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Release Notes WeOS 4.13.4

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About

Westermo WeOS is a network operating system designed for industrial grade rugged Ethernet switches and routers. Fully supporting RedFox, 2nd generation Wolverine and Viper, Lynx switches, and the Falcon ADSL/VDSL2 router.

WeOS is a Linux based software platform that 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.

For more information about Westermo and other product offerings see http://westermo.com.

Version Number Format

WeOS version numbers have three fields. The main reason for the third field 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. 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., 4.12.1 would be the first patch release in the 4.12.0 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 This custom has now been replaced by the more common –betaN notation, for internal and limited distribution beta releases, and –rcN, for release candidates.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.

Technology Previews

WeOS contains hidden and undocumented features called technology previews. Westermo provides no support for undocumented features. Features specifically marked as tech previews can be completely redesigned, removed or changed in such a way that after an upgrade they are *not guaranteed* to work!

The following is by no means a complete list, but details features that may become supported in the next upcoming feature release.

- SNMP MIB for RIP and OSPF See section 3.1.

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- *Floating Static Route:* Will only work for interfaces with static IP addresses. See section 3.2.
- *NTP Server*: CLI only. (section 3.3)
- *TFTP Server*: CLI only. (section 3.4)
- *Guest User*: CLI only. (section 3.5)
- *New VLAN Features:* CLI only support for disabling 'secure' mode and MAC address leadning. See section 3.6.
- *Managing the Router's Host Table (DNS):* See section 3.7.
- *Tcpdump:* CLI only. See section 3.8.
- *CLI welcome message:* Ability to set custom CLI welcome message. See section 3.9.
- *Certificate handling, import/export in WebUI*: See section 3.10.
- *Additional DDNS providers*: See section 3.11.
- *USB boot*: CLI only (section 3.12). Separate feature from "USB Autobackup/restore" and "USB Configuration Deployment"!
- *USB Logging*: CLI only The CLI logging configuration context now supports logging to a USB stick. Remember, some USB sticks are terribly slow, so you might need to add a boot delay. For more details, see the online help.
- *IPsec Backup Peer*: IPsec initiators may now be configured with two responder addresses (section 3.13).
- *SSL VPNs using OpenVPN*: CLI only (section 3.13).
- *L2TP/IPsec and PPTP VPNs for mobile phone access*: Server only, CLI only (section 3.13)
- *Trigger IPsec and SSL VPN tunnels with alarm actions* (section 3.13)
- *IEEE 802.1AX/802.3ad Link aggregation with FLHP link qualification*: See section 3.14.
- *IEEE 802.1AX/802.3ad Link aggregation over SHDSL links:* See section 3.14.
- *PPPoE Server*: CLI only (section 3.15).
- *Serial HDX mode*: CLI only (section 3.16).
- *DHCP client arping option*: CLI only (section 3.17).

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1 News

WeOS 4.13.4 is a bugfix release from 4.13.0. As of 4.13.1, a new unified image format was introduced, in which all WeOS products can use the same firmware image. Support for the RFR-212-FB is new as of 4.13.1.
More changes and additions are listed below. Also, see section 6, for details on bug fixes and other changes not mentioned here.

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2 Summary of Changes

2.1 Support for new hardware

2.1.1 RFR-212-FB

RFR-212-FB is a switch developed for rail on board and industrial applications. It is a replacement unit for RFR-12-FB with improved packet processing performance and with added hw functionality.

2.2 BOOTP and DHCP

As of WeOS v4.13 it is possible to bootstrap the device configuration using BOOTP. For this you need a DHCP/BOOTP Server and a TFTP server, holding the unit's configuration file. As of WeOS v4.13, it is only possible to use BOOTP/TFTP to download the WeOS configuration file.

Due to the addition of BOOTP support the DHCP server configuration has been updated considerably, see the "DHCP Server" chapter in the WeOS Management Guide for details. The CLI in particular has seen extensive changes to how static leases are setup. Many of these changes are not backwards compatible, so it is *strongly encouraged* to make backups of the device configuration before upgrading, in case you want to downgrade. Also, make sure to inspect (and save!) the resulting DHCP server configuration after upgrade!

2.3 SFP DDM/DOM Diagnostics

Digital diagnostics monitoring (DDM), also known as digital optics monitoring (DOM), is a function enabling the user to monitor diagnostic parameters of the SFP.

WeOS 4.13 provides diagnostic information for the following DDM parameters.

- Optical TX power: Measures the optic power when transmitting, which can be used for detecting a deteriorating link.
- Optical RX power: Measures the optic power when receiving, which can be used for detecting a deteriorating link.
- Temperature: The temperature of the SFP.
- Bias current: The transmitting bias current can be used to determine how fast an SFP is aging.
- Voltage: The SFP supply voltage.

DDM support in WeOS 4.13 is limited to Westermo DDM SFPs.

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2.4 Unified Firmware Format

Traditionally, each product family has had its own distinct firmware image. WeOS 4.13.1 introduces a new unified image format in which all WeOS products can use the same firmware image. The new format also includes the latest bootloader versions. Images use a concise, yet readable, naming convention as follows:

WeOS-4.13.4.pkg

For more information about upgrading your firmware, see Section 8 and the WeOS Management Guide.

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3 Technology Previews

3.1 SNMP RIPv2-MIB and OSFP-MIB

Tech preview support of SNMP MIBs:

- RFC1724 RIP Version 2 MIB
- RFC1850 OSPF Version 2 MIB

3.2 Floating Static Routes & Discard Routes

For many layer-3 fail-over scenarios there is a need to automatically set alternative routes. For instance, if a primary network interface goes down, a secondary should automatically take over.

With the addition of an optional *distance* to static routes this automatic fail-over is now possible. The *distance* of a static route can be set higher than that of a dynamic routing protocol like OSPF, so that as long as the OSPF route is active the static route will lie dormant.

```
router:/config/ip/#> route 0.0.0.0/0 vlan10 200
```

The default admin distance for OSPF is 110, so not until an OSPF injected default route is lost will the above static route be installed.

There is also a new Null0 interface available for setting up discard routes, which is a quite handy for loop prevention. Here a discard route for 192.168.0.0/16 is setup to catch any unused subnets from being accidentally routed back to an upstream router via a default route.

```
router:/config/ip/#> route 192.168.0.0/16 null0
```

Remember, the most specific match wins, so routes with bigger netmask will always be chosen over the discard route.

3.3 NTP Server

Support has been added for WeOS to act as a NTP server in a network. As implemented today, it has only one configuration option, set which interface to listen on, if not set it will listen on all interfaces.

Note: When setting up an NTP server it is a good thing to also configure an SNTP client, when doing so the server will act as a proxy for that server. If no SNTP server is entered, the local time of the unit will be the reference clock.

Syntax: `router:/config/#> ntp-server`

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3.4 TFTP Server

WeOS has support to work as a TFTP server in the network, this can be a very useful feature when combining it with the BOOTP configuration deployment, introduced in 4.13. Make sure you have an USB stick inserted in the USB port and then enable the TFTP server.

Syntax: `server:/config/tftp-server/#> path usb://`

3.5 Guest User

Basic guest user support is now possible to enable in WeOS. The reserved local username 'guest' must be setup in AAA configuration context to enable this feature:

Syntax:

```
router:/config/aaa/#> username guest guest
Adding new user guest.
router:/config/aaa/#> leave

router login: guest
Password:
router:/$>
```

The guest account is very restricted, e.g., it cannot configure the system, read passwords by from configuration files, or otherwise manipulate the state of the system. Only inspect status of ports, VLANs, interfaces and RMON, and do basic network debugging using, e.g., ping or traceroute.

3.6 New VLAN Features

By default WeOS VLANs are setup in 'secure' mode, IEEE 802.1q, so any traffic that, e.g., tries to ingress with an unknown[1] VLAN tag is silently dropped.

With some equipment, or in some setups, this 'secure' mode is not desired behavior. A user may simply want traffic to pass-through the switch unaffected. For this purpose it is now possible to disable the secure mode on a per VLAN basis.

Syntax: `router:/config/vlan-1/#> no dot1q`

It is also possible to disable MAC address learning on a per VLAN basis.

Syntax: `router:/config/vlan-1/#> no learning`

[1] I.e., a VLAN ID not configured for the given port, in either tagged or untagged mode.

3.7 Managing the Router's Host Table (DNS)

When acting as a DHCP server a WeOS router automatically add clients to the local host table. This has obvious practical advantages over using the IP address to access clients on a network.

In this release initial support for adding static entries to the router's host table has been added, making it possible in a limited fashion to act as a DNS server. Please note, however, that this does not imply that a WeOS device supports acting as an authoritative DNS server, only that smaller setups can benefit from this added feature.

Syntax:

```
router:/config/ip/#> domain local.domain.net
router:/config/ip/#> host controller 192.168.2.200
router:/config/ip/#> host www.spam.net 127.0.0.1
```

This makes the IP 192.168.2.200 available as controller.local.domain.net and creates a local override for www.spam.net that redirects to the loopback interface. Specifying FQDN's like that can be handy, but please be careful!

3.8 Packet Capture – Tcpdump

Previously only available to developers and support personnel, this release now adds support for the tcpdump packet capture tool in the CLI. Due to the design of the device's hardware, it is not possible to capture packets on a per-port basis (Layer-2), only per interface (Layer-3), but if a single port is setup in a VLAN the effect will in most cases be the same. With the exception of certain control traffic like IGMP, RSTP, FRNT, 802.1X, etc. Such frames will not be possible to capture, unless the functions in WeOS are completely disabled.

The exposed tcpdump features are limited, but should be sufficient for most use-cases. One such feature is the ability to save the PCAP files to a USB stick, if the device is equipped with a USB port.

See the online help in the CLI for more information and some useful examples to get started.

Syntax: `router:/#> tcpdump vlan1`

3.9 CLI Welcome Message

Support for personalising the WeOS CLI welcome banner is another new feature. It is now possible to add a message that shows up before login, different depending on trying to login from from the console or SSH, and another after successful login, called Message of the Day, or MOTD.

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- **Console login:**
  `router:/config/system/#> [no] issue <MESSAGE>`
- **SSH login:**
  `router:/config/system/#> [no] issue-net <MESSAGE>`
- **Message of the Day:**
  `router:/config/system/#> [no] motd <MESSAGE>`

Example:

```
router:/config/system/#> issue "Company Inc. Gateway | Welcome operator!"
router:/config/system/#> issue-net "Only authorized personel, contact
   +46(0)123-456\nThis session is logged for any intrusion attempts!"
router:/config/system/#> motd "Site policy:\n o Do not change live
   system!\n o Contact sysadmin for help or system problems."
```

3.10 Custom HTTPS certificates

Tech preview of custom certificates for HTTPS. This allows you to upload your own certificates and they will be used in the HTTPS traffic. Useful if you want to remove all certificate warnings in a unified network environment. If not specified, the default Westermo self-signed certificates will be used. Only supported from the CLI.

Syntax: `router:/config/web/#> certificate <LABEL>`

3.11 Additional DDNS providers

The DDNS client, inadyn, now has untested support for a few more DDNS providers: 3322, zoneedit, easydns, and dnsomatic. This in addition to the still supported: dyndns, freedns, and no-ip. This addition should come in handy now that DynDNS has, more or less, removed the free accounts many users have relied on so far.

3.12 USB functionality

An exciting USB function referred to as ”USB boot” is available as technology preview. Instead of using the USB stick as (continuous) backup, it can also be used to boot from. This has been available from WeOS 4.6.0, but is still only a technology preview. The directory structure used in 4.6.0 has changed in 4.8.0. To activate this, on the unit, simply log in to the CLI.

Syntax: `router:/#> boot <usb|flash>`

3.13 VPN

- IPsec Backup Peer This is a technology preview of upcoming IPsec redundancy support.

  IPsec initiators may be configured with two responder adresses. If IPsec fails to connect to the primary responder, it will try to connect to the backup responder. The primary responder will periodically be checked, and a switch back is initiated if possible.

- Tech preview of upcoming *OpenVPN* support, from the CLI only. This allows a WeOS unit to be an OpenVPN client or server (with or without RADIUS backend). Currently only routed mode is supported. Not bridged, however, bridged mode is a future target.

  Syntax: `config/tunnel> ssl [ID]`

- Tech preview of upcoming *PPTP* support, server only. See the online help for more details. **Syntax:** `router:/config/tunnel/#> pptp`
  Some clients (for example iPhone) has the option to send all traffic through the tunnel. To get this to work you need to add a name-server in the PPTP-configuration.
  Syntax: `router:/config/tunnel/pptp/#> ppp name-server 8.8.8.8`
  It is possible to configure firewall rules that will apply on all connected clients, not on each client, for example:
  Syntax: `router:/config/ip/firewall/#> allow in pptp0 proto icmp`

- Tech preview of upcoming *L2TP/IPsec* support, server only. See the online help for more details. **Syntax:** `router:/config/tunnel/#> pptp`
  Syntax: `router:/config/tunnel/#> l2tp`
  Syntax: `router:/config/tunnel/l2tp> #> ipsec`
  Some clients (for example iPhone) has the option to send all traffic through the tunnel. To get this to work you need to add a name-server in the L2TP-configuration.
  Syntax: `router:/config/tunnel/l2tp/#> ppp name-server 8.8.8.8`
  It is possible to configure firewall rules that will apply on all connected clients, not on each client, for example:
  Syntax: `router:/config/ip/firewall/#> allow in l2tp0 proto icmp`

- Trigger IPsec and SSL VPN tunnels with alarm actions

  Syntax: `server:/config/alarm/action-4/#> target tunnel`
  Syntax: `server:/config/alarm/action-4/#> tunnel ipsec 0`

  This can be used to for example have a service tunnel that you want to enable from digital in. In that case you just create a digital in trigger and connect it to the action created above.

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3.14 IEEE 802.1AX/802.3ad Link aggregation

- FLHP is a Westermo proprietary protocol used to qualify if a link has full connectivity and can be used to qualify if a link should be a member of an aggregate. It is only at technology preview function and is not a supported function.
- As a technology preview it is possible to use 802.1AX link aggregation on SHDSL links. Note: On SHDSL products with PAF support, it is recommended to use PAF instead. LACP link aggregation does not work for DSL ports on DDW-142.

3.15 PPPoE Server

- Tech preview of *PPPoE Server* is configurable, from the CLI only. This allows a WeOS unit to serve up to 16 PPPoE clients, using a local user database for client authentication and authorisation.
  - **Syntax:** `config/pppoe-0#> server` (Enables PPPoE server)
  - By default, the PPPoE server will have address `10.2.0.1`, and hand out addresses in range `10.2.0.2-10.2.0.9`: **Syntax:**
    `config/pppoe-0#> address 1.2.3.4` (Set local IP address)
    `config/pppoe-0#> pool 1.2.3.10 10` (Using size)
    `config/pppoe-0#> pool 1.2.3.10 1.2.3.19` (Using range)
- **Syntax:** `config/pppoe-0#> aaa-auth local-db 0`
  Use local user database ”0” to authenticate/authorise PPPoE clients.

3.16 Serial HDX mode

- Tech preview of *Serial HDX mode* is configurable, from the CLI only. This allows a WeOS unit to handle serial HDX mode.
- **Syntax:**
  `config/serial-1#> hdx` (Enables HDX mode)
  `config/serial-1#> no hdx`

  WeOS support for serial HDX mode. To handle legacy Serial - V.23 HDX application/equipment with RTS/CTS and DCD control on serial port devices like the Lynx, Wolverine and the Falcon. This function is limited to handle RTS-CTS delay of 23 ms and a guard time for the DCD signal of 10 ms.

By default, serial HDX mode will be de-activated.

3.17 DHCP client arping option

- Tech preview of *DHCP client arping option* is configurable, from the CLI only. This allows a WeOS unit to disable the arping option in the DHCP client.
- **Syntax:**
  `config/iface/vlan-1#> no arping` (Disables arping option in DHCP client)
  `config/iface/vlan-1#> arping`

  WeOS support disable of arping option in the DHCP client. If arping option is disabled the DHCP client in WeOS sets the IP Address assigned by the DHCP server without doing a arping of the assigned IP Address.

  By default, the arping option will be enabled.

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4 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.

4.1 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.
- The new alarm configuration lacks support for RMON triggers.
- Running an FRNT ring over copper SFPs is not recommended, due to slow response time from copper SFPs.
- 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.
- Port monitoring fails to preserve the VLAN priority. Fix planned for a later release.
- 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.
- 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.

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4.2 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".

4.3 SNMP

The SNMP chapter of the WeOS Management Guide lists supported standard MIBs, including limitations to specific tables for some MIBs. Additional deviations from the standard MIBs may exist.

4.4 Web

- Inspecting RMON counters in the Port Statistics page may need a manual reload before the actual values are displayed.
- Due to security reasons the username and password must always be provided when logging in, i.e auto-completion is not supported in the login form.

4.5 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.
- Limitations in field length causes problem with upgrade from IPConfig Tool, i.e. too long file names are not supported. No fix planned.

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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.

4.6 SHDSL

- SHDSL link can sometimes on older DDW-225/226 hardware be lost due to slowly dropping SNR margin, issue #5317. This seems to be caused by high traffic load on the link. Fixed on boards with hardware revisions 3 or newer, DDW-225 (5013-0750) and DDW-226 (5013-0740). This board update was introduced in production from serial number 4645 on the DDW-225 (3642-0250) respectively 4931 for the DDW-226 (3642-0240).

4.7 Firewall

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

4.8 VPN

- 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.)

4.9 Link aggregation

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

- 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.

- 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.
- Only link aggregation of Ethernet ports is supported. Aggregation of SHSDSL ports is provided as technology preview. Configuration of xDSL ports (ADSL/VDSL) ports in an aggregate may be possible but this is not supported and the behaviour is undefined, issue # 8117.

4.10 Serial Over IP

- Issue #8251 details how a sender of broadcast data also receives a copy of the data.
  Workaround: When using broadcast destination, please select a listen interface.

4.11 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.

4.12 Bootstrapping configuration via BOOTP

- Bootstrapping the configuration file using BOOTP is only possible over the WeOS unit's Ethernet ports. DSL ports (SHDSL, ADSL, VDSL) can not be used.
- It is only possible to use BOOTP/TFTP to download the WeOS configuration file (certificates for IPsec, etc., can not be downloaded).

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5 Known Issues

Issue	Category	Description
#4203	RSTP	Storm occurs quite frequently when toggling RSTP bridge priority
#4462	Ports	Cross switchcore 802.3x flow control
#4707	RSTP	Long reconfiguration time for RSTP at link up, up to 32 sec
#4895	RSTP	RSTP show blocked port on LED when port is in forwarding state
#4929	RSTP	Looping admin edge ports causing a storm
#5649	RSTP	Non root switch sends out BPDUs with the same bridge ID as the root
#5987	VPN	IPsec: Wayward ARP caused by IPsec added route
#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
#6268	FRNT	Long FRNT reconfiguration time for Wolverine units on power-up.
#6920	PPP	PPPoE termination message (PADT) from server not handled properly
#7275	System	Fiber patch cable connected to 100 Mbps in one end and 1000 Mbps in the other cause complete systems lockup
#7276	VPN	IPsec "no remote network" causes NAPT rules to be bypassed
#7322	USB	USB autobackup/restore can restore configuration of a Lynx to a RedFox => FAIL
#7367	System	Bad response from DynDNS server may prevent the DNS name from being updated
#7453	PoE	Viper sometimes fails to toggle ports during over-allocation of power
#7500	VPN	IPsec with certificates and identity using 'auto' will not work
#7760	SNMP	VRRP monitoring is not available in SNMP on WeOS
#7896	IpConfig	DDW-142 shown as DDW-225 in IPConfig Tool (10.4.0)
#8093	System	Broken USB-stick causes failure in WeOS
#8117	Link Aggregation	Possible to aggregate links of different type (Ethernet and DSL)
#8224	Link Aggregation	Changing RSTP cost for link-aggregate does not (always) take effect
#8251	Serial over IP	Sender of UDP broadcast also receives transmitted data
#8260	VLAN	Removing forbid on dynamic vlans not working
#8286	Link Aggregation	Combining dynamic VLANs (AVT) and link aggregates does not work
#8305	CLI	Problems with port qualifiers on Falcon/DDW-142 when using aggregates
#8373	System	Moving the 1100-0148 SFP causes an interrupt storm
#8451	Ports	Interrupted availability due to large packets - DDW-226
#8652	RSTP	Default SHDSL port cost should be higher than for copper ethernet port
#8784	System	Compability issues with MRD and DR units for VRRP
#8974	System	SSH users are not timed out
#9214	SNMP	SNMP ifOutDiscards is a 16 bit value but should be counter type
#9431	DHCP	DHCP server does not assign option 82 address to unit replacement until lease times out

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Issue	Category	Description
#9514	FRNT	FRNT not stable when on 32 kbit/s SHDSL link with traffic load.
#9564	RSTP	RSTP not always blocking ports
#9608	System	Other users are not kicked out when initiating an upgrade
#9668	DSL	Priority does not work over a PAF bonded link
#9715	CLI	Prefix "repeat" hangs terminal when command displays more than one page of text
#9875	System	Mac authentication in combination with LACP, RSTP or FRNT is unpredictable.
#9901	System	bootp: vfs-target usb does not work as expected.
#9909	Link Aggregation	LACP: Changing aggregate type may cause ports to remain in forward state
#9943	VPN	IPsec: Instability in main mode
#10156	Firewall	Disabling ’management interface’ may remove port-forwarding rules at runtime
#10201	WEB	FW upgrade using File Upload requires too much free memory
#10209	VPN	Unit will reboot when flooding packets over IPsec tunnel
#10222	DSL	G.992.3 Annex J not supported in Annex B (ISDN).
#10230	LED	LED blink on config can stop working

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6 Fixed Issues

4.13.4

Fixed issues from WeOS v4.13.0

Issue	Category	Description
#7298	Firewall	Port forwarding (DNAT) does not work with VRRP virtual address or secondary addresses
#8202	Link Aggregation	Link alarm on LACP link aggregates has incorrect startup behaviour
#8258	LLDP	Mgmt-IP not initialized nor updated correctly.
#8773	VRRP	VRRP reports old information when in INIT
#9335	802.1X	show mac-auth don't always list all blocked ports
#9374	IGMP	Ports leading to forced queriers does not seem to be set as multicast-router-ports
#9594	OSPF	OSPF NSSA ABR fail to forward external routes to backbone
#9911	Ports	Some SFP's are detected as 100Mbit/s instead of 1000Mbit/s
#9925	System	Bad error message when FTP and TFTP upgrade fails
#9934	CLI	Running commands via SSH reorders text lines
#9935	OSPF	Configured route cost, and other interface settings, lost when DHCP interface goes down/up
#9951	System	BOOTP client is indicated to have failed to start
#9959	System	MAC based port auth stops working after a aging-timeout for RedFox gigabit ports
#9966	System	File descriptor leak causing "unable to open netlink socket" and cannot show running-config
#9968	WEB	Wrong items displayed on the Enviroment status?
#9971	WEB	SFP-DDM Graphs goes off scale at +76°C or 0°C
#9979	DHCP	DHCP option 82 does not work with old config files.
#9982	System	Missing SFP on Lynx causes error message to be written to syslog
#9985	USB	Factory reset fails when configuration initially has been loaded from USB
#9992	Alarm	Reconfiguration of alarm triggers always resends SNMP traps
#10016	SNMP	Show loopback interface in ifTable
#10017	System	Descriptor leakage in alarm daemon related to SNMP traps
#10035	PPP	Services are not restarted after IPCP negotiation
#10051	System	Upgrade using TFTP via slow link
#10059	System	All eth port in state blocking after upgrade from 4.12.1
#10089	System	SYSLOG Server not working in 4.13
#10090	QoS	Set proper network priorities on important services
#10102	FRNT	FRNT Daemon not starting correctly (Assertion 'index >= 0' failed)

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Issue	Category	Description
#10160	Firewall	1-to-1 NAT proxy-ARP does not work after configuration if there is no default route, reboot needed
#10167	IGMP	Not ignoring IGMP control packets on VLANs where IGMP is disabled
#10175	Ports	DDM values invalid
#10226	WEB	web help for basic setup is empty
#10227	Serial over IP	Serial-over-IP and similar protocols should use TOS/DSCP value 0x68
#10233	DHCP	dhcp-server circuit-id string not cleaned up properly
#10235	CLI	Command "show dhcp-clients" inserts line breaks in the Client ID field
#10250	System	Mac authentication in combination with LACP or FRNT is unpredictable.
#10258	System	Refresh authenticated MAC addresses before aging-timeout
#10260	LLDP	Show lldp does not include all VLAN's over a link
#10269	System	The 'show host' command in ip configuration context gives empty list when no domain is set
#10283	System	Static secondary address not active until lease received
#10306	DHCP	DHCP server/client issue with lease time
#10312	DHCP	Option-82 leases corrupted by last entered DHCP subnet => no address from DHCP server
#10342	OSPF	Showing OSPF details in CLI may hang console
#10358	CLI	Ambiguous meaning of the mean rate in the show rmon <port> command
#10368	DHCP	Disabling local relay agent does not re-enable local DHCP server again
#10369	DHCP	Static lease with Option-82 or Client-ID as hex containing a '0' does not work
#10374	DHCP	Disabling subnet pool, with 'no pool', prevents static leases from being served
#10394	CLI	Resetting system contact fails
#10405	System	Add information on CPU in 'show system-information'
#10412	DHCP	Mixup in help text for tftp-server and tftp-server-name
#10416	System	Routing data not recovered after zebra daemon crash
#10480	LLDP	LLDP is not functional over aggregate
#10513	System	Suppress warning for customer specific SFPs
#10525	System	Unit may run out of ramdisk
#10528	Logging	NTP logs is allowed to grow without limits

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7 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.

To change some settings, enter the configuration context with the command `conf`, short for "configure". The same commands as shown above also apply here, but now display configured settings.

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

To leave a level the operator must use the command `end` to save and `abort` to cancel.

Any new settings are activated only when the operator leaves the configuration context, using "end".

To save settings to non–volatile RAM (flash disk), the operation uses `copy run start` from admin–exec context.

```
$ ping -b 192.168.2.255
PING 192.168.2.255 (192.168.2.255) 56(84) bytes of data.
64 bytes from 192.168.2.200: icmp_seq=1 ttl=64 time=10.4 ms
64 bytes from 192.168.2.200: icmp_seq=2 ttl=64 time=0.895 ms
^C

$ swping -i eth1
Nr  MAC                IP                  Ver. Type               Status
================================================================================
  1  00:07:7c:86:04:b5  192.168.2.200/24    4.09 RedFox         -------------SI

$ ssh admin@192.168.2.200
The authenticity of host '192.168.2.200 (192.168.2.200)' can't be established.
RSA key fingerprint is 1d:ce:fe:4b:8e:c2:73:42:11:68:73:02:e5:a6:e4:8b.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '192.168.2.200' (RSA) to the list of known hosts.
admin@192.168.2.200's password: westermo

.--.--.--.-----.-----.------.-----.-.--.--------.-----.
|  |  |  |  -__|__ --|_    _|  -__|   _|  .  .  |  _  | http://www.westermo.com
 \__/\__/|_____|_____| |__| |_____|__| |__|__|__|_____|        info@westermo.se
   Robust Industrial Data Communications -- Made Easy

\\/ Westermo WeOS v4.9.2 4.9.2 -- Oct  2 16:01 CEST 2012
Type: 'help' for help with commands, 'exit' to logout or leave a context.
redfox:/#> ^D
```

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```
$
```

This is a typical session where broadcast ping is first used to locate the device, followed by an IPConfig scan and then SSH login using the default user and password.

8 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.

The version string listed in the output from the `show system-information` command is only updated after reboot.

8.1 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.

Since version 4.13.1 of WeOS, unified firmware package files are supported. However, it is important to note that a device must first be upgraded to version 4.13.1, using a traditional image file, before package files can be used to upgrade to later versions. WeOS will detect the input image format, so the upgrade procedure is the same when using package files as when using the old format. This applies to both the CLI and the Web interface.

Primary and Secondary

List of primary and secondary CPU firmware images.

WeOS-4.13.4.pkg: All products, WeOS 4.13.4

fw4134.img: Falcon, WeOS 4.13.4

lw4134.img: Lynx & Viper, WeOS 4.13.4

rw4134.img: RedFox, WeOS 4.13.4

ww4134.img: Wolverine DDW-142/225/226, WeOS 4.13.4

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.

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Please note, the boot loader firmware does not follow the WeOS version numbers, it has its own version numbering scheme and it is CPU platform specific. Also, unless the release notes explicitly recommends it, there is no need to upgrade the boot loader.

Current bootloader firmware images:

imx27-redboot-4.11.bin: Falcon, Lynx, Viper, Wolverine DDW-142/225/226

xscale-redboot-2.03.bin: All RedFox products

Additionally, the versions listed are bundled with the new package format. Use the command `upgrade boot <ip-addr> <firmware>` to upgrade the bootloader.

8.2 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.

8.3 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 rw492.img
Upgrade in progress, console disabled: Please stand by...
Reading MTD partition information from FLASH
netflash: login to remote host 192.168.2.42
ftp: connect: Connection refused
```

```
netflash: ftping file "rw492.img" from 192.168.2.42
No control connection for command: Connection refused
ftp: bind: Address family not supported by protocol
netflash: FTP failed.

Trying TFTP instead...
Reading MTD partition information from FLASH
netflash: fetching file "rw492.img" from 192.168.2.42
...............................................................................
netflash: got "rw492.img", length=10416128
netflash: Signature OK - Sig = RFox
netflash: CramFS OK - CRC = 0x82975A33
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
Reading MTD partition information from FLASH
Updating MTD partition information
Unlocking and erasing MTD partition information in FLASH
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

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