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WeOS 5.20.1
Release Notes

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Important User Information

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

- WeOS 5.20.0 has been interoperability tested with WeOS 4.33.2.

- When using WeConfig to manage WeOS 5.20, WeConfig 1.17.2, or later is recommended.

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

User Guide

In WeOS 5, the primary user documentation is referred to as the WeOS 5 *User Guide*. Compared to the WeOS 4 *Management Guide*, the User Guide is a web first publication focusing on use-cases, documented in stand-alone "HowTo:s", and configuration guides for all supported sub-systems.

The User Guide is included in the release Zip file in the sub-directory: `user-guide/`. To access the documentation, open the following file in your web browser:

`file://Downloads/WeOS-5.20.1/user-guide/index.html`

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

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1 Summary of Changes

This section details new features added in this major release.

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

1.1 News in 5.20.0

The subsections below describe news in WeOS 5.20.0. In addition, section 2.1 includes information on fixed issues.

1.1.1 IPv6 Interface Addressing

In this release WeOS adds the capability configure IPv6 addresses on its interfaces. After enabling the IPv6 setting on the device it is possible to configure IPv6 addresses for the devices network interfaces.

For more information on Interface addressing, see the WeOS User Guide section *Configuration Guides → Interface*.

1.1.2 Multicast Listener Discovery

In this release support for MLD was added. The MLD settings for the device is configured the same way IGMP setting has been configured in earlier versions of WeOS. MLD snooping will only be active for VLANs where the interface has a IPv6 address configured.

For more information on configuring MLD, see the WeOS User Guide section *Configuration Guides → IGMP/MLD Snooping*.

1.1.3 Upgrade All

This release adds some additions and changes around the upgrade semantics and rulesets. A new upgrade path has been added called Upgrade All. Issuing this upgrade path will upgrade all three main images sequentially. I.E. Secondary, Primary and the Bootloader, in this specific order will be written to the flash before restarting.

This upgrade path has been added as a precaution for upgrade-steps where there are strict dependencies to a new bootloader to be able to boot WeOS.

As of WeOS-5.20.0 it is no longer accepted to upgrade the images with their unpacked .bin files unless the "Force" flag is used. Using the force flag in upgrade is not recommended and if Upgrade is no commencing it is recommended to contact Westermo Support before proceeding to upgrading using the force flag.

A main driver for this command is that in a future Firmware it will be required to use the Upgrade All path for WeOS on all platforms. WeOS is changing the file-format for its images to Flattened-image-tree (FIT).

This is done in conjunction with the roll-out of Secure Boot support on WeOS.

For more information on Upgrade, see the WeOS User Guide section *Configuration Guides → Upgrade*.

1.1.4 IPsec IKE version 2

This release adds support in WeOS for IPsec IKE version 2. This release does not provide the full range of feature-sets that may be expected within IPsec, this specific release is limited to IKEv2, CLI configuration and PSK-only configuration.

The supported use cases are also limited to Host-To-Host and Net-To-Net setups.

Future WeOS release will extend the functionality of IPsec to add both web management support as well as more, use cases and configuration options.

WeOS-4 and WeOS-5 are not compatitable to communicate using IPsec tunnels in this release. IKEv1 support in WeOS-5 will be added in a later release to allow for backwards compatitability.

For more information on configuring IPsec, see the WeOS User Guide section *Configuration Guides → IPsec*.

1.1.5 Q-in-Q VLAN Tunneling

It is now supported to create VLAN tunnels through WeOS-5 devices. This is done by allowing a untagged port the act as a VLAN nesting port. In essence the port will accept ingressing frames that already contains a VLAN tag, a new tag will be pushed before the original tag in the frame. This new tag will then be used to make switching decision through the network until the frame reaches a nestling egress port. When egressing the nestling port the additional tag is removed from the frame and the original tag is now the only one remaining in the frame.

This implementation of Q-in-Q implements double-tagging of 802.1Q tags and is therefore, not compatitable with 802.1ad implementations of multi-tagging.

For more information on configuring Q-in-Q, see the WeOS User Guide section *Configuration Guides → VLAN*.

1.1.6 Firewall logging

In WeOS-5.20.0 support to specify within the firewall configuration that a firewall filter hit should generate a syslog-message. This is configurable for each firewall filter configured in the firewall.

For more information on Interface addressing, see the WeOS User Guide section *Configuration Guides → Firewall*.

1.2 Removed in 5.20.0

This section describes functions that have been removed in WeOS-5.20.0.

1.2.1 IEC-61375 - Multiple Ethernet Train Backbone

In WeOS-5.20.0 the support for multiple ETBs for IEC-61375 has been removed. This functionality has been unstable and very limited in how the functionality had been possible to use due to the symmetrical design constraints required for both Ethernet Train Backbones.

Other network designs have proven to be more efficient and stable in when applied.

1.3 News in 5.20.1

The subsections below describe news in WeOS 5.20.1. In addition, section 2.2 includes information on fixed issues.

1.3.1 IEEE-1588 - Precision Time Protocol

It is now possible to select between PTP Protocol version 2.0 and 2.1 to help insure compatibility between all PTP entities in the network.

PTP web configuration has been improved, allowing to seamlessly switch between different clock types.

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2 Fixed Issues

2.1 WeOS 5.20.0

Fixed issues in WeOS 5.20.0 (as relative to 5.19.1).

Issue	Category	Description
#19713	WEB	HTTPS certificate upload menu missing from layer 2 webGUI
#19703	Documentation	Filename "aux.html" is not allowed by MS OneDrive
#19690	WEB	Can not apply interface settings without chosing a trigger ID
#19684	Logging	Logging sink configuration producing unexpected error
#19604	System	mDNS needs to be enabled on all interfaces on a device to respond correctly to a mDNS request
#19603	System	Reconfigration spams log file with mDNS fail messgages
#19598	DHCP	Classless static routes not present after a reboot
#19571	IEEE1588/PTP	PTP inaccuracy on E2E twostep TC
#19563	IP Multicast	IGMP querier with mroute range loses cpu port when local igmp join occurs
#19544	System	The adapter board is missing in the 'show system' command on the Lynx-5512 (Dagger)
#19491	Port Monitoring	Multiple instances of port monitor do not work
#19469	Port Monitoring	Port not added back into vlan after used in monitor
#19436	FRNT	Ring-ports LED's are solid orange even when not electrical up
#19397	Port Monitoring	Port Monitoring fails if VLAN1 is not present
#19196	SNMP	RMON-MIB does not respond

2.2 WeOS 5.20.1

Fixed issues in WeOS 5.20.1 (as relative to 5.20.0).

Issue	Category	Description
#19748	IEEE1588/PTP	1-step TC: correction calculation is sometimes wrong
#19747	IEEE1588/PTP	1-step TC: peer delay is added multiple times
#19746	General	Envoy: Possible to run upgrade all without pkg
#19741	NTP	If "Selected interface" is selected when configuration NTP, the NTP service is not running
#19717	System	Redfox-F24G sometimes crashes with many SFPs inserted during boot
#19367	Ports	5000 and 7000 series devices unable to use Bidi-SFPs

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3 Known Limitations

This section describes known limitations in WeOS.

3.1 Ring Coupling version 2 not supported

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

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

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

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

3.3 Login

Known limitations related to the Login service.

Side-effect of disabling console login

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

SSH Public Key Lost When Disabling Built-in User

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

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

3.4 Setting Date Manually

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

3.5 Available ports for boot specific functionality

The boot loader rescue mode only supports regular copper ports, not SFP ports. On RedFox-5528, ports 1-4 are also not supported until the system has booted.

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3.6 Routing Hardware Offloading

The routing hardware offloading support for Viper-TBN introduced in WeOS 5.8 has shown to have instabilities. In particular, when used with dynamic routing, there are issues not yet solved. Therefore hardware offloading has temporarily been disabled by default. For use cases with static routing setups, hardware offloading can be enabled as shown in the example below.

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

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

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

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

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

3.7 FRNT

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

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

3.8 RSTP

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

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

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

fixed path-cost in the spanning-tree port configuration.

3.9 IEC 61375

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

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

"Automatic Gap Insertions", when several vehicles have the same name, can lead to unexpected behaviour. This is also true when Ethernet speed on backbone ports is set to Gigabit speed.

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

Gigabit speed on backbone ports limits the handling of lost and recovering middle nodes.

Since hardware offloading was introduced in WeOS 5.8.0, Viper TBN can now route data at a faster rate than the CPU could previously, leading to a potential of overloading the CPU during the time when the offloading tables are being set up. Since this happens during TTDP train inauguration, it is strongly recommended to enable inauguration inhibition on all nodes to reduce spurious re-inaugurations and guarantee a stable train communication.

For applications with HW offloading active in the system there is currently a known limitation in case high loads of multicast traffic for which a multicast route has not been explicitly set up, when the device is otherwise acting as a multicast router. This commonly happens with backup devices in TTDP using VRRP where the backup device will receive all routed multicast data from the backbone in the CPU causing unwanted load to the device. With 5.14.3 a temporary workaround has been introduced which require a manual configuration change with an added VLAN used as blackhole for the multicast traffic. The solution with an additional VLAN is only for TTDP and might not cover all use cases.

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

3.9.1 Priority Mode with TTDP

As of the current release it is strongly discouraged to reconfigure the priority mode of ports for redundant consist setups. Using anything except priority-mode 'tag' may result in inconsisten behaviours.

3.9.2 Hardware Offloading

Use of TTDP together with Hardware Offloading requires specific settings to achieve good performance. It is suggested that the settings *optimized-vrrp-failover* is enabled.

Hardware offloading with TTDP is in this release limited for redudant consist use cases to only function in single CN setups.

3.9.3 Blackhole Mroute Iface

The setting *blackhole-mroute-iface* has been decrepitate and will be removed in future releases of WeOS. This setting is recommended to not be used as of this release. This setting was used to protect the cpu from being overloaded by multicast traffic. As of this release, another solution has been added that may be incompatitable with this setting.

3.10 LLDP

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

3.11 Port Monitoring

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

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

3.11.1 Cross switch core limitation

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

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

3.12 Media Redundancy Protocol (MRP)

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

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

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

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

3.13 10G SFP Ports

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

- IEEE 1588/PTP is currently not supported on 10G SFP ports.

- 10G SFP ports are only to be used for 10G Fiber SFPs or 1G Fiber SFPs, not copper SFPs or 100 Mbit/s Fiber SFPs.

- Status of MDI/MDIX and polarity shows value 'Invalid' ('N/A' or 'Not Applicable' would be more appropriate).

3.14 Search function in User Guide

The User Guide included within the release-zip is Web based. The Search function in the User Guide navigation pane only works if you make the pages available via a Web Server. That is, the Search function does not work when opening the User Guide via your local file system.

At https://docs.westermo.com/weos/weos-5/ you can browse the WeOS 5 User Guide online, with Search function included.

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4 Known Issues

4.1 List of known issues

Issue	Category	Description
#19654	TCN	ETBND vrrp interface with vmac does not work for ecsp communication if configuration is done in specific order
#19600	NTP	NTP Service Crashing/freezing
#19575	IP Multicast	no multicast-snooping does not disable IGMP snooping
#19529	WEB	Cannot apply Boot Configuration with firefox and saved password
#19524	WEB	Unable to delete VLAN by WEB when FRNT is enabled (Envoy & Dagger)
#19498	IGMP	Duplicate multicast packets over link-aggregates when changing router timeout (Dagger)
#19490	TCN	ETBN should only forward train-wide MULTICAST packets when ETBN is inaugurated
#19489	TCN	ETBN should only forward train-wide UNICAST packets when ETBN is inaugurated
#19484	SNMP	Repeated SNMP writes can lock system after SNMP writes and Profinet system settings
#19410	IGMP	Mismatch between MDB and ATU for mc group 239.193.0.1 when etbn is acting as router, sender and consumer of data
#19387	System	Using CLI config + abort causes "config change"
#19385	System	Static Unicast MAC entries can not be added to the FDB
#19367	Ports	SFP:s 1100-0554 and 1100-0555 does not work on 5512 and 5528
#19326	Ports	Adminstatus does not affect operstatus of port if the port is it's own interface (i.e. outside a vlan)
#19323	FRNT	FRNT Focal point Topology Counter rush with LACP links (Dagger)
#19295	Any	Upgrade of pkg:s will complete with error printouts
#19288	FRNT	After configuring FRNT2 on Coronet/Viper 20A the FRNT leds are flashing red
#19262	Ports	Traffic not handled on Envoy ports using Copper SFPs
#19255	QoS	Priority-mode IP fails when both ingress and egress ports are fiber ports on Envoy platform
#19231	TCN	2-3 inauguration may never reach operational traindir shared
#19181	Ports	Port-Priority-mode IP and Offloading broken with DSCP set field
#19024	Link Aggregation	Using link-aggregates as FRNT ring ports gives long failover times in ring topology changes
		Continued on next page

		Continued from previous page
Issue	**Category**	**Description**
#18967	System	Joins on SSL ports does not lead to the CPU port being added to the ATU
#18910	TCN	TTDP Topology timeout not adapted for Gigabit ETB, causing ETB inaugurations upon ETBN down event
#18886	IP Multicast	Static multicast route with wildcard source fails to forward when group first heard on other interface
#18808	Alarm	Link-alarm with multiple ports makes status-relay indicate OK when some port is up and others down
#18675	Link Aggregation	Long failover time (aggregate member link up/down) in link-aggregate interoperability case (WeOS5 'Dagger' vs WeOS4)
#18643	IEEE1588/PTP	RedFox 5528/5728 fiber ports (Eth1-4) have more jitter in the correction field accuracy than the other fiber ports
#18638	CLI	CLI does not allow "?" when configuring local user accounts password using clear-text
#18614	TCN	TTDP NAT rules incorrectly modifies packets between local CNs
#18593	QoS	Tagged ports with 'priority-mode ip' is broken
#18377	Logging	Syslog events may be missed during syslogd restart
#18362	TCN	Broken/missing ECSPs in train composition handled incorrectly
#18275	VRRP	Not possible to match on VRRP interface in firewall
#18163	OSPF	Routes to 'redistributed connected E1 routes' lost within NSSA areas upon topology change
#18151	Logging	Long-running programs log events to syslog with the wrong time stamp on timezone changes
#18076	MRP	Probing MRP status (30 ms profile) during heavy load may cause reboot (Viper-TBN)
#18069	QoS	ARP packets treated with lowest priority and may be missed/dropped under load
#17995	System	Service discovery not available in safe-config

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

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

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

- Alternative 2: Use 'regular' OSPF areas instead of NSSA areas.

5 Quick Start Guide

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

5.1 Default User and Password

user: admin

password: admin

5.2 General

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

- http://weos.local

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

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

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

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

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5.3 CLI

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

- An SSH client, see below

- The device's IP address or DNS/mDNS name, see above

- The user name and password, default user: admin, password: admin

SSH Clients

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

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

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

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

CLI Overview

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

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

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

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

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

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

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

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

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

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

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

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

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

6 Firmware Upgrade

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

6.1 WeOS Image

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

```
redfox-4d-3b-20:/#> upgrade primary <SERVER-ADDRESS> WeOS-5.20.1.pkg
```

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

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

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

6.2 Boot Loader

The boot loader firmware has its own version numbering scheme and is CPU platform specific. Please note, unless the release notes explicitly recommends it, there is usually no need to upgrade the boot loader.

The boot loader firmware is included in the WeOS-5.20.1.pkg.

- Viper Series (Coronet): Barebox 2017.12.0-11

- RedFox-5700/7500 and Lynx-5500/5600 Series (Dagger): Barebox 2017.12.0-11

- Lynx 3300/3500 Series (Envoy): Barebox 2022.08.0-1

```
redfox-4d-3b-20:/#> upgrade boot <SERVER-ADDRESS> WeOS-5.20.1.pkg
```

WESTERMO

Document
Release Notes WeOS 5.20.1

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7 Significant differences between WeOS 4 and WeOS 5

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

- Access port names have changed, e.g. `Eth 1` is now `eth1`. Similarly, on products with M12 ports, `Eth X1` is now `ethX1`.

- Port ranges (lists) have changed, e.g. `Eth 1-8` is now `eth1..eth8`

- Server and Internet port settings are now usually input as ADDR:PORT

- IGMP settings have been renamed from `igmp-foo` to `multicast-foo` due to the included MLD snooping support. Hidden compatibility aliases exist to ease the transition

- Stateless NAT (NAT 1-to-1) has moved out from the firewall context

- Enabling management services per interface has moved to each specific service

- Configuration of management services have moved to a separate management sub-context

- New discovery services, in addition to LLDP, are mDNS and SSDP. The latter is for discovery on Windows systems, see also section 5

- The DHCP relay agent CLI syntax has changed considerably

- The `show running-config` command now lists an actual file, in JSON format as mentioned previously. An optional keyword now lists the first level JSON object, and more advanced keywords can also be given in `jq` syntax[1]. For more information, see the CLI online help text for `help running-config`

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