Manual

MEG801AE-R2
Quadband VDSL Switch
Part of VDSL Point to Multipoint Solution

1 GENERAL

MEG801AE-R2 is an Ethernet switch with 2 10/100/1000Mbps standard RJ45 network ports and 8 VDSL Quadband ports. These 8 ports allow you to connect VDSL receivers MEG101RAE-R2 from the Black Box Quadband series only.

The following distances supported are :

1.9Km(6333ft) at 5Mbps up- and downstream
1.3Km(4333ft) at 15Mbps up- and downstream
800m(2666ft) at 25Mbps up- and downstream

These values are valid for standard wires. You can also use other copper medias, but with shorter distances and lower bitrates.

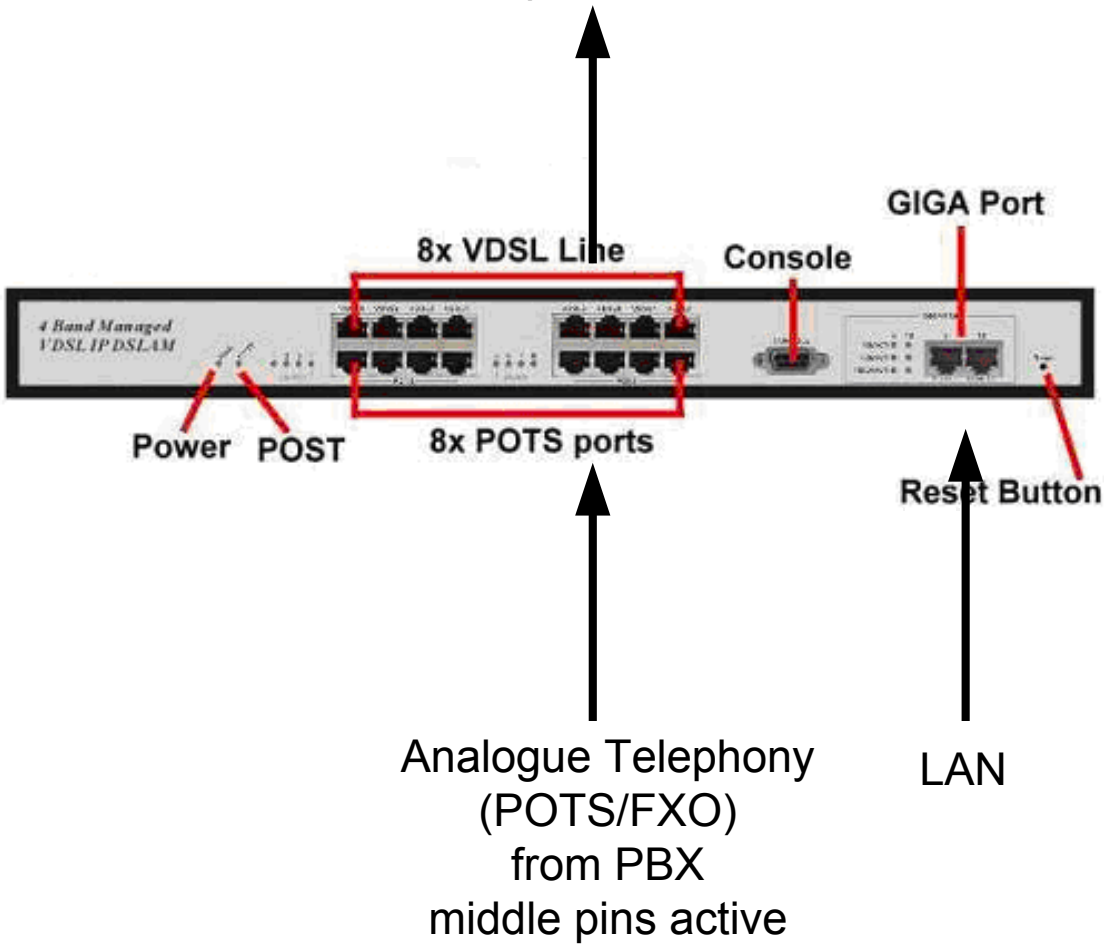
These distances may and will vary depending on your wires. Keep in mind that every interconnect of your wire will result in less reach. Also watch out for cables not being truly isolated, running high power current nearby, getting wet or being very old.

Avoid using telephony RJ11 ribbon cables. These cables are built using very low diameter stranded cables. Using them will mean that bandwidth is lower and reach is shorter!

While there is nothing to configure with the single VDSL receivers MEG101RAE-R2 there are various configuration options for the switch MEG801AE-R2.

Serial: Straight Through RS232 Cable
9600bps 8N1
User: admin
Password: 123

IP: Default IP Address: 192.168.16.250
User: admin
Password: 123


2 Wire Line
middle pins active
GIGA Port
8x VDSL Line
Console
4 Band Managed
VDSL IP DSLAM
Power
POST
8x POTS ports
Reset Button
Analogue Telephony
(POTS/FXO)
from PBX
middle pins active
LAN

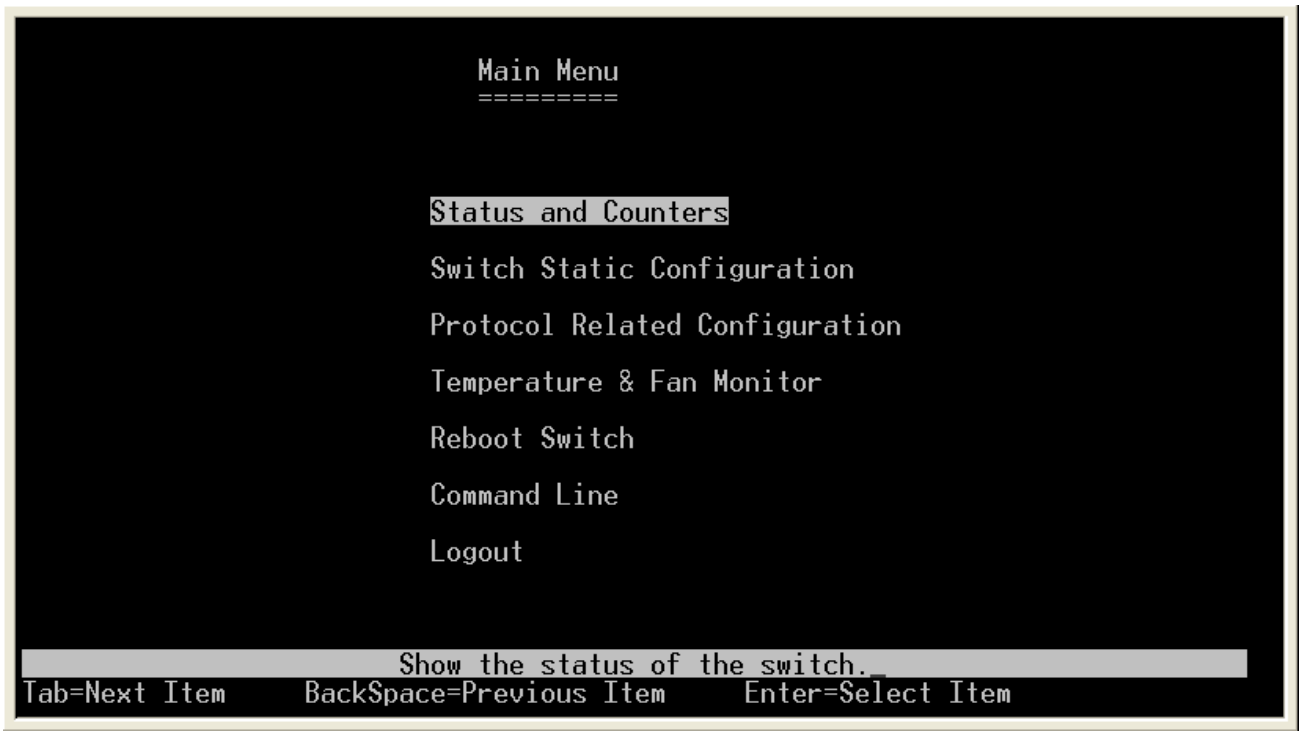
2 SERIAL / CONSOLE PORT

Use a straight through serial cable with any terminal software like HyperTerminal with setting 9600bps 8N1.

Login: **Username: admin**
Password: 123

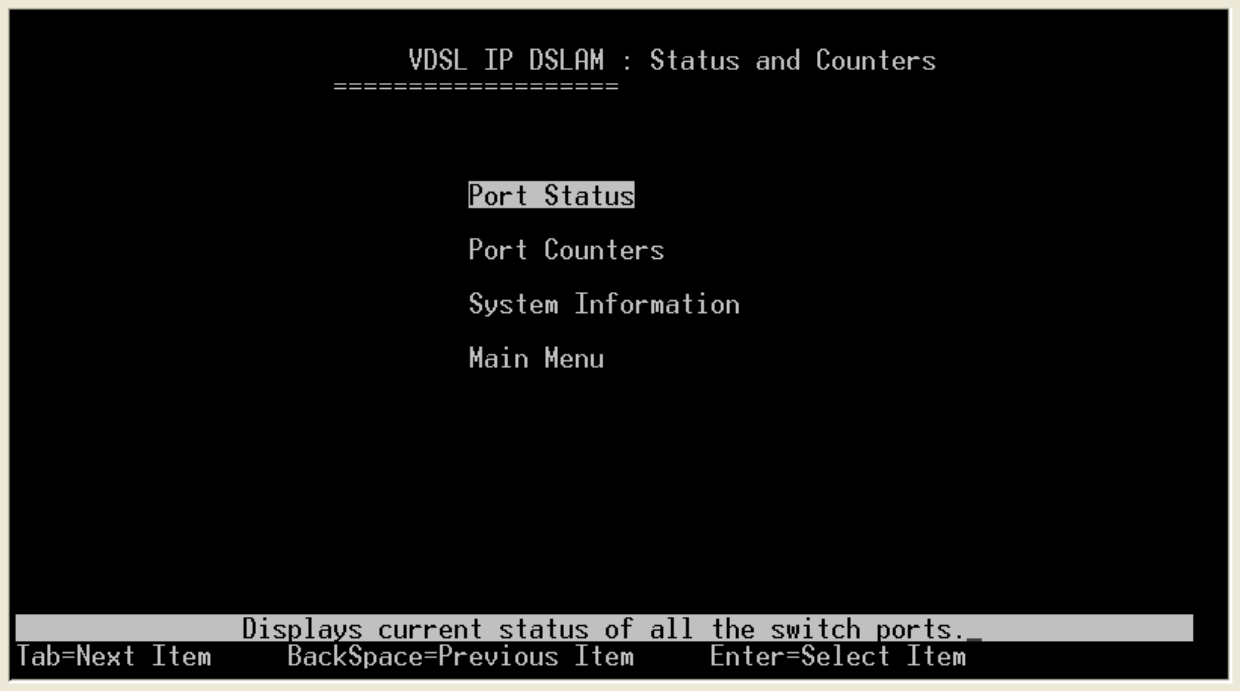
2.1. MAIN MENU

After logging in you will see the following menu:



Navigation:	TAB Button	Next Item
	Backspace	Previous Item
	Enter	Select Item
	CTRL + A	Return to Action Menu

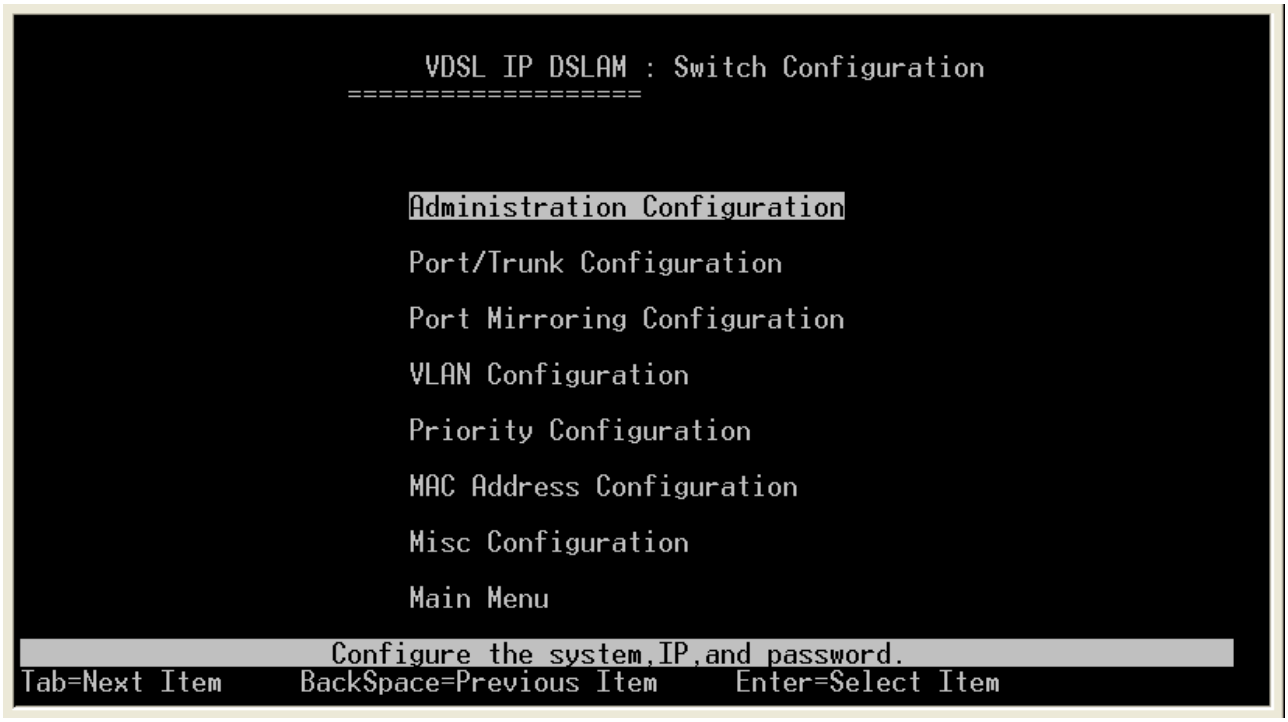
2.2. STATUS AND COUNTERS



Port Status	Displays the current status of all ports
Port Counters	Displays a summary of network activity
System Information	Displays information about the system including Firmware
Main Menu	Return to Main Menu

2.3. SWITCH STATIC CONFIGURATION

This menu is the most powerful, enabling you to configure nearly all the options.



Administration Configuration
: Enables you to configure the IP Address, Username and Password for access to the MEG801AE-R2

Port/Trunk Configuration
: Enables you to set ports to certain speeds and lets you configure trunks

Port Mirroring Configuration
: Mirroring is a feature to copy all Ethernet traffic to a certain port for sniffing

VLAN Configuration
: MEG801AE-R2 can do Port and Tagged VLANs Configure them here

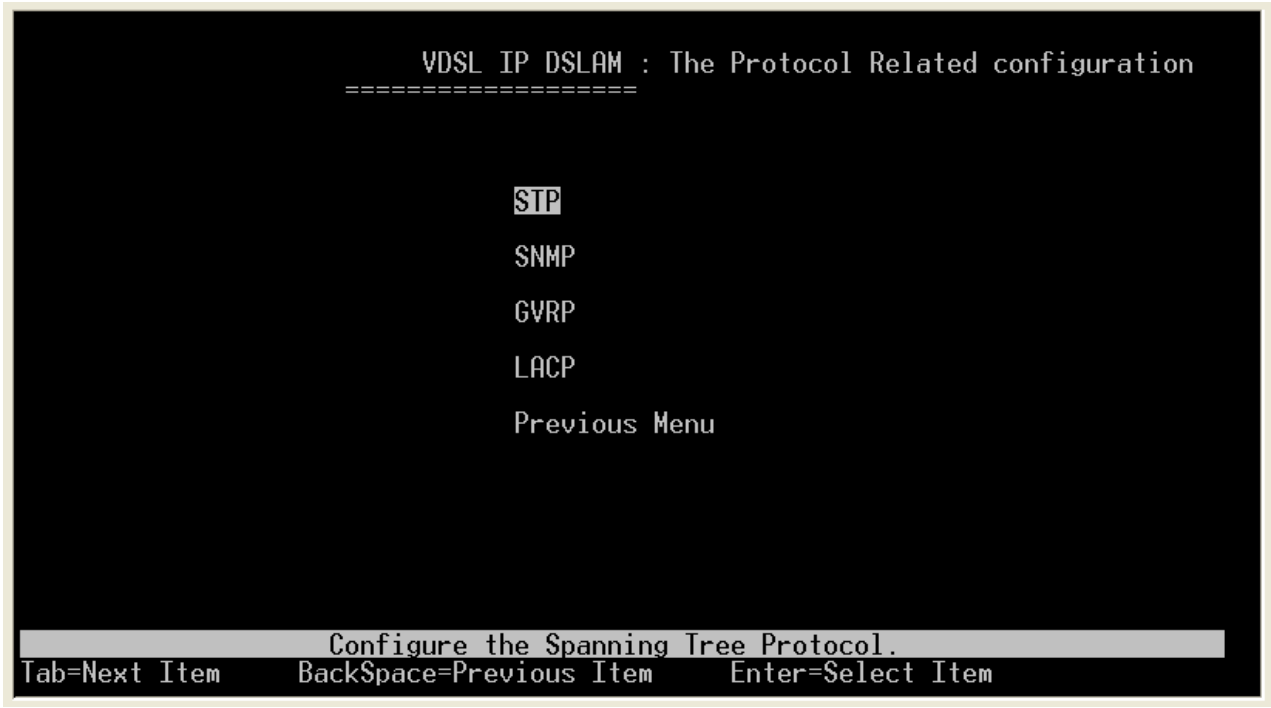
Priority Configuration
: 802.1q Quality of Service configuration options

MAC Address Configuration
: Enables you to only allow certain MAC Addresses on specific ports and/or filter allowed/disallowed MAC Addresses

Misc Configuration
: Security options, Broadcast Protection and Ageing Interval configuration options

2.4. PROTOCOL RELATED CONFIGURATION

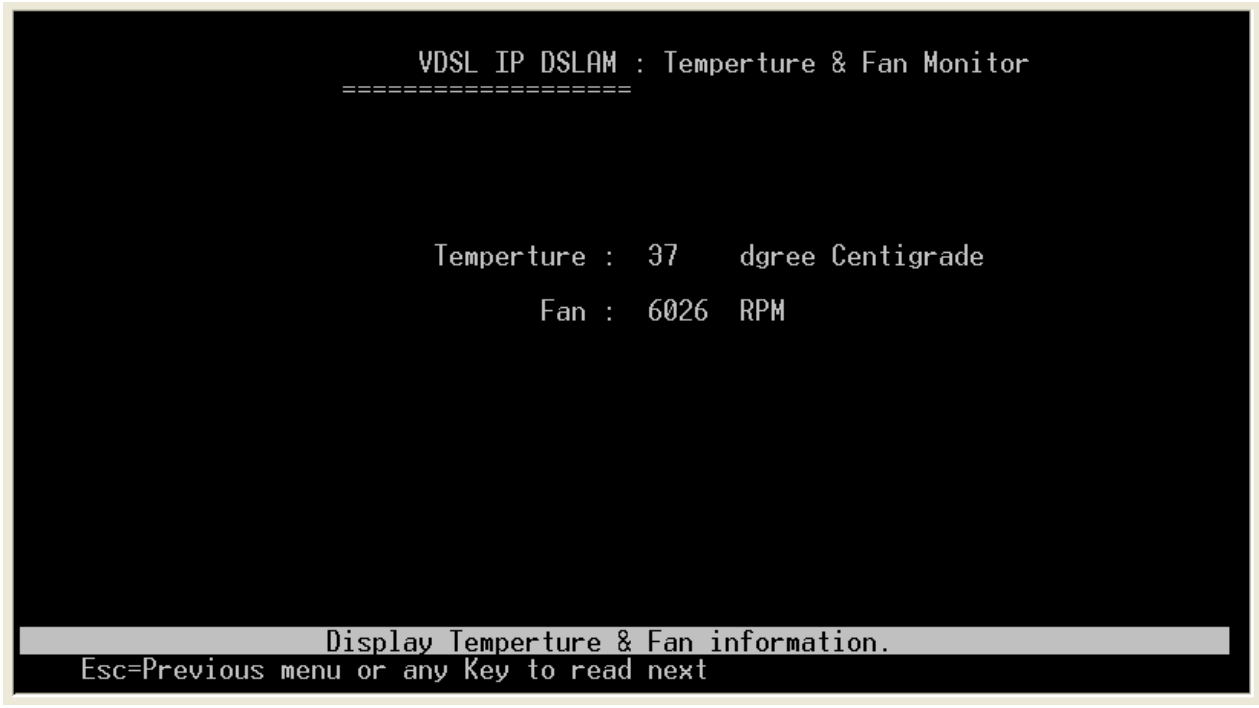
Allows the configuration of some of the protocols the switch is able to handle.



STP	Spanning Tree Protocol. Allows you to configure Redundant links and Ethernet Rings
SNMP	Simple Network Management Protocol. Allows you to configure the switch to send traps and events to an SNMP workstation
GVRP	Dynamic/automatic VLAN Configuration Protocol
LACP	Trunking / link aggregation protocol

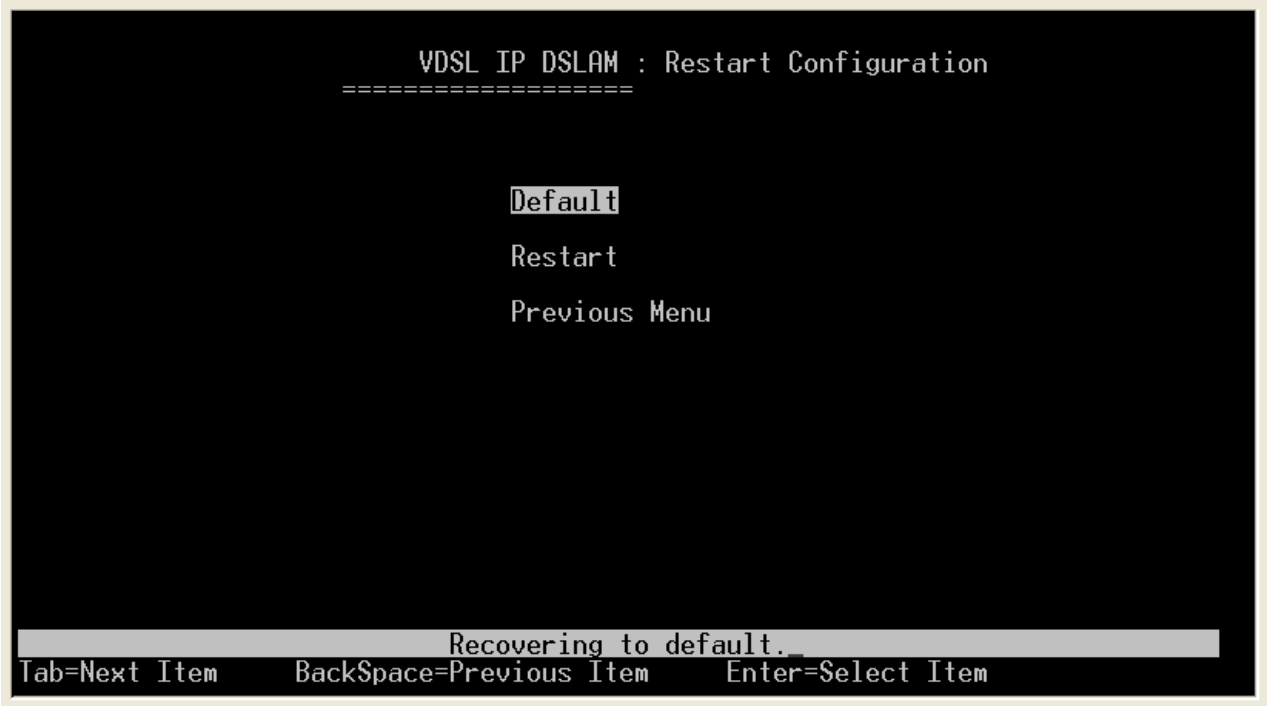
For all options in these menus, do not change anything unless you know what you are doing and what you are changing. For normal operation none of these settings need to be changed. Black Box Free Tech Support is always available for you if required.

2.5. TEMPERATURE AND FAN MONITOR



Temperatures up to 70 degrees Celsius are within normal operation.

2.6. REBOOT SWITCH



Here you have the chance to reboot and/or reset the switch.

Default	Reset to Factory Default
Restart	Simple and normal restart

If your system is not operating as expected or if you know that someone else changed and tried some of the "special" settings, it is always a good idea to set the system back to factory default!

2.7. COMMAND LINE

The Command Line Interface allows several special and some hidden commands. This level of the device is not intended for the user.

2.8. LOGOUT

Logs you out of the system and the login screen will appear again.

3 TELNET

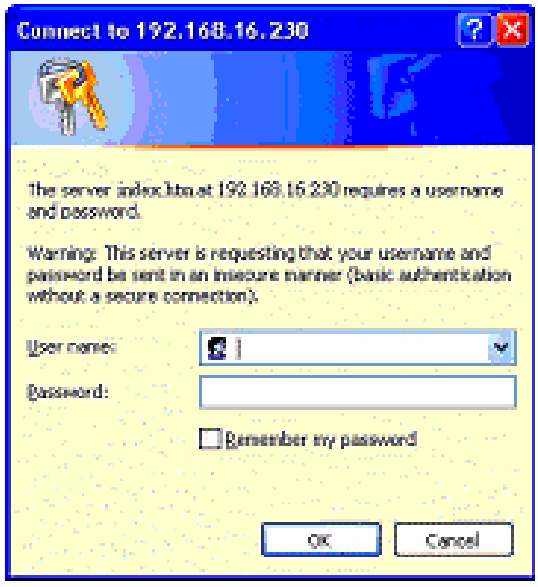
Using Telnet and the IP Address of the MEG801AE-R2 gives you all the options as if you were using the serial interface. Note that while the Console port is in use, the Telnet port is blocked.

Depending on your firmware (newer firmware from 2008 and later) you can only use TELNET from the RJ45 LAN Ports of the MEG801AE-R2.

4 WEB INTERFACE

Users will mostly use the Web interface. Any modern Web browser will do. If you can not access the switch with your Web browser check your Proxy and Firewall settings. You may need to check or alter some Security settings.

Simply start your Web browser and enter **http://<ip-adress>** as the URL. E.g. Using the Default IP Address you would enter **http://192.168.16.250**



Note that beforehand you need to check if you can access that IP Address. Use Ping to check that you are in the same subnet!

Depending on your firmware (newer firmware from 2008 and later) you can only use the Web interface from the RJ45 LAN Ports of the MEG801AE-R2.

Default settings for Login:
Username: admin
Password: 123

4.1 WEB - HOME

You will reach the home page of the switch.

On the left side you can see all your configuration and maintenance options. On the top you will see the switch itself showing links as up or down.

4.2 WEB – PORT STATUS

Port Status

The following information provides a view of the current status of the unit.

Port Num	State		Link Status	Auto Negotiation		Speed Status		Duplex Status		Flow Control	
	Config	Atual		Config	Atual	Config	Atual	Config	Atual	Config	Atual
1	On	Off	Down	Auto	Auto	Auto	5M	Full	Full	On	On
2	On	Off	Down	Auto	Auto	Auto	5M	Full	Full	On	On
3	On	Off	Down	Auto	Auto	Auto	5M	Full	Full	On	On
4	On	Off	Down	Auto	Auto	Auto	5M	Full	Full	On	On
5	On	Off	Down	Auto	Auto	Auto	5M	Full	Full	On	On
6	On	Off	Down	Auto	Auto	Auto	5M	Full	Full	On	On
7	On	Off	Down	Auto	Auto	Auto	5M	Full	Full	On	On
8	On	Off	Down	Auto	Auto	Auto	5M	Full	Full	On	On
9	On	On	Up	Auto	Auto	1000	100	Full	Full	On	On
10	On	On	Up	Auto	Auto	1000	100	Full	Full	On	On

State: Display port status enable or disable state, where enable is link port and disable is no link port.
Config: Display the user setup setting On when enable and Off when disable.
Actual: Display the negotiation result.

Link Status: Down is “No Link”, Up is “Link”
Auto Negotiation: MEG801AE-R2 auto negotiation mode
Configure: Display the user setup of auto negotiation mode.
Actual: Display the negotiation result.

Speed status: Port 9 and 10 are 10/100/1000Mbps and Port 1- 8 are 5/15/25Mbps,
Configure: Display the state of user setup.
Actual: Display the negotiation result.

Duplex status: Display full-duplex or half-duplex mode.
Configure: Display the user setup.
Actual: Display the negotiation result.

Flow control: Display flow control status enable or disable mode.
Configure: Display the user setup.
Actual: Display the negotiation result.

4.3 WEB – PORT STATISTICS

Port Statistics

The following information provides a view of the current status of the unit.

Port	State	Link	TxGoodPkt	TxBadPkt	RxGoodPkt	RxBadPkt	TxAbort	Collision	DropPkt
1	Off	Down	0	0	0	0	0	0	0
2	Off	Down	0	0	0	0	0	0	0
3	Off	Down	0	0	0	0	0	0	0
4	Off	Down	0	0	0	0	0	0	0
5	Off	Down	0	0	0	0	0	0	0
6	Off	Down	0	0	0	0	0	0	0
7	Off	Down	0	0	0	0	0	0	0
8	Off	Down	0	0	0	0	0	0	0
9	On	Up	3168	0	2830	0	0	0	26
10	On	Up	0	0	764	0	0	0	103

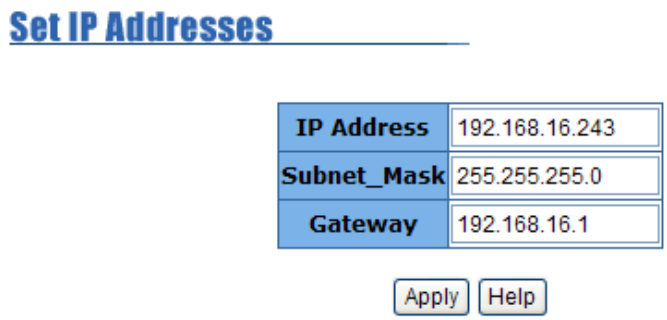
Note:

BadPkt means that some transmission error has come up. It is quite OK to have “some” Bad Packets on VDSL links. When there is a bad packet, it is simple resent to ensure IP transmission, but with more Bad Packets you get less bandwidth and higher latency.

DropPkt means that some Packets have been dropped. This mainly is because of VLAN settings. If you expect to have IP traffic while using 802.1q, but you do not have any traffic, then check this value.

4.4 WEB - IP ADDRESS

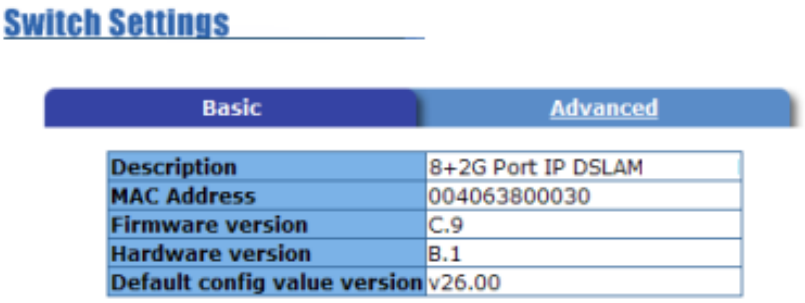
User can configure the IP Settings and fill in the new value, then click the apply button. User must reset MEG801AE-R2 and use new IP address to browse this web management.

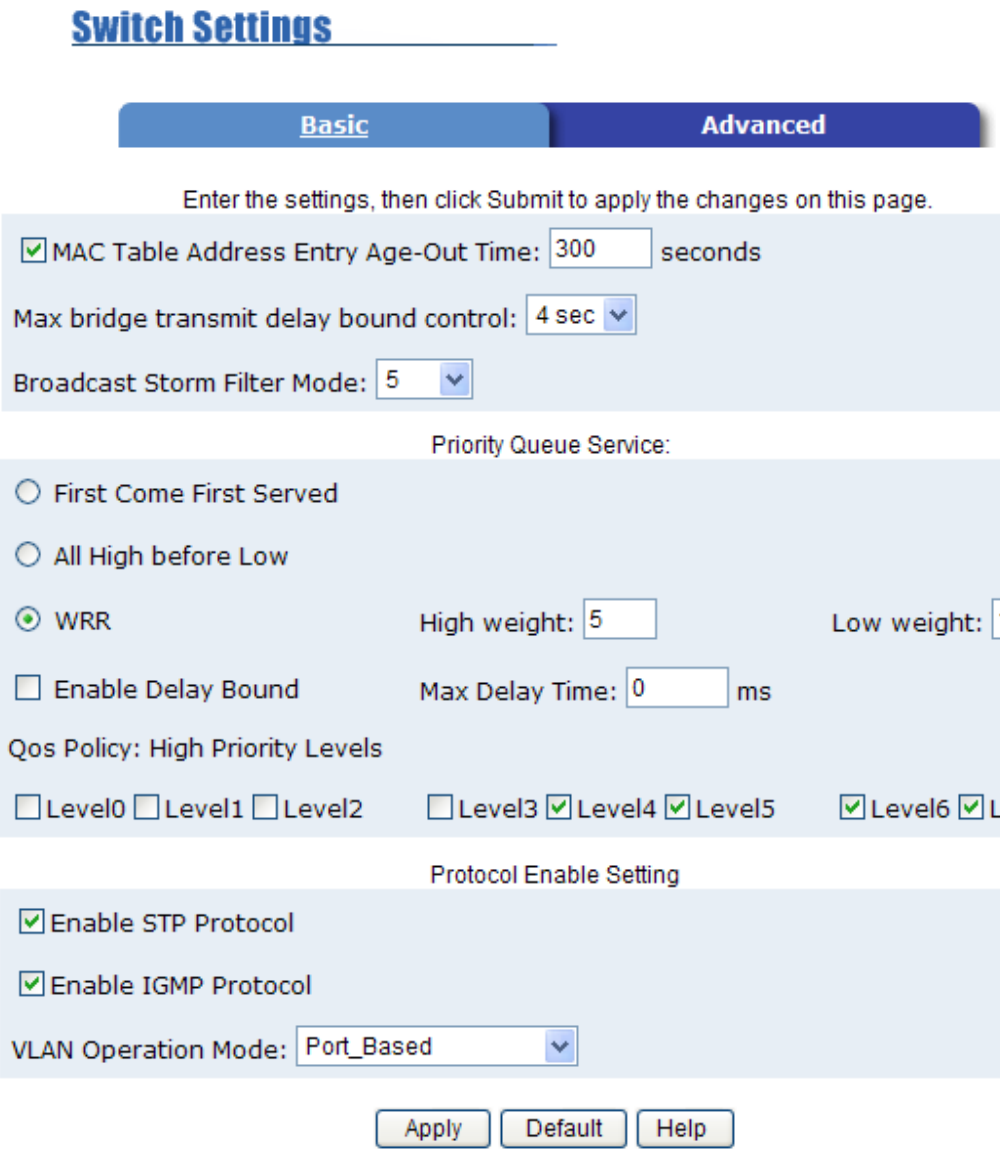


4.5 WEB – SWITCH SETTINGS

BASIC

Description: Display the device type.
MAC Address: The unique hardware address assigned by manufacturer.
Firmware Version: Display the firmware version.
Hardware Version: Display the hardware version.
Def.config value vers.: Display default value table version.





ADVANCED:

MAC Address Age-out Time:
Type the number of seconds that an inactive MAC address will remain in the address table. The valid range is 300~765 seconds. Default is 300 seconds.

Max bridge transit delay bound control:
Limit the packets queuing time in MEG801AE-R2. If enable, the packets will be drop if exceed the queued time. The valid values are 1sec, 2 sec, 4 sec and off. Default is 4 seconds.

Broadcast Storm Filter:
To configure broadcast storm filter, set the upper threshold for individual ports. The threshold is the percentage of the port's total bandwidth used by broadcast traffic. When broadcast traffic for a port rises above the threshold being set, broadcast storm filter becomes active. The valid threshold values are 5%, 10%, 15%, 20%, 25% and off. The default value is 5%.

First Come First Served:
The sequence of packets sent depends on arrived order.
All High before Low:
The high priority packets are sent before low priority packets.
Weighted Round Robin:
Select the preference given to packets in the switch high-priority queue.
These options represent the number of high priority packets sent before one low priority packet is sent. For example 5 High : 2 Low means that the switch sends 5 high priority packets before sending 2 low priority packet.
Enable Delay Bound:
Limit the low priority packets queuing time in MEG801AE-R2. Default Max Delay Time is 255ms. If the low priority packet stays in VDSL switch exceed Max Delay Time, it will be sent. The valid range is 1~255 ms.
QoS Policy: High Priority Levels:
0~7 priority level can map to high or low queue.

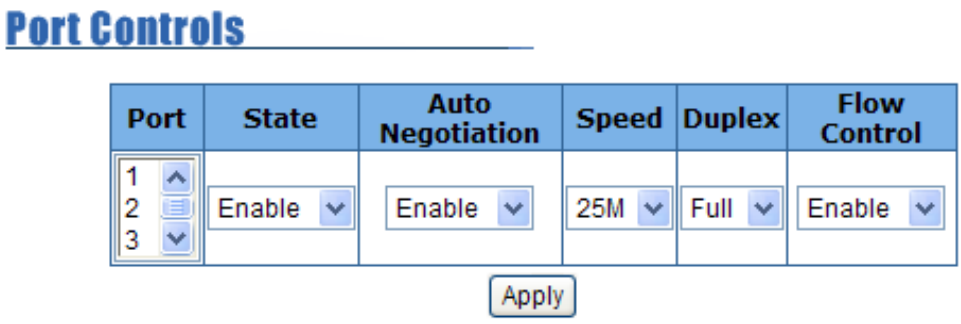
Enable Spanning Tree Protocol:
Default recommends enable STP
Enable Internet Group Multicast Protocol:
Default recommends enable IGMP protocol
VLAN Operation Mode:
No VLAN
802.1Q(Tagging Based) without GVRP
802.1Q(Tagging Based) with GVRP
Port Based VLAN

GVRP (GARP VLAN Registration Protocol)
GVRP allows automatic VLAN configuration between the MEG801AE-R2 and nodes. If the VDSL switch is connected to a device with GVRP enabled, you can send a GVRP request using the VID of a VLAN defined on the switch, the MEG801AE-R2 will automatically add that device to the existing VLAN.

4.6 WEB – PORT CONTROLS

This section shows you how to change every port status and speed mode
State: You can disable or enable VDSL port control
Auto Negotiation: You can set enable or disable VDSL port
Speed: You can change VDSL Speed mode by 5Mbps, 15Mbps or 25Mbps
Speed Default Value: Auto-speed
Duplex: User can set full-duplex or half-duplex mode for Ethernet port. VDSL port fixed on Full Duplex.
Flow Control:
Full: User can set flow control function enable or disable in full mode.
Half: User can set backpressure enable or disable in half mode.

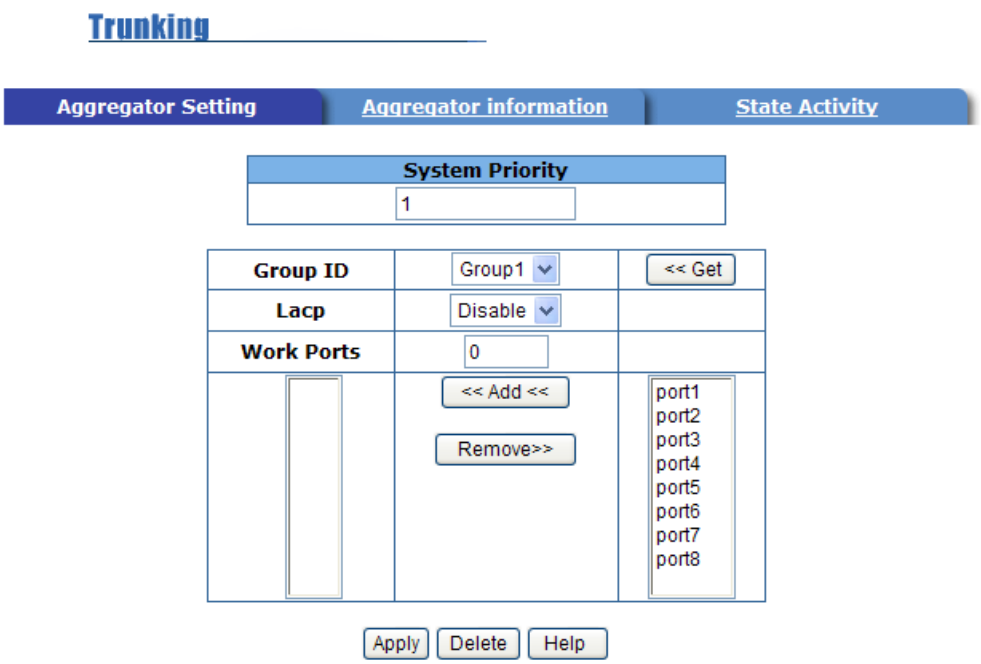
Note:
Every change of the port setup makes a repower of the VDSL receiver MEG101RAE-R2 necessary. The Auto Speed mode always goes down from 25 to 15 and 5 Mbps. Please allow some seconds for the switch and the receiver to link. In some scenarios it is OK and normal that the link comes and goes until it is up and stable up.



4.7 WEB – LINK AGGREGATION

The Link Aggregation Control Protocol (LACP) provides a standardized means for exchanging information between Partner Systems on a link to allow their Link Aggregation Control instances to reach agreement on the identity of the Link Aggregation Group to which the link belongs, to move the link to that Link Aggregation Group and to enable its transmission and reception functions in an orderly manner. Therefore, Link aggregation lets you group up to eight consecutive ports into a single dedicated connection. This feature can expand bandwidth to a device on the network. **LACP operation requires full-duplex mode,** for more detail information, please refer to IEEE 802.3ad.

AGGREGATOR SETTING



System Priority:
A value used to identify the active LACP. The MEG801AE-R2 Group with the lowest Priority value has the highest priority and is selected as the active LACP.
Group ID:
It can create a link aggregation across two or more ports, choose the "Group ID" and click "Get".
LACP:
If enabled, the group is LACP static trunking group. If disabled, it is local static trunking group. All ports support LACP dynamic trunking group. If connecting to a device which also supports LACP, the LACP dynamic trunking group will be created automatically.

Work ports:
The maximum number of ports that can be aggregated at the same time. If LACP static trunking group, the exceed ports is standby and able to aggregate if work ports fail. If using local static trunking group, the value must be the same as group ports.
To create, Select the ports to join the trunking group
If LACP is enabled, you can configure LACP Active/Passive status for each port.

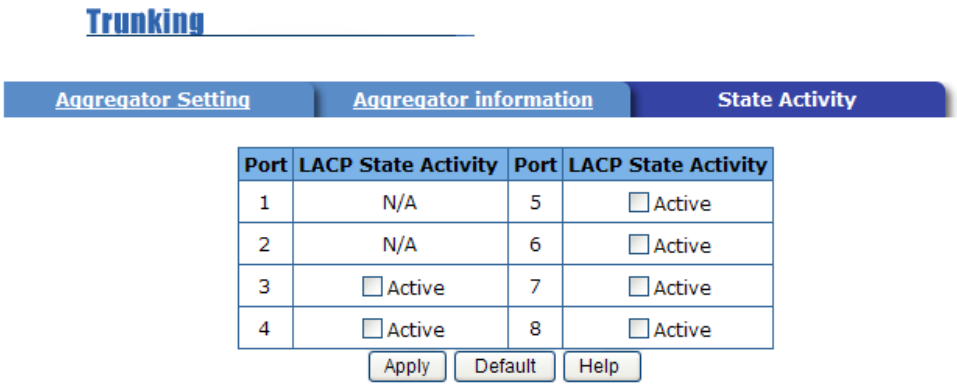
AGGREGATOR INFORMATION

When you are setting LACP aggregator, you can see related information in here.

STATE ACTIVITY

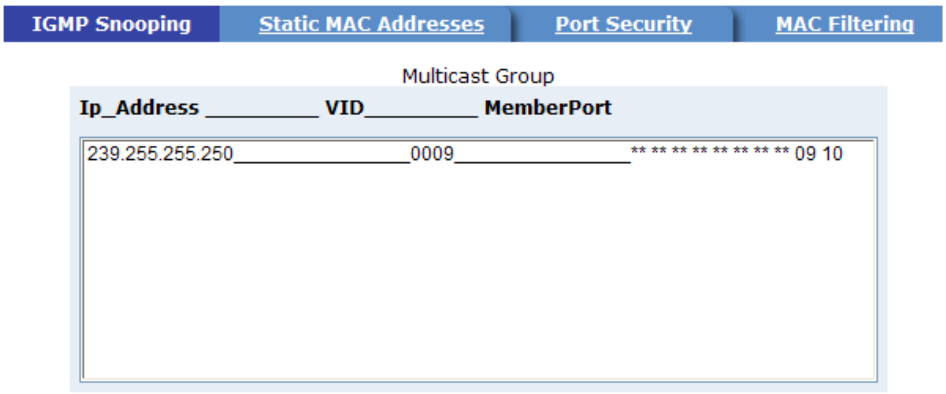
Active (select):
The port automatically sends LACP protocol packets.
Passive (no select):
The port does not automatically sends LACP protocol packets and responds only if it receives LACP protocol packets from the opposite device.

1. A link having either two active LACP ports or one active port can perform dynamic LACP trunking. A link that has two passive LACP ports will not perform dynamic LACP trunking because both ports are waiting for LACP protocol packets from the opposite device.
2. If one port is set as active, the active status will be created automatically.



4.8 WEB – FILTER DATABASE

IGMP SNOOPING

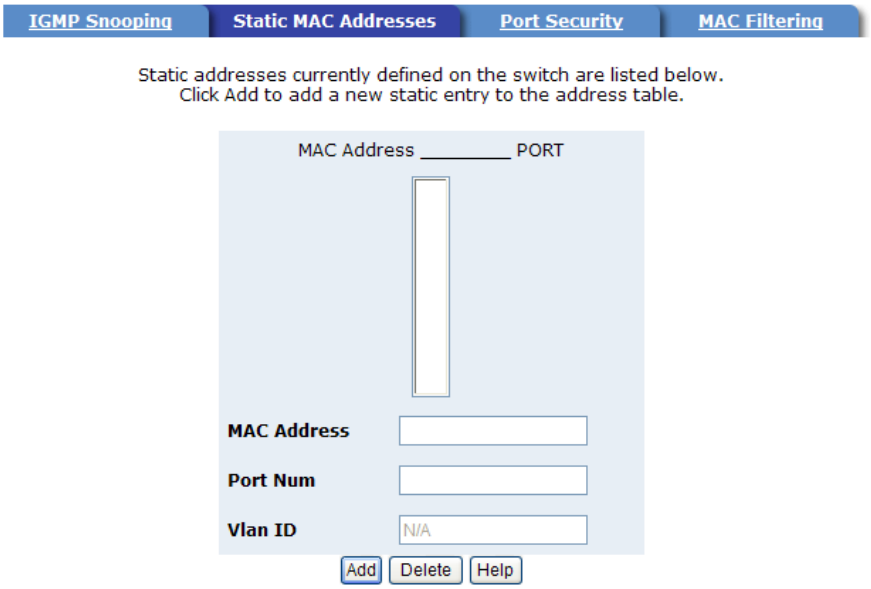


MEG801AE-R2 supports IP multicast. To enable IGMP go to SWITCH SETTINGS – ADVANCED (See 4.5.). Here you can view different multicast groups, VID and member port and IP multicast addresses range from 224.0.0.0 through 239.255.255.255. The Internet Group Management Protocol (IGMP) is an internal protocol of the Internet Protocol (IP) suite. IP manages multicast traffic by using switches, routers and hosts that support IGMP. Enabling IGMP allows ports to detect IGMP queries and report packets and manage IP multicast traffic through the MEG801AE-R2.

IGMP has three fundamental types of message as follows:

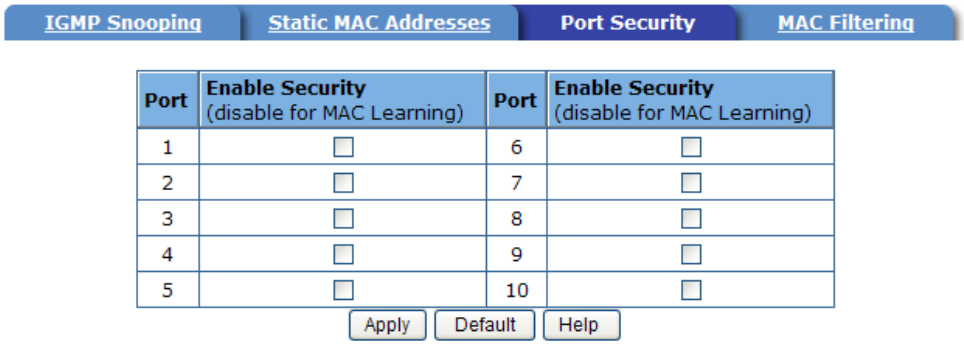
Message	Description
Query	A message sent from an IGMP router or IP switch asking for a response from each host belonging to the multicast group.
Report	A message sent by a host to the IGMP router or IP switch to indicate that the host wants to be or is a member of a given group indicated in the report message.
Leave Group	A message sent by a host to the IGMP router or IP switch to indicate that the host has quit being a member of a specific multicast group.

STATIC MAC ADDRESS



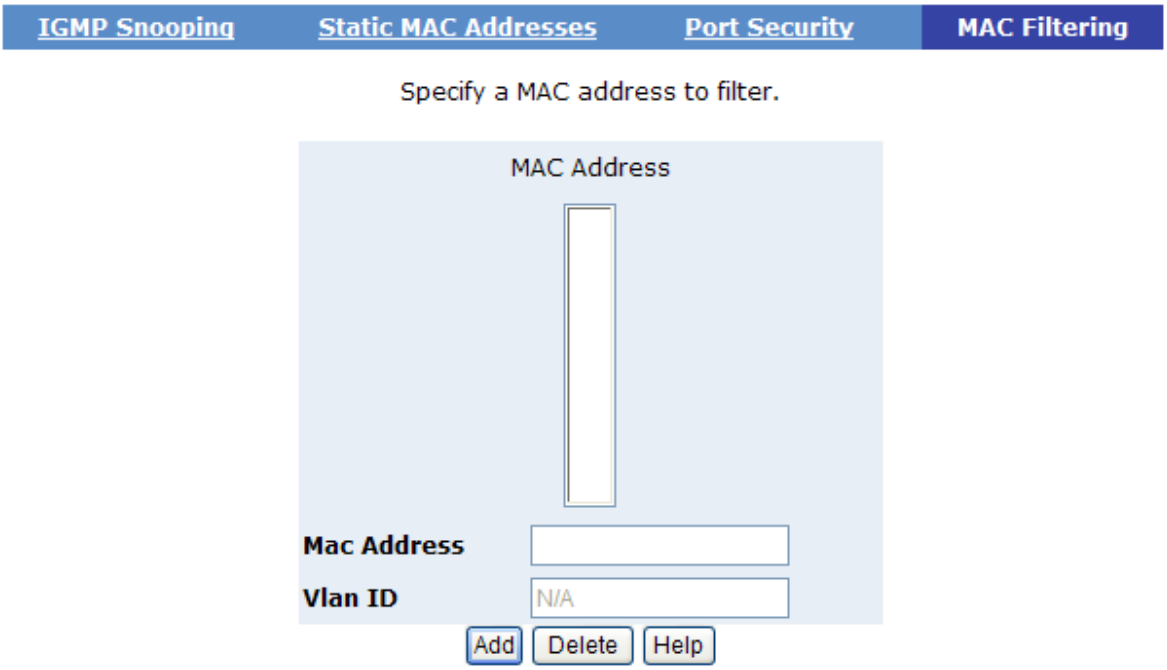
When you add a static MAC address, it remains in the address table, regardless of whether the device is physically connected to the switch. This saves the switch from having to re-learn a device MAC address when the disconnected or powered off device is active on the network again. Furthermore you can prevent that a configured device for Port x can be connected to Port y.

PORT SECURITY



A port in security mode will be “locked” and will not permit address learning. Only the incoming packets with Static MAC already existing in the address table can be forwarded normally. Users can disable the port from learning any new MAC addresses, then use the static MAC addresses screen to define a list of MAC addresses that can use the secure port. Enter the settings then click apply to save the changes.

MAC Filtering



MAC address filtering allows the MEG801AE-R2 to drop unwanted traffic. Traffic is filtered based on the destination address. For example, if one network is congested because of high utilization from one MAC address, you can filter all traffic transmitted from that MAC address, restoring network flow while you troubleshoot the problem.

4.9 WEB - VLAN CONFIGURATION

A Virtual LAN (VLAN) is a logical network grouping that limits the broadcast domain. It allows one to isolate network traffic so only members of the VLAN can receive traffic from the same VLAN members. Basically, creating a VLAN from a MEG801AE-R2 is logically equivalent to reconnecting a group of network devices to another MEG801AE-R2. However, all the network devices still plug into the same MEG801AE-R2 physically.

The MEG801AE-R2 supports port-based and protocol-based VLAN in web management. In the default configuration, VLAN is enabled and all ports on the switch belong to default VLAN ID 1.

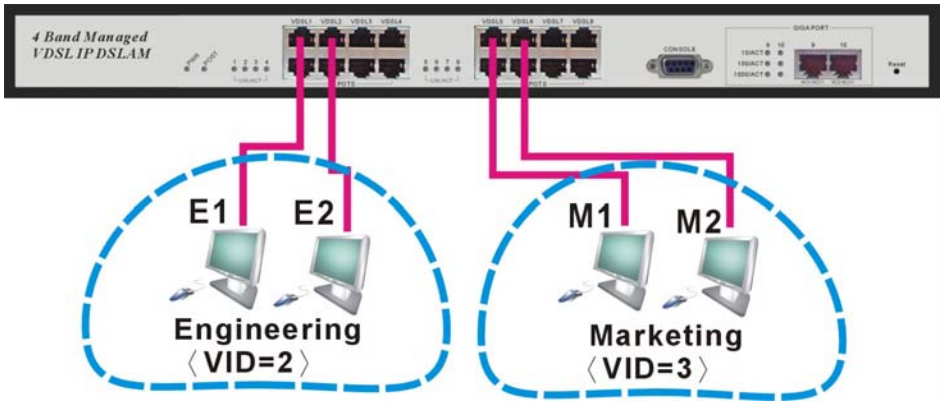
Support for Multiple VLAN (IEEE 802.1Q VLAN)

Port-based VLAN tagging is an IEEE 802.1Q specification standard. It is possible to create VLANs across devices from different vendors. IEEE 802.1Q VLAN uses a technique to insert a “tag” into the Ethernet frames. The tag contains a VLAN Identifier (VID) that indicates the VLAN numbers.

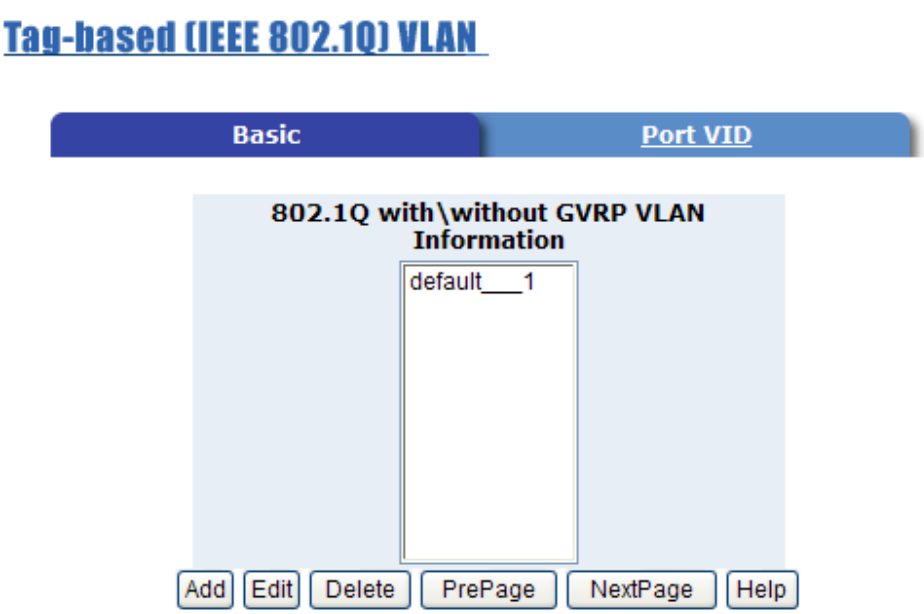
Support for Protocol-based VLAN

In order for an end station to send packets to a different VLAN, it has to be either capable of tagging packets it sends with VLAN tags or be attached to a VLAN-aware bridge that is capable of classifying and tagging the packet with different VLAN ID based on not only the default PVID but also other information about the packet, such as the protocol.

MEG801AE-R2 will support protocol-based VLAN classification by means of both built-in knowledge of layer 2 packet formats used by selected popular protocols such as Novell IPX and AppleTalk’s EtherTalk and some degree of programmable protocol matching capability.



MAC Filtering



Create a VLAN and add tagged member ports to it.

1. From the main menu, click administrator → VLAN configuration.
2. Click “Add”.
3. Type a name for the new VLAN.
4. Type a VID (between 2~4094), where the default is 1.
5. From the available ports box, select ports to add and click “Add”.
6. Click “Apply”.

Port VID

Tag-based (IEEE 802.1Q) VLAN

Basic | Port VID

Assign a Port VLAN ID (1~4094) for untagged traffic on each port, then click Submit to apply the changes on this page.

No.	PVID	Ingress Filtering 1	Ingress Filtering 2	NO	PVID	Ingress Filtering 1	Ingress Filtering 2
1	1	Enable	Disable	6	1	Enable	Disable
2	1	Enable	Disable	7	1	Enable	Disable
3	1	Enable	Disable	8	1	Enable	Disable
4	1	Enable	Disable	9	1	Enable	Disable
5	1	Enable	Disable	10	1	Enable	Disable

Ingress Filtering Rule 1
(Forward only packets with VID matching this port's configured VID)
Ingress Filtering Rule 2
(Drop Untagged Frame)

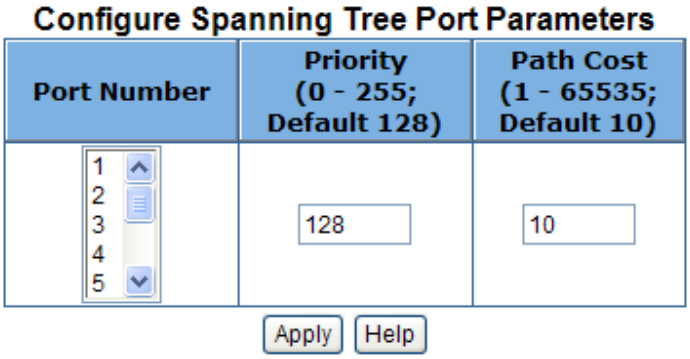
Apply | Default | Help

Configure Port VID setting
From the main Tag-based (IEEE 802.1Q) VLAN page, click Port VID Settings.
Port VID (PVID)
Set the Port VLAN ID that will be assigned to untagged traffic on a given port. For example, if port 10's Default PVID is 100, all untagged packets on port 10 will belong to VLAN 100. The default setting for all ports is VID 1.
This feature is useful for accommodating devices that one wants to participate in the VLAN but don't support tagging. Only one untagged VLAN is allowed per port.
Ingress Filtering
Ingress filtering lets frames belonging to a specific VLAN to be forwarded if the port belongs to that VLAN.
MEG801AE-R2 has two ingress filtering rule:
Ingress Filtering Rule 1:
Forward only packets with VID matching this port's configured VID
Ingress Filtering Rule 2:
Drop Untagged Frame

4.10 WEB – SPANNING TREE

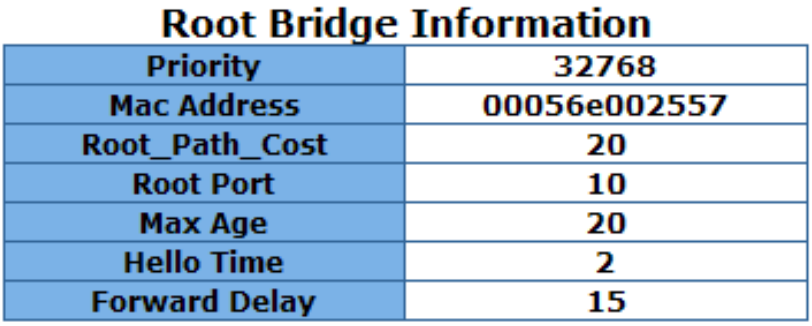
The Spanning Tree Protocol (STP) is a standardized method (IEEE 802.1D) for avoiding loops in Ethernet networks. When STP is enabled, it ensures that only one path is active at a time between any two nodes on the network.

1. The following parameter can be configured on each port, click the Apply button to modify.



Parameter	Description
Port Priority	To make it more or less likely to become the root port, the range is 0~255, where default setting is 128. The lowest number has the highest priority. If the value is changed, the switch must be rebooted.
Path Cost	Specify the path cost of the port that MEG801AE-R2 uses to determine which ports are the forwarding ports. The port with the lowest number is the forwarding port. The range is 1~65535 and the default values based on IEEE802.1D are 10Mbps = 50~600 100Mb/s = 10~60 1000Mb/s = 3~10. If the value is changed, the switch must be rebooted.

2. Spanning tree information can be viewed at the Root Bridge:



3. STP parameter can be set at the Configure Spanning Tree Parameters, click Apply button to modify.

Configure Spanning Tree Parameters

Priority (1-65535)	32768
Max Age (6-40)	15
Hello Time (1-10)	2
Forward_Delay_Time(4-30)	5

Apply

Parameter	Description
Priority	To change priority value. A value must be used to identify the root bridge. The bridge with the lowest value has the highest priority and is selected as the root. Values range from 1 to 65535.
Max Age	To change Max Age value. The number of seconds a bridge waits without receiving Spanning Tree Protocol configuration messages before attempting a reconfiguration. Values range from 6 to 40.
Hello Time	To change Hello time value. The number of seconds between the transmit time of Spanning Tree Protocol configuration messages. Value ranges from 1 to 10.
Forward Delay time	To change forward delay time. The number of seconds a port waits before changing from its Spanning Tree Protocol learning and listening states to the forwarding state. Value ranges from 4 to 30.

4. Spanning tree status can be viewed at the STP Port Status.

STP Port Status

PortNum	PathCost	Priority	PortState
1	10	128	DISABLED
2	10	128	DISABLED
3	10	128	DISABLED
4	10	128	DISABLED
5	10	128	DISABLED
6	10	128	DISABLED
7	10	128	DISABLED
8	10	128	DISABLED
9	10	128	FORWARDING
10	10	128	FORWARDING

4.11 WEB – PORT SNIFFER

The Port Sniffer is a method for monitoring traffic in your network. Traffic through ports can be monitored by one specific port. That is, traffic going in or out of monitored ports will be duplicated into the sniffer port.

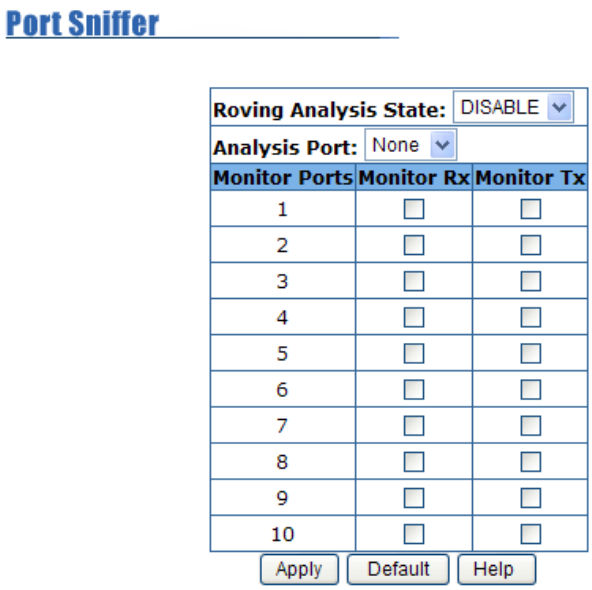
Roving Analysis State:
Enable or disable the port sniffer function.

Analysis Port:
Analysis port can be used to see all monitor port traffic. The sniffer port can be connected to LAN Analysis, Session Wall or Netxray.

Monitor Ports: The ports you want to monitor. All monitor port traffic will be copied to the sniffer port. You can select maximum of 9 monitor ports. If you want to disable the function, you must remove the RX and TX monitor selection.

Monitor Rx: Monitor received frames from the port.

Monitor Tx: Monitor sent frames from the port.

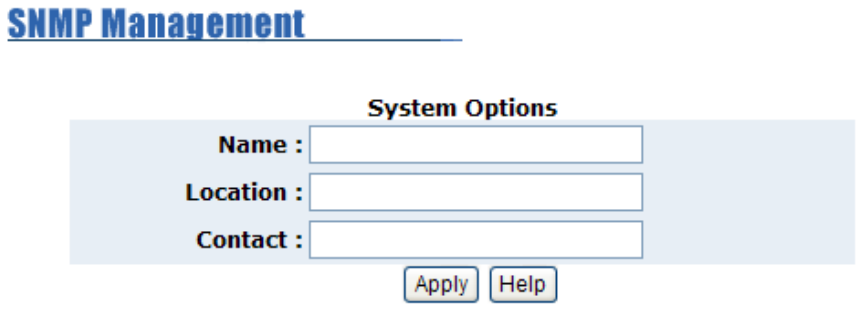


4.12 WEB – SNMP

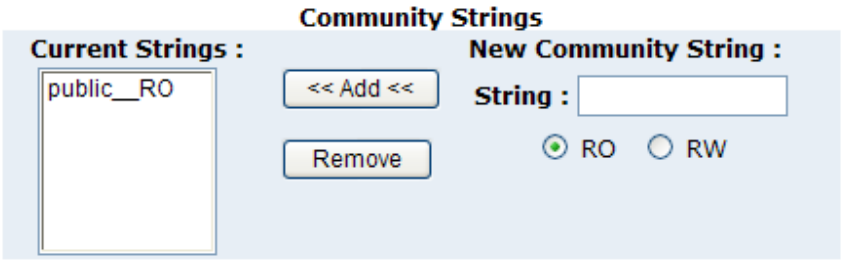
Any Network Management software like Nino (http://nino.sf.net) running the Simple Network Management Protocol (SNMP) can manage the MEG801AE-R2 provided that the Management Information Base (MIB) is installed correctly on the management station. SNMP is a protocol that governs the transfer of information between management and agent. The VDSL switch supports SNMP V1.

1. Use this page to define management stations as trap managers and enter SNMP community strings. Users can also define a name, location and contact person for the MEG801AE-R2. Fill in the system options data then click Apply to update the changes on this page.

Name: Enter a name to be used for the MEG801AE-R2.
Location: Enter the location of the MEG801AE-R2.
Contact: Enter the name of a person or organization.



2. Community strings serve as passwords and can be entered as one of the following:



Read only: Enables requests accompanied by this string to display MIB-object information.
Read write: Enables requests accompanied by this string to display MIB-object information and to set MIB objects.

3. Trap Manager

A trap manager is a management station that receives traps and system alerts generated by the MEG801AE-R2. If no trap manager is defined, no traps are issued. Create a trap manager by entering the IP address of the station and a community string.
Enterprise MIB contains two traps:

a. When MEG801AE-R2 internal temperature is greater than 70 degrees Celsius, system will send a “Temperature alarm “ trap.
b. When the MEG801AE-R2’s internal cooling FAN doesn’t run, the system will send a “FAN speed alarm” trap.

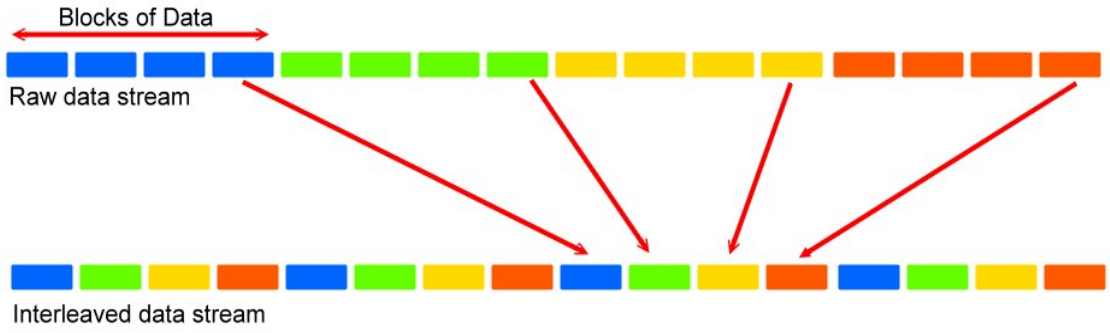
4.13 WEB – INTERLEAVE

This function is used in digital data transmission technology to protect the transmission against noise issues and data error.

If during transit more than a certain amount of data has been lost then the data cannot be correctly decoded. Short bursts of noise on the line can cause these data packets to become corrupt and the modem has to re-request data which in turn can slow down the overall rate at which data is transmitted.

Interleaving is a method of taking data packets, chopping them up into smaller bits and then rearranging them so that contiguous data is now spaced further apart into a non continuous stream. Data packets are re-assembled by your modem.

The diagram below is an example of how interleaved traffic is transmitted.



If your line is particularly susceptible to bursts of noise then interleaving should improve your vdsl experience simply because if you lose a whole batch of data then this could cause your modem to loose sync with the exchange.

Using Interleaving, the modem is able to re-assemble the data or if necessary just re-request the part of the data that it is unable to recover. By increasing the interleave depth of each port that is susceptible to noise, this will improve error performance and stability of marginal lines.

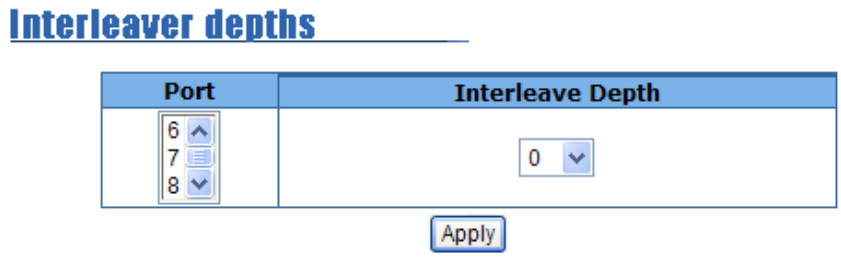
Interleave Depth is defined as the number of bits (or bytes) in each block of data.
VDSL supports various levels of interleaving, the depth of which can range from 0 (no interleaving) to 64.

Interleave Delay is defined as the mapping (relative spacing) between subsequent input bytes at the interleave input and their placement in the bit stream at the interleave output.

Maximum Interleave Delay is the configurable attribute on some DSLAMs/routers as the maximum time for the Interleave Delay. The higher the Interleave Delay the greater the Interleaving Depth.

Note: Interleaving Depth & Interleaving Delay do not appear to be the same thing as the additional amount of latency you will see when interleaving is switched on nor is latency affected by speed (e.g. it does not decrease when one go from 1Mbits to 5Mbits).

The following ports can modify the desired interleave depth.

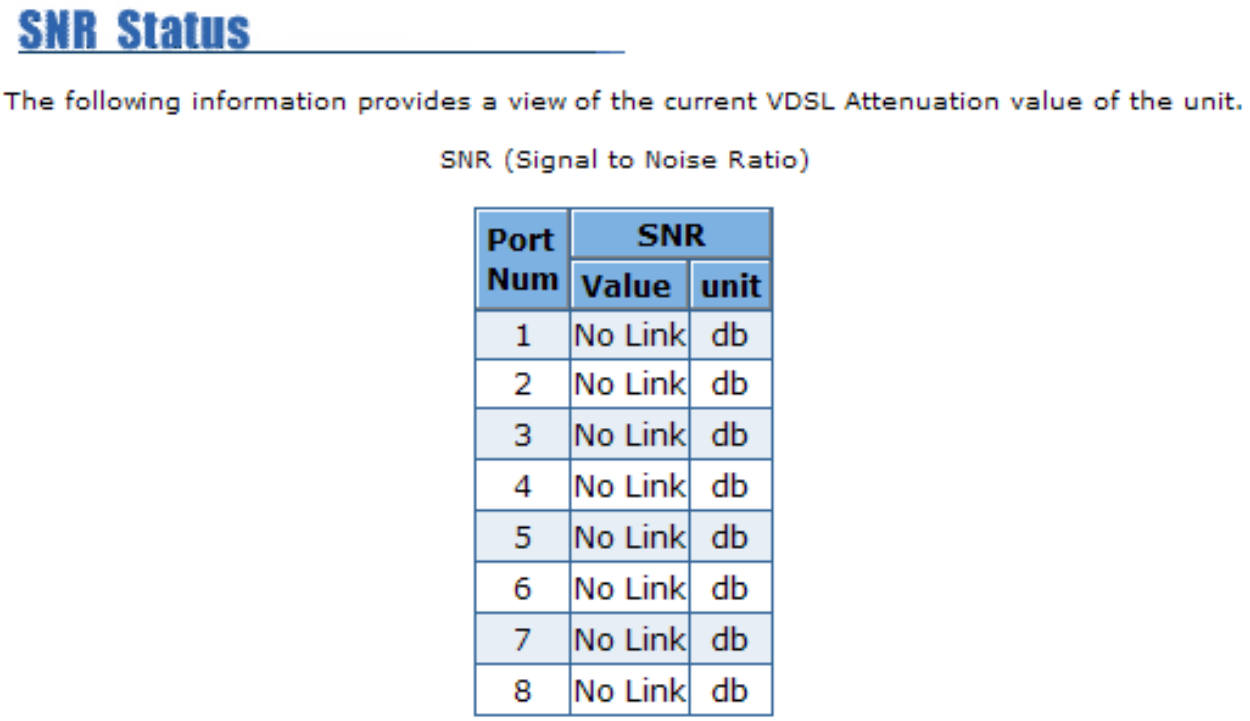


Port	Interleave Depth	
	Config	Status
1	16	16
2	8	0
3	8	0
4	8	0
5	8	0
6	8	0
7	8	0
8	8	0

The current information provides a view of the current status of the unit.
Interleave depth value will show in the status only if the port is connected.

4.14 WEB – SNR

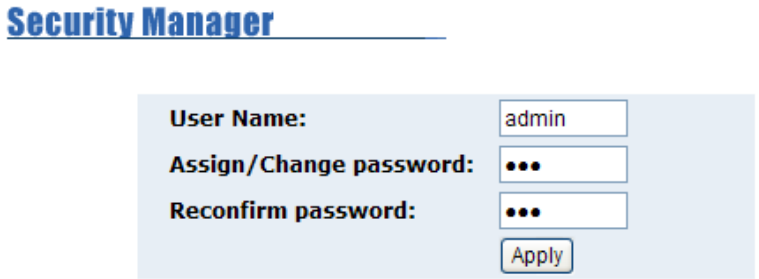
SNR (Signal to Noise Ratio) status provides a view of the current VDSL Attenuation value of the unit.
A SNR Value of 25 or higher means a good connection



Port Num	SNR	
	Value	unit
1	No Link	db
2	No Link	db
3	No Link	db
4	No Link	db
5	No Link	db
6	No Link	db
7	No Link	db
8	No Link	db

4.15 WEB – Security Manager

Security manager allows the user to change the user name and password of the web management.

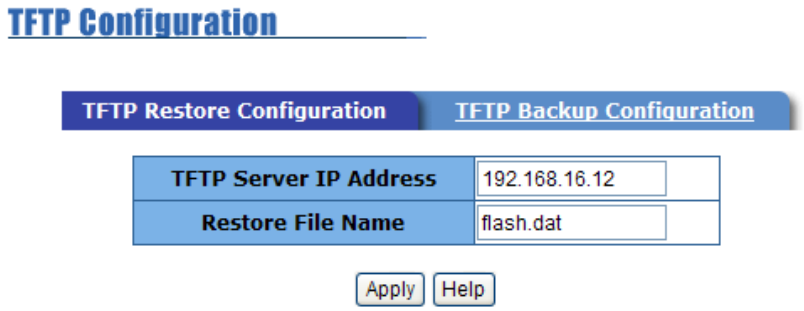


4.16 WEB – TFTP UPDATE FIRMWARE

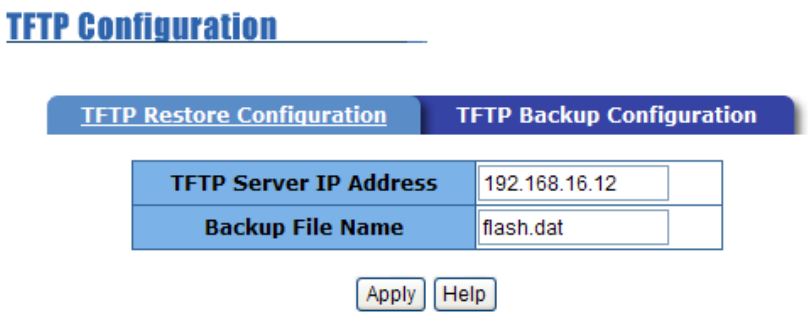
TFTP Update Firmware provides the system control functions to allow a user to update firmware and remotely boot the system.

1. Install TFTP Server and execute the program.
2. Copy firmware update version image.bin to TFTP Server directory.
3. Enter IP Address and Filename into this window
4. Click Apply to start Download and Upgrade Process

4.17 WEB – CONFIGURATION BACKUP



This enables you to restore the configuration later from that saved configuration file. The procedure uses a TFTP server.



Use this page to backup the configuration of your MEG801AE-R2.

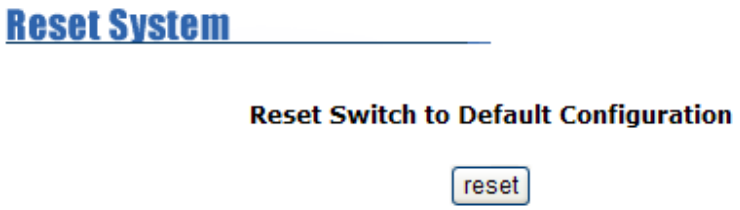
.

4.18 WEB – RESET SYSTEM

Reset MEG801AE-R2 to default configuration

Note:

Please make sure the MEG801AE-R2 has been disconnected from the VDSL Modems



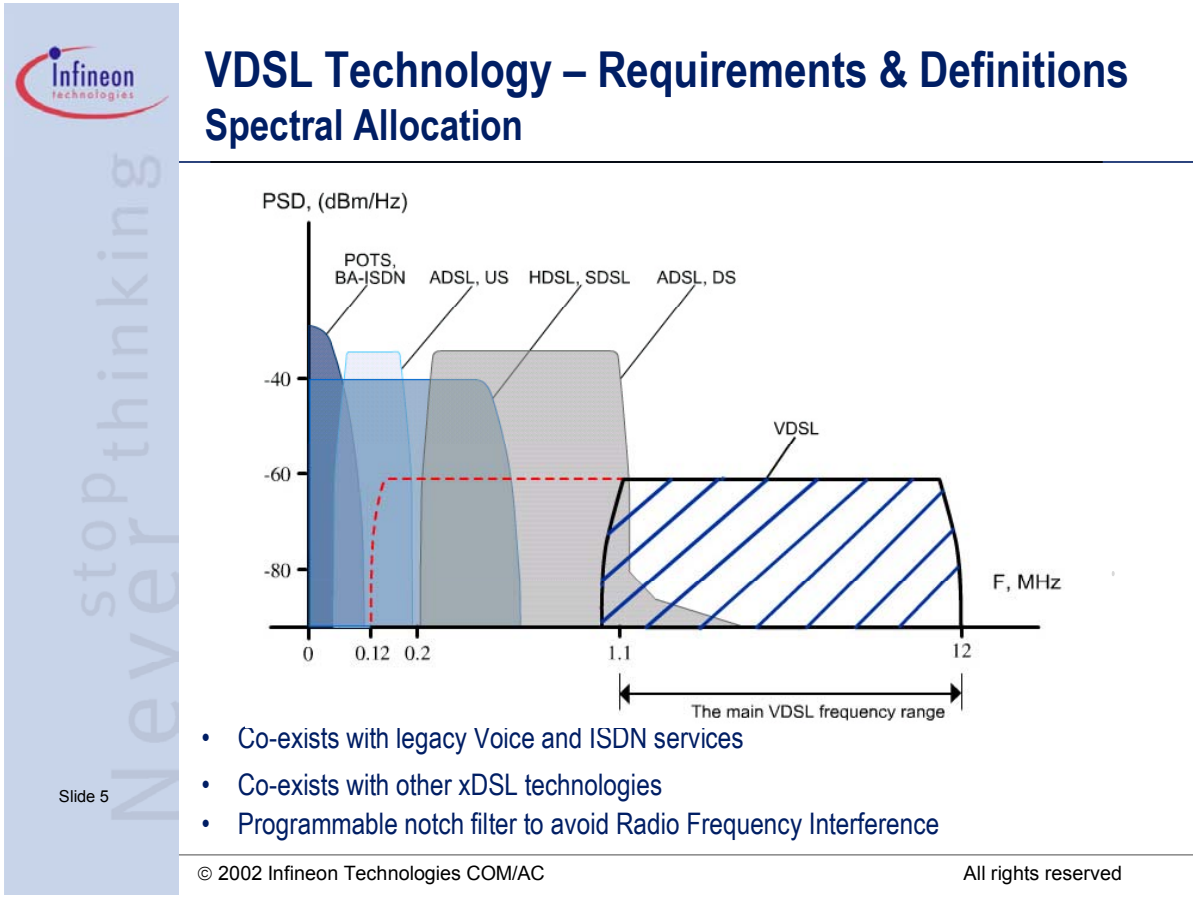
4.19 WEB – REBOOT

Reboot the MEG801AE-R2

5 CONFIGURATION TIPS, TRICKS AND HINTS

While setting up a single VDSL route with the single transmitters and receivers of the MEG101 series is very easy, you might experience some issues with your IP transmission using aggregation units like MEG801AE-R2 or MEG2401AE-R2.

Because VDSL technology is using a big portion of the frequency spectrum available for data transmission, it can transmit a lot of bandwidth. But because of the high frequencies being used, the chance of getting noise from wires nearby is very high. This effect is called crosstalk.



The Quadband VDSL technology uses dynamic frequencies to minimize crosstalk. Depending on your wires you may need additional things to get stable IP transmission and high bandwidth.

Follow these rules:

1. Use twisted cabling where the 2 pins for one VDSL connection are twisted. Check the pinning carefully and be sure that none of the cables is twisted with another cable carrying another signal
2. Avoid cable routes where high power voltage is nearby
3. Avoid using telephony ribbon cables
4. With many VDSL routes running parallel avoid using Auto speed mode Set to 5Mbps fixed speed if necessary. Do not forget to repower the receivers after changing the settings
5. Select the appropriate Interleave factor. Trying 16 may be OK for you. Do not forget to reboot the receivers after changing the settings
6. Lower your fixed bandwidth rate (25-15-5Mbps) to have a SNR value of at least 25db

Keep in mind:

1. The longer, worse or thinner the cable, the longer the links needs to come online.
2. Lower bitrates give higher (better) SNR values
3. Higher interleave gives higher (better) SNR values
4. High SNR values mean more stable connections.
5. The higher the Interleave value, the higher the latency, but more stable and more consistent the throughput

6 FIRMWARE UPGRADE BY SERIAL

If you do not want to upgrade the firmware by TFTP, there is an alternative using serial:

1. Power on the VDSL Switch.
2. Get a serial cable (straight through).
3. Connect by Hyperterminal with 9600bps, 8N1
4. Press enter twice. You will get the login window.
5. Power off the switch, wait 5 seconds, power it on again.
6. You see a message telling you press X to upgrade firmware.
7. Press X.
8. Change to 57600 bps, 8N1
9. Upload firmware file with 1K Xmodem.
10. After upload is done, switch will restart
11. Change to 9600 bps, 8N1 to see login window again

What can I do if my line is too long?

Often there are different routes to get to the “other side”. Try to find out if there is another one. If not, Black Box has other xDSL devices that can be used.

Please check MDS932AE-10BT-R2, MDS952AE-10BT and/or MDS5110AE, MDE5210E/MDE5211E as a possible alternative for your application by calling your local Black Box office . Check www.blackbox.eu for e-mail adresses, phone and fax-numbers.

Firmware Upgrade

The MEG101RAE-R2 and MEG101TAE-R2 units can not be firmware upgraded. The switches MEG801AE-R2 and MEG2401AE-R2 can be firmware upgraded using TFTP or RS-232.

Tech Support

It is our main philosophy to service you and your needs. If you have any questions please feel free to contact Black Box Free Tech Support. Check www.blackbox.eu for phone numbers of your local office.

Black Box Worldwide Offices

As well as the Black Box International Subsidiaries listed below, we also have a worldwide network of distributors ensuring efficient shipment of stock and delivery of the right local technical and language support that you need.

Australia	España	Österreich
Belgium + Luxemburg	France	Puerto Rico
Brasil	Italia	Suomi
Canada	Japan	Sverige
Chile	México	Schweiz
Danmark	Nederland	United Kingdom
Deutschland	Norge	United States of America

Product Specifications

o Compliant with IEEE 802.3 & 802.3u & 802.3ab Ethernet Standards
o Compliant with ETSI, ITU & ANSI standards
o 10/100/1000Mbps Ethernet ports: 2 x RJ-45 with auto crossover
o POTS Splitter port: 8 x RJ-45
o VDSL port: 8 x RJ-45
o MAC address table: 8K Entries
o Switching method: Store-and-forward
o Flow control method by IEEE802.3x for Full Duplex & Back Pressure for Half Duplex
o Compliant with GARP/GVRP IEEE 802.1p/q port-base VLAN with 256 groups static VID or 4094 dynamic VID
o Compliant with IEEE 802.1v protocol-base VLAN classification
o Compliant with IEEE 802.1d Spanning trees
o Multicast IP table: 1K groups
o Compliant with IEEE 802.1p QOS by class of service with 2-level priority queuing
o Compliant with LACP IEEE 802.3ad Trunking
o RS-232 console port: DB-9Pin Female / 9600bps
o SNMP v1 RFC-1493 Bridge MIBs
RFC-1643 Ethernet MIB, RFC-1213 MIB II, Enterprise MIBs
RMON groups 1(Statistics), 2(Alarm), 3(Event), 9(History)
o Port security by MAC address filtering
o LED indication: Power good and POST LED
Link/Active/Speed Status for Ethernet port.
Link for VDSL port.
o VDSL Frequency Spectrum: Transmitter: 900kHz ~ 3.9 MHz
Receiver: 4MHz ~ 7.9 MHz
o POTS Filter Spectrum: 0 ~ 630 kHz
o Internal Switching Power Adapter Input: AC 85-265 volts/50-60Hz/1A.
o Dimensions: 435 x 255 x 44 mm
o Power Consumption: 18.7W
o Operating Temperature: 0 Celsius ~ 50 Celsius
o Storage Temperature: -20 Celsius ~ 65 Celsius (-4F ~ 149F)
o Humidity: 10% ~ 90% non-condensing
o Safety: FCC, CE Mark
o RoHS compliant