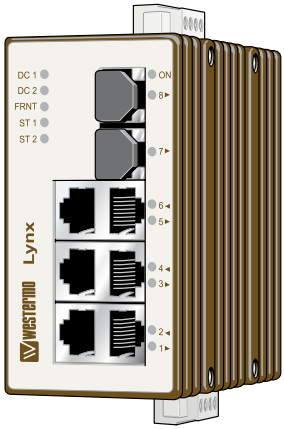
Reference Guide
6640-3201

Lynx
SERIES



Industrial Ethernet 8-port Switch

www.westermo.com

Accessing and Using the Web Interface

To access to all possible settings, the Lynx switch should be configured via the onboard web based configuration tool. This application note describes the web interface on the Lynx 1xx/4xx and Lynx 1xxx and how to use it. It is important that the unit has the latest firmware, which can be downloaded from Westermo website. All Lynx units with firmware 3.0 or later can be configured through the web interface. If the unit has to be updated, please read the release note on upgrading Lynx before proceeding.

Firmware release note on upgrading the lynx is found at:

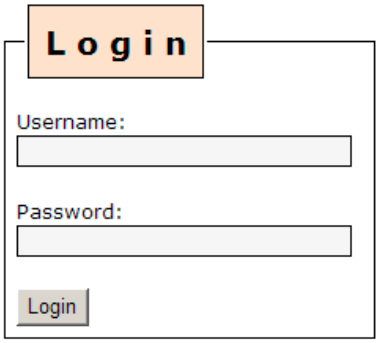
www.westermo.com Choose download / firmware

Accessing the Lynx Web Interface

The Lynx can easily be configured via the onboard Web based configuration interface or by using the Westermo IP Configuration utility.

From the IP Configuration utility a web browser can automatically be launched onto any desired switch in the same subnet, and a login box similar to figure 3 will be displayed.

Figure 3



Enter the following login details:

- User name: admin
- Password: westermo

Note! This is the default login, but once logged in the administrator password can be changed. Default login will not work if the admin password has been changed.

Note! This is the default password for all Lynx switches with Firmware 3.12 or later. For Lynx switches with older Firmware the default password is: otn

Lynx Web Interface Structure

The administrator start page will be displayed and show a brief summary of the unit. It will be similar to figure 4. The menu bar is divided into a main menu, which is the top row tab, and a sub-menu, which is directly under the main menu, figure 5. The main menu tabs are used to select a group of pages, and the sub-menu is used to select a page within that group. Directly under the menu bar the content of the page will be displayed.

Figure 4

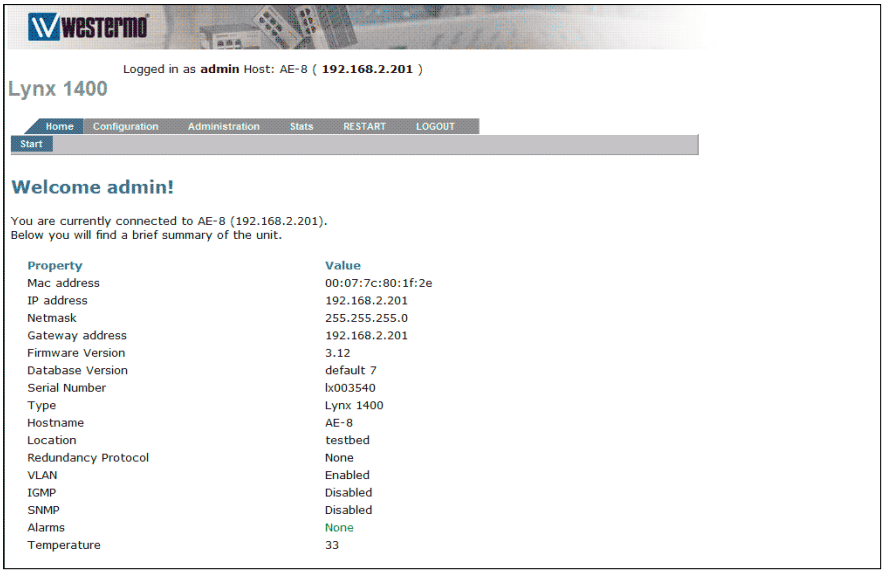
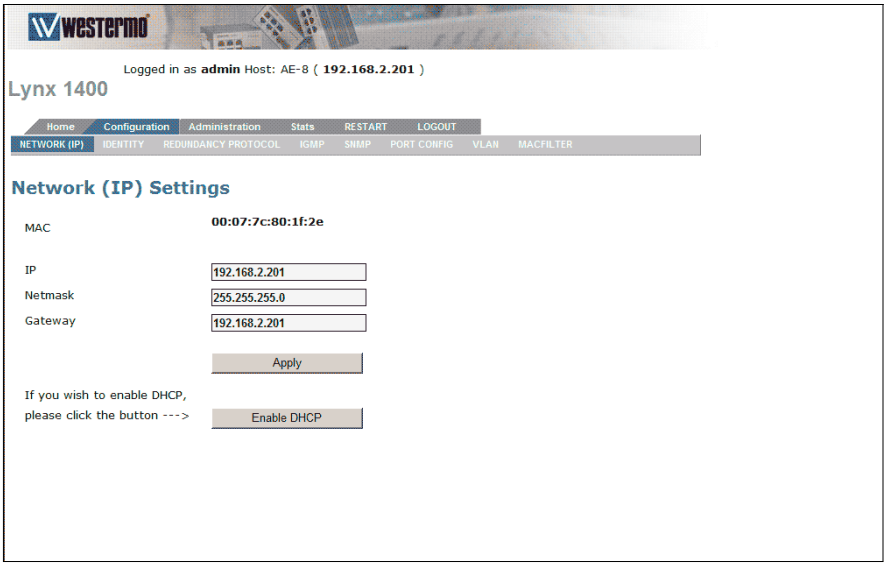


Figure 5

Configuration

Network (IP)



The Lynx switch IP-address can individually be changed via the Web Interface, another option is DHCP. These settings can be configured in the *Network (IP) Settings*.

MAC The Lynx switch MAC-address (can not be changed)

IP If it is desired to change the Lynx switch IP address, enter the new IP address and netmask. Once the changes have been applied, the IP address of the Lynx switch will change. The unit does not need to reboot after changes to the Network (IP) Settings.

Netmask The subnet netmask of the network.

Gateway The address of the gateway in the network.

Enable DHCP Enables DHCP protocol on the Lynx switch

Click the "*Apply*" button to confirm changes made to the *Network (IP) Settings*.

Note! If you are not sure about the settings – consult your network administrator.

Identity

The Lynx switch identity can be changed via the Web Interface.
These settings can be configured in the Identity Settings.

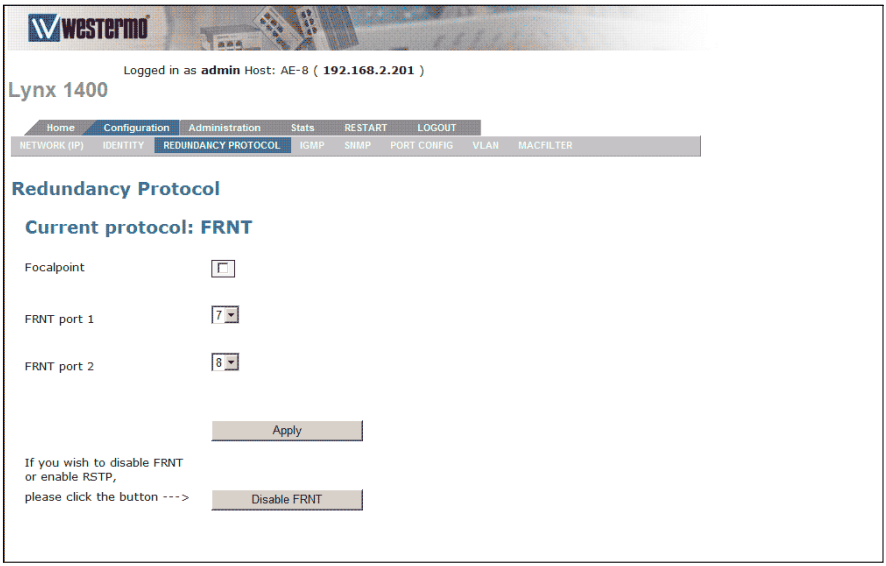
Available options are:

Hostname Set desired hostname for the Lynx switch. Accepted characters are 0-9, a-z, A-Z, _ (underscore) and - (minus).

Location Set desired location for the Lynx switch. Accepted characters are 0-9, a-z, A-Z, _ (underscore) and - (minus).

Click the "*Apply*" button to confirm changes made to the *Identity Settings*.

Redundancy protocol – FRNT



The Lynx switch supports the redundancy protocol FRNT (Fast Re-configuration of Network Topology, FRNT version 0).

For more information on FRNT, please read the Whitepaper found on the enclosed Lynx CD or at the Westermo website.

Available options are:

Focal point If this unit should be the Focal Point, tick the check box. If this unit should act as a member in the ring, leave the check box unticked.

FRNT port 1 Selection of redundant port for FRNT

FRNT port 2 Selection of redundant port for FRNT

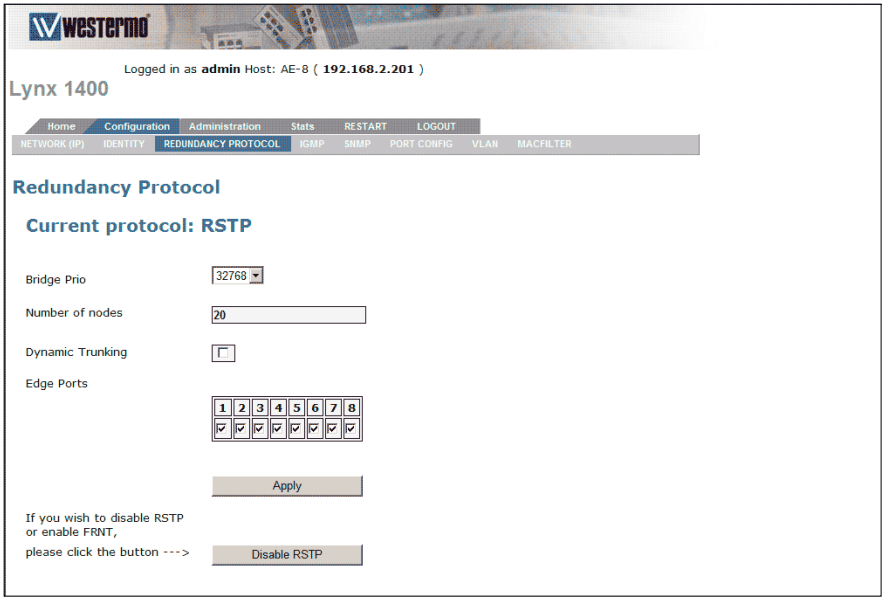
Disable FRNT This option disables FRNT.

Click the "*Apply*" button to confirm changes made to the *Redundancy Protocol settings*. The unit needs to be restarted before changes can take affect.

Note! Only one unit in a redundant ring using FRNT can be set as Focal Point.

Note! If the redundant ring is created with **copper cables**, selected FRNT ports should be 5 and 6.

Redundancy protocol – RSTP



The Lynx switch support the Rapid Spanning Tree Protocol (RSTP) according to IEEE802.1w with fallback to the Spanning Tree Protocol (STP - IEEE802.1D). The STP fallback feature means that the Lynx switches can be used together with switches that only have support for STP.

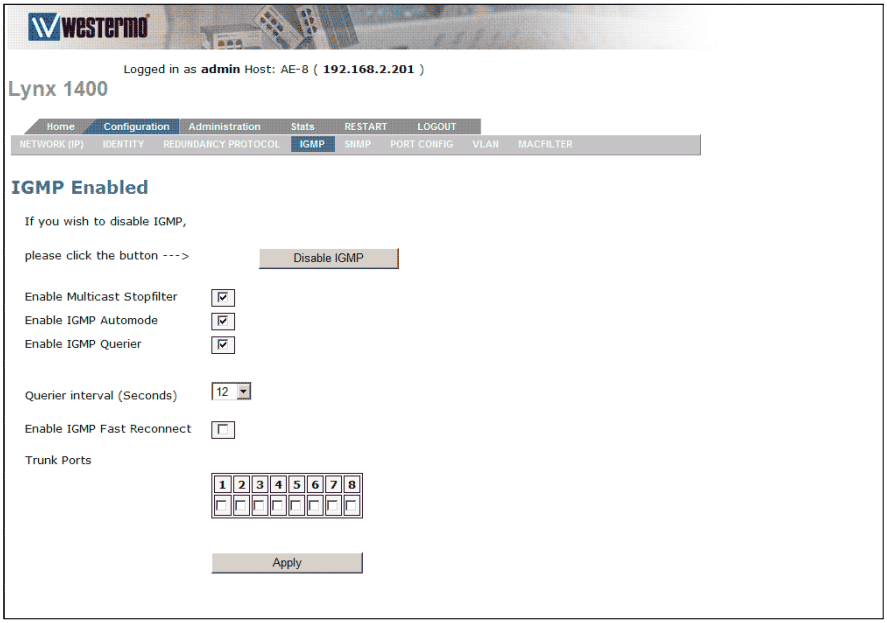
For more information on RSTP, please read the Whitepaper found on the enclosed Lynx CD or at the Westermo website.

Available options are:

Bridge Prio	The switch with the lowest priority will become the root switch.
Number of nodes	Should be equivalent to total number of units in the ring.
Dynamic Trunking	Dynamic trunking is enabled when RSTP is used in a VLAN to eliminate failure due to an incorrectly configured VLAN. If every unit in the ring has enabled Dynamic trunking, all VLANs will be granted access on the ring.
Edge Ports	Selection of edge ports for RSTP.
Disable RSTP	This option disables RSTP.

Click the "*Apply*" button to confirm changes made to the *Redundancy Protocol settings*. The unit needs to be restarted before changes can take affect.

IGMP (Internet Group Management Protocol)



The Lynx switch supports IGMP (Internet Group Management Protocol) snooping based on IGMP v1,IGMPv2 and IGMPv3. To enable IGMP snooping, click *Enable IGMP.*

For more information on IGMP, please read the Whitepaper found on the enclosed Lynx CD or at the Westermo website.

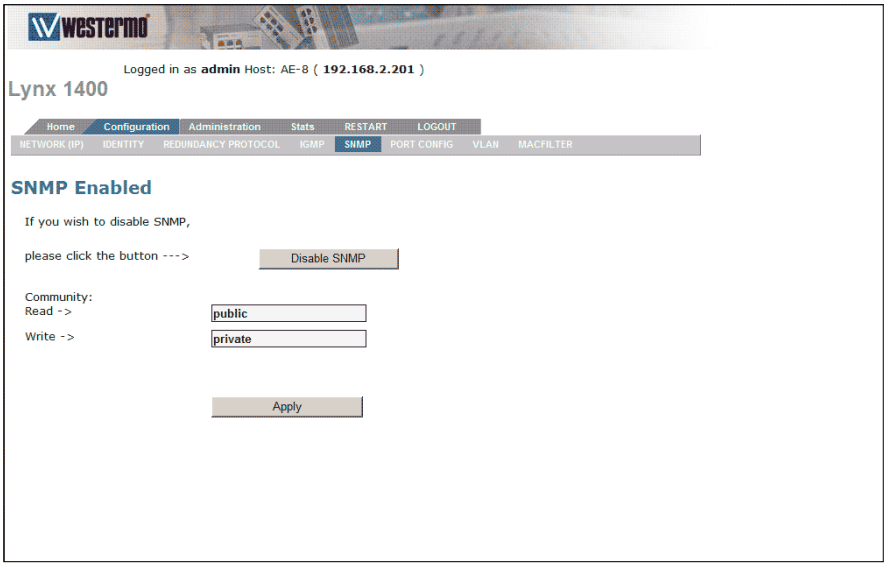
Available options are:

Disable/Enable IGMP	This option disables/enables IGMP.
Enable Multicast Stopfilter	Enable this option if the switch should deny unwanted Multicast broadcasts.
Enable IGMP Automode	Options according to possible combinations below:

Enable IGMP Querier	Auto mode enabled + Querier disabled: This unit will always act as a member in the ring. Auto mode disabled + Querier enabled: This unit will always act as Querier in the ring. (IGMP focal point) Auto mode enabled + Querier enabled: This unit can act as a Querier in the ring. If more than one unit in the ring is configured with this setting, the unit with the lowest IP-address will automatically be selected as Querier. If that unit should fail, the unit with the second lowest IP-address becomes the Querier, then the third lowest and so on.
Querier interval (seconds)	Indicates the interval between two IGMP query packets. Four intervals are possible. 12, 30, 70 or 150 seconds.
Enable IGMP Fast Reconnect	The IP multicast filter implementation is integrated with the Fast Re-configuration of Network Topology (FRNT) protocol. This means that the multicast filters will be updated as fast the FRNT implementation handles a topology change, i.e. approx. 20 ms.
Trunk Ports	The IGMP Queriers will be forwarded on selected ports.

Click the "*Apply*" button to confirm changes made to the *IGMP settings*.
The unit needs to be restarted before changes can take affect.

SNMP (Simple Network Management Protocol)



The Lynx has support for SNMP v2c with a range of MIBs, which are listed and explained in the Lynx White paper.

The Lynx MIB's are divided into groups allowing the SNMP manager to poll the SNMP agents for information.

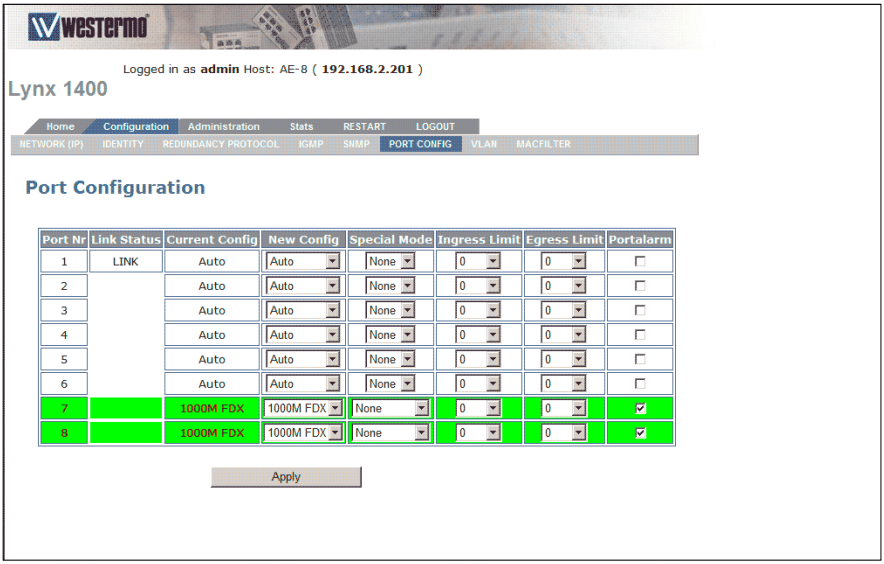
For more information on SNMP and MIB's, please read the Whitepaper found on the enclosed Lynx CD or at the Westermo web page.

Available options are:

Disable/Enable SNMP	This option disables/enables SNMP.
Read	SNMP password to be able to read SNMP values.
Write	SNMP password to be able to write SNMP values.

Click the "*Apply*" button to confirm changes made to the *SNMP* settings. The unit needs to be restarted before changes can take affect.

Port Configuration

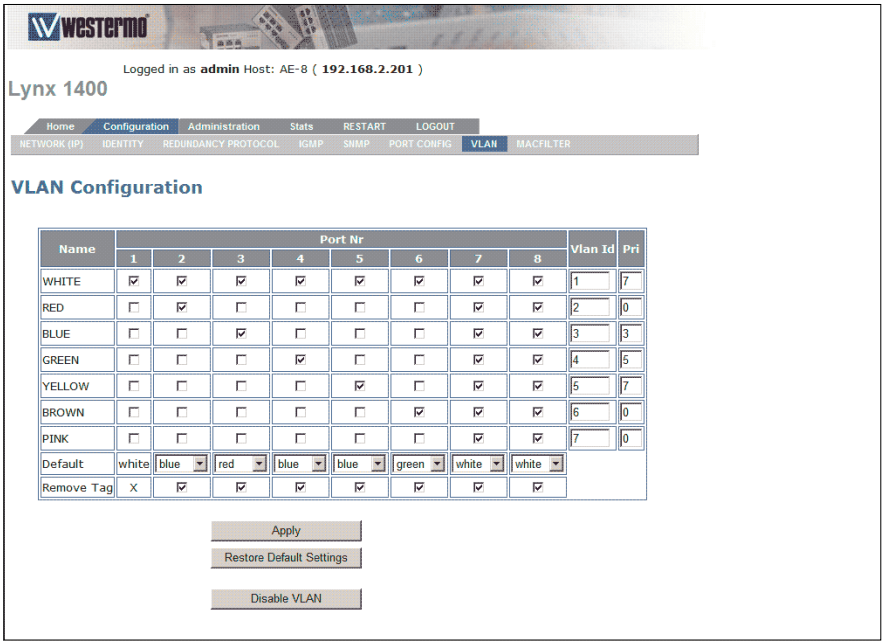


All ports can be configured individually in the *Port Configuration*. To confirm changes made to the *Port Configuration* click the *Apply* button. The unit needs to be restarted before changes can take affect.

Parameter	Options	Description
Port Number	N/A	Port number correspond to the port number on the actual switch
Link Status	LINK	Indicates Link status
Current Config	Disabled Auto 10M HDX 10M FDX 100M HDX 100M FDX 1000M FDX (Port 7-8 only)	Current port settings
New Config		Configuration of new setting
	Disabled	Port disabled
	Auto	Port automatically set to same capacity as receiver
	10M HDX	10 Mbit half duplex
	10M FDX	10 Mbit full duplex
	100M HDX	100 Mbit half duplex
	100M FDX	100 Mbit full duplex
	1000M FDX (Port 7-8 only)	1 Gbit full duplex (Port 7-8 only)
Special Mode	None	Normal mode
	Mirror	A port set to mirror mode will receive data from ports set to sniff mode.
	Sniff	Data sent on a port set to sniff mode can be received from ports set to mirror mode.
Ingress Limit 1)	0-8192	Bandwidth limit into the port
Egress Limit	0-8192	Bandwidth limit out of the port
Port Alarm	ActivatedNot Activated	Port alarm activatedPort alarm deactivated

Note 1. Works only for UDP packets, not TCP/IP

VLAN



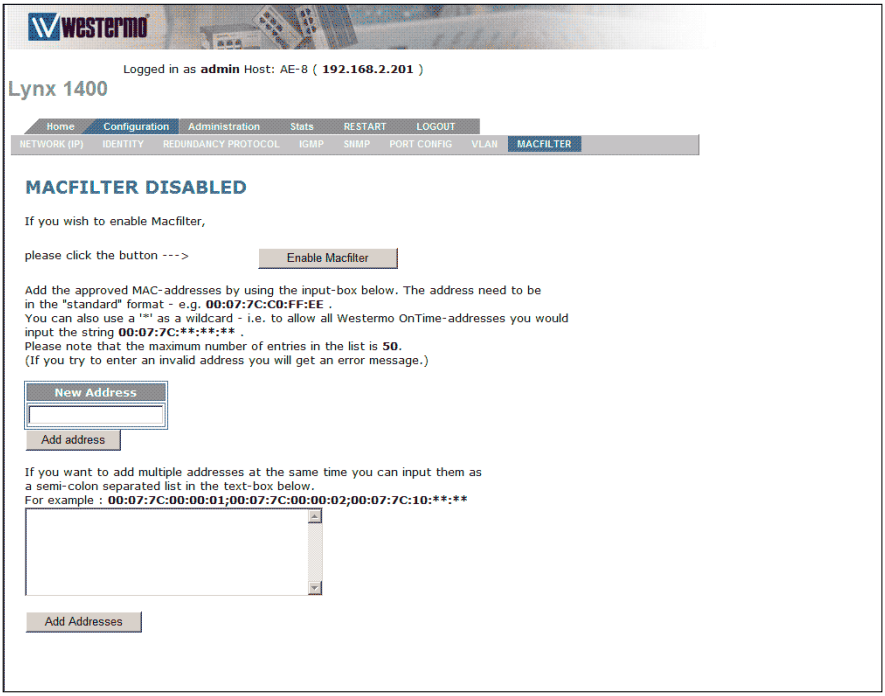
The Lynx has support for VLAN, and each trunk port can be individually granted different levels of access. In the VLAN Configuration each VLAN ID is named as a different colour. The colour White is static and set as management VLAN with VLAN ID 1, this can not be changed.

All other predefined VLANs are fully manageable, and necessary settings are made in the VLAN Configuration.

For more information on VLAN, please read the Whitepaper found on the enclosed Lynx CD or at the Westermo web page.

Parameter	Options	Description
Name	White	White is set as management VLAN. VLAN ID 1
	Red Blue Green Yellow Brown Pink	Red-Pink VLAN are 6 predefined VLAN that can be managed.
Port Nr	1-8	Configure which VLAN colour should be allowed on each port
	Drop down menu	Defines colour (VLAN ID) port Nr should have
	Check box	VLAN allowed on this port
Vlan Id	1-4094	VLAN id for each VLAN
Pri	0-7	Priority for traffic on each VLAN. 0 equals lowest priority. 7 equals highest priority.

MAC Filter



If the MAC filter is enabled, only approved MAC addresses will be granted access through the switch. To approve MAC addresses, add them according to the methods below.

Note that this function should be used with care. An incorrect configuration could result in total denied access, and a factory reset of the unit would then be needed.

MAC addresses can be added to the MAC filter by different methods:

1) One by one by adding a single MAC address in the small input-box.
The MAC address should be typed in the standard format - e.g. 00:07:7c:12:34:56

2) As a range of addresses using an asterisk, *, as a wild card. E.g. 00:07:7c:12:34:**
This will allow addresses between 00:07:7c:12:34:00 to 00:07:7c:12:34:ff.

3) As a sequence of single MAC addresses divided by a semi colon.
Example: 00:07:7c:00:00:00;00:07:7c:00:01:00;00:07:7c:00:0*:**;00:07:7c:00:00:02;

MAC addresses can be added according to method 1 and method 2 in the sequence.

Available options are:

Input-box small Input-box if a MAC address is added according to method 1) or 2)

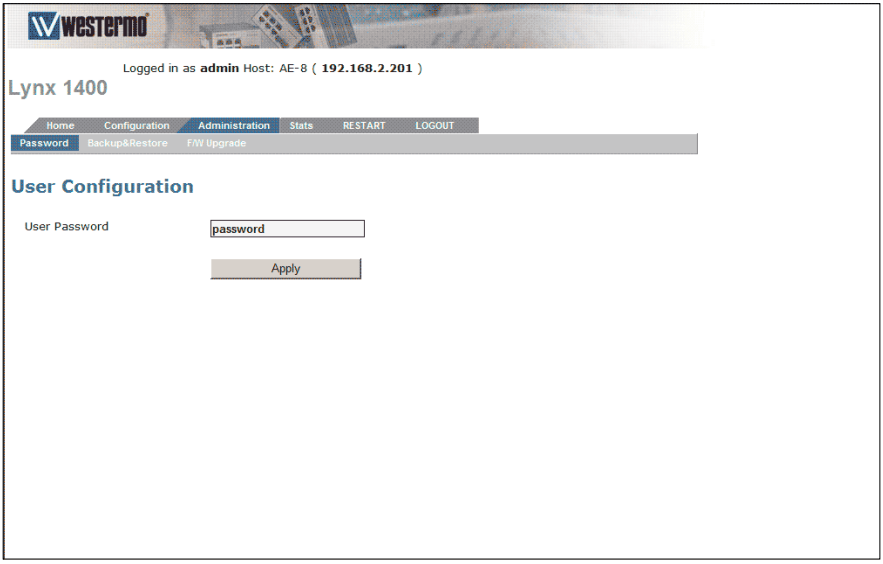
Input-box large Input-box if a MAC address is added according to method 3)

Click the "*Apply*" button to confirm changes made to the *MAC filter* settings. The unit needs to be restarted before changes can take affect.

Note! Once the MAC filter has been enabled on a unit, the units own MAC address must be added to the MAC filter.

Administration

Password



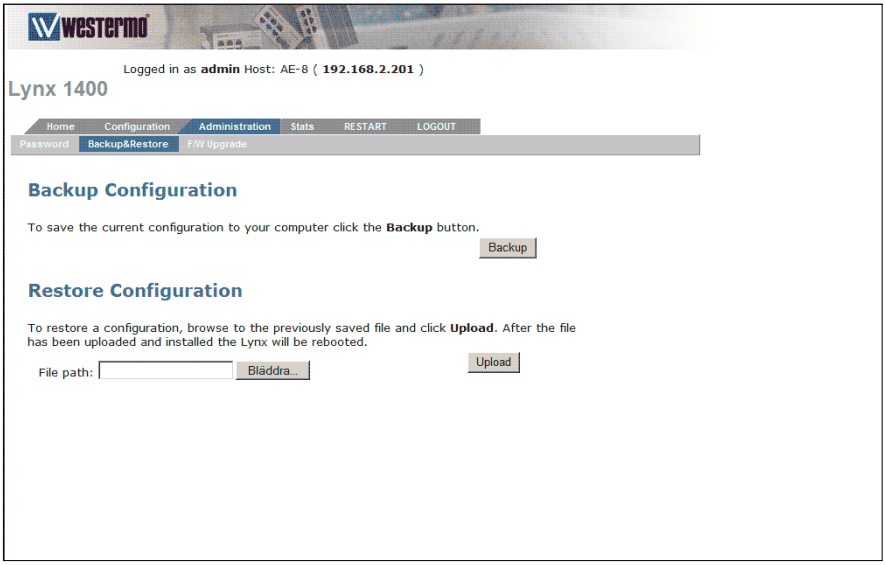
The Lynx switch administrator password can be changed via the Web Interface. These settings can be made in the *User Configuration*.

Available options are:

User Password Insert new password. Once the changes have been applied, the administrator password of the Lynx switch will change.

Click the "*Apply*" button to confirm changes made to the *User Configuration*.

Backup & Restore



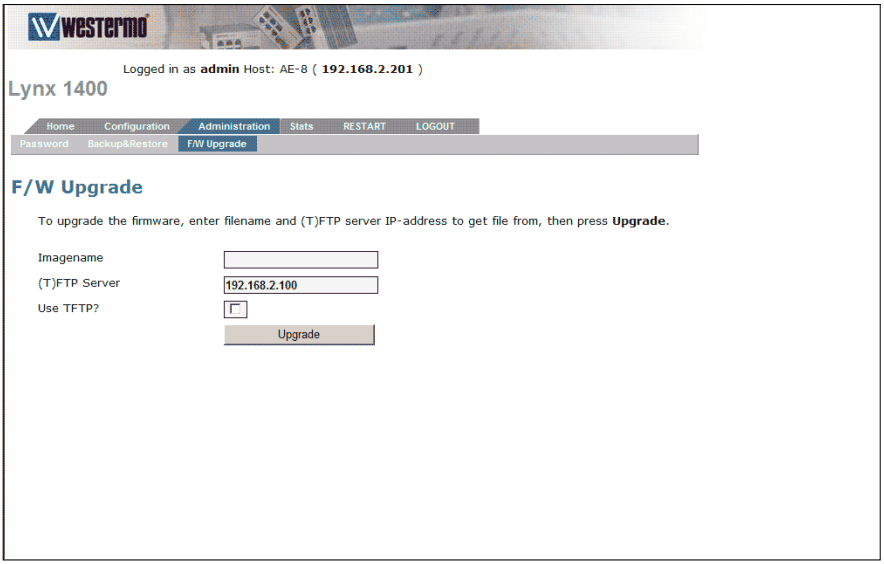
The configuration of the Lynx switch can be saved as a file to a PC. The file can then be used to restore the configuration later on, or used to configure another switch with identical configuration.

Available options are:

Backup	To save current configuration, click Backup and save file to a suitable location.
Upload	To load a saved configuration, insert path and filename into *File path* table or click Browse to browse the location of the saved file. When file path is valid, click *Upload*.

The unit needs to be restarted before loaded settings can take affect.

Firmware Upgrade



Lynx switches with firmware 3.12 and latter can be updated via the Web Interface. To accomplish a firmware update a TFTP or FTP server must be available on the network.

For more information on updating the Lynx switch, please read the release note on upgrading Lynx before proceeding,

Firmware release note on upgrading the lynx is found at: www.westermo.com Choose download / firmware

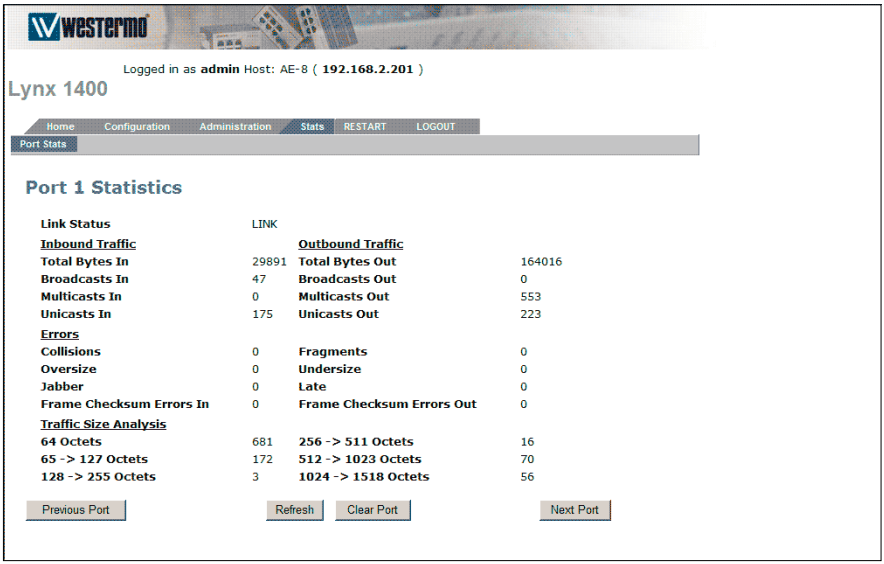
Available options are:

Imagename	Insert file name to the new Firmware
(T)FTP Server	Insert IP address to the TFTP/FTP
Use TFTP	Tick check box if a TFTP server should be used, otherwise leave the check box unmarked.

Click the "*Upgrade*" button to confirm changes made to the *FW Upgrade*. The unit needs to be restarted before a firmware update can take affect.

Statistic

Port statistics



A overview of the Lynx port statistics

Available options are:

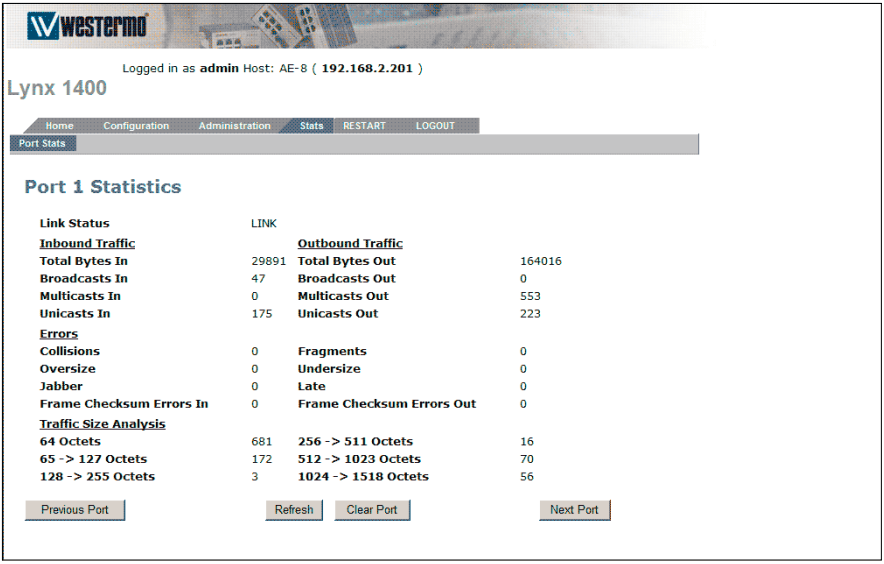
Details Get a more detailed specification on a specific port

Refresh Refresh statistics

Clear all Clear all statistics

Parameter	Options	Description
Port Number	N/A	Port number correspond to the port number on the actual switch
Link Status	LINK (White)LINK (Green)LINK (Red)	Indicates established linkIndicates established redundant linkIndicates failed redundant link
Speed / Duplex	N/A	Current port settings
Total Bytes in	N/A	Total Bytes received on port
Total Bytes out	N/A	Total Bytes sent from port
In Bytes/ s	N/A	Bytes received each second on port
Out Bytes/ s	N/A	Bytes transmitted each second on port
FCS Errors	N/A	Total frames received with a CRC error not counted in InFragments, InJabber or InRxErr.

Port Statistics – Details



A detailed overview of a specific port.

Available options are:

Previous port	Display detailed specifics of previous port
Refresh	Refresh statistics
Clear all	Clear all statistics
Next port	Display detailed specifics of next port

Parameter	Description		
Link Status	Indicates link status		
Inbound traffic	**Description**	**Outbound traffic**	**Description**
Total bytes In	Total Bytes received on port	Total bytes Out	Total Bytes transmitted on port
Broadcasts In	The number of good framed received that have a Broadcast destination MAC address.	Broadcasts Out	Total Broadcasts received on port
Multicasts In	The number of good framed received that have a Multicast destination MAC address.	Multicasts Out	Total Multicasts received on port
Unicasts In	The number of good framed received that have a Unicast destination MAC address.	Unicasts Out	Total Unicasts received on port

Errors	Description	Errors	Description
Collisions	The number of collision events seen by the MAC not including those counted in Single, Multiple, Excessive or Late. This counter is applicable in half-duplex.	Fragments	Total frames received with a length of less than 64 octets and an invalid FCS
Oversize	Total frames received with a length of more than MaxSize octets but with an invalid FCS.	Undersize	Total frames received with a length of less than 64 octets but with a valid FCS.
Jabber	Total frames received with a length of more than MaxSize octets but with an invalid FCS.	Late	The number of times a collision is detected later than 512 bits-times into the transmission of a frame. This counter is applicable in half-duplex only.
Frame checksum errors	Total frames received with a CRC error not counted in InFragments, InJabber or InRxErr.	Frame checksum errors Out	The number of frames transmitted with an invalid FCS. Whenever a frame is modified during transmission (e.g., to add or remove a tag) the frame's original FCS is inspected before a new FCS is added to a modified frame. If the original FCS is invalid, the new FCS is made invalid too and this counter is incremented.

Traffic Size Analysis	Description	Traffic Size Analysis	Description
64 Octets	Total frames received (and/or transmitted) with a length of exactly 64 octets, including those with errors.	256 -> 511 Octets	Total frames received (and/or transmitted) with a length of between 256 and 511 octets, including those with errors.
65 -> 127 Octets	Total frames received (and/or transmitted) with a length of between 65 and 127 octets, including those with errors.	512 -> 1023 Octets	Total frames received (and/or transmitted) with a length of between 512 and 1023 octets, including those with errors.
128 -> 255 Octets	Total frames received (and/or transmitted) with a length of between 128 and 255 octets, including those with errors.	1024 -> 1518 Octets	Total frames received (and/or transmitted) with a length of between 1024 and 1518 octets, including those with errors.

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