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Release Notes WeOS 4.3.0

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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 routers second generation Wolverine, Lynx+ switches and mini routers.

The Cricket software platform has been in operation since 2006 on custom made RedFox Mil, RedFox Aero and RedFox Rail products. It has a proven track record and is considered mature. With the advent of the Westermo RedFox Industrial line of products Cricket was given a major overhaul to comply with standards as well as compatibility requirements with existing Westermo product offerings. The result is WeOS, the Westermo Operating System.

Westermo has several big projects underway to boost hardware capability to be able to roll out WeOS on even more products than just the RedFox, Lynx+ and Wolverine series. There is also a wide range of software features on the roadmap for WeOS itself.

For contact information and further details, see the Westermo home page http://westermo.com.

Version Number Format

In WeOS the version number format has gained an extra digit. The main reason for this 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., 4.3.1 would be the first patch release in the 4.3.0 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 This custom has now been replaced by the more common –betaN notation, for internal and limited distribution beta releases, and –rcN, for release candidates.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 target release version is visible in all stages of a release cycle.

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2 Summary of Changes

WeOS 4.3.0 adds support for Lynx+ and Wolverine DDW-226 and dynamic unicast routing protocols RIP, OSPF and VRRP. Major changes listed below, for details see section 5.

Lynx+

The Lynx+ is the 2nd generation of the Lynx, now with 10 Ethernet ports and SFP slots with support for both 100 Mbps and 1.0 Gbps transceivers and, like all WeOS enabled devices, a console port.

Wolverine DDW-226

With 4.3.0 also comes support for the new Wolverine DDW-226, which is like the 225, but with the additional RS-232 serial port, including Serial/IP support.

Dynamic Routing

WeOS 4.3.0 is the first release with official support for dynamic IPv4 routing protocols RIP v1/v2, OSPF v2, and VRRP according to RFC2338. See the Management Guide for further details.

Power alarm no longer included in factory default setting

In 4.3.0 and later the DC power alarm trigger has been excluded from the factory defaults. Products delivered with 4.3.0 and later will by default only indicate DC failure via the DC1 and DC2 LEDs. Previously the ON LED and the digital out fault relay were also affected. Upgrading an existing products to WeOS 4.3.0 is still possible, but peforming a factory reset will activate the new behavior.

The main reason for removing the DC power alarm trigger from the factory default is to simplify the procedure when determining when a crossed–cables factory reset has finished — the unit will come up with a green ON LED. See the Management Guide, or the User Guide of your product for more information.

As a user, you can easily add the DC power alarm to achieve the same behaviour as before. Below is an example of adding a power alarm trigger via the CLI, this is also possible via the Web interface

```
redfox:/#> configure
redfox:/config/#> alarm
redfox:/config/alarm/#> trigger power
Created trigger 1
redfox:/config/alarm/trigger-1/#> sensor 1,2
redfox:/config/alarm/trigger-2/#> end
redfox:/config/alarm/#> show
Trigger Class       Enabled  Action  Source
==========================================
      1 power       YES           1  1 2
redfox:/config/alarm/#>
```

2.1 Platform

- Serial port support with RS-232 on the DDW-226.
- USB port support on the Wolverine DDW-225 and 226. Fixes issue #3973.
- Support for link propagation from port link to VLAN and interface oper state, needed mostly for OSPF and VRRP.
- Multicast sender inside router, enables all dynamic routing protocols as well as Serial over IP support for multicast distribution.
- Support for switching of double tagged frames is now finally possible. The Max frame size for switching has been increased from 1522 to 1632 bytes.
- The strange ARP flux problem seen in #4083 has been resolved. Each interface now only reports its own MAC.
- Issue #3672 has affected quite a few people, when changing the member ports of a VLAN interface the interface MAC changed accordingly. This has finally been fixed.

  The VLAN interface's MAC address is allocated from the member ports and, as long as the initial interface MAC address belongs to a member of the VLAN, the interface MAC will not change. If the port that owns the MAC no longer is member of the VLAN the interface MAC must be reallocated. When that occurs a gratuitous ARP is generated to update switches and clients accepting such ARP packets.

  On reboot however the interface will, as usual, pick the MAC of the first untagged port in the the VLAN.
- The MXC platform (Lynx+, Wolverine, Falcon) have received a significant update to the network driver. During storm the high interrupt load caused the switch to reboot, issue #4008. In issue #4773 NAPI support, an interrupt mitigation technique, was added to the network driver.
- When RSTP was disabled BPDUs did not pass through, issue #4745. Fixed.
- Standard UN*X traceroute failed getting replys in #4634. Fixed.
- Improper VLAN port filtering caused extra IGMP query packets to be received, which in turn caused extra query packets to be forwarded in #4156. Fixed.

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2.2 CLI

- Support for changing interface MAC address.
- Support for changing interface MTU.
- Support for changing the Web session timeout, still not possible however to disble it completely.
- Support for OSPF v2, including areas and interface specific settings such as authentication.
- Support for RIP v1 and v2, including interface specific settings such as authentication.
- Support for VRRP, according to RFC2338. This is a per interface setting.
- It is now possible to use the `abort` command even in the top-level configuration context. Disabling services, e.g. spanning-tree, or removing all VLANs can now safely be aborted.
- When attempting to leave configuration context in interactive mode, the CLI now performs a simplistic sanity check and warns the user if:

  1. All ports have been disabled, or
  2. All VLANs have been disabled, or
  3. All interfaces have been disabled (`no up`), or when
  4. Any other subsystem returns an error during the "pre commit phase".

  Unfortunately this does not cover all faulty scenarios, but the hope is that it covers at least the most common ones.
- When leaving configuration context using the `leave` or `end` commands a friendly "heads up" reminder about `copy run start` is displayed. This is currently shown regardless if the user has made any changes or not. Improvements to this are planned for a later release.
- When configuring interfaces the `inet static` stanza is now mandatory to be able to access commands to set static IPv4 address. This is in preparation for the upcoming `inet6 static`, for IPv6 configuration.
  Note: The WeOS .cfg configuration files have used this syntax since 4.0.0, hence this change only affects interactive use.
- A long standing issue with the awkward use of `no vlans`, et consortes, in .cfg configuration files has been resolved. When loading a configuration file the database is now first cleared and system defaults are used. This could affect users that are used to load "diff configurations", however that is still supported by pasting in into an non–interactive CLI session's configuration context.

- The recommended way of pasting in configurations into the terminal is now to use the `copy con run` command.

- 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.

- 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.

- When entering the configure context the ON LED will flash on the unit, similar to what the IPConfig tool does. Useful for locating a device or verifying the correct unit is being configured.

- The CLI format version has been stepped up to v1.3 in all .cfg files saved using WeOS 4.3.0.

2.3 SNMP

- No new features.

2.4 Web

- Support for ping and traceroute tools

- Support for IPConfig discovery scanning.

- Support for inspecting system log files.

- Support for enabling/disabling ports in a spanning-tree (RSTP).

- Support for changing system date/time.

- When being timed out and returned to login page the system now returns you to the same page when logging in again. (Note: It is now possible to configure the web session timeout, in the CLI.)

- Domain name and DNS servers set by a DHCP client on the primary interface is now displayed correctly.

- Support for setting DPD delay and timeout in IPsec VPN tunnels.

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2.5 SHDSL

- New serial port support in DDW-226. An RJ45 supporting RS-232.
- Issue #4761 details a problem with packet loss over the SHDSL link. The customer reports loss of up to 20 ping packets during a normal ping over 24h, ping interval 1 sec. Problem identified as speed-duplex setup problem in internal connection between Ethernet switch fabric and DSL chip.

2.6 Firewall

- No changes.

2.7 VPN

- IPsec/IKEv1 support in WeOS has been upgraded to Openswan v2.6.25.

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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.
- 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.
- FRNT is limited to having both its ring ports in the same slot, or rather of the same type.
- 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 support (yet) for image upgrades from USB stick.
- 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.
- The VRRP master does not use the virtual MAC address, issue #4694. This represents a major problem if client machines do not support, or cannot be setup to support, gratuitous ARP. A fix to support vMAC is planned for a later release.
- RSTP, IGMP Snooping, FRNT, etc. not supported over link aggregates.
- No support for any port authentication, either MAC nor IEEE 802.1x based.
- No 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.

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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.
- 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.
- When downgrading to a release < 4.1.0 the user must perform a password reset due to password cryptography enhancements from 4.1.0 and later. A password reset is only allowed on the console port, simply login with user “password” and password “reset”, see the Management Guide for details.

  If a console port access is not available a crossed cable factory reset may be the only way to regain access.

  Note: In most cases the downgrade results in the password being reset to system default.
- The location indicator ("Here I am!") blink with the ON LED is currently only supported when accessing a WeOS device from the IPConfig tool or the CLI. Future releases will support activating the location indicator from the Web UI as well.

3.2 CLI

- The command `show vlans` lists VLANs in the order they were entered when setting them up. Support for sorting according to VID will soon be added.
- Tab completion only works for commands in current context, not global, parent or even local show commands.
- The ’?’ key does not work as expected. It only lists alternatives and does not include any online help. Full support is underway. In the meantime the user can use the ’help [command]’ for online help.
- The on–line help is not only insufficient, it is sometimes even misleading. E.g., some commands do not support the `no` prefix. The help system will be restructured in a later release.
- No support for displaying SNTP status, NTP server stats. Best way currently is to manually check system time against another SNTP synchronized computer.
- No support for scheduled upgrades, i.e. ability to upgrade @02:30 to limit downtime during regular office hours. Support planned for a later release.

3.3 Web

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

3.4 IPConfig Tool

Limitations in current v10.3.0 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.
  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.

3.5 Firewall

- Management of firewall rules is currently very limited. Adding a new rule before, after or at a given position is currently not possible. Neither is editing an existing rule.
  Note: Full support is planned for WeOS 4.4.0.

- The firewall NAT rule really does allow all traffic from the internal interface to the external (as well as related replies from the outside coming back in). There is currently no way to control what internal traffic is allowed to access external resources. Hence, the NAT rule currently enables the device to act as a very simple Internet gateway. Support for *deny* rules and *deny all* functionality is planned for WeOS 4.4.0.

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

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3.6 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 by first disabling and the reenabling it in the configuration.

- Sometimes when updating an existing IPsec tunnel the changes does not take effect. This is documented in issue #5036. Several countermeasures have been put in place to prevent this from occurring, most notably #5097. However, should such conditions be detected in the field the IPsec daemon "pluto" can be manully restarted, without having to resort to restarting the whole device. Both the CLI and Web UI have this implemented.

  Please note, due to #5097 *any* change to *any* tunnel will cause *all* tunnels to go down. This is also true when changing related settings in outbound interface, default gateway, VLAN or even port settings and firewall. For WeOS 4.4.0 the plan is to fix #5036 to minimize the impact on already established unrelated tunnels.

- In some (invalid) setups the IPsec daemon "pluto" crashes and does not recover. This is detailed in issue #5056. In addition to fixing the crash, improved documentation and online validation of the configuration is planned for WeOS 4.4.0.

  Symptoms: First the user notices that all tunnels go down, then the CLI command `show tunnel ipsec` gives no output at all, even if there are multiple tunnels configured.

  To be sure this bug is the problem, in the CLI issue the command `show log` and look for the line `ipsec__plutorun: Segmentation fault:`

```
Feb  4 01:12:00 lynx pluto[2824]: "ipsec0" #1: ignoring informational payload,
       type NO_PROPOSAL_CHOSEN msgid=00000000
Feb  4 01:12:00 lynx pluto[2824]: "ipsec0" #1: received and ignored informational
       message
Feb  4 01:12:00 lynx pluto[2824]: "ipsec0" #1: received Delete SA payload: deleting
       ISAKMP State #1
Feb  4 01:12:00 lynx pluto[2824]: packet from 10.0.0.1:500: received and ignored
       informational message
Feb  4 01:12:00 lynx ipsec__plutorun: Segmentation fault
Feb  4 01:12:00 lynx ipsec__plutorun: !pluto failure!:  exited with error status
       139 (signal 11)
Feb  4 01:12:00 lynx ipsec__plutorun: restarting IPsec after pause...
Feb  4 01:12:06 lynx login[3354]: root login on 'ttyS0'
```

- When using L2TP IPsec over NAT, only one connection from the NAT:ed network can be established.

- The VPN LED (previously ST2), visible on all new products, is not supported in WeOS 4.3.0. Full support expected in WeOS 4.4.0.

3.7 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.
- 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.

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4 Known Issues

Issue	Category	Description
#3139	QoS	QoS interboard contention
#3248	System	No warning in CLI/Web when other users are managing the system
#3554	SNMP	Unable to change VLAN interface settings static/DHCP in Inet4BaseIfaceTable
#3572	SNMP	Q-BRIDGE VLAN implementation of StaticEgressPorts incorrect
#3771	System	Timed out SSH sessions leaves running /bin/clish processes
#3881	DSL	DSL firmware load fails sometimes, fallback retry mechanism always works
#4067	System	LLDP sends incorrect data.
#4196	IGMP	IGMP Snooping does not operate correctly when all switches use DHCP client
#4494	FLHP	Aggregated SHDSL Link does not work after FLHP reboot
#4502	FLHP	Traffic across link aggregation breaks when a physical link is removed
#4508	FLHP	Link aggregation with FLHP does not start when activated, needs reboot
#4694	VRRP	VRRP not using virtual MAC
#4707	RSTP	Long reconfiguration time for RSTP, up to 32 sec
#4798	System	Kernel "cramfs: bad compressed blocksize" message when upgrading
#4823	System	Unable to reboot or access web after failed upgrade
#4856	Ports	SHDSL link up indicated on LEDs and CLI/Web before link is fully qualified
#4895	LED	RSTP show blocked port on LED when port is in forwarding state
#4929	RSTP	Looping admin edge ports causing a storm
#4961	Alarm	SHDSL SNR-monitoring does not use high and low value
#5014	Ports	SFP 1000BASE-T does not autonegotiate to 10Base-T or 100Base-T
#5035	System	CLI routing table "show ip route" does not always display new static routes
#5036	System	Configuration of VPN does not (always) take effect
#5056	VPN	IPsec daemon "pluto" crashes and does not recover in some setups.
#5092	VPN	IPsec: ID type inet (ID_IPV4_ADDR) fails in aggressive mode WeOS to WeOS
#5132	Alarm	Lynx: Digital out gives a short close on a trigger event
#5151	SNMP	SNMPv3 engine ID error in Castlerock SNMPc when power cycled
#5152	SNMP	ifMau speed and duplex still not working

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5 Fixed Issues

4.3.0-rc7

Issue	Category	Description
#5043	System	Interface responds to PING even if it is administratively DOWN
#5101	System	Lynx Mil: Constant system overload causes non-responsive system
#5102	System	hwmon: List of kernel multicast group subscriptions full.

4.3.0-rc6

Issue	Category	Description
#5099	SNMP	Regression: Impossible to set speed-duplex with ifMauDefaultType
#5097	System	Revert IPsec config reload mechanism for 4.3.x to restart daemon on any change
#5080	WEB	Add restart button in Web for IPsec restart
#5074	CLI	Add CLI command for IPsec restart
#5037	WEB	Network mask of 0.0.0.0 in VPN is shown as -1
#5026	FRNT	FRNT incompatibility with DDW-222, WeOS DDW-225 indicates broken ring
#5076	CLI	Issuing 'leave' in CLI after modifying a VLAN user is thrown out, settings lost
#5045	WEB	WEB does not make difference on erouted and prospect IPsec tunnel status
#5094	Alarm	Lynx+ digital out is inverted

4.3.0-rc4, -rc5

Issue	Category	Description
#4704	System	Lynx 1400G-UC hangs in boot phase "Probing hardware"
#4885	System	Factory reset doesn't always work with 1/1 - 1/2 loop
#4893	System	IP address prefix length does not default according to A, B, and C classes
#4901	VPN	IPsec fails: tunnels rekey too often and does not handle interfaces goiing up/down
#4908	Ports	100 Mbps SFP does not work in Lynx+ 4.3.0-rc3
#4915	System	CLI copy command creates soft link on USB ooo.cfg –> startup-config
#4919	Alarm	Digital out gives only a short break on a trigger event
#4926	Kernel	Arp requests sent with a poorly chosen src-address in networks using asymmetric routing
#4935	DHCP	DHCP client overwrites default gateway if already set in configuration
#4952	FRNT	FRNT blocks ring on other SHDSL units after reconfiguration
#4959	VPN	Cannot create more than 4/5 IPsec tunnels => change MAX to 25
#4960	Alarm	Double alarm events on Link-Alarm
#4962	IpConfig	Strange/invalid netmask detected on devices running DHCP client

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4.3.0-rc3

Issue	Category	Description
#4852	Kernel	CVE-2010-1187: TIPC - Fix oops on send prior to entering networked mode
#4501	Firewall	Firewall loses track of rules added by IPsec when adding new VLAN
#4552	FRNT	FRNT erroneously detects SHDSL ring-ports as down on the a ring member
#4869	DSL	High priority traffic does not get prioritised over SHDSL link
#4716	VPN	IPsec crashes, leaves zombies, and finally runs out of memory
#4702	Logging	syslogd: sendto: Network is unreachable
#4680	FRNT	FRNT problems in mixed SHDSL ring
#4864	VPN	ipsec0: We cannot identify ourselves with either end of this connection
#4855	Alarm	Alarm status not updating in web/cli
#4808	RSTP	RSTP block on Eth after factory default
#4849	CLI	Bold font when displaying rmon counter
#3815	System	Changes in CLI have no effect during high CPU load
#4839	System	Errors from shdsl daemon constantly repeats in syslog
#4831	System	USB units fails to automount

4.3.0-rc2

Issue	Category	Description
#3179	WEB	Suggest a default FTP server address in Web upgrade
#3672	System	Lost connectivity after reconfiguring VLANs
#3691	Alarm	Link alarm requires a reboot to take effect.
#3796	Alarm	Digital In may not affect alarm target at startup
#4008	System	Lynx+, DDW-225/226 switches restarts during storm or high routing load
#4083	Any	ARP flux problem
#4104	Alarm	Repeat command in "repeat show alarm" completely ignored
#4156	IGMP	Sometimes extra IGMP query packets are received on chan0
#4254	System	Unable to see if system is running on backup firmware
#4622	System	IP address will not change after using DHCP client
#4625	Ports	Max Ethernet Frame Size too low (1522 instead of 1632)
#4627	System	Have to restart L1400G to enable configuration
#4632	WEB	Web does not display timezone correctly
#4634	System	WeOS does not reply to UN*X traceroute (UDP)
#4652	SNMP	Wrong SNMP response for RSTP priority on Lynx 1400G
#4653	System	linkd gives bogus warnings about previously removed VLANs
#4670	LED	Blocked FRNT port does not show on LED on SHDSL
#4671	LED	Link alarm is not shown on LED on SHDSL port
#4673	LED	RSTP does not show blocked port on LED on SHDSL
#4674	WEB	Blocked SHDSL ports not shown in Web UI
#4682	WEB	Web menus dissapering
#4711	Ports	Fiber ports cannot be changed from autoneg to fixed speed on Lynx+ or RedFox
#4745	RSTP	WeOS device not transparent for BPDU packets when RSTP is disabled
#4751	CLI	CLI TIMEZONE setting does not verify letter case
#4753	Kernel	Watchdog-timer does not start until first kick
#4761	DSL	Packet loss over SHDSL link
#4773	Kernel	Add NAPI support to MXC fec driver
#4784	System	Setting "no address" on an interface is not propagated to system
#4797	System	Starting/stopping services cause the complete freeze while DSL firmware is loaded
#4799	CLI	CLI session aborted after "repeat show rings", or other repeat command is stopped
#4802	Alarm	Status output and ON LED indicates alarm condition when unit should be OK
#4803	IGMP	IGMP packets pass thru a blocked DSL port
#4804	CLI	Text highlight never stops in "show sys" if INVALID SFP exists
#4805	LED	No green ON LED on DDW-226/Falcon/Lynx+/Lynx 1400G
#4816	System	Port default VID not set for SHDSL ports
#4818	System	Copy factory running while loading DSL chip freeze system
#4822	Alarm	Alarm confused regarding FRNT ports and state
#4825	WEB	It's possible to select FRNT ports of different type.

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4.3.0-rc1

Issue	Category	Description
#4460	System	RedFox constantly rebooting after upgrade
#4579	CLI	show ports should include static speed and duplex settings
#4589	CLI	Add support for disabling the Web session timeout
#4612	Any	Internal Error when setting Identity
#2125	System	Multicast sender inside router
#4624	CLI	Add friendly heads-up about "copy run start" when leaving config context
#4587	VRRP	Add "show vrrp" to display all VRRP groups on the router
#4486	System	Implement CLI support for RIP in WeOS

4.3.0-beta5

Issue	Category	Description
#3355	System	BUG: Annoying extra printout when setting non-existing routes.
#3374	CLI	Add support for configuring mcast-router-timeout from the CLI
#3607	Firewall	Firewall with NAT and active ftp does not work
#3738	IGMP	IGMP querier continues to get MC stream when no longer querier
#3985	Logging	Logging to console does not work after reboot
#4260	System	Disabling a VLAN does not take down its interface
#4333	CLI	Add "Manufacturing Date" to system-information
#4531	CLI	stop_service(): bad pid (0) for IGMP Snooping daemon, signal: 1
#4535	System	Link up propagation to VLAN fails on some ports
#4553	CLI	Incorrect indentation in 'show system-information'.
#4554	System	Article number and serial number not shown i CLI and web.
#4558	CLI	"Show sys" show information about FPGA on units with no FPGA
#4561	WEB	ping count 0 makes a ping process that never exit
#4563	WEB	IPsec tunnel list does not display subnet mask or prefix-length anymore
#4564	WEB	When enter a incorrect ntp-server, garbage is returned in the error-message
#4566	WEB	Cannot create port forwarding rule with a port span.
#4568	WEB	Access control rule subnet mask is not saved.
#4569	WEB	Details: information about FPGA version on units with no FPGA
#4570	System	Default gateway not set after interface comes up
#4573	VRRP	keepalived: auth_pass secret only takes 7 chars, while standard says 8.
#4580	IGMP	Incorrect election of IGMP-querier
#4591	System	Console displays "ioctl failed" once in a while

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4.3.0-beta4

Issue	Category	Description
#4232	WEB	IPsec: Show disabled instead of down if tunnel is disabled
#4225	WEB	No option pre-selected when enabling IP address on interface
#4247	WEB	FRNT Statistics webpage does not show if port is in Blocking state.
#4303	System	Add partial sysinfo to .cfg file comment header
#3076	CLI	Issues with use of "no vlans" in .cfg files
#3373	CLI	Support for changing interface MAC address
#4451	System	System start/patch scripts in /mnt/start.d does not run, regression from 4.0.0
#4484	System	Implement CLI support for OSPF in WeOS
#4485	System	Implement CLI support for VRRP in WeOS
#4507	Ports	Port range ops. on RF Rail IP-RS12 do not handle X31 & X32 properly

4.3.0-beta3

Issue	Category	Description
#4146	WEB	Missing online help
#4455	IGMP	IGMP snooping blocks 224.0.0.x
#4294	System	Implement link propagation of Ethernet port status to VLAN interface
#4440	WEB	Web: Add support for alarm action
#4434	IGMP	Support for multicast based routing protocols in WeOS and IGMP Snooping
#4391	WEB	Add support for setting/getting NAT source address/len
#2993	CLI	CLI/SNMP: "show fdb" only shows CPU switch core MAC addresses
#4439	WEB	Websupport for Serial Over IP

4.3.0-beta2

Issue	Category	Description
#4410	Alarm	HW-failure alarm about "invalid sfp" on ports with no SFP
#4302	FLHP	Add support for continuously monitoring the link
#4315	System	CLI support for Serial Over IP
#4400	LED	"show env" displays wrong status on Power and Digital in
#4220	Kernel	Failed mounting USB stick on redfox
#3319	Firewall	NAT replaces source ip on ALL packets going out through external iface.
#4310	System	Configuration support for generic serial port, CLI + Web

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Issue	Category	Description
#3404	WEB	Handle RSTP stp-port enable/disable
#3407	WEB	Manual setting of date/time
#3847	WEB	Back on same place if logged in again
#3973	System	Add driver support for iMX27 USB port
#3993	FRNT	FRNT reconfiguration time on DSL too long
#4188	WEB	Upgrade does not inform about trying TFTP anymore
#4189	WEB	Domain name and DNS servers set by DHCP are not displayed in Web GUI
#4249	DHCP	Non-primary interface does not release its IP address when DHCP lease expires
#4258	VPN	Limiting the range for the DPD delay setting
#4263	LED	Strange LED behavior on wolverine.
#4265	Kernel	TX Link interrupt does not work on Wolverine on trunk.
#4266	Kernel	Write to I2C device does not work in kernel 2.6.32 for MXC platform
#4301	Kernel	Lynx and Wolverine MDC/MDIO accesses are ineffective and take a lot of CPU time
#4343	WEB	Capital letters mixup in IPsec/IPSec
#4355	WEB	Add support for setting DPD delay and timeout values.

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Issue	Category	Description
#3196	FRNT	Switching off FRNT blocks traffic until reboot
#3795	VLAN	Problems with multicast on dynamic VLAN ports.
#3840	System	Lynx Mil: Factory default SNMPv2 rw/ro community should be disabled
#3937	VPN	Improved configuration support for IPsec
#4007	QoS	Incorrect queue scheduling on DSL card switchcore (weighted instead of strict)
#4113	System	Factory defaults not updated wrt. alarm and logging for 4.2.0
#4216	CLI	Not possible to disable SNTP client in CLI
#4219	IpConfig	VLAN interface MAC address presented instead of device MAC address
#4221	CLI	Not possible to copy any file to USB memory stick
#4223	CLI	Factory reset fails: "Failed parsing rate auto: Invalid argument. Defaulting to auto(0)"
#4224	System	New interfaces IP address not disabled by default
#4226	DSL	SHDSL Link Uptime does not reset when reconfiguring the SHDSL port -
#4227	Kernel	Kernel memory corruption issue in JFFS2 file system
#4228	System	Fiber port on Lynx 1400G cannot be reenabled again when disabled
#4229	CLI	Strange messages when moving from frnt context
#4233	DSL	SHDSL Auto rate does not always establish link at 5,7Mbit/s at startup.
#4234	Alarm	SNR margin alarm mixes status from both ports.
#4244	IGMP	Igmp snooping daemon can not be restarted
#4245	WEB	Possible to select both untagged and tagged VLAN ports when dynamic VLANs is enabled
#4261	VPN	IPsec becomes unresponsive with NAT-T and aggressive mode
#4269	Kernel	Symlink garbage collection issue in JFFS2 file system
#4308	System	No fallback to Wolverine if ID PROM is not programmed
#4342	Firewall	Enable firewall does not enable "ip forward"
#4435	WEB	CGI upgrade cannot handle images > 8 MB in size
#4452	VPN	IPsec: Assertion failed in aggressive mode with Cisco ASA

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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.

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
MAC                IP                  Ver.            Type     Status
================================================================================
00:07:7c:86:04:b5  192.168.2.200/24    4.0.            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/RedFox Version 4.0.0 cricket/4.0.x@13930 -- May 18 14:20 CEST 2009
redfox:/#> ^D
$
```

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.

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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.

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.

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

lm4XY.img: Lynx 1400G, WeOS 4.X.Y (customer specific)

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 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: 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.

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.

See the management guide for further details or contact support@westermo.se if you have issues with your setup and installation.