors make it possible to limit only broadcast, multicast or unknown unicast (packets addressed to MAC addresses not yet known by the switch).

The implementation done in 4.6.2 has a few side effects on the RedFox platform. Limiting multicast will also limit broadcast. Limiting unknown unicasts will also limit both multicast and broadcast as well. This behavior may change in a later release. For details, please see the management guide.

2.2 Ping Trigger in Alarm System

First introduced in WeOS 4.5.0, the *ping trigger*, has in 4.6.0 been extended with an *outbound <IF-NAME>* setting, which is highly useful when connected to VRRP.

2.3 VRRP Dynamic Priority Adjustment

In WeOS 4.6.0 VRRP has been extended with an option to dynamically adjust the router priority based on upstream connectivity. The new setting *track* connects VRRP to the Alarm & Event subsystem triggers.

```
track trigger <ID> adjust <DELTA>
```

e.g.

```
track trigger 2 adjust -10
```

Configure a ping trigger in the alarm system (remember the *outbound* setting!) and track the state of it in VRRP. When the uplink goes down (ping stops), the VRRP priority is automatically adjusted with the given delta and another device can assume the role as gateway in your topology.

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2.4 1-TO-1 NAT

1-TO-1 NAT adds full subnet NAT capabilities to WeOS 4.6.0. It is useful for implementing scenarios where the same local IP subnet is used on multiple locations that need to be accessed from a central node, e.g., SCADA. It can also be used for mapping public IP addresses to servers on a LAN.

Since 4.6.2 the 1-TO-1 NAT also enables Proxy ARP as default. Proxy ARP is helpful when a subnet of a larger network needs to be NAT'ed but you want to avoid setting up routing.

2.5 Modbus Gateway - Modbus serial to Modbus TCP

Modbus is a communication protocol developed by Modicon systems. The WeOS Modbus gateway is used for interconnecting a TCP/IP Modbus network and a serial line Modbus network (either RTU or ASCII). Permitting Modbus clients (masters) on either of the TCP/IP or the serial network to connect to Servers (slaves) on the other network.

In a standard Modbus network, there is one master and up to 247 Slaves, each with a unique slave address from 1 to 247. The master can also write information to the slaves. The official Modbus specification is available from <http://www.modbus-ida.org>

2.6 GRE Tunnels, Multinetting and Loopback Interface

Introduced in 4.5.0, as a technology preview, the following features are now fully qualified and verified WeOS 4.6.0 features:

- GRE Tunnels
- Multinetting
- Loopback Interface

GRE is a very useful technology for, e.g., tunneling multicast or other protocols that cannot (or are difficult) to route.

Multinetting is simply the ability to assign multiple secondary IPv4 addresses to interfaces. Fully supported and verified on the loopback interface (see below).

The *lo* (loopback) interface is very useful for many use cases. Specifically related to routing, but can also be used for many other obscure setups, e.g., when bridging two Serial/IP instances.

For the VPN failover use case we recommend employing multinetting the *lo* interface to create GRE-to-GRE networks for the benefit of OSPF.

2.7 VPN Failover

Or, how to successfully setup a resilient multi-wan connection to transparently bridge remote sites.

In WeOS 4.6.0 you finally get the ability to run a dynamic routing protocol, such as OSPF, on top of GRE tunnels between remote sites connected with IPsec VPN tunnels. The trick to remember is to multinet the loopback interface and use that for hooking up your GRE tunnels.

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2.8 DHCP Relay Agent, with Option 82

WeOS 4.6.0 is the first release with DHCP relay support, including option 82. This means that it is now possible to use WeOS devices to setup dynamic IP address assignment based on originating port. I.e., regardless of what device (MAC address) you connect to a given port, that port will always get the same DHCP lease address.

However, the DHCP *server* is not yet fully Option 82-aware, so a WeOS topology is not yet self-hosting w.r.t. an Option 82 setup.

2.9 CLI

- In an effort to become even more compliant with existing CLIs on the market, only differences to the WeOS defaults are saved in the .cfg files. This is still an ongoing effort, so not all subsystems have been updated yet.
This is a backwards compatible change.
- The CLI format version has been stepped up to v1.6 in all .cfg files saved using WeOS 4.6.0.
- Upcoming USB WeBackup (auto backup & restore) support available as a technology preview (CLI only).
Syntax: autobackup
- Upcoming USB boot support available as a technology preview (CLI only).
Syntax: boot <usb|flash>

2.10 SHDSL

- Reconfiguration could sometimes cause the SHDSL lines to not go up again. This is fixed in WeOS 4.6.1-rc1. Issue #6463.

2.11 Firewall

- Issue #6118 details how the service rules for Serial/IP could not be overridden with custom packet filter rules. Fixed in 4.6.0-beta3.

2.12 VPN

- IPsec setups on Lynx, Falcon, Wolverine and Viper failed sometimes when the unit acted as responder in aggressive mode and using FQDN as local-ID. This only occurred when using certain equipment as initiator, for example the DR-250. Fixed in WeOS 4.6.1-rc1. Issue #6582.
- IPsec tunnels going over DSL on a Falcon did not always go up automatically when restarting the DSL line or the PPP interface. Resolved in WeOS 4.6.1-rc1. Issue #6851.

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2.13 Serial over IP

- The frame size limit setting caused truncation on incoming packets via IP if they were larger than the limit. Issue #6804. This is fixed in WeOS 4.6.1-rc1 and the limit is only used for generating the outbound IP packets, making it possible to use different frame size limits on units communicating with each other.
- Reconfiguration during ongoing serial traffic could cause a lockup of serial over IP requiring a reboot to recover. Resolved in WeOS 4.6.1-beta1. Issue #6818.

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3 Known Limitations

This section includes known reported bugs and missing features, which may not necessarily be *limitations*, in many cases they may constitute severe operational drawbacks.

3.1 Platform

- A system with many VLANs setup requires more time at boot. This was first reported in #3291, but even after having fully optimized all data paths there still remains a significant delay. E.g., creating 128 VLANs on a RedFox Industrial takes apx. 6 seconds longer than creating a single VLAN.
- On some computers, with some operating systems, the Westermo console port USB cable can block the boot sequence. Disconnect the USB-to-console cable when no terminal program, e.g., PuTTY is running. Issue #5984.
- The new alarm configuration lacks support for RMON triggers. Furthermore the community string that can be configured for each SNMP alarm action is missing in the actual trap.
- Issues #4494, #4502 and #4508 concern continued caveats with the feature preview link aggregation support.
- Running an FRNT ring over copper SFPs is currently not supported, or recommended, due to slow response time from copper SFPs.
- No CLI configuration support for managing multiple users and their capabilities.
- No CLI configuration support for static multicast routes.
- No LACP support in link aggregation.
- RSTP, IGMP Snooping, FRNT, etc. not supported over link aggregates.
- No support for any port authentication, either MAC nor IEEE 802.1x based.
- Limited support for low-level interaction with PHYs and link partners.
- Moving ports from one VLAN to another can change the MAC address of the corresponding VLAN interface leading to loss of connectivity. The symptoms are that Web and SSH connections to the device suddenly “freeze” due to stale ARP caches. The effects of which can take several minutes to resolve.

WeOS 4.3.0, and later, include support for gratuitous ARP on MAC address changes. However, not all client systems allow gratuitous ARP, although configurable, for security reasons. For cases where this effect is undesirable, e.g. a management interface, it is recommended to set a static MAC address using the CLI.

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- Port monitoring fails to preserve the VLAN priority. Fix planned for a later release.
- SHDSL link can sometimes be lost due to slowly dropping SNR margin, issue #5317. This seems to be caused by high traffic load on the link. Fix currently unknown.
- When toggling bridge priority on the elected root bridge storm is easily provoked, issue #4203. Fix planned for a later release.
- In some setups when RSTP gets link up it has been reported to take very long to reconfigure, issue #4707. This may however be fixed in #5625.
- LLDP does not work correctly in all configurations. It has been disabled in the Westermo factory defaults, issue #4067. Fix planned for a later release.
- Default routes learned from DHCP or PPPoE (primary interface) are set as “kernel routes”. This is not expected to cause any problems, but may cause some confusion when listing the ip routing table.
- The traffic types configurable for port ingress rate limit has side effects. Selecting multicast will also rate limit broadcast. Selecting unknown unicast will also limit broadcast and multicast. This behavior will likely change in a later release. Issue #6939.
- Actual throughput may differ from the ingress rate limit set in configuration. The error varies for different configured rates. Work is in progress to increase the precision. Issue #6928.
- Changing the configured speed on gigabit copper (RJ45) ethernet ports does not take effect until you reboot the unit. This only affects the models RFI-10-F4G-T4G and RFI-18-F4G-T4G from the RedFox family. A fix is in development. Issue #6986.
- DHCP relay agent and DHCP server can not be run simultaneously on the same VLAN. Configuring this leads to undefined behavior. The DHCP server handling will be replaced in release 4.8.0 and that will remove the problem.
There are currently no plans of fixing this in the 4.6.x series. Issue #6769.
- The upcoming Viper product family has limited support with WeOS 4.6.x. Viper units without PoE, Power Over Ethernet, can be run with 4.6.x, but units with PoE ability will not run properly on 4.6.x. PoE is officially supported from version 4.8.0.

3.2 Serial over IP

- All configuration changes on a Serial over IP profile will disrupt your communication on all configured Serial over IP profiles temporarily. This is due to that the daemon needs to be restarted, resulting in that the TCP connections will have to be renegotiated.

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- When configured as TCP server. If a client reboots due to power failure or otherwise loose the connection without properly closing the TCP session. The server may take up to 16 minutes to detect that the session is lost. During this time the client want be able to reconnect to server. Issue #6033.
- When a TCP client lose the connection to a TCP server without a proper reset (a power failure on the client for example) and the server at the same time tries to send data to that client, the client will not be able to reconnect to the server for around 15 minutes instead of the normal timeout on 2 minutes.
Workaround: Have the unit sending data as the TCP client or use Peer mode.

3.3 CLI

- When issuing, e.g., `show running` not all settings are shown. This is due to WeOS 4.3.0 and later only showing differences to the system default. Support for `show running [all]`, where the optional 'all' keyword would list everything, is planned for a later release.
- The on-line help is not only insufficient, it is sometimes even misleading. E.g., some commands do not support the `no` prefix, some commands do not support `show` and no commands in configure context support `repeat`. Cleanup and improvement is a work in progress.
- No support for displaying SNTP status, NTP server stats. Best way currently is to manually check system time against another SNTP synchronized computer. The syslog is also a possible location to see what is going on. See "show log".

3.4 Web

- Inspecting RMON counters in the Port Statistics page may need a manual reload before the actual values are displayed.

3.5 IPConfig Tool

Limitations in current v10.4.0 of IPConfig Tool for Windows™.

- The WeOS version is encoded in the old version numbering format to be fully compliant in all Windows™ releases. E.g., version 4.3.0 is encoded as 4.03 and version 4.3.1 is also encoded as 4.03. Hence, version 4.10.0 would be encoded as 4.10.
- Due to limitations in the version field of IPConfig the patch level of the WeOS version is not visible in the tool. No fix planned.
Workaround: Verify patch revision from Web, CLI or SNMP.

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- Limitations in field length causes problem with upgrade from IPConfig Tool, i.e. too long file names are not supported. No fix planned.
Workaround: Rename image file name to a shorter name before attempting upgrade. Note, the file name is *not* used in any way to encode any information for the upgrade process.

3.6 Firewall

- Port forwarding does not work well with interfaces using DHCP assigned IP addresses. A fix is planned for a later release.

3.7 VPN

- In some cases when one of the IPsec endpoints closes the tunnel the connection cannot be reestablished automatically. This may occur when the connection is configured with static peer IP addresses on both end points and the tunnel uses NAT traversal.
Workaround: The IPsec connection on one or both peers have to be restarted manually. In the CLI this is done in admin-exec context using: `tunnel ipsec restart`
- MTU override may not work as expected, sending a message over the IPsec tunnel will not respect mtu override on the other end. **Workaround:** Always have the same MTU on the interfaces on both ends of the tunnel.
- The remote IP address of the IPsec gateway may in some circumstances not be reachable from an IP address associated with the IPsec tunnel. Issue #5987
Workaround: Always connect to an IP on the IPsec gateway that is reachable from within the tunnel.
- It should be impossible to select “clear” as dpd-action on an initiator, it is however currently available as a configurable option. (Also, “hold” as dpd-action should work, but currently does not.)

3.8 Link aggregation

Link aggregation is only provided as an unsupported technology preview feature. All use of the link aggregation feature except for testing is discouraged.

WeOS supports basic link aggregation in line with IEEE 802.3ad. However, the current support for link aggregation contains several limitations such as:

- Aggregation control: Link aggregates can be configured statically or be managed dynamically via the Westermo FLHP protocol. LACP is currently **not** supported.
- VLAN support: There is no support to add a link aggregate to a VLAN. Instead, each of the individual member links need to be added to the appropriate VLANs.

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- Port settings: There is no support to configure port settings for the link aggregate. Instead, each of the individual member ports need to be configured uniformly, e.g., with respect to port speed/duplex mode.
- Layer-2 protocols: Layer-2 redundancy protocols such as FRNT or RSTP cannot be used on a link aggregate or any of its member ports. Neither can IGMP snooping, thus VLANs where any link aggregate has a member port must have IGMP disabled.

When configuring link aggregation on switches in an operational network, there is a potential risk for a broadcast storm to occur. WeOS currently does not support the use of RSTP or FRNT on aggregated ports. The operator must therefore ensure that no layer-2 forwarding loop is established when connecting switches via aggregated links.

3.9 Software Upgrade

- No support (yet) for scheduled upgrades, i.e. ability to upgrade @02:30 to limit downtime during regular office hours. Feature request registered in issue #3363. Support planned for a later release.
- Software upgrade via the web interface sometimes fails. This is due to low amount of free memory in the underlying system. This is most often seen on the Falcon product as it has the largest firmware image file. A workaround for this is to reboot the unit and try again if it fails. If the problem persists, try disabling memory intense features like OSPF and VPN temporary during upgrade.
A fix for this is under development and will be included in a later release. Issue #7035.

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4 Known Issues

Issue	Category	Description
#3139	QoS	QoS interboard contention
#4067	System	LLDP does not work as expected
#4203	RSTP	Storm occurs quite frequently when toggling RSTP bridge priority
#4494	FLHP	Aggregated SHDSL Link does not work after FLHP reboot
#4502	FLHP	Traffic across link aggregation breaks when a physical link is removed
#4506	FLHP	FLHP and aggregation configuration
#4508	FLHP	Link aggregation with FLHP does not start when activated
#4707	RSTP	Long reconfiguration time for RSTP at link
#4856	DSL	SHDSL link up indicated on LEDs and CLI/Web before link is fully qualified
#4895	RSTP	RSTP show blocked port on LED when port is in forwarding state
#4929	RSTP	Looping admin edge ports causing a storm
#4951	FRNT	FRNT goes down during sustained high network load
#5317	DSL	SHDSL SNR Margin falls with high load over the link
#5472	Kernel	Possible memory leak in xDSL-drivers
#5649	RSTP	Non root switch sends out BPDUs with the same bridge ID as the root
#5818	DSL	Auto-negotiated SHDSL link does not respect the desired SNR criteria
#5984	System	Unit does not boot if console is attached to system w/o running terminal client
#5987	VPN	IPSec: Wayward ARP caused by IPsec added route
#6022	SNMP	Not all OIDs in hds12ShdslEndpointCurrTable implemented
#6033	Serial over IP	Very long timeouts (>15 min) for lost TCP-server connections
#6112	VPN	IPsec initiator dpd-action hold and clear does not work
#6180	System	RedFox 8FX: System instability issues with 1000Mbps fiber in 100Mbps SFP slot
#6223	Ports	Unit crashes when traffic is looped back to the interface it came from
#6275	Serial over IP	Sometimes TCP Sessions are not closed correctly in AT command mode.
#6281	Serial over IP	AT mode CONNECT messages completely unsynchronised
#6303	VPN	VPN Led and Web pages show wrong VPN status
#6399	Modbus	Missing CLI admin-exec command "show modbus" to display modbus status
#6431	Serial over IP	Improved status information of serial over ip connections
#6433	Serial over IP	Buffering of data before connect
#6530	DSL	Very high CPU load on shdsl during boot
#6551	CLI	Issues with password protected PKCS#12 certificates
#6611	System	USB stick sometimes not found/recognized at boot
#6769	WEB	DHCP Relay and Server can't coexist on the same VLAN
#6828	DHCP	DHCP relay: Removing VLANs does not update port list in DHCP relay
#6894	Alarm	Ping trigger must use ppp0 as outbound interface to work over IPsec/PPPoE Falcon
#6896	Logging	Ambiguous log messages: port qualifiers are lost on Falcon

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Issue	Category	Description
#6917	Alarm	Actionless link event trigger does not work as expected
#6920	PPP	PPPoE termination message (PADT) from server not handled properly
#6928	Ports	Configured ingress rate limit does not always match actual limit
#7010	System	RedFox Gigabit copper port speed changes fixed/autoneg does not bite
#7035	WEB	CGI upgrade require too much free memory
#7063	Alarm	Temp sensor shows wrong value on RFR-12-FB
#7090	Serial	Serial hardware flow control only works in one direction
#7149	Serial over IP	Broadcast to/from Serial over IP not working properly
#7151	Serial over IP	Multicast not working properly on Serial over IP

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5 Fixed Issues

This includes all -beta releases leading up to 4.6.2 from 4.6.0-beta1

4.6.2

4.6.2-rc3

Issue	Category	Description
#7178	WEB	Setting dynamic address mode on an interface causes an error about the primary netmask.
#7177	WEB	Summary page shows DHCP server running when it has been disabled

4.6.2-rc2

Issue	Category	Description
#6959	WEB	It is possible to set invalid netmasks on static interface addresses
#7174	Ports	Ingress rate limit does not consider unknown unicast or unknown multicast (primarily Lynx, Wolverine, and Viper products)
#7134	LED	No link alarm on Wolverine 225/226 DSL port 1/2
#7024	DSL	DSL-LED at CO is not working
#7069	DHCP	CLI: "no dhcp-server" does not disable DHCP server

4.6.2-rc1

Issue	Category	Description
#6954	WEB	Configuration of netmask is missing for DHCP server
#7068	System	Long version string seems to cause a buffer overrun in "show system"
#7086	Modbus	Modbus generates an illegal exceptions code if reference number higher than 0xFF is used
#7092	WEB	Dynamic peer settings doesn't work as intended
#7102	PPP	PPPoE may crash with reboot on certain PPPoE server responses
#6978	System	Modbus Gateway daemon suddenly stopping

4.6.2-beta1

Issue	Category	Description
#7048	System	In some use-cases the system configuration does not apply correctly
#6878	DSL	DDW-225 very unstable in Turbo speeds compared to DDW-120

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Issue	Category	Description
#7088	CLI	Show command in config ports context displays ports twice
#6919	DHCP	Relay agent not reliable
#6897	Logging	Change of hostname requires a reboot to have impact on log messages
#6960	Ports	Toggling Ethernet port low-power-mode back to low-power does not take effect until the device is restarted
#6959	WEB	Static addresses can be assigned without a valid mask
#6957	DHCP	DHCP server does not always start after enabling
#6971	Firewall	NAPT without IN interface specified breaks IPsec tunnel
#7034	Serial over IP	TCP-server, connections not closed correctly on DTR-low

4.6.1

4.6.1-rc2

Issue	Category	Description
#6876	VPN	Remove IPsec IKE DH group setting "AUTO" in CLI
#6879	VPN	Remove new IPsec crypto and hash methods mistakenly introduced in 4.6.1-rc1

4.6.1-rc1

Issue	Category	Description
#6463	DSL	SHDSL link on Wolverine fails to come up after reconfiguration
#6582	VPN	Using WeOS as an IPsec responder with DR250/260 in aggressive mode fails on Lynx family products
#6707	System	'show ip default-gateway' does not work when an inactive static default route is in place
#6761	WEB	The error handling in port forwarding clears all config fields
#6794	CLI	IPsec: The command for setting ESP DH group does not support AUTO
#6803	WEB	Serial-over-IP peer address may be shown repeatedly when changing mode
#6804	Serial over IP	Framesize limit should only be used for outbound ethernet data
#6819	System	Inadyn does not update IP periodically towards DynDNS
#6851	VPN	IPsec does not reestablish after a DSL (PPP) restart

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Issue	Category	Description
#6818	Serial over IP	Serial-over-IP: Reconfiguration during serial load in peer mode crashes the communication
#6829	SNMP	Unable to permanently disable SNMP via Web or CLI

4.6.0

4.6.0-rc3

Issue	Category	Description
#6700	System	USB phy fails to communicate after powercycle on i.MX27
#6766	VPN	IPsec responder fails to bring up more than one tunnel
#6768	Modbus	Exceptions not working in client mode
#6777	CLI	Conflicting serial ports in seroip and modbus renders wrong error message
#6780	DHCP	Link-local address remains as primary, if a DHCP address is assigned afterwards
#6782	WEB	IPsec crypto algorithm AES192 not available in system, only in web
#6784	VPN	IPsec rejects some valid(?) IP addresses
#6790	Modbus	Modbus client cannot connect to IPs with last dot group >127

4.6.0-rc2

Issue	Category	Description
#6254	System	Ping command from CLI hanged (once in testing), Ctrl-C does not work
#6521	System	zcip daemon lingering in system when changing from inet dhcp to inet static
#6701	SNMP	WeOS private mib files have incorrect last-updated date
#6706	VPN	IPsec fails when supernetting on the responder
#6708	CLI	Pressing '?' => missing newline => help text slightly garbled output
#6711	VPN	ike crpyto blowfish does not work on initiator aggressive mode
#6712	VPN	ESP, crypto blowfish does not work with aggressive mode
#6713	VPN	IPsec sometimes fails to come up in nightly during various ipsec tests
#6717	WEB	Factory reset in web only do restart
#6721	CLI	Ctrl-C does not work when trying to abort "copy console running-config"
#6722	WEB	VRRP Virtual Address shows 0.0.0.0 in web page but correct in CLI
#6723	WEB	Saving VPN settings makes Firefox ask if the password for username "120" should be remembered
#6726	Serial over IP	DTR control of server loses first 1-2 characters that are buffered
#6727	Serial over IP	secondary Failover client can not start communication after reboot
#6730	CLI	Tab completion of copy command broken on running/startup/factory
#6731	CLI	Serial over IP daemon restarts on every configuration change when using ATCMD

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Issue	Category	Description
#6732	Modbus	Modbus exception handling "ignore unknown" does not seem to have any functionality
#6733	GRE	RIPv2 update not sent over GRE
#6735	Modbus	MODBUS gateway interrupts communication on RS-485 bus
#6736	VPN	IKE/ESP DH groups 17 and 18 are visible in the web but is not supported in CLI or config
#6737	WEB	IPsec: Lifetimes do not display correctly in pop-up details of tunnel config overview
#6739	CLI	The copy command copies the TO to the FROM
#6740	WEB	Basic setup in falcon does not recognize factory-reset configuration
#6746	WEB	Serial over IP, bad cleanup when apply settings fail.

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Issue	Category	Description
#6113	Serial	Missing baudrate in WeOS for Lynx-DSS and DDW-142
#6276	Serial over IP	Add support for DTR controlled connection in TCP-server and TCP-client
#6312	CLI	Audit serial port syntax changes/additions for 4.6.0
#6371	CLI	Serial: The "show port" command does list serial ports in configure context
#6387	CLI	Modbus: Insufficient check of modbus client map command
#6505	Serial	Refuse "no enable" for RS-232 serial ports
#6562	Serial over IP	Disable the peer in TCP client result in flooding of the log
#6569	CLI	Ability to run one-shot SSH commands in the CLI
#6603	CLI	Update CLI help for serial over ip frame-separator command
#6609	CLI	Support for modbus enable/disable option
#6628	Serial	Factory reset does not reset serial port ownership
#6632	CLI	Insufficient check of port speed when selecting type RS-232
#6633	DHCP	Creating a DHCP server starts the daemon but it does not respond
#6635	CLI	Not possible to manage terminate rx and tx settings independently for RS-422
#6636	CLI	Logged out when giving incorrect arguments to "show serial port" (admin exec)
#6637	Serial over IP	TCP server secondary connection Failover not reestablishing as expected
#6640	CLI	Serial port status "show serial port ID" does not work on Falcon and DDW-226
#6646	CLI	Possible to set hw-flow control (RTS/CTS) when port is in RS-422/485 mode
#6652	Serial over IP	Timeout in TCP server secondary connection slotted mode not working as expected
#6654	WEB	DHCP server domain name is limited to 15 chars in the Web GUI
#6661	Alarm	Lynx-1400G reports SFP wrong speed error in alarm log even with no SFP mounted
#6675	Modbus	Client mode does not handle Internet connection failures well
#6676	SNMP	Requesting multiple OIDs in one GET cause error in IF-MIB::ifName
#6682	WEB	Checkbox for enable should be removed for RS-232 ports

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Issue	Category	Description
#6698	VPN	IPSec does not always reconfigure when unit gets new gateway from the DHCP server

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Issue	Category	Description
#5648	System	Indication of wrong startup config
#6265	Firewall	Unify the firewall packet filter/access control terminology
#6526	CLI	Prompt for confirmation before overwriting a file
#6575	CLI	Sorting of interfaces not in alphabetical order
#6613	CLI	Entering "ip fire cpu" in exec context crashes CLI

4.6.0-beta4

Issue	Category	Description
#3802	SNMP	Enable/disable of IP addresses in SNMP
#5817	Firewall	Add support for 1:1 NAT
#5821	Firewall	Support NAT from any interface
#5905	SNMP	Port numbering in bridge MIB not according to standard.
#6062	DSL	SHDSL GHS handshake signal not detected on good cables where non-westermo SHDSL modem works at full speed
#6073	Documentation	Cannot find details on how many access rules WeOS products can handle
#6220	System	Implement Modbus Gateway for WeOS
#6233	Serial	Add RS-422/485 termination settings
#6369	Serial over IP	Add Multiple SerOverIP instances
#6372	System	Add support for link change counter to Ethernet ports
#6382	Serial over IP	Serial over IP in (TCP) client mode requires listen interface setting to start
#6403	VRRP	VRRP virtual IP can be set to 0.0.0.0 and other special addresses
#6407	DHCP	Possible to create DHCP server for subnet 0.0.0.0
#6408	VPN	Peer address 0.0.0.0 is accepted by the configuration
#6411	System	Do not save "iface lo" to startup-config unless secondary address is available
#6428	VPN	'show tunn ipsec' displays wrong status when tunnel disabled.
#6429	Alarm	Missing checks of temperature trigger threshold values
#6443	Serial over IP	reconfig active AT command profile and serial ports stops responding
#6445	Serial over IP	auto-answer 0 is no auto-answer but no auto-answer is not auto-answer 0
#6450	WEB	Add outbound interface setting to ping trigger in web
#6459	Alarm	Disabled link alarm still triggers alarm and port LED
#6460	System	Add support for the new hardware variants RFR-12 with IP-65 spec
#6473	Firewall	Contrack flushing disturbs Serial-over-IP

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Issue	Category	Description
#6484	Serial	Serial status pins (DSR and DCD) toggles at Power-On
#6492	CLI	Serial-over-IP: Not possible to remove first peer
#6493	CLI	Serial-over-IP: Issues with multiple instances
#6500	CLI	Possible to enter primary address on iface-ppp0 without warning
#6507	Firewall	1-to-1 NAT only destination NAT
#6511	CLI	The abort function for the serial port configuration does not work
#6513	Alarm	Ping trigger can reference a VLAN owned by PPP, but not the PPP interface
#6515	System	DC1/DC2 indication does not work on Viper12
#6522	Serial over IP	Add basic tcp-server/client logging to ease support
#6523	System	Regression: HW Setup fails at boot for various RedFox units
#6524	VPN	IPSec fails to start at boot on Wolverine
#6537	CLI	Not possible to show statistic for serial-over-ip
#6543	VPN	IPsec: setup of super-netting environment causes local subnet to become inaccessible
#6544	Serial	Error after setting xonxoff
#6563	Serial over IP	Not possible to disable a Serial/IP instance
#6564	System	Reorder CLI warnings when "copy usb://xxx.cfg startup-config"
#6568	Kernel	IP fragments are randomly dropped
#6581	WEB	Serial over IP in Peer mode, Frame Separator handling strange
#6587	Serial	Serial buffer not emptying in flow control mode
#6591	Serial over IP	TCP server is listening to 0.0.0.0:9000 despite choosing specific listen iface.
#6595	Serial over IP	Serial over IP crashes and restarts repeatedly with AT-cmd mode with no cmd profile
#6638	SNMP	Unexpected error messages when creating a VLAN
#6639	SNMP	Errors when creating FRNT instance using SNMP.

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Issue	Category	Description
#4134	CLI	Port range parser too strict on systems with less ports than reference
#5923	VPN	Refactor start/stop/restart of ipsec to remove start-stop scripts
#5965	System	DDNS not updated after DSL reconnect
#5966	NTP	NTP time not updated after ADSL reconnect
#6024	CLI	Display of firewall rules show port names, not numbers, c.f. Web UI.
#6043	Firewall	Combine firewall "allow" and "deny" as parameters in general "filter" CLI command
#6048	System	Secondary IP of loopback interface also set on another unrelated interface
#6089	CLI	The command "show ip default-gateway" missing from admin-exec
#6090	CLI	The command "show ip forwarding" missing from admin-exec context
#6091	CLI	The command "show ip domain" missing from admin-exec context
#6092	CLI	The command "show ip ddns" missing from admin-exec context

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Issue	Category	Description
#6110	CLI	Issues when deleting "first name-server" and adding a new one
#6118	Firewall	Serial Over IP allow rules inserted before configurable packet filter rules
#6119	CLI	Firewall: show allow/deny in config context do not show position for passive rules
#6120	CLI	Firewall "move" command does not accept "-1" as first argument
#6121	CLI	Firewall: Not possible to insert a packet filter rule at a specific position
#6161	Ports	Port names are mixed in CLI between copper and DSL in fallback mode.
#6222	System	Refactor alias interfaces into multiple addresses per interface
#6226	VPN	IPsec is not restarted when outbound interface settings are modified
#6228	Documentation	Document Viper-12 console cable in Management Guide
#6234	Serial	Add support for serial port ownership
#6246	HW	Increase drive strength of I/Os for termination on Lynx DSS
#6252	Serial	Lynx DSS, Duplex relay not closed in RS-485 mode
#6261	CLI	CLI crashes when doing TAB completion in certain cases
#6271	Documentation	Not mentioned in the web help how to reach turbo dsl speed.
#6306	CLI	Ping trigger help text says "show show" is a viable command.
#6326	CLI	Unknown interfaces in config results in a invalid configuration.
#6330	VPN	Aggressive mode tunnel not reestablished
#6334	Ports	No warning on Westermo I-line SFP
#6347	System	show interfaces displays bad MAC/PtP addresses for gre and lo interfaces
#6353	System	"no address" on interface lo removes the primary IP 127.0.0.1
#6355	CLI	Entering 'leave' when configuring a DHCP server will log you out
#6362	CLI	Serial: Show port command does not fully work for serial ports
#6365	CLI	Serial: RTS/CTS info should not be shown in RS422/RS485 mode
#6367	CLI	Serial: Possible to set 5/6 databits in MXC based devices, not supported by CPU
#6368	CLI	Serial: Use Enabled/Disabled for RS-485 termination values instead of ON/NO
#6373	CLI	Add support for showing MDI/MDIX Ethernet port status
#6375	WEB	Ping trigger interval missing unit info (seconds/minutes/hours)
#6378	WEB	Add information about expected file format for firmware upgrade.

4.6.0-beta2

Issue	Category	Description
#6218	WEB	Remove possibility to change configuration on PPP base interface
#6227	CLI	Firewall: "no alg" without protocol does not work
#6250	System	Add support for telnet daemon and client

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Issue	Category	Description
#4215	VPN	No IP connection with local interface
#4815	SNMP	SNMP sub agent restarts continuously at high network load
#4888	VPN	Error in local routing when supernetting using VPN
#4965	Alarm	Alarm actions and triggers does not reuse old numbers
#5092	VPN	IPsec: ID type inet fails in aggressive mode between WeOS peers
#5169	System	Mount log has strange entrys
#5236	System	Ping does not issue error or fragment packet when packetsize is too big.
#5479	Firewall	Add support for setting TCPMSS
#5734	VPN	IPsec: PFS (Perfect Forwarding Secrecy) configurable in Web and CLI
#5806	VRRP	Extension of VRRP to VRRP+
#5816	DHCP	Add support for "Renew Lease" in DHCP client
#5895	WEB	Configuration of SNMP community for alarm action snmp not possible in web.
#5960	Kernel	Upgrade kernel to 2.6.35.X
#5963	System	Add support for the Lynx-DSS in WeOS
#6084	VPN	IPsec: Change from dpdaction=restart to dpdaction=restart_by_peer
#6085	FRNT	FRNTsometimes report one ringport as DISABLED
#6097	WEB	The Deactivate text does not fit correctly on the button in the Firewall
#6100	System	Possible to set net address on alias interfaces
#6109	VPN	Configuring IPsec tunnel stops all routed traffic
#6114	System	Add a specific factory config file for the Lynx-DSS
#6117	Firewall	UDP ports 5097-5098 opened in firewall input filter
#6123	CLI	Hide alias commands in tab completion
#6128	System	Removing all vlans from "copy con run" leaves system in bad state
#6150	VPN	IPsec firewall rules does not always exist
#6151	CLI	"show" command missing in "config/ip/icmp" context
#6153	VPN	IPsec: Supernetting hijacks services
#6155	Ports	SFP ports swapped
#6157	System	No alarm for illegal speed
#6158	System	System Info for SFPs are duplicated
#6165	FRNT	No Link up on FRNT fibre ports at start-up
#6169	RIP	RIP passive-interface command does not work (always non-passive)
#6172	VRRP	VRRP will not enter BACKUP state
#6213	System	Loading new config, or restoring backup, does not terminate old PPP/PPPoE sessions
#6237	RSTP	RSTP tries to change state on FRNT ports
#6238	PPP	PPPoE restart does not terminate the PPP session properly

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6 Accessing the Command Line Interface

The RedFox switch supports a classic Command Line Interface (CLI) that can be accessed via the console port at 115200@8N1 or Secure Shell (SSH), for details see the Secure Shell RFC4251. WeOS supports protocol version 2 only.

Issue `help` or `show tutorial` at the prompt to access the built-in help and tutorials. See the WeOS Management Guide for more information.

Recommended Clients

UNIX OpenSSH, <http://www.openssh.com>

Win32 PuTTY, <http://www.chiark.greenend.org.uk/~sgtatham/putty/>, note that PuTTY is also useful for connecting to serial port consoles.

Please follow the directions for installation and usage applicable to your system and client.

Logging In

To gain access to the CLI you need:

- An SSH client
- The switch IP#
- The user name and password

Units shipping with WeOS have by default all ports assigned untagged to VLAN 1, RSTP enabled on all ports and a static IP address: 192.168.2.200 with netmask 255.255.255.0.

Use the IPConfig tool, an LLDP client or nmap to find your device. If you have a DHCP server available you can set it up to hand out a known IP addresses for the registered devices MAC addresses. Each unit comes with 16 or 32 MAC addresses assigned, depending on the port count, the base address should be printed on the box and on the unit itself.

The unit is fairly quick to boot, in under 10 seconds is the unit up requesting an IP address — depending on the existence of a DHCP server the fall back to link-local address can take a while. To be on the safe side while scanning for your device, expect it to take anything from 30 seconds to one minute after power-on.

The following example illustrates how to login to the switch using OpenSSH from a GNU/Linux based host system. The process is similar with PuTTY or other SSH clients.

The operator lists the running configuration with the command `show running`, an overview of ports, vlans and interfaces is available by typing `show ports`, `show vlans` and `show ifaces`. See the `help` or the `show tutorial` for more on line help.

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7 Firmware Upgrade

Firmware upgrade is supported from the CLI, Web and IPConfig tool. All of them support FTP/TFTP upgrade, but the Web also supports CGI upload from the browser – making it the ultimate choice if you have no FTP/TFTP server available or do not care to set one up.

Note, the secondary CPU image and the boot loader firmwares can only be upgraded from the CLI. The version string listed in the output from the `show system-information` command is only updated after reboot.

7.1 What Firmware Image to Use

The image file names are currently limited in length to what the IPConfig tool is capable of handling. This is an intermediate limitation before introducing support for longer human-readable file names in a future IPConfig replacement. The file names are built around the product name and the model, or operating system, it is based upon.

Primary and Secondary

List of primary and secondary CPU firmware images.

fw4XY.img: Falcon, WeOS 4.X.Y

lw4XY.img: Lynx+, WeOS 4.X.Y

rw4XY.img: RedFox, WeOS 4.X.Y

ww4XY.img: Wolverine DDW-225/226, WeOS 4.X.Y

Boot Loader

The boot loader firmware can only be upgraded from the CLI. The current version (updated at boot) is visible in the output from the `show system-information` command.

Please note, the boot loader firmware does not follow the WeOS version numbers, it has its own version numbering scheme and is also very CPU platform specific. Also, unless the release notes explicitly recommends it you should not upgrade the boot loader. List of bootloader firmware images:

imx27-redboot-4.XX.bin: Falcon, Lynx+, Lynx 1400G, Wolverine DDW-225/226

xscale-redboot-2.XX.bin: All RedFox products

Use the command `upgrade boot <ip-addr> <firmware>` to upgrade the bootloader.

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7.2 Upgrading early RedFox units to 4.3.0 or later

Early RedFox units (Industrial and Rail) delivered with WeOS 4.0.0, comes with a flash memory partition unsuitable for the larger firmware image size of WeOS 4.3.0 and later.

You find information on your product's type of *model*, *article number*, and *serial number* via the Web interface (Menu path: Home ⇒ Details), or via the CLI `show system-information` command.

Model	Article number	Serial number
RFI-18-F4G-T4G	3641-3300	< 1190
RFI-14P-F4G	3641-3200	< 1180
RFI-10P	3641-3110	< 1220
RFI-18P	3641-3100	< 1111

See the management guide for details on how to safely upgrade the system flash table.

7.3 Upgrading From the CLI

To be able to upgrade the switch firmware the user must install and run an FTP server or a TFTP server on a network connected to the device. The (T)FTP upgrade uses anonymous login with the password 'support@westermo.se'.

The example below shows that the upgrade command, in CLI, Web and IPConfig first tries FTP and then TFTP, should the FTP connection fail.

```
redfox:/#> upgrade pri 192.168.2.42 rw400.img
Reading MTD partition information from FLASH
netflash: login to remote host 192.168.2.42
ftp: connect: Connection refused
netflash: ftping file "rw400.img" from 192.168.2.42
No control connection for command: Connection refused
netflash: failed to load new image
Trying TFTP instead...
Reading MTD partition information from FLASH
netflash: fetching file "rw400.img" from 192.168.2.42
.....
netflash: got "rw400.img", length=5918720
netflash: Signature OK - Sig = RFox
netflash: CramFS OK - CRC = 0x194F663B
netflash: Flashing primary image, reboot is forced.
netflash: Killing processes to protect FLASH during upgrade...
netflash: programming FLASH device /dev/mtd1
.....
netflash: Updating RedBoot FIS directory
```

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Writing updated MTD partition information to FLASH
netflash: Rebooting.
Restarting system.

The system will force a reboot when upgrading the primary image. This to protect against flash corruption issues seen in earlier releases, caused by simultaneous access to the flash during programming or when starting new processes after upgrade.

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

This is how far the release notes goes, please see the management guide for details. Or get in touch with your local distributor, or Westermo for any questions, support or course material.

Good Luck! //The WeOS Team