

CEM-538M

HomePNA3.1 Coax MDU Master Bridge



Application Notes

*Version 1.3
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*SendTek Corporation
*CONFIDENTIAL**

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SECURITY

EPs within one Master

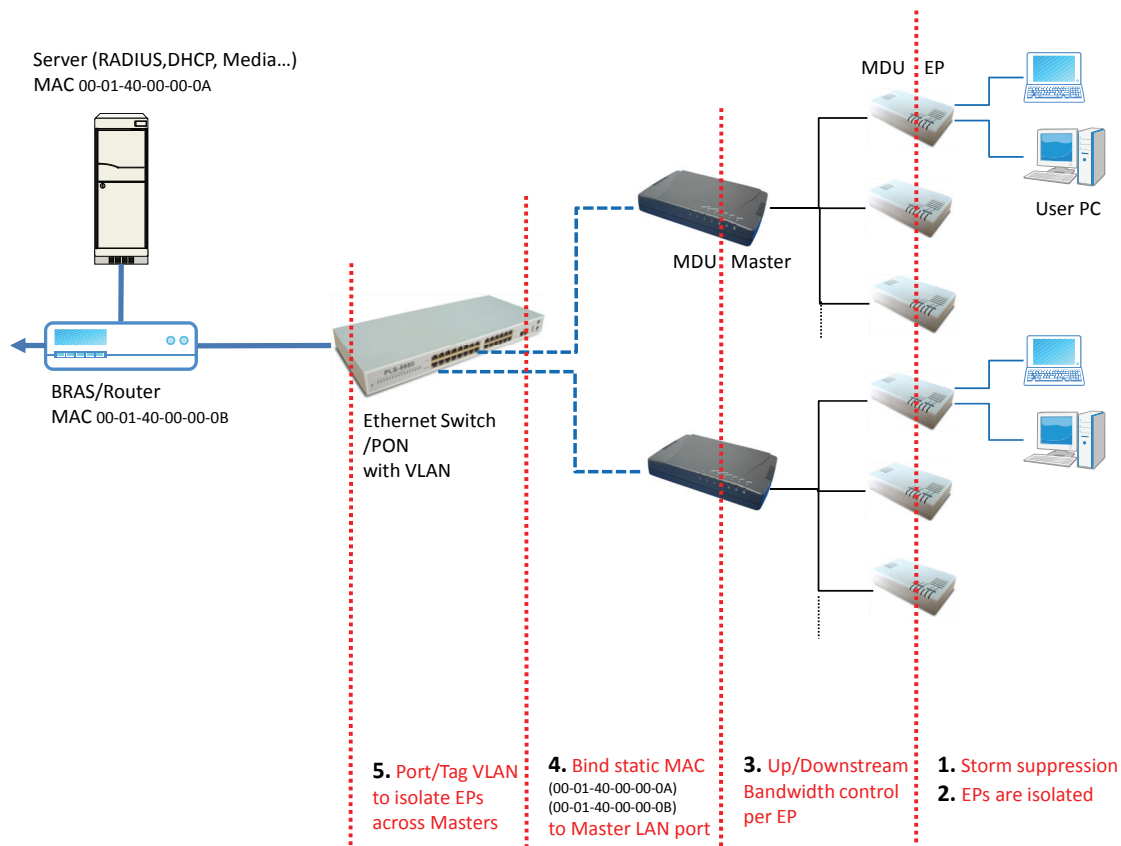
The communication between EPs is isolated intentionally. EP cannot talk to each other. It is the default security mode and is unchangeable.

EPs across many Masters

To isolate the communication between EPs at different Masters, Master should be separated to each other by VLAN if they are grouped by Ethernet switch. That is, packets sourced from one EP could not route to another EP via the up-link switch that connects all Masters.

Example Scheme

Refer the following example diagram,



5 basic security designs to be implemented,

1. Storm suppression

Built-in broadcast storm protection within Master and EP.

2. EPs are isolated

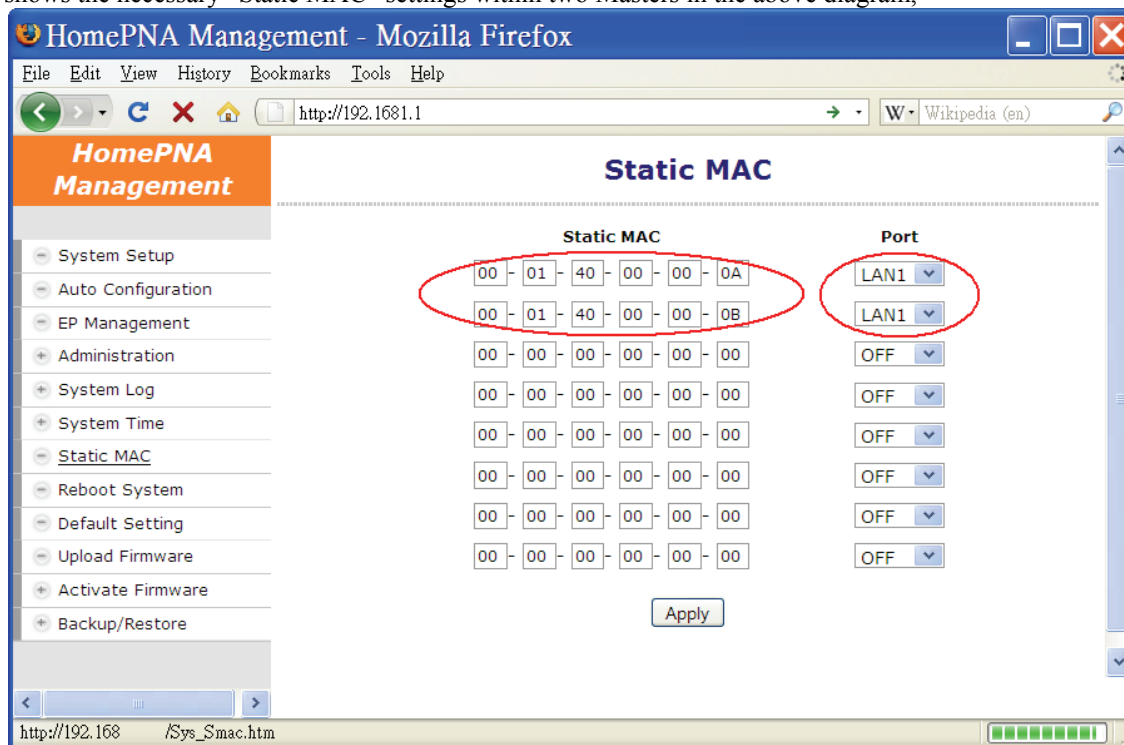
Host (PC) at different EP cannot access each other within the same Master.

3. Upstream/Downstream Bandwidth control

Enable per EP Rate-Control to prevent EP from flooding or saturating the HPNA trunk by emitting packets abnormally. For example, limit the maximum upstream bandwidth to 1Mbps for each EP.

4. Bind Server/Router MAC to Master LAN port

Maintain the Master MAC table integrity, not to be polluted by possible bogus/spoofing packets. For example, here shows the necessary "Static MAC" settings within two Masters in the above diagram,



5. VLAN to isolate EPs across Masters

This is a must and crucial for the whole security plan. To prevent hosts (PC) at different EP from seeing or disturbing each other. Master devices in this example are grouped by one Ethernet switch, Port VLAN or Tag VLAN should be enforced in the up-link switch to maintain the isolation between all connected EPs.

TAG VLAN

VLAN ID is based on Port

VLAN ID (VID) could be 1~4095. For VID Tag/Untag/Match operations, support max 3 VID per Master/EP, per VID per port.

- VID1 for LAN1 port.
- VID2 for LAN2 port.
- VID3 for HPNA port as management VLAN.

Enable VLAN in EPs only, one or two VID per EP (user)

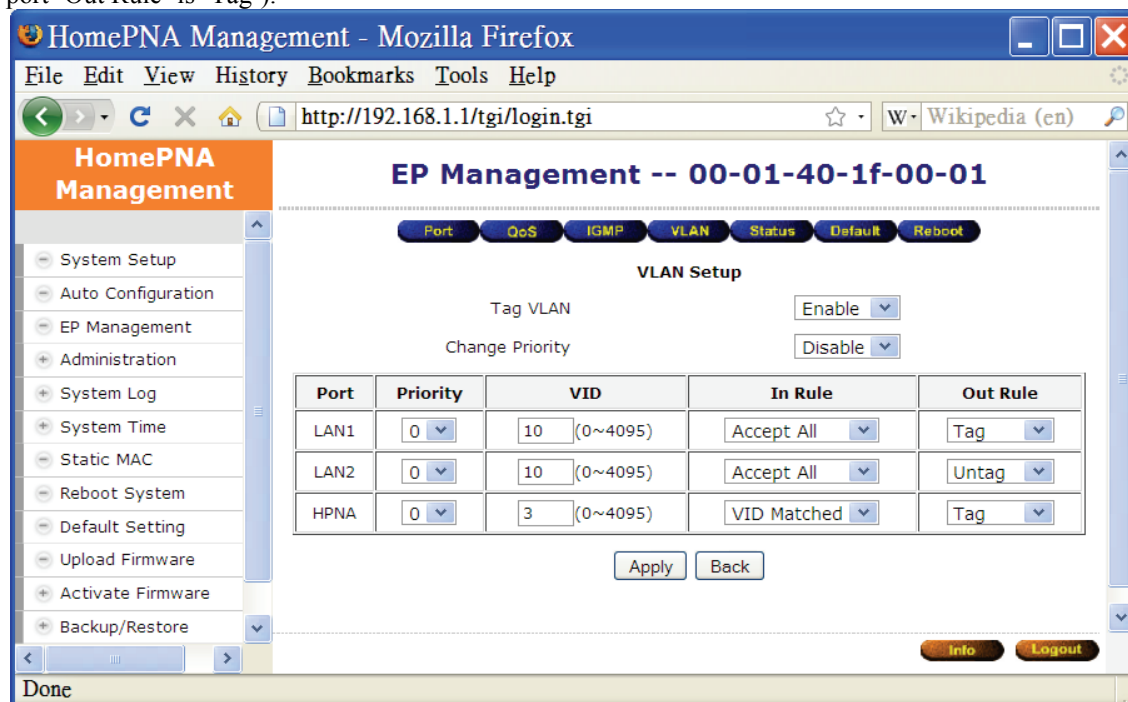
This is a general installation. Usually enable VLAN mode only in EP to tag packets from host (PC) at EP and to un-tag packets toward host at EP. You may assign each EP (user) with one or two different VIDs. Set Master VLAN to 'Disable' (Off) to pass-through tagged packets, all packets toward/from Master LAN port should be tagged in advance.

For management, Master device could be accessed by un-tagged packets from the manager host goes to its LAN1 or LAN2 port.

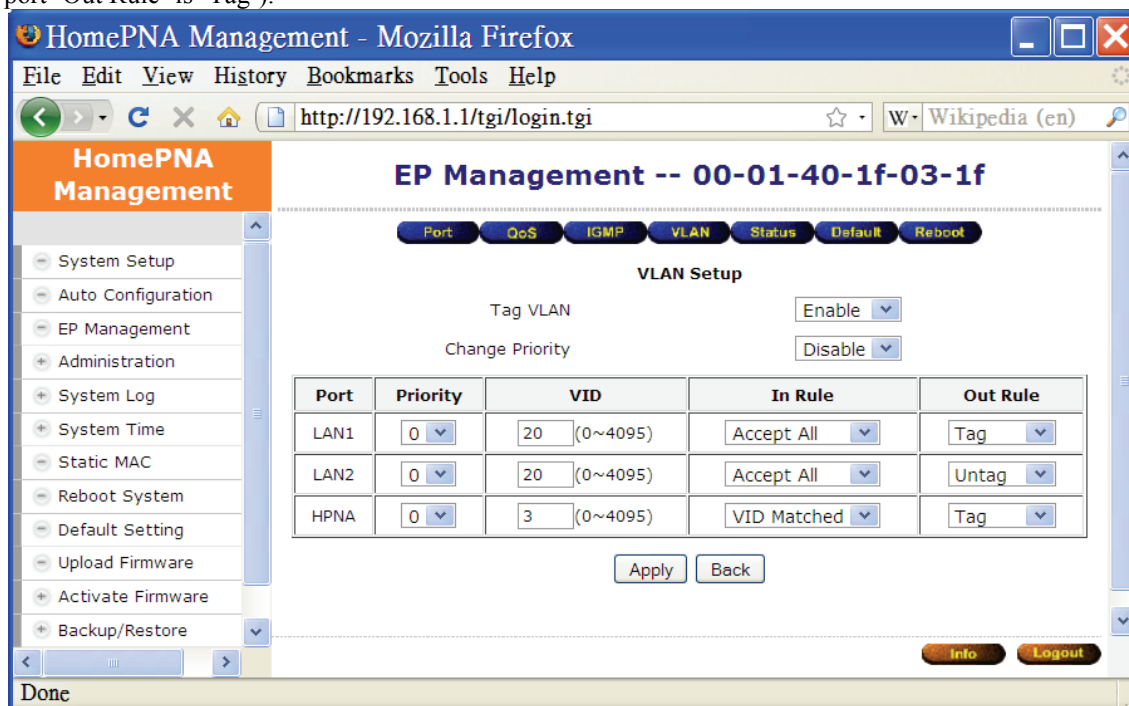
One VID per EP Example

For example, a Master connects with two EPs (users), one EP has VID '10' and the other EP needs VID '20'. Both EPs' LAN1 port connects to STB that needs tagged video packets, Both EPs' LAN2 port connects to host for untagged data packets.

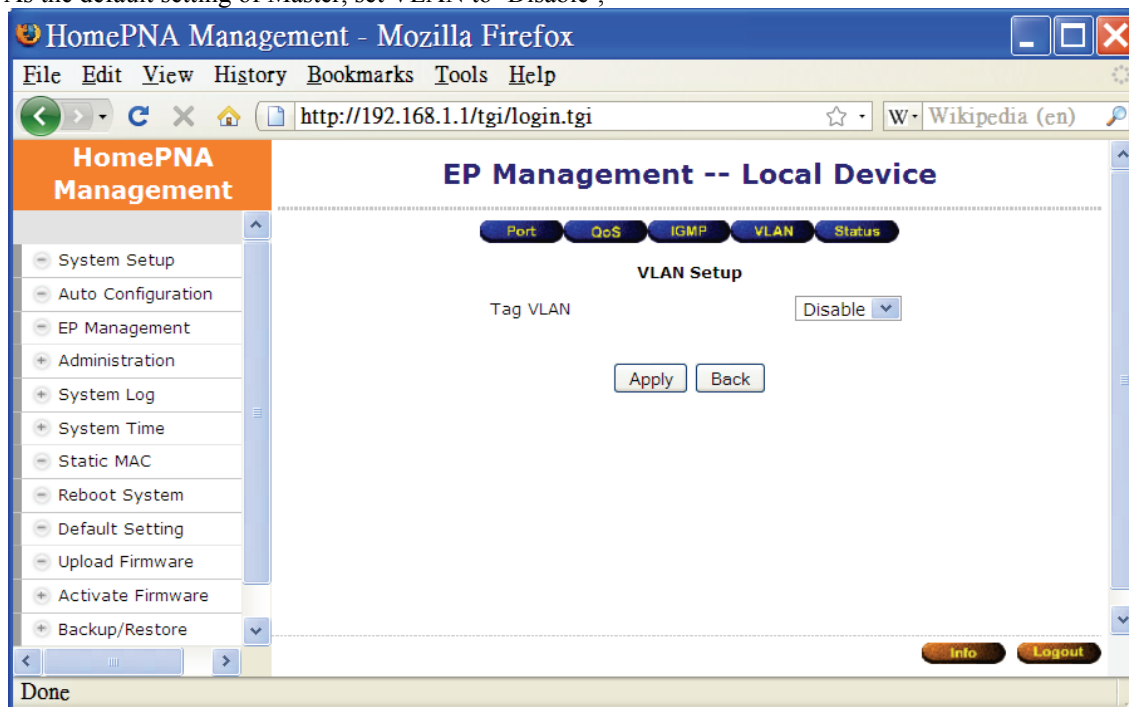
The following diagram is for EP with VLAN '10'. Downstream packets with VID '10' sourced from HPNA trunk port will be accepted by EP (HPNA port 'In Rule' is 'VID Matched'); downstream packets with other VID will be rejected. Upstream packets toward HPNA trunk (sourced from LAN1/LAN2) will be tagged with VID '10' (HPNA port 'Out Rule' is 'Tag').



The following diagram is for EP with VLAN '20'. Downstream packets with VID '20' sourced from HPNA trunk port will be accepted by EP (HPNA port 'In Rule' is 'VID Matched'); downstream packets with other VID will be rejected. Upstream packets toward HPNA trunk (sourced from LAN1/LAN2) will be tagged with VID '20' (HPNA port 'Out Rule' is 'Tag').

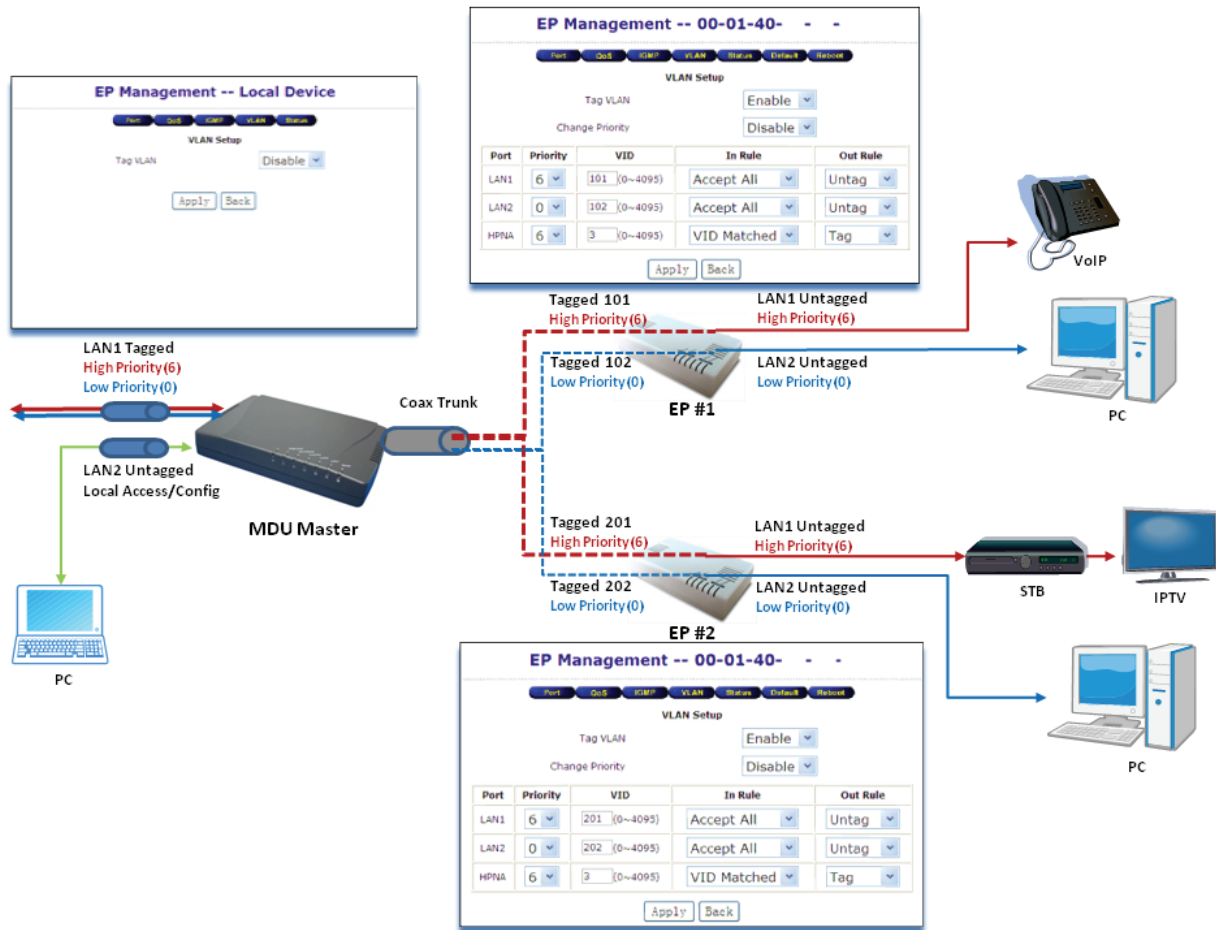


As the default setting of Master, set VLAN to 'Disable',



Two VID per EP Example

Per EP, LAN1 is tagged with high priority VID, for IPTV or VoIP service, LAN2 is tagged with low priority VID for normal Data service. Refer the following example diagram for detail,



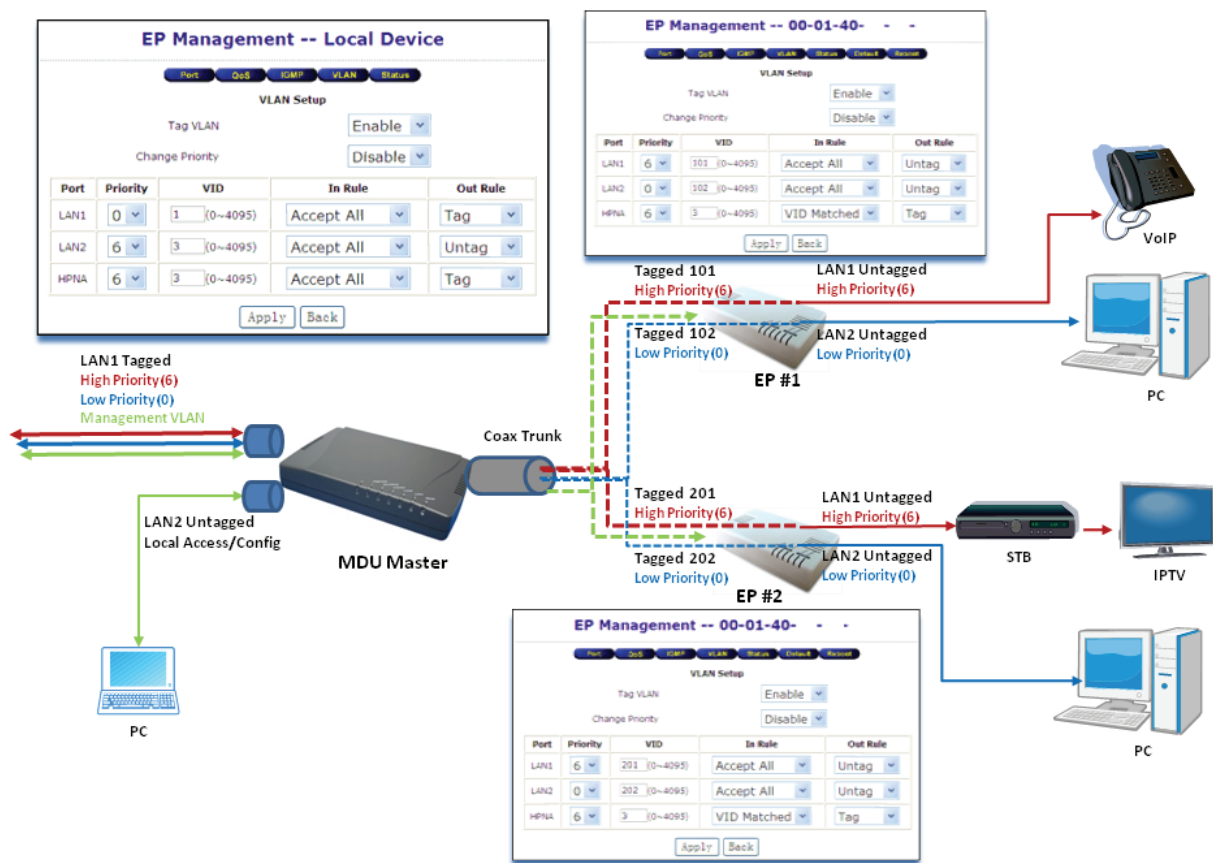
Enable VLAN in all EPs and Master(s), plus Management VLAN

Furthermore, an extra management VLAN that different from all users' VLAN may be necessary. Master device VLAN needs to be 'Enable' (On). All data packets toward/from Master LAN port should be tagged, each EP (user) may be assigned with different VIDs. Please note the HPNA port VID in Master is the management VLAN ID.

Two VID per EP Example

For example, we setup the management VLAN with VID '3', and take Master LAN1 port as the traffic trunk for all tagged data or management packets. May still keep management packets toward/from Master LAN2 port untagged for any necessary local access.

Refer the following diagram for Master VLAN settings. The 'In Rule' setting is 'Accept All' for all ports to accept all EP (user) packets with different VID pass through the Master device. LAN1 trunk 'Out Rule' is 'Tag' for upstream packets, HPNA trunk 'Out Rule' is 'Tag' for downstream packets toward EPs.

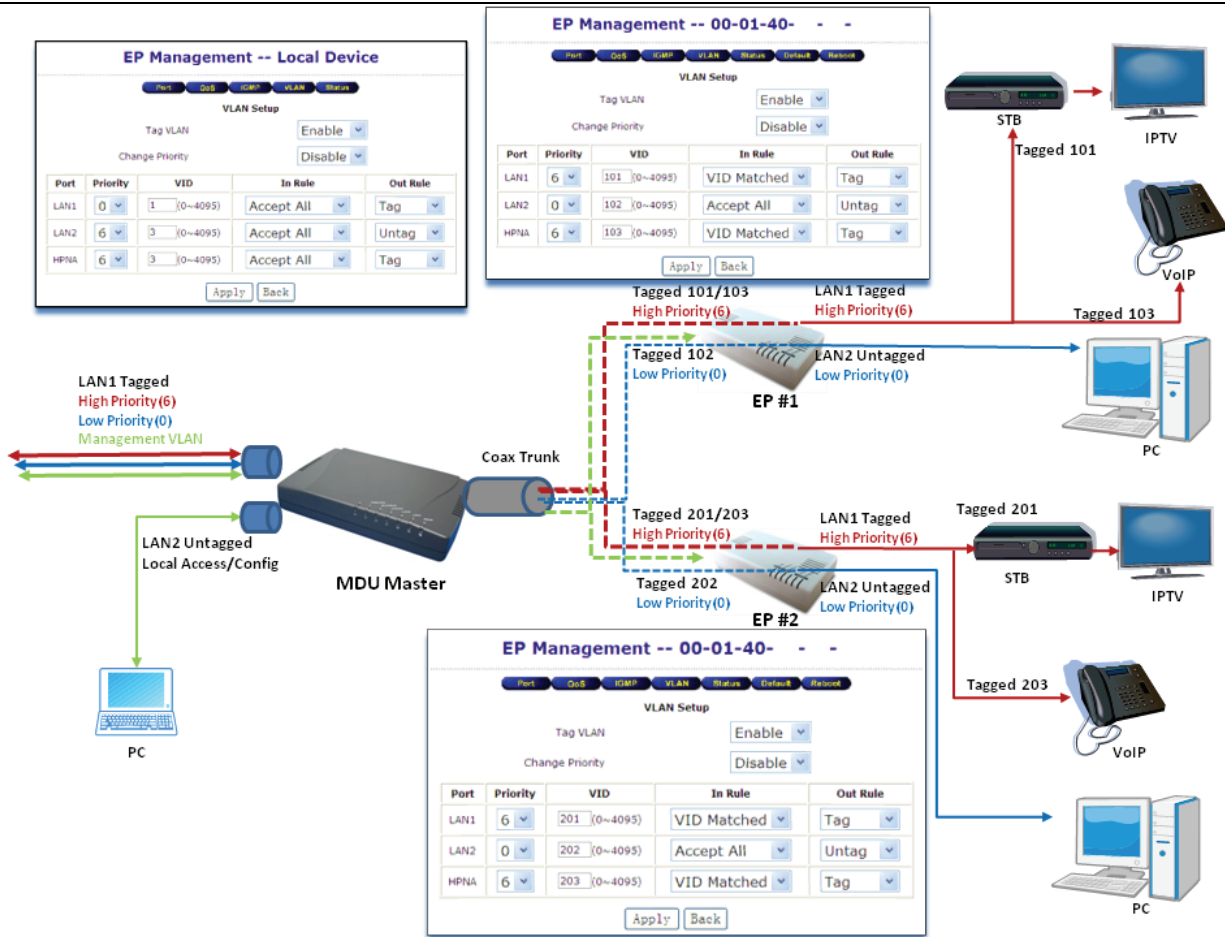


In this example, all packets should be tagged with destined user VID before enter/leave the Master device. The Master LAN1 does has an irrelevant VID '1', only HPNA VID '3' is significant for management VLAN.

Three VID per EP Example

If CPE (VoIP ATA or IPTV STB alike) is able to receive and transmit tagged packets, the EP HPNA VID may be adopted as the third VID. And requires one EP LAN port (as LAN1) to transmit the tagged packets contains 2 VIDs toward two different CPE.

Refer the following diagram, the management VLAN has VID '3' in Master and EP#1 LAN1 port will accept tag-matched packets with VID '101' or VID '103'. VID '102' goes to untagged EP#1 LAN2 port. EP#2 LAN1 port will accept tag-matched packets with VID '201' or VID '203'. VID '202' goes to untagged EP#2 LAN2 port. Per EP, 1st VID for IPTV service, 2nd VID for VoIP service, and the 3rd VID for normal Data service.



Static IP for Master

Factory default static IP for Master is '192.168.1.1'

DHCP for Master

Master may use DHCP client to get its 'IP/Subnet Mask/Default Gateway/DNS' from DHCP server.

Support DHCP options

Support the following DHCP options if filled by DHCP server in the DHCP handshaking packets.

TFTP server IP

Specify IP address in DHCP option 66 or in DHCP packet field 'sname'. The TFTP server IP address is used for **Auto-Config**.

TFTP extension directory path

DHCP option 18 or in DHCP packet field 'file'. The TFTP extension path is used for **Auto-Config**.

Syslog server IP

DHCP option 7.

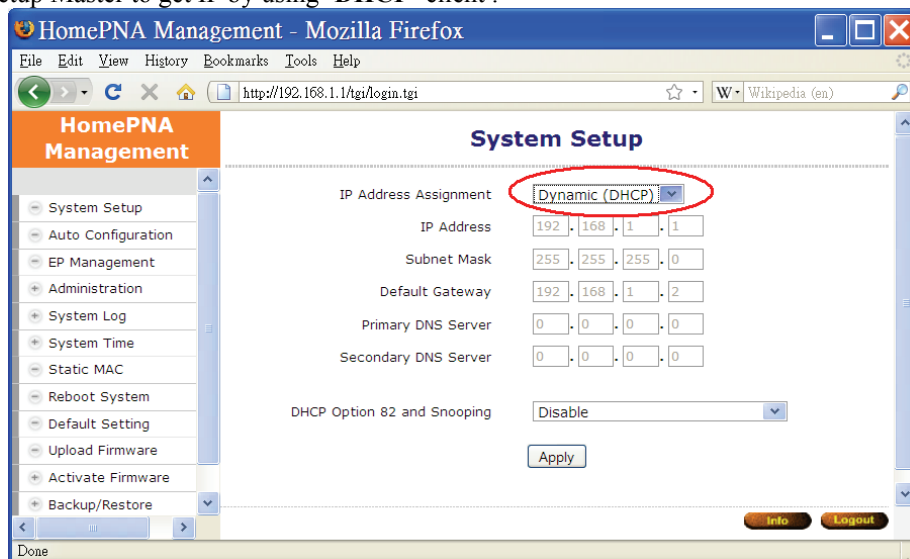
NTP server IP

DHCP option 42.

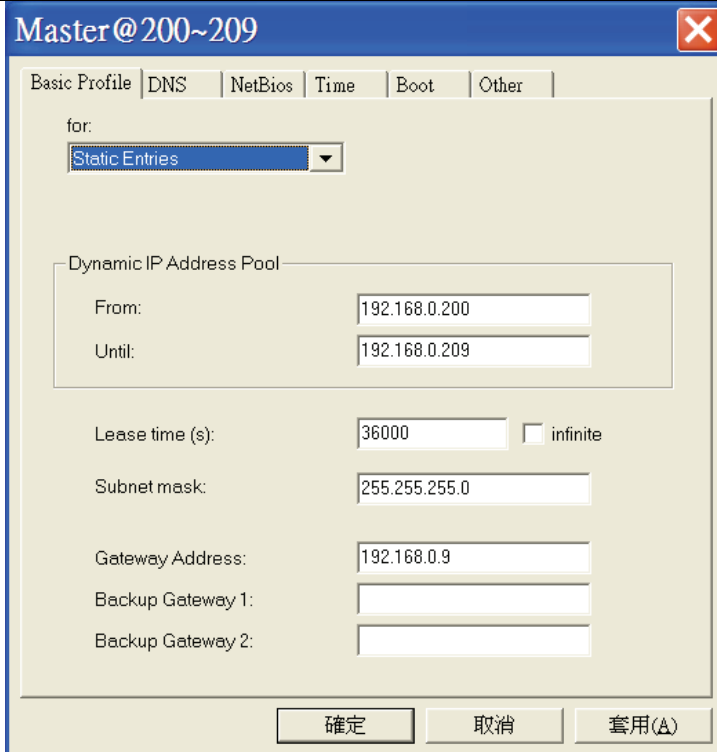
Example by using HaneWIN DHCP server

Test one Master CEM-538M firmware v3.33 and two CES-532D EPs with haneWIN DHCP server v3.0.22.

1. Setup Master to get IP by using 'DHCP' client .



2. In HaneWIN DHCP server, setup 'IP/Subnet Mask/Default Gateway/DNS' for the Master,



Master@200~209

Basic Profile | DNS | NetBios | Time | Boot | Other

for:
Static Entries

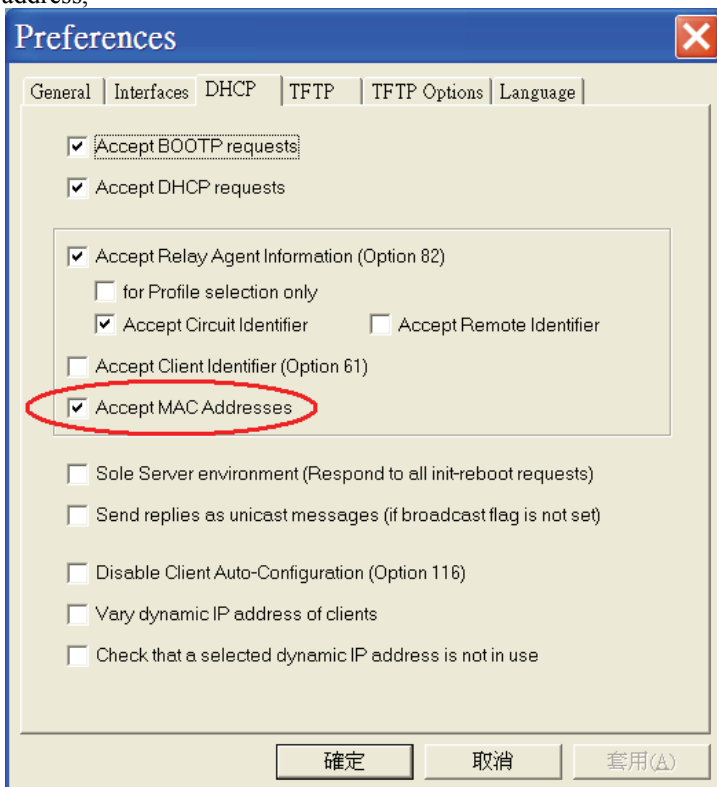
Dynamic IP Address Pool

From: 192.168.0.200
Until: 192.168.0.209

Lease time (s): 36000 ☐ infinite
Subnet mask: 255.255.255.0
Gateway Address: 192.168.0.9
Backup Gateway 1:
Backup Gateway 2:

確定 取消 套用(A)

3. In HaneWIN DHCP server, let Master ('00-01-40-20-00-07') get IP '192.168.0.207' according to its MAC address,



Preferences

General | Interfaces | DHCP | TFTP | TFTP Options | Language

☒ Accept BOOTP requests
☒ Accept DHCP requests

☒ Accept Relay Agent Information (Option 82)
☐ for Profile selection only
☒ Accept Circuit Identifier ☐ Accept Remote Identifier
☐ Accept Client Identifier (Option 61)
☒ Accept MAC Addresses

☐ Sole Server environment (Respond to all init-reboot requests)
☐ Send replies as unicast messages (if broadcast flag is not set)
☐ Disable Client Auto-Configuration (Option 116)
☐ Vary dynamic IP address of clients
☐ Check that a selected dynamic IP address is not in use

確定 取消 套用(A)

Static entry

With static entries you can assign clients with known MAC (hardware) address or identifier a fixed or dynamic IP address and a configuration profile.

If an assigned fixed IP address falls within a dynamic IP address range, the address is excluded from the IP address pool. For dynamic clients specify an IP address of 0.0.0.0.

MAC addresses or identifiers must be specified byte by byte in hexadecimal notation. For MAC addresses the bytes must be separated by a dash or colon.

☐ Relay Agent Information: ☒ Circuit ☒ Remote Identifier
☐ Client Identifier:
☒ MAC Address:

IP Address:

Optional

Configuration Profile:

Remark:

☐ Redundant entry (allow entry with an existing IP address)

OK Cancel Apply

4. In HaneWIN DHCP server, adopt option 66 for TFTP server IP address '192,168,0,99',

Master@200~209

Basic Profile | DNS | NetBios | Time | Boot | Other

Boot Server

Next Server IP Address:

Name:

File:

Boot File Size (in 512 byte blocks):

☒ Always use option 66/67 for Name and File (not standard)

☐ Alternate File if Vendor-Class-Id is:

File:

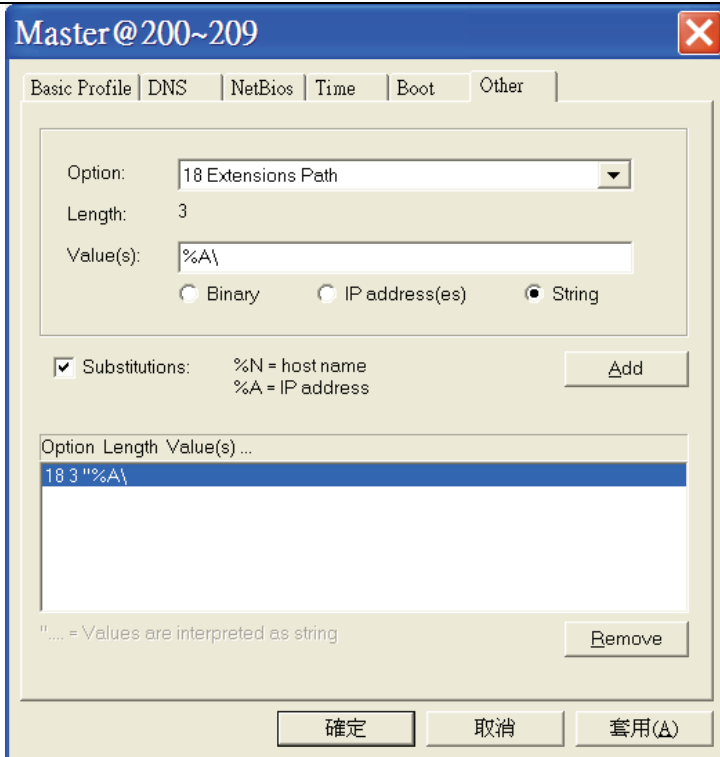
Boot File Size (in 512 byte blocks):

Root Path:

Substitutions in File and Root Path: %N = host name
 %A = IP address

確定 取消 套用(A)

Use the Master IP string '192.168.0.207' as the TFTP extension directory path in DHCP option 18. The whole TFTP path will be "\$TFTP_Server_Root_Directory\$192.168.0.207"



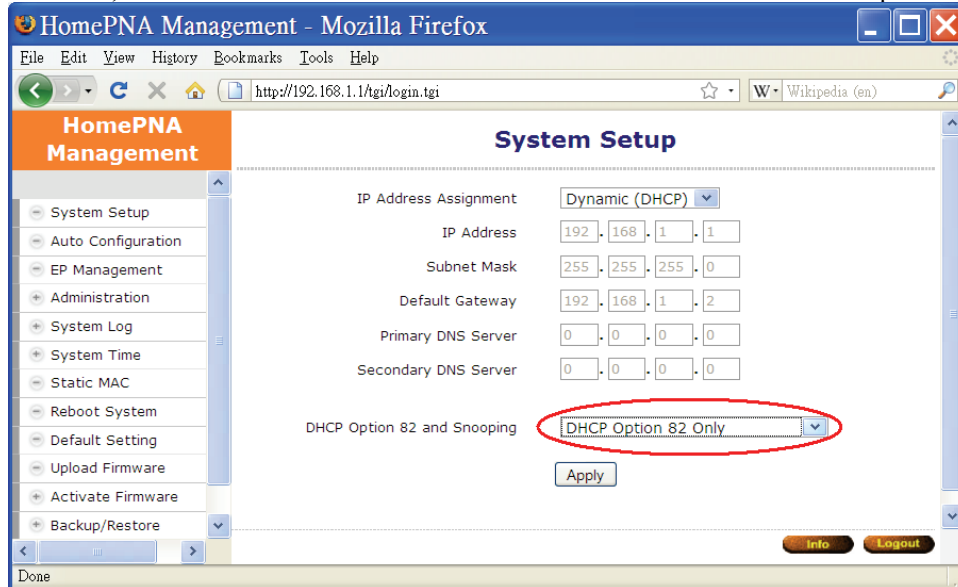
5. In this example, haneWIN plays both DHCP server and TFTP server at IP '192.168.0.99', Master will get IP address '192.168.0.207' via DHCP.

DHCP for Host (user PC) at EP

Master supports DHCP option 82 and snooping function if host (PC) at EP adopts DHCP client to get its IP address.

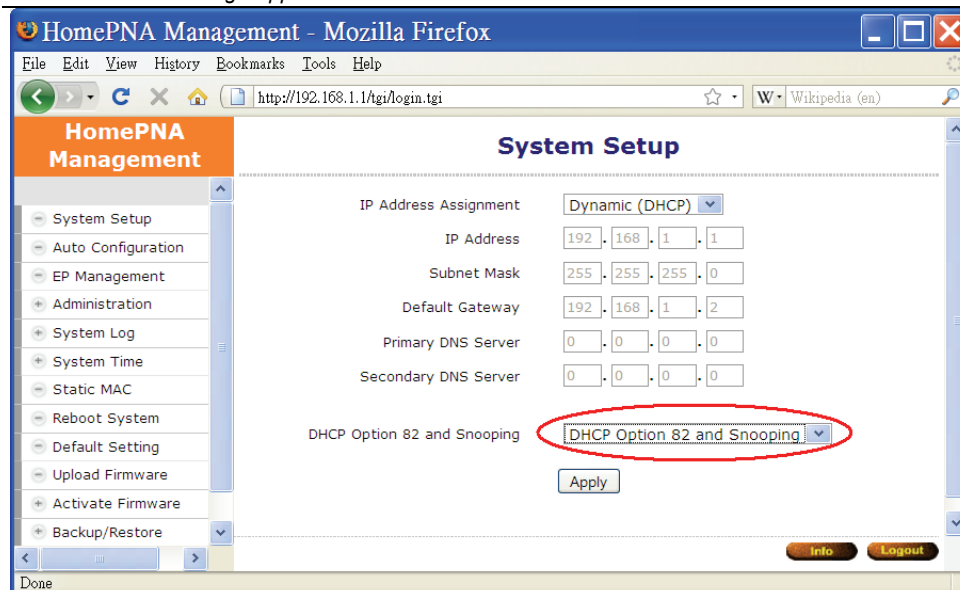
DHCP option 82 for EPs

If enabled, Master will fill 'Circuit ID' field with 'EP MAC Address' in DHCP packets emitted by host (PC) at EP.



DHCP snooping for EPs

If enabled, Master will allow only host (PC) at EP that using DHCP client (validated by DHCP server) to access the Master LAN ports. That is, user host behind EP could access the HPNA trunk with legal DHCP client granted by DHCP server.

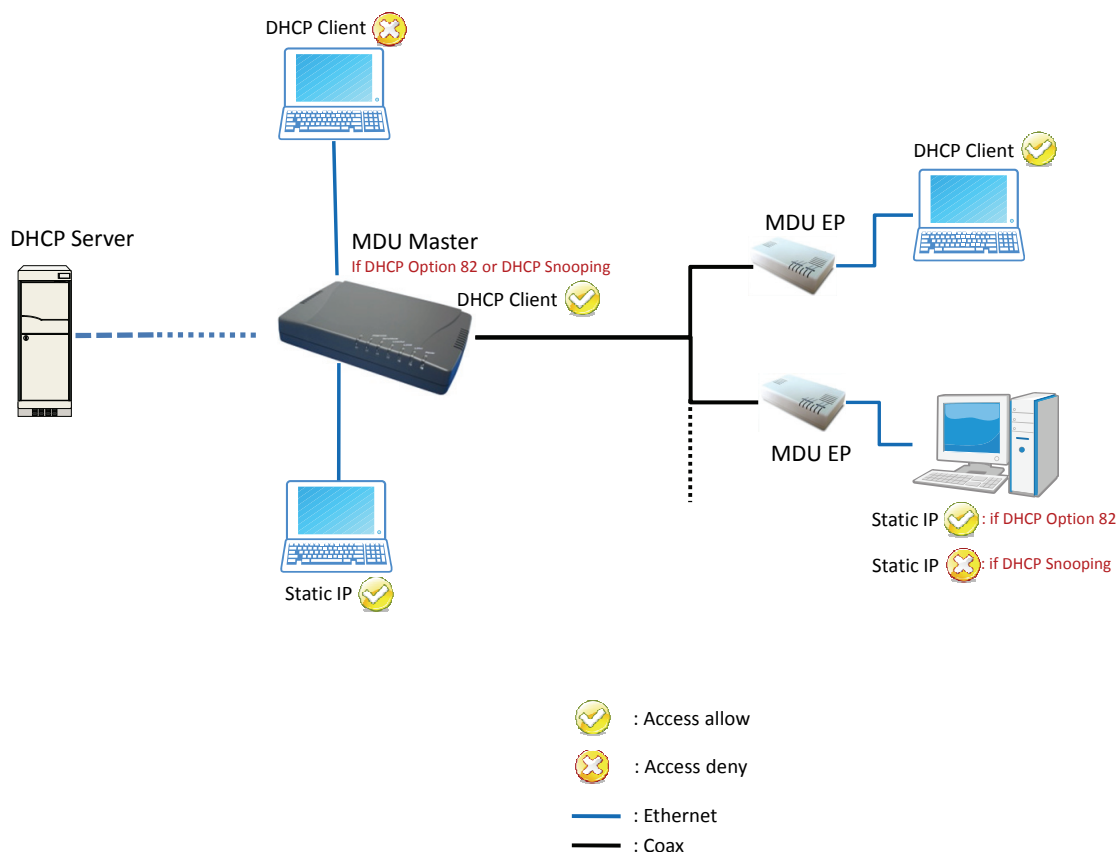


DHCP server support RFC-4388 is a must

The DHCP snooping function requests DHCP server to support RFC-4388('DHCP Leasequery').

Access control for DHCP option 82/snooping

Refer the following diagram, and note the DHCP usage restriction for host connected to Master LAN port if either option 82 or snooping is enabled.



Auto-Config

If 'Auto-Config' is enabled, Master will,

1. Try to retrieve the related config files (*.shc, *.ep) from TFTP server.
2. Setup Master and connected EPs according to the config script file and overwrite the original settings in Master and EPs.

TFTP to retrieve config script file

Master uses TFTP client to get the config script files from 'extension directory path' resides at TFTP server.

Filename '*.shc' works for Master and filename '*.ep' works for EP.

Master script file

The example Master script file, lead '#' or '##' denotes comment. Here we enable 'DHCP' / 'DHCP Option 82' / 'Auto-Config', and keeps other settings default.

```
## HomePNA Master Device Configuration Script

## ipassign = Method(static/dhcp) (for Master IP assignment)
ipassign = dhcp

## staticip = IP, Subnet Mask, Default Gateway (valid if Master IP assignment is static)
#staticip = 192.168.1.1, 255.255.255.0, 192.168.1.2

## dns = Primary DNS, Secondary DNS
#dns = 10.0.0.1, 0.0.0.0

## dhcpsetting = Mode(off/opt82/opt82_snooping) (work on dhcp client Host/PC attached to EP)
dhcpsetting = opt82

## autocfg = Mode(on/off), TFTP Server IP, Directory Path
## if load and run the Configuration Script files for Master and EPs
autocfg = on, 0.0.0.0, ""

## administrator = Index(0~4), Name(up to 8 chars), Password(up to 8 characters), Privilege(super/rw/ro)
#administrator = 0, "admin", "admin", super

## allowsource = Index(0~15), IP, Subnet, Telnet(on/off), HTTP(on/off), SNMP(on/off), Ping Reply(on/off)
#allowsource = 0, 0.0.0.0, 0.0.0.0, on, on, on, on

## telnet = Mode(on/off), TCP Port, Idle Timer(1~65535 Seconds)
#telnet = on, 23, 600

## http = Mode(on/off), TCP Port
#http = on, 80

## snmp = Mode(on/off), UDP Port, Name, Contact, Location, R-only Community, R-W Community
#snmp = off, 161, "", "", "", "public", "private"

## # trapsetup = Login/Logout(on/off), Upgrade Firmware(on/off), EP Status Group(on/off),
## Diagnosis Group(on/off), DHCP Group(on/off), Auto Config Group(on/off)
#trapsetup = on, on, on, on, on, on

## trapserver = Index(0~4), IP, UDP Port, Community

## logserver = Index(0~4), IP, Severity
#logserver = 0, 0.0.0.0, 7

## sntp = Mode(on/off), Server1, Server2, Time Zone, Period to Renew(0~65535 minutes)
#sntp = on, "time.stdtime.gov.tw", "", GMT+08:00, 60

## smac = index(0~5), mac, off/lan1/lan2 (bind static mac entry to specific port)
```

```
#smac = 0, 00-00-00-00-00-00, off
#smac = 1, 00-00-00-00-00-00, off
#smac = 2, 00-00-00-00-00-00, off
#smac = 3, 00-00-00-00-00-00, off
#smac = 4, 00-00-00-00-00-00, off
#smac = 5, 00-00-00-00-00-00, off
#smac = 6, 00-00-00-00-00-00, off
#smac = 7, 00-00-00-00-00-00, off

## port = lan1/lan2, auto/100f/100h/10f/10h, Flow Control(on/off)
#port = lan1, auto, on
#port = lan2, auto, on

## ratectrl = Port(lan1/lan2/hpna), InRate(0~1563, *64k), OutRate(0~1563, *64k)
#ratectrl = lan1, 1563, 1563
#ratectrl = lan2, 1563, 1563
#ratectrl = hpna, 1563, 1563

## qosqueue = Index, Weight(1~15), Drop Ratio(0:0%, 1:25%, 2:50%, 3:75%)
#qosqueue = 0, 1, 0
#qosqueue = 1, 2, 0
#qosqueue = 2, 3, 0
#qosqueue = 3, 4, 0

## qosservice = Index, Mode(on/off), TCP/UDP Port(0~65535), Queue(0~3)
#qosservice = 0, off, 0, 0
#qosservice = 1, off, 0, 0
#qosservice = 2, off, 0, 0
#qosservice = 3, off, 0, 0
#qosservice = 4, off, 0, 0
#qosservice = 5, off, 0, 0

## vlanctrl = Mode(on/off), Change Priority(on/off)
#vlanctrl = off, off

## vlan = Port(lan1/lan2/hpna), Priority(0,2,4,6), VID(1~4095) , InAction, OutAction
##InAction=all(accept all)/tag(VID Matched), OutAction=untag/tag/bypass
#vlan = lan1, 0, 1, all, untag
#vlan = lan2, 0, 2, all, untag
#vlan = hpna, 0, 3, all, tag

## igmp = Mode(on/off), Interval(4~510, even only)
#igmp = off, 248
```

EP script file

The example EP script file, lead '#' or '##' denotes comment. Here we enable 'VLAN' and 'Rate Control' only.

```
# HomePNA EP Device Configuration Script

##up to 16 chars, may used for marks (name/location/...)
## note = ""

## hpna = HostLimit(0~11) (the maximum number of hosts for one EP)
#hpna = 11

## port = lan1/lan2, Port(on/off), auto/100f/100h/10f/10h, Flow Control(on/off)
#port = lan1, on, auto, on
#port = lan2, on, auto, on

## port = hpna, Port(on/off), Flow Control(on/off)
```

#port = hpna, on, on

ratectrl = lan1/lan2/hpna, InRate(0~1563, *64k), OutRate(0~1563, *64k)
for example DS/US=10M/2M, 2Mbps=32*64k, 10Mbps=160*64k
ratectrl = lan1, 32, 160
ratectrl = lan2, 32, 160
ratectrl = hpna, 160, 32

qosqueue = Index, Weight(1~15), Drop Ratio(0:0%, 1:25%, 2:50%, 3:75%)
#qosqueue = 0, 1, 0
#qosqueue = 1, 2, 0
#qosqueue = 2, 3, 0
#qosqueue = 3, 4, 0

qosservice = Index, Status(on/off), Port(0~65535), Queue(0~3)
#qosservice = 0, off, 0, 0
#qosservice = 1, off, 0, 0
#qosservice = 2, off, 0, 0
#qosservice = 3, off, 0, 0
#qosservice = 4, off, 0, 0
#qosservice = 5, off, 0, 0

vlancntrl = on/off, Change Priority(on/off)
vlancntrl = on, off

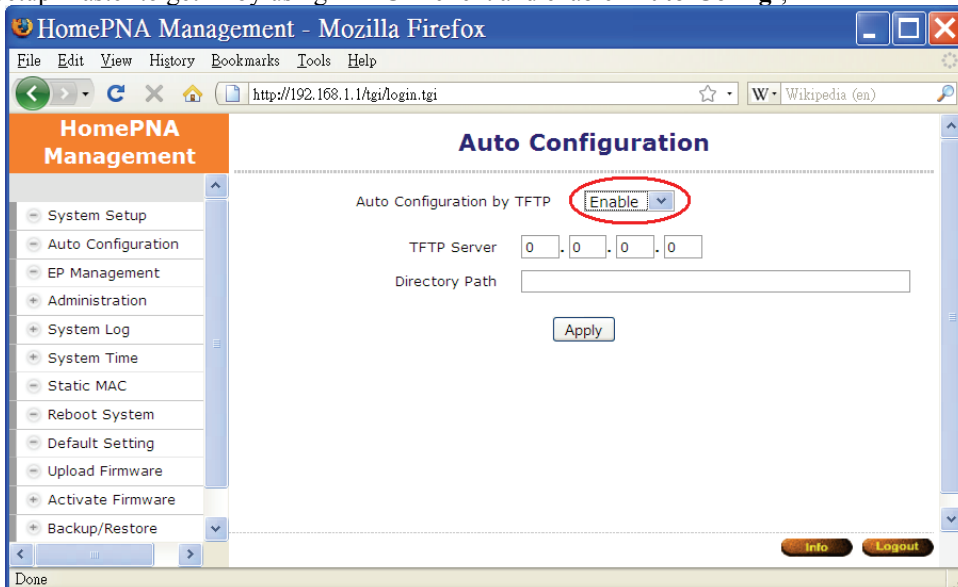
vlan = lan1/lan2/hpna, Priority(0,2,4,6), VID(1~4095), InAction, OutAction
##InAction=all(accept all)/tag(VID Matched), OutAction=untag/tag/bypass
vlan = lan1, 0, 1, all, untag
vlan = lan2, 0, 2, all, untag
vlan = hpna, 6, 3, tag, tag

igmp = on/off, Interval(4~510, even only)
#igmp = off, 248

Example by using HaneWIN DHCP server – Continue

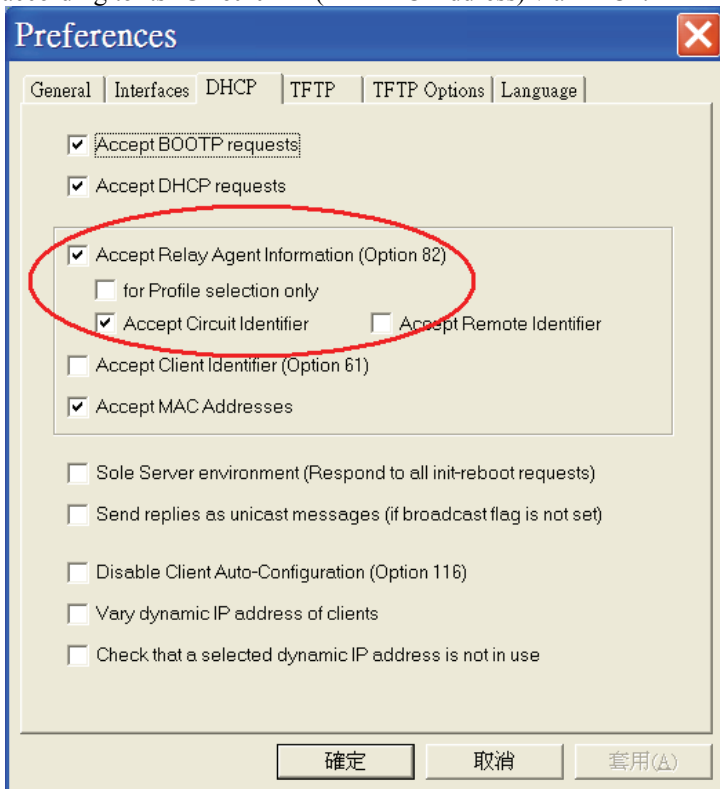
Test one Master CEM-538M firmware v3.33 and two CES-532D EPs with haneWIN DHCP server v3.0.22.

6. Setup Master to get IP by using 'DHCP' client and enable 'Auto-Config',

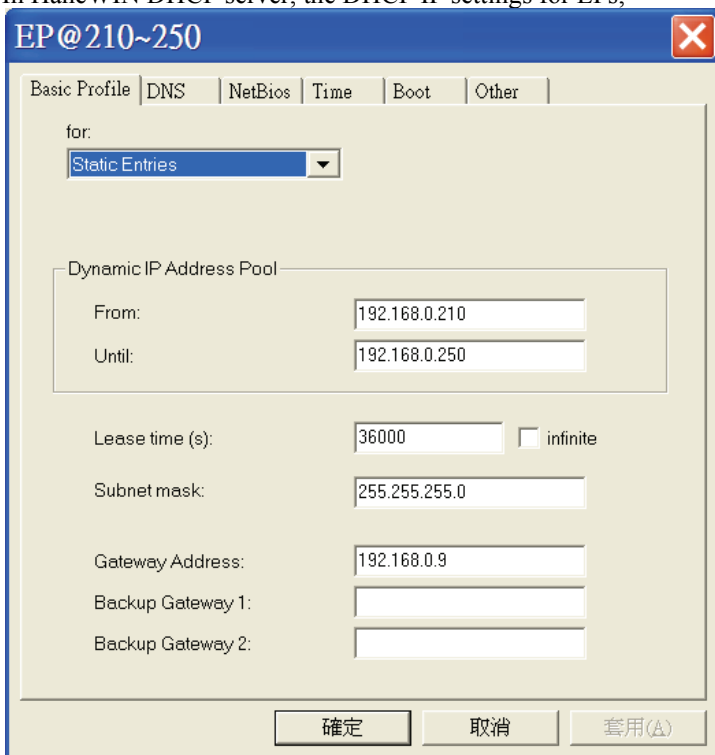


7. Power-on Master will get IP '192.168.0.207' via DHCP and start TFTP to get script file '00-01-40-20-00-07.shc' from TFTP server '192.168.0.99'.


8. Master will also retrieve two EP config script files '00-01-40-1F-00-01.ep' and '00-01-40-1F-03-1F.ep'. Then config each EP accordingly.
9. The Master script file will enable '**DHCP Option 82**'. In HaneWIN DHCP server, let host (PC) at EP get IP according to its '**Circuit ID**' (EP MAC Address) via DHCP.



10. In HaneWIN DHCP server, the DHCP IP settings for EPs,



Accept DHCP requests from host at EP '00-01-40-1F-00-01' and host at EP '00-01-40-1F-03-1F',

Static entry 

With static entries you can assign clients with known MAC (hardware) address or identifier a fixed or dynamic IP address and a configuration profile.

If an assigned fixed IP address falls within a dynamic IP address range, the address is excluded from the IP address pool. For dynamic clients specify an IP address of 0.0.0.0.

MAC addresses or identifiers must be specified byte by byte in hexadecimal notation. For MAC addresses the bytes must be separated by a dash or colon.


☒ Relay Agent Information: ☒ Circuit ☐ Remote Identifier

☐ Client Identifier:

☐ MAC Address:


IP Address:

Optional

Configuration Profile: 

Remark:

☐ Redundant entry (allow entry with an existing IP address)

Static entry 

With static entries you can assign clients with known MAC (hardware) address or identifier a fixed or dynamic IP address and a configuration profile.

If an assigned fixed IP address falls within a dynamic IP address range, the address is excluded from the IP address pool. For dynamic clients specify an IP address of 0.0.0.0.

MAC addresses or identifiers must be specified byte by byte in hexadecimal notation. For MAC addresses the bytes must be separated by a dash or colon.


☒ Relay Agent Information: ☒ Circuit ☐ Remote Identifier

☐ Client Identifier:

☐ MAC Address:

IP Address:

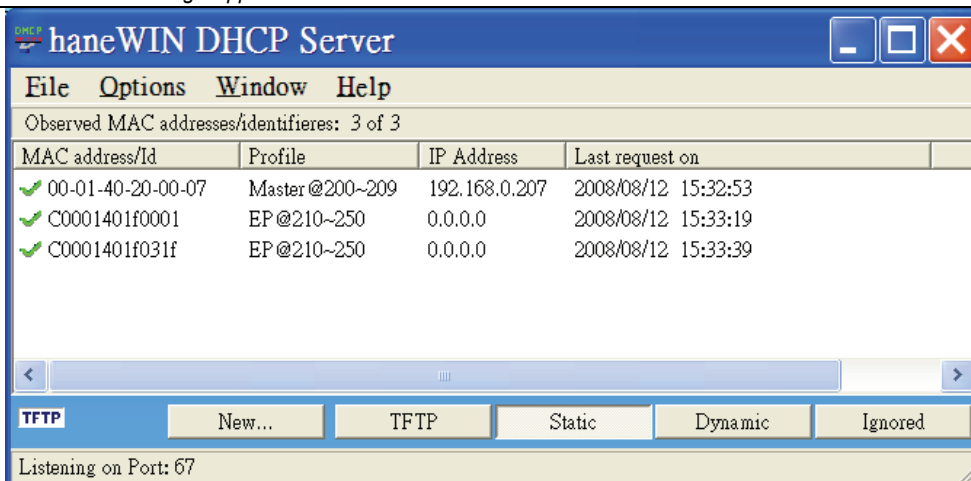
Optional

Configuration Profile: 

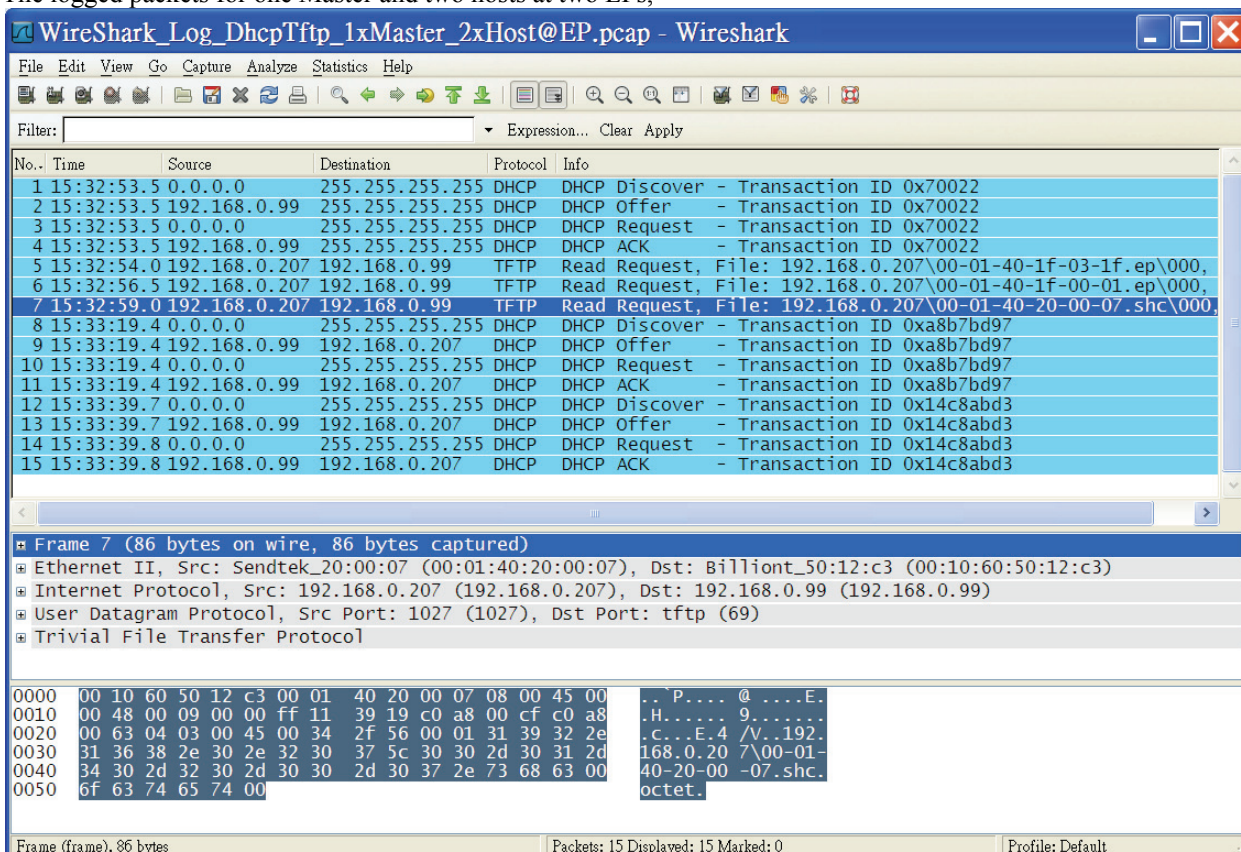
Remark:

☐ Redundant entry (allow entry with an existing IP address)

11. Status in HaneWIN DHCP server,



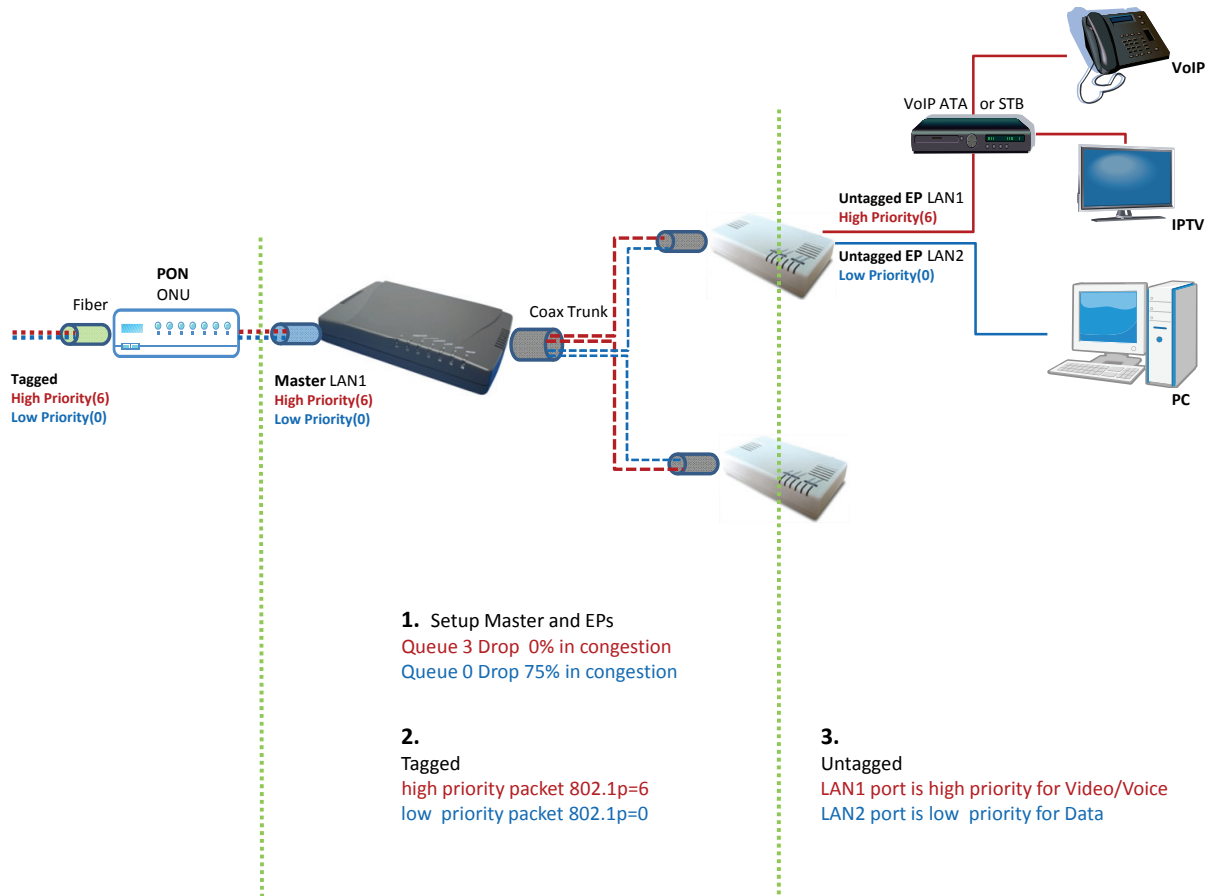
12. The logged packets for one Master and two hosts at two EPs,



QoS & IGMP

QoS Example

Refer the following generic QoS scheme diagram,



Adopt the following QoS rules in this example,

1. Congestion Control

Drop low-priority packets within Master (queue) and EPs (queue) to guarantee available buffers for high-priority packets.

EP Management

Port QoS IGMP VLAN Status

QoS Setup

Queue	Service Weight	Drop Ratio
0 (Lowest)	1	75% ▼
1	2 (1~15)	50% ▼
2	3 (1~15)	25% ▼
3	4 (1~15)	0% ▼

Service Weight and Drop Ratio of Queue

2. Use Tag 802.1p

Tell the packet priority in Fiber/Coax trunk by VLAN Tag.

3. Route by EP Lan1/Lan2

High priority packet goes to/from EP LAN1 port, low priority packet goes to/from EP LAN2 port. Also refer the other diagrams as [Two VID](#) or [Three VID](#) for more detail.

IGMP

Support IGMP v2 with 'Fast Leave'. Make sure the router/server works in the IGMP v2 mode before you enable the 'IGMP Snooping' function, the Master and EPs do not support IGMP v3. All Master and connected EPs should have the same 'IGMP Snooping' settings (enabled).

SNMP

The SNMP agent resides in CEM-538M supports SNMP V2c operations from SNMP server. CEM-538M agent supports two SNMP management methods: a **direct** read/write management and an **indirect** read/write management.

- **Direct management:** SNMP server just read/write the CEM-538M snmp oid normally.
- **Indirect management:** Works for Smart EP(CES-532D) Ethernet properties only. First, SNMP server need to designate the target EP in CEM-538M SNMP agent, then SNMP server will be able to change the target EP settings managed by CEM-538M. CEM-538M SNMP agent only read/write to the designated EP and takes care one EP in each designation (alike the proxy).

MIB

The proprietary MIB file ‘SendTek-MDU.mib’ has the complete private MIB's definitions for Master CEM-538M and Smart EP CES-532D. HPNA3 snmp mib objects-id(OID) are classified into the following main groups:

- Master **System** properties: *hpnaBrSystemGroup* / *hpnaBrIPGroup* / *hpnaBrAdminGroup* / *hpnaBrServiceGroup* / *hpnaBrTFTPGroup*
- Master **HPNA** properties: *hpnaBrMasterHpnaGroup*
- EP **HPNA** properties: *hpnaBrEPHpnaGroup* — include EP and Smart EP
- Master **Ethernet** properties: *hpnaBrEtherGroup*
- Smart EP **Ethernet** properties: *hpnaBrSmartEPetherGroup*
- TRAPs: *hpnaBrNotification*

Note you may read/write the group ‘*hpnaBrSmartEPetherGroup*’ by **indirect** management only.

MIB Tree by net-snmp

Generated by the net-snmp command “snmptranslate -m ./SendTek2-MDU.mib -Tp”,
(for mib file v4.25)

```
+--iso(1)
|
+--org(3)
|
+--dod(6)
|
+--internet(1)
|
+--directory(1)
|
+--mgmt(2)
|
+--mib-2(1)
|
+--transmission(10)
|
+--experimental(3)
|
+--private(4)
|
+--enterprises(1)
|
+--sendtek(8442)
|
+--products(1)
|
+--hpnaBr(2)
|
+--hpna3Br(1)
|
+--CEM-336(1)
|
+--CEM-338M(4)
|
+--CEM-538M(6)
|
+--mibobjects(2)
```

```

+--hpnaBrMib(2)
|
|+--hpnaBrSystemGroup(1)
| |
| |+-R-- EnumVal hpnaBrModel(1)
| | |Values: CEM-336(36899), CEM-338M(36907), CEM-338M(38955), CEM-538M(39084)
| |+-R-- String hpnaBrProductName(2)
| | |Textual Convention: DisplayString
| | |Size: 0..32
| |+-R-- String hpnaBrSystemMac(3)
| | |Textual Convention: MacAddress
| | |Size: 6
| |+-R-- String hpnaBrMasterMac(4)
| | |Textual Convention: MacAddress
| | |Size: 6
| |+-R-- String hpnaBrHardwareVersion(5)
| | |Textual Convention: DisplayString
| | |Size: 0..5
| |+-R-- String hpnaBrBootVersion(6)
| | |Textual Convention: DisplayString
| | |Size: 0..16
| |+-R-- String hpnaBrSystemFwWorkingVersion(7)
| | |Textual Convention: DisplayString
| | |Size: 0..16
| |+-R-- String hpnaBrSystemFwUploadVersion(8)
| | |Textual Convention: DisplayString
| | |Size: 0..16
| |+-RW- EnumVal hpnaBrSystemFwUpgradeAction(9)
| | |Values: idle(0), activateThenReboot(1)
| |+-R-- EnumVal hpnaBrSystemFwUpgradeStatus(10)
| | |Values: normalOrComplete(0), inProgress(1), failed(2)
| |+-RW- EnumVal hpnaBrSystemReboot(11)
| | |Values: idle(0), activateThenReboot(1)
|
|+--hpnaBrIPGroup(2)
| |
| |+-RW- IpAddr hpnaBrIPAddress(1)
| |+-RW- IpAddr hpnaBrSubnetMask(2)
| |+-RW- IpAddr hpnaBrDefaultGatewayIPAddress(3)
| |+-RW- IpAddr hpnaBrPrimaryDnsIPAddress(4)
| |+-RW- IpAddr hpnaBrSecondaryDnsIPAddress(5)
| |+-RW- EnumVal hpnaBrIPAddressAssign(6)
| | |Values: static(0), dynamic-dhcp(1)
| |+-R-- Integer32 hpnaBrDHCPLease(8)
| |+-RW- EnumVal hpnaBrHostDHCPPadOpt82EnableCtrl(10)
| | |Values: disable(0), enable(1)
| |+-RW- EnumVal hpnaBrHostDHCPSPnoopEnableCtrl(12)
| | |Values: disable(0), enable(1)
|
|+--hpnaBrHostDHCPTable(13)
| |
| |+-hpnaBrHostDHCPEntry(1)
| | |Index: hpnaBrHostDHCPIndex
| | |
| | |+-R-- Integer32 hpnaBrHostDHCPIndex(1)
| | |+-R-- String hpnaBrHostDHCPPEPMac(3)
| | | |Textual Convention: MacAddress
| | | |Size: 6
| | |+-R-- String hpnaBrHostDHCPHostMac(4)
| | | |Textual Convention: MacAddress
| | | |Size: 6
| | |+-R-- IpAddr hpnaBrHostDHCPIPAddress(5)
| | |+-R-- Integer32 hpnaBrHostDHCPLease(6)
| |
| |+-RW- EnumVal hpnaBrAutoConfig(15)
| | |Values: disable(0), enable(1)
| |+-RW- IpAddr hpnaBrAutoConfigTFTPSTServerIPAddress(16)
| |+-RW- String hpnaBrAutoConfigTFTPEXTensionPath(17)
| | |Textual Convention: DisplayString
| | |Size: 0..40
|
|+--hpnaBrGroupObsolete1(3)
|
|+--hpnaBrAdminGroup(4)
| |
| |+-hpnaBrAccountTable(1)
| | |
| | |+-hpnaBrAccountEntry(1)
| | | |Index: hpnaBrAccountIndex
| | | |
| | | |+-R-- Integer32 hpnaBrAccountIndex(1)
| | | |+-RW- String hpnaBrAccountName(2)
| | | | |Textual Convention: DisplayString
| | | | |Size: 0..8
| | | |+-RW- String hpnaBrAccountPasswd(3)

```

```

+-- -R-- Integer32 hpnaBrSnmpTrapEnableIndex(1)
+-- -R-- EnumVal hpnaBrSnmpTrapEnableType(2)
|   Values: LogInOut(0), Upgrade(1), EPStatus(2), EPDiagnosis(3), DHCP(4), AutoConfig(5)
+-- -RW- EnumVal hpnaBrSnmpTrapEnableCtrl(3)
|   Values: disable(0), enable(1)
+--hpnaBrSnmpTrapTable(9)
|
+--hpnaBrSnmpTrapEntry(1)
|   Index: hpnaBrSnmpTrapIndex
|
+-- -R-- Integer32 hpnaBrSnmpTrapIndex(1)
+-- -RW- IpAddr hpnaBrSnmpTrapIPAddress(3)
+-- -RW- INTEGER hpnaBrSnmpTrapPortNum(4)
|   Range: 0..65535
+-- -RW- String hpnaBrSnmpTrapCommunity(5)
|   Textual Convention: DisplayString
|   Size: 0..16
+-- CR-- EnumVal hpnaBrSnmpTrapRowStatus(6)
|   Textual Convention: RowStatus
|   Values: active(1), notInService(2), notReady(3), createAndGo(4), createAndWait(5), destroy(6)
+--hpnaBrServiceSyslogTable(4)
|
+--hpnaBrSyslogEntry(1)
|   Index: hpnaBrSyslogIndex
|
+-- -R-- Integer32 hpnaBrSyslogIndex(1)
+-- -RW- IpAddr hpnaBrSyslogIPAddress(3)
+-- -RW- EnumVal hpnaBrSyslogSeverity(4)
|   Values: emergency(0), alert(1), critical(2), error(3), warning(4), notice(5), info(6), debug(7)
+-- CR-- EnumVal hpnaBrSyslogRowStatus(5)
|   Textual Convention: RowStatus
|   Values: active(1), notInService(2), notReady(3), createAndGo(4), createAndWait(5), destroy(6)
+--hpnaBrServiceSntp(5)
|
+-- -RW- EnumVal hpnaBrSntpEnableCtrl(1)
|   Values: disable(0), enable(1)
+-- -RW- String hpnaBrSntpPrimaryServerName(2)
|   Textual Convention: DisplayString
|   Size: 0..32
+-- -RW- String hpnaBrSntpSecondaryServerName(3)
|   Textual Convention: DisplayString
|   Size: 0..32
+-- -RW- EnumVal hpnaBrSntpTimeZone(4)
|   Values: GMT(0), GMT-plus-0100(4), GMT-plus-0200(8), GMT-plus-0300(12), GMT-plus-0330(14), ...,GMT-minus-0100(252)
+-- -RW- INTEGER hpnaBrSntpQueryPeriodInMinutes(5)
|   Range: 0..65535
+-- -R-- String hpnaBrSntpCurrentTime(6)
|   Textual Convention: DisplayString
|   Size: 0..32
+--hpnaBrGroupObsolete2(6)
+--hpnaBrMasterHpnaGroup(7)
|
+-- -R-- String hpnaBrMasterMac(1)
|   Textual Convention: MacAddress
|   Size: 6
+-- -R-- String hpnaBrMasterNote(2)
|   Textual Convention: DisplayString
|   Size: 0..16
+-- -R-- EnumVal hpnaBrMasterModel(3)
|   Values: CEM-336(36899), CEM-338M(36907), CEM-338M(38955), CEM-538M(39084)
+-- -R-- String hpnaBrMasterProductName(4)
|   Textual Convention: DisplayString
|   Size: 0..32
+-- -R-- EnumVal hpnaBrMasterWorkingPrivacyMode(5)
|   Values: off(0), on(1)
+-- -RW- EnumVal hpnaBrMasterSettingPrivacyMode(6)
|   Values: off(0), on(1)
+-- -R-- INTEGER hpnaBrMasterWorkingPrivacyKey(7)
|   Range: 0..65535
+-- -RW- INTEGER hpnaBrMasterSettingPrivacyKey(8)
|   Range: 0..65535
+-- -R-- String hpnaBrMasterDrvWorkingVersion(9)
|   Textual Convention: DisplayString
|   Size: 0..16
+-- -R-- String hpnaBrMasterDrvUploadVersion(10)
|   Textual Convention: DisplayString
|   Size: 0..16
+-- -RW- EnumVal hpnaBrMasterDrvUpgradeAction(11)
|   Values: idle(0), activate(1)
+-- -R-- EnumVal hpnaBrMasterDrvUpgradeStatus(12)
|   Values: normalOrComplete(0), inProgress(1), failed(2)

```

```

+--RW- EnumVal  hpnaBrMasterScanEPAction(13)
|   Values: idle(0), activate(1)
+--R-- EnumVal  hpnaBrMasterScanEPStatus(14)
|   Values: normalOrComplete(0), inProgress(1), failed(2)

+--hpnaBrEPHpnaGroup(8)
|
|   +--hpnaBrEPTable(1)
|   |
|   |   +--hpnaBrEPEntry(1)
|   |   |   Index: hpnaBrEPIndex
|   |   |
|   |   |   +--R-- Integer32 hpnaBrEPIndex(1)
|   |   |   +--R-- String  hpnaBrEPMac(2)
|   |   |   |   Textual Convention: MacAddress
|   |   |   |   Size: 6
|   |   |   +--RW- String  hpnaBrEPNote(3)
|   |   |   |   Textual Convention: DisplayString
|   |   |   |   Size: 0..16
|   |   |   +--R-- EnumVal  hpnaBrEPModel(4)
|   |   |   |   Values: CET-330-MDU(4131), CET-338(4139), CES-532D(5292)
|   |   |   +--R-- String  hpnaBrEPProductName(5)
|   |   |   |   Textual Convention: DisplayString
|   |   |   |   Size: 0..32
|   |   |   +--R-- EnumVal  hpnaBrEPOnlineStatus(6)
|   |   |   |   Values: off(0), on(1)
|   |   |   +--RW- INTEGER  hpnaBrEPHostCountLimit(8)
|   |   |   |   Range: 0..11
|   |   |   +--R-- EnumVal  hpnaBrEPWorkingPrivacyKeyMatched(12)
|   |   |   |   Values: no(0), yes(1)
|   |   |   +--R-- String  hpnaBrEPDrvWorkingVersion(13)
|   |   |   |   Textual Convention: DisplayString
|   |   |   |   Size: 0..16
|   |   |   +--R-- String  hpnaBrEPDrvUploadVersion(14)
|   |   |   |   Textual Convention: DisplayString
|   |   |   |   Size: 0..16
|   |   |   +--RW- EnumVal  hpnaBrEPDrvUpgradeAction(15)
|   |   |   |   Values: idle(0), activate(1)
|   |   |   +--R-- EnumVal  hpnaBrEPDrvUpgradeStatus(16)
|   |   |   |   Values: normalOrComplete(0), inProgress(1), failed(2)
|   |   |   +--RW- EnumVal  hpnaBrEPPhyDiagAction(17)
|   |   |   |   Values: idle(0), activate(1)
|   |   |   +--R-- EnumVal  hpnaBrEPPhyDiagStatus(18)
|   |   |   |   Values: normalOrComplete(0), inProgress(1), failed(2)
|   |   |   +--R-- String  hpnaBrEPDiagTxResult(19)
|   |   |   |   Textual Convention: DisplayString
|   |   |   |   Size: 0..64
|   |   |   +--R-- String  hpnaBrEPDiagRxResult(20)
|   |   |   |   Textual Convention: DisplayString
|   |   |   |   Size: 0..64
|   |   |   +--RW- EnumVal  hpnaBrEPHostOnlineDiagAction(21)
|   |   |   |   Values: idle(0), activate(1)
|   |   |   +--R-- EnumVal  hpnaBrEPHostOnlineDiagStatus(22)
|   |   |   |   Values: normalOrComplete(0), inProgress(1), failed(2)
|   |   |   +--RW- EnumVal  hpnaBrEPRowStatus(27)
|   |   |   |   Values: active(1), destroy(6)
|   |
|   |   +--hpnaBrEPHostTable(2)
|   |   |
|   |   |   +--hpnaBrEPHostEntry(1)
|   |   |   |   Index: hpnaBrEP-MacIndex
|   |   |   |
|   |   |   |   +--R-- Integer32 hpnaBrEP-MacIndex(1)
|   |   |   |   +--R-- EnumVal  hpnaBrEP-MacType(2)
|   |   |   |   |   Values: EP(0), Master(1), Host(2)
|   |   |   |   +--R-- String  hpnaBrEP-EPMac(3)
|   |   |   |   |   Textual Convention: MacAddress
|   |   |   |   |   Size: 6
|   |   |   |   +--R-- String  hpnaBrEP-HostMac(4)
|   |   |   |   |   Textual Convention: MacAddress
|   |   |   |   |   Size: 6
|   |   |
|   |   |   +--RW- EnumVal  hpnaBrEP-ScanHostAction(2)
|   |   |   |   Values: idle(0), activate(1)
|   |   |   +--R-- EnumVal  hpnaBrEP-ScanHostStatus(3)
|   |   |   |   Values: normalOrComplete(0), inProgress(1), failed(2)
|   |
|   |   +--hpnaBrEPNetPerTable(3)
|   |   |
|   |   |   +--hpnaBrEPNetPerEntry(1)
|   |   |   |   Index: hpnaBrEPNetPerIndex
|   |   |   |
|   |   |   |   +--R-- Integer32 hpnaBrEPNetPerIndex(1)
|   |   |   |   +--R-- String  hpnaBrEPNetPerEPMac(2)
|   |   |   |   |   Textual Convention: MacAddress
|   |   |   |   |   Size: 6
|   |   |   |   +--R-- Integer32 hpnaBrEPNetPerTxSNR(3)

```

```

+-- -R-- Integer32 hpnaBrEPNetPerRxSNR(4)
+-- -R-- Integer32 hpnaBrEPNetPerTxRate(5)
+-- -R-- Integer32 hpnaBrEPNetPerRxRate(6)

```

+--hpnaBrTFTPGroup(9)

```

+-- -RW- IpAddr hpnaBrTFTPServerIPAddress(1)
+-- -RW- String hpnaBrTFTPFilename(2)
|   Textual Convention: DisplayString
|   Size: 0..32
+-- -RW- EnumVal hpnaBrTFTPGetAction(3)
|   Values: idle(0), activate(1)
+-- -R-- EnumVal hpnaBrTFTPGetStatus(4)
|   Values: normalOrComplete(0), inProgress(1), failed(2)
+-- -RW- String hpnaBrTFTPExtensionPath(5)
|   Textual Convention: DisplayString
|   Size: 0..40

```

+--hpnaBrEtherGroup(10)

```

+--hpnaBrEtherPort(1)
|
+--hpnaBrPortPropTable(1)
|
+--hpnaBrPortPropEntry(1)
|   Index: hpnaBrPortPropPID
|
+-- -R-- Integer32 hpnaBrPortPropPID(1)
+-- -R-- EnumVal hpnaBrPortPropType(2)
|   Values: ethernet(0), coax(1), phoneLine(2)
+-- -RW- EnumVal hpnaBrPortPropConfig(3)
|   Values: autoNegotiation(0), 100MbpsFullDuplex(1), 100MbpsHalfDuplex(2), 10MbpsFullDuplex(3), 10MbpsHalfDuplex(4)
+-- -R-- EnumVal hpnaBrPortPropLinkStatus(4)
|   Values: off(0), 100MbpsFullDuplex(1), 100MbpsHalfDuplex(2), 10MbpsFullDuplex(3), 10MbpsHalfDuplex(4)
+-- -RW- EnumVal hpnaBrPortPropInRateCtrl(6)
|   Values: disable(0), enable(1)
+-- -RW- INTEGER hpnaBrPortPropInRate(7)
|   Range: 0..1563
+-- -RW- EnumVal hpnaBrPortPropOutRateCtrl(8)
|   Values: disable(0), enable(1)
+-- -RW- INTEGER hpnaBrPortPropOutRate(9)
|   Range: 0..1563
|
+--hpnaBrPortStatsTable(2)
|
+--hpnaBrPortStatsEntry(1)
|   Index: hpnaBrPortStatsPID
|
+-- -R-- Integer32 hpnaBrPortStatsPID(1)
+-- -R-- EnumVal hpnaBrPortStatsType(2)
|   Values: ethernet(0), coax(1), phoneLine(2)
+-- -R-- Counter64 hpnaBrPortStatsRxPkts(3)
+-- -R-- Counter64 hpnaBrPortStatsRxBytes(4)
+-- -R-- Counter64 hpnaBrPortStatsTxPkts(5)
+-- -R-- Counter64 hpnaBrPortStatsTxBytes(6)
+-- -R-- Counter64 hpnaBrPortStatsCollisions(7)
+-- -R-- Counter64 hpnaBrPortStatsErrors(8)
|
+--hpnaBrStatsCtrl(3)
|
+-- -RW- EnumVal hpnaBrStatsCtrlReset(1)
|   Values: idle(0), activate(1)
+-- -RW- EnumVal hpnaBrStatsCtrlRefresh(2)
|   Values: idle(0), activate(1)
|
+--hpnaBrEtherQoS(2)
|
+--hpnaBrQueueTable(1)
|
+--hpnaBrQueueEntry(1)
|   Index: hpnaBrQueueNum
|
+-- -R-- Integer32 hpnaBrQueueNum(1)
+-- -R-- EnumVal hpnaBrQueueName(2)
|   Values: Q0(0), Q1(1), Q2(2), Q3(3)
+-- -RW- INTEGER hpnaBrQueueServiceWeight(3)
|   Range: 1..15
+-- -RW- EnumVal hpnaBrQueueDiscardPktRatio(4)
|   Values: 0Percent(0), 25Percent(1), 50Percent(2), 75Percent(3)
|
+--hpnaBrTcpUdpPriorityTable(2)
|
+--hpnaBrTcpUdpEntry(1)
|   Index: hpnaBrTcpUdpRuleNum
|
+-- -R-- Integer32 hpnaBrTcpUdpRuleNum(1)
+-- -RW- EnumVal hpnaBrTcpUdpEnableCtrl(2)

```

```

    | Values: disable(0), enable(1)
    | +--RW- INTEGER hpnaBrTcpUdpPortNum(3)
    | | Range: 0..65535
    | | +--RW- EnumVal hpnaBrTcpUdpMappedQueue(4)
    | | | Values: Q0(0), Q1(1), Q2(2), Q3(3)
    | +--hpnaBrEtherIGMPSnoop(3)
    | | +--RW- EnumVal hpnaBrIGMPSnoopEnableCtrl(1)
    | | | Values: disable(0), enable(1)
    | | +--RW- INTEGER hpnaBrIGMPSnoopQueryInterval(2)
    | | | Range: 4..510
    | +--hpnaBrEtherTagVLAN(4)
    | | +--RW- EnumVal hpnaBrTagVLANEnableCtrl(1)
    | | | Values: disable(0), enable(1)
    | +--hpnaBrTagPortTable(2)
    | | +--hpnaBrTagPortEntry(1)
    | | | Index: hpnaBrTagPortPID
    | | | +--R-- Integer32 hpnaBrTagPortPID(1)
    | | | +--R-- EnumVal hpnaBrTagPortType(2)
    | | | | Values: ethernet(0), coax(1), phoneLine(2)
    | | | +--RW- INTEGER hpnaBrTagPortPriority(3)
    | | | | Range: 0..7
    | | | +--RW- INTEGER hpnaBrTagPortVID(4)
    | | | | Range: 1..4095
    | | | +--RW- EnumVal hpnaBrTagPortInRule(5)
    | | | | Values: all(0), tag(1)
    | | | +--RW- EnumVal hpnaBrTagPortOutRule(6)
    | | | | Values: untag(0), tag(1), bypass(2)
    | | +--RW- EnumVal hpnaBrTagVLANChangePriorityCtrl(3)
    | | | Values: disable(0), enable(1)
    | +--hpnaBrSmartEPetherGroup(11)
    | | +--hpnaBrEPDesignate(1)
    | | | +--hpnaBrEPDesignateTable(1)
    | | | | +--hpnaBrEPDesignateEntry(1)
    | | | | | Index: hpnaBrEPDesignateEPIndex
    | | | | | +--R-- Integer32 hpnaBrEPDesignateEPIndex(1)
    | | | | | +--R-- String hpnaBrEPDesignateEPMac(2)
    | | | | | | Textual Convention: MacAddress
    | | | | | | Size: 6
    | | | | | +--R-- EnumVal hpnaBrEPDesignateOnlineStatus(3)
    | | | | | | Values: off(0), on(1)
    | | | | | +--R-- INTEGER hpnaBrEPDesignateDeviceVersion(4)
    | | | | | | Range: 0..65535
    | | | | | +--R-- EnumVal hpnaBrEPDesignateIsSmart(6)
    | | | | | | Values: no(0), yes(1), unknown(255)
    | | | | | +--RW- EnumVal hpnaBrEPDesignateIsTarget(7)
    | | | | | | Values: no(0), yes(1)
    | | +--hpnaBrEPetherPort(2)
    | | | +--hpnaBrEPPortPropTable(1)
    | | | | +--hpnaBrEPPortPropEntry(1)
    | | | | | Index: hpnaBrEPPortPropEPIndex, hpnaBrEPPortPropPID
    | | | | | +--R-- Integer32 hpnaBrEPPortPropEPIndex(1)
    | | | | | +--R-- Integer32 hpnaBrEPPortPropPID(2)
    | | | | | +--R-- String hpnaBrEPPortPropEPMac(3)
    | | | | | | Textual Convention: MacAddress
    | | | | | | Size: 6
    | | | | | +--R-- EnumVal hpnaBrEPPortPropType(4)
    | | | | | | Values: ethernet(0), coax(1), phoneLine(2)
    | | | | | +--RW- EnumVal hpnaBrEPPortPropConfig(5)
    | | | | | | Values: autoNegotiation(0), 100MbpsFullDuplex(1), 100MbpsHalfDuplex(2), 10MbpsFullDuplex(3), 10MbpsHalfDuplex(4)
    | | | | | +--R-- EnumVal hpnaBrEPPortPropLinkStatus(6)
    | | | | | | Values: off(0), 100MbpsFullDuplex(1), 100MbpsHalfDuplex(2), 10MbpsFullDuplex(3), 10MbpsHalfDuplex(4)
    | | | | | +--RW- EnumVal hpnaBrEPPortPropFlowCtrl(7)
    | | | | | | Values: off(0), on(1)
    | | | | | +--RW- EnumVal hpnaBrEPPortPropInRateCtrl(8)
    | | | | | | Values: disable(0), enable(1)
    | | | | | +--RW- INTEGER hpnaBrEPPortPropInRate(9)
    | | | | | | Range: 0..1563
    | | | | | +--RW- EnumVal hpnaBrEPPortPropOutRateCtrl(10)
    | | | | | | Values: disable(0), enable(1)
    | | | | | +--RW- INTEGER hpnaBrEPPortPropOutRate(11)

```



```

Range: 0..1563
+--RW- EnumVal hpnaBrEPPortPropEnableCtrl(12)
Values: disable(0), enable(1)

+--hpnaBrEPPortStatsTable(2)
+--hpnaBrEPPortStatsEntry(1)
| Index: hpnaBrEPPortStatsEPIndex, hpnaBrEPPortStatsPID
|
+--R-- Integer32 hpnaBrEPPortStatsEPIndex(1)
+--R-- Integer32 hpnaBrEPPortStatsPID(2)
+--R-- String hpnaBrEPPortStatsEPMac(3)
| Textual Convention: MacAddress
| Size: 6
+--R-- EnumVal hpnaBrEPPortStatsType(4)
| Values: ethernet(0), coax(1), phoneLine(2)
+--R-- Counter hpnaBrEPPortStatsRxPkts(5)
+--R-- Counter hpnaBrEPPortStatsRxBytes(6)
+--R-- Counter hpnaBrEPPortStatsTxPkts(7)
+--R-- Counter hpnaBrEPPortStatsTxBytes(8)
+--R-- Counter hpnaBrEPPortStatsCollisions(9)
+--R-- Counter hpnaBrEPPortStatsErrors(10)

+--hpnaBrEPStatsCtrlTable(3)
+--hpnaBrEPStatsCtrlEntry(1)
| Index: hpnaBrEPStatsCtrlEPIndex
|
+--R-- Integer32 hpnaBrEPStatsCtrlEPIndex(1)
+--R-- String hpnaBrEPStatsCtrlEPMac(2)
| Textual Convention: MacAddress
| Size: 6
+--RW- EnumVal hpnaBrEPStatsCtrlReset(3)
| Values: idle(0), activate(1)
+--RW- EnumVal hpnaBrEPStatsCtrlRefresh(4)
| Values: idle(0), activate(1)

+--hpnaBrEPETHERQoS(3)
+--hpnaBrEPQueueTable(1)
+--hpnaBrEPQueueEntry(1)
| Index: hpnaBrEPQueueEPIndex, hpnaBrEPQueueNum
|
+--R-- Integer32 hpnaBrEPQueueEPIndex(1)
+--R-- Integer32 hpnaBrEPQueueNum(2)
+--R-- String hpnaBrEPQueueEPMac(3)
| Textual Convention: MacAddress
| Size: 6
+--R-- EnumVal hpnaBrEPQueueName(4)
| Values: Q0(0), Q1(1), Q2(2), Q3(3)
+--RW- INTEGER hpnaBrEPQueueServiceWeight(5)
| Range: 1..15
+--RW- EnumVal hpnaBrEPQueueDiscardPktRatio(6)
| Values: 0Percent(0), 25Percent(1), 50Percent(2), 75Percent(3)

+--hpnaBrEPTcpUdpPriorityTable(2)
+--hpnaBrEPTcpUdpEntry(1)
| Index: hpnaBrEPTcpUdpEPIndex, hpnaBrEPTcpUdpRuleNum
|
+--R-- Integer32 hpnaBrEPTcpUdpEPIndex(1)
+--R-- Integer32 hpnaBrEPTcpUdpRuleNum(2)
+--R-- String hpnaBrEPTcpUdpEPMac(3)
| Textual Convention: MacAddress
| Size: 6
+--RW- EnumVal hpnaBrEPTcpUdpEnableCtrl(4)
| Values: disable(0), enable(1)
+--RW- INTEGER hpnaBrEPTcpUdpPortNum(5)
| Range: 0..65535
+--RW- EnumVal hpnaBrEPTcpUdpMappedQueue(6)
| Values: Q0(0), Q1(1), Q2(2), Q3(3)

+--hpnaBrEPETHERIGMPSnoop(4)
+--hpnaBrEPIGMPSnoopTable(1)
+--hpnaBrEPIGMPSnoopEntry(1)
| Index: hpnaBrEPIGMPSnoopEPIndex
|
+--R-- Integer32 hpnaBrEPIGMPSnoopEPIndex(1)
+--R-- String hpnaBrEPIGMPSnoopEPMac(2)
| Textual Convention: MacAddress
| Size: 6
+--RW- EnumVal hpnaBrEPIGMPSnoopEnableCtrl(3)
| Values: disable(0), enable(1)
+--RW- INTEGER hpnaBrEPIGMPSnoopQueryInterval(4)
| Range: 4..510

```



```

+--hpnaBrEPetherTagVLAN(5)
|
+--hpnaBrEPTagVLANCtrlTable(1)
|
+--hpnaBrEPTagVLANCtrlEntry(1)
|   Index: hpnaBrEPTagVLANEPIndex
|
|   +--R-- Integer32 hpnaBrEPTagVLANEPIndex(1)
|   +--R-- String   hpnaBrEPTagVLANEPMac(2)
|   |   Textual Convention: MacAddress
|   |   Size: 6
|   +--RW- EnumVal  hpnaBrEPTagVLANEnableCtrl(3)
|   |   Values: disable(0), enable(1)
|   +--RW- EnumVal  hpnaBrEPTagVLANChangePriorityCtrl(4)
|   |   Values: disable(0), enable(1)
|
+--hpnaBrEPTagPortTable(2)
|
+--hpnaBrEPTagPortEntry(1)
|   Index: hpnaBrEPTagPortEPIndex, hpnaBrEPTagPortPID
|
|   +--R-- Integer32 hpnaBrEPTagPortEPIndex(1)
|   +--R-- Integer32 hpnaBrEPTagPortPID(2)
|   +--R-- String   hpnaBrEPTagPortEPMac(3)
|   |   Textual Convention: MacAddress
|   |   Size: 6
|   +--R-- EnumVal  hpnaBrEPTagPortType(4)
|   |   Values: ethernet(0), coax(1), phoneLine(2)
|   +--RW- INTEGER  hpnaBrEPTagPortPriority(5)
|   |   Range: 0..7
|   +--RW- INTEGER  hpnaBrEPTagPortVID(6)
|   |   Range: 1..4095
|   +--RW- EnumVal  hpnaBrEPTagPortInRule(7)
|   |   Values: all(0), tag(1)
|   +--RW- EnumVal  hpnaBrEPTagPortOutRule(8)
|   |   Values: untag(0), tag(1), bypass(2)
|
+--hpnaBrEPCtrl(6)
|
+--hpnaBrEPCtrlTable(1)
|
+--hpnaBrEPCtrlEntry(1)
|   Index: hpnaBrEPCtrlEPIndex
|
|   +--R-- Integer32 hpnaBrEPCtrlEPIndex(1)
|   +--R-- String   hpnaBrEPCtrlEPMac(2)
|   |   Textual Convention: MacAddress
|   |   Size: 6
|   +--RW- EnumVal  hpnaBrEPCtrlEtherDefaultAction(3)
|   |   Values: idle(0), activate(1)
|   +--RW- EnumVal  hpnaBrEPCtrlRebootAction(4)
|   |   Values: idle(0), activateThenReboot(1)
|
+--notifications(3)
|
+--hpnaBrNotification(2)
|
|   +--hpnaBrHttpLoginNotification(1)
|   +--hpnaBrHttpLogoutNotification(2)
|   +--hpnaBrHttpLogin.Auth.FailedNotification(3)
|   +--hpnaBrTelnetLoginNotification(4)
|   +--hpnaBrTelnetLogoutNotification(5)
|   +--hpnaBrTelnetLogin.Auth.FailedNotification(6)
|   +--hpnaBrSystemFwUpgradeNotification(11)
|   +--hpnaBrDhcpClientAckNotification(21)
|   +--hpnaBrHostDhcpClientAckNotification(23)
|   +--hpnaBrAutoConfigTFTPGetNotification(27)
|   +--hpnaBrHTTPGetNotification(51)
|   +--hpnaBrMasterDrvUpgradeNotification(71)
|   +--hpnaBrEPDrvUpgradeNotification(81)
|   +--hpnaBrEPOnlineStatusNotification(82)
|   +--hpnaBrEPDiagResultNotification(83)
|   +--hpnaBrTFTPGetNotification(91)
|
+--security(5)
|
+--snmpV2(6)
|
|   +--snmpDomains(1)
|   |
|   +--snmpProxys(2)
|   |
|   +--snmpModules(3)

```

MIB oid

Direct management – System

Read (Get, Get-Next) or write (Set) the following oid via SNMP operations directly.

hpnaBrSystemGroup(.1.3.6.1.4.1.8442.2.2.1)

- hpnaBrModel.0 (.1.3.6.1.4.1.8442.2.2.1.1.0)
- hpnaBrProductName.0 (.1.3.6.1.4.1.8442.2.2.1.2.0)
- hpnaBrSystemMac.0 (.1.3.6.1.4.1.8442.2.2.1.3.0)
- ...
- hpnaBrSystemReboot.0 (.1.3.6.1.4.1.8442.2.2.1.11.0)

Name/OID	Value	Type
hpnaBrModel.0	39084	Integer
hpnaBrProductName.0	Coax(3110) 12~28 Hi-Pwr MDU	OctetString
hpnaBrSystemMac.0	00-01-40-20-00-12	OctetString
hpnaBrMasterMac.0	00-01-40-21-00-12	OctetString
hpnaBrHardwareVersion.0	B3	OctetString
hpnaBrBootVersion.0	3.1	OctetString
hpnaBrSystemFwWorkingVersion.0	3.33	OctetString
hpnaBrSystemFwUploadVersion.0	nonexistent	OctetString
hpnaBrSystemFwUpgradeAction.0	idle	Integer
hpnaBrSystemFwUpgradeStatus.0	normalOrComplete	Integer
hpnaBrSystemReboot.0	idle	Integer

hpnaBrIPGroup(.1.3.6.1.4.1.8442.2.2.2)

- hpnaBrIPAddress.0 (.1.3.6.1.4.1.8442.2.2.2.1.0)
- hpnaBrSubnetMask.0 (.1.3.6.1.4.1.8442.2.2.2.2.0)
- hpnaBrDefaultGatewayIPAddress.0 (.1.3.6.1.4.1.8442.2.2.2.3.0)
- ...
- hpnaBrHostDHCP SnoopEnableCtrl.0 (.1.3.6.1.4.1.8442.2.2.2.12.0)
- hpnaBrHostDHCP Table(.1.3.6.1.4.1.8442.2.2.2.13) – **n** is table index
 - hpnaBrHostDHCPIndex.**n** (.1.3.6.1.4.1.8442.2.2.2.13.1.1.**n**)
 - hpnaBrHostDHCPPEPMac.**n** (.1.3.6.1.4.1.8442.2.2.2.13.1.3.**n**)
 - hpnaBrHostDHCPHostMac.**n** (.1.3.6.1.4.1.8442.2.2.2.13.1.4.**n**)
 - hpnaBrHostDHCIPIAddress.**n** (.1.3.6.1.4.1.8442.2.2.2.13.1.5.**n**)
 - hpnaBrHostDHCPLease.**n** (.1.3.6.1.4.1.8442.2.2.2.13.1.6.**n**)

If the 'hpnaBrHostDHCP SnoopEnableCtrl' is 'enable', Master will keep DHCP information for the host (user PC) at EPs. As the following example, one CEM-538M with 5 hosts at 4 EPs (one EP has two hosts).

	hpnaBrHostDHCPIndex	hpnaBrHostDHCPPEPMac	hpnaBrHostDHCPHostMac	hpnaBrHostDHCIPIAddress	hpnaBrHostDHCPLease
1	0	00-01-40-1F-03-15	00-11- -	192.168.0.10	70597
2	1	00-01-40-1F-02-FA	00-15- -	192.168.0.11	59257
3	2	00-01-40-1F-02-E2	00-21- -	192.168.0.12	61601
4	3	00-01-40-1F-02-E2	00-11- -	192.168.0.14	43007
5	4	00-01-40-1F-03-20	00-0E- -	192.168.0. 4	80454

- hpnaBrAutoConfig.0 (.1.3.6.1.4.1.8442.2.2.2.15.0)
- hpnaBrAutoConfigTFTPServerIPAddress.0 (.1.3.6.1.4.1.8442.2.2.2.16.0) – for Auto-Config TFTP session only
- hpnaBrAutoConfigTFTPExtensionPath.0 (.1.3.6.1.4.1.8442.2.2.2.17.0) – for Auto-Config TFTP session only.

hpnaBrAdminGroup (.1.3.6.1.4.1.8442.2.2.4)

- hpnaBrAccountTable (.1.3.6.1.4.1.8442.2.2.4.1) – **n** is table index
 - hpnaBrAccountIndex.**n** (.1.3.6.1.4.1.8442.2.2.4.1.1.1.**n**)
 - hpnaBrAccountName.**n** (.1.3.6.1.4.1.8442.2.2.4.1.1.2.**n**)
 - ...
- hpnaBrAllowIPProtocolTable (.1.3.6.1.4.1.8442.2.2.4.2) – **n** is table index
 - hpnaBrAllowIndex.**n** (.1.3.6.1.4.1.8442.2.2.4.2.1.1.**n**)
 - hpnaBrAllowIPAddress.**n** (.1.3.6.1.4.1.8442.2.2.4.2.1.2.**n**)

- ...
- hpnaBrStaticMacTable(.1.3.6.1.4.1.8442.2.2.4.3) – **n** is table index
 - hpnaBrStaticMacIndex.**n** (.1.3.6.1.4.1.8442.2.2.4.3.1.1.**n**)
 - hpnaBrStaticMacAddress.**n** (.1.3.6.1.4.1.8442.2.2.4.3.1.2.**n**)
- ...

hpnaBrServiceGroup (.1.3.6.1.4.1.8442.2.2.5)

- hpnaBrServiceTelnet (.1.3.6.1.4.1.8442.2.2.5.1)
 - hpnaBrTelnetEnableCtrl.**0** (.1.3.6.1.4.1.8442.2.2.5.1.1.**0**)
 - hpnaBrTelnetPortNum.**0** (.1.3.6.1.4.1.8442.2.2.5.1.2.**0**)
- ...
- hpnaBrServiceHttp (.1.3.6.1.4.1.8442.2.2.5.2)
 - hpnaBrHttpEnableCtrl.**0** (.1.3.6.1.4.1.8442.2.2.5.2.1.**0**)
 - hpnaBrHttpPortNum.**0** (.1.3.6.1.4.1.8442.2.2.5.2.2.**0**)
- ...
- hpnaBrServiceSnmpp (.1.3.6.1.4.1.8442.2.2.5.3)
 - hpnaBrSnmppEnableCtrl.**0** (.1.3.6.1.4.1.8442.2.2.5.3.1.**0**)
 - hpnaBrSnmppPortNum.**0** (.1.3.6.1.4.1.8442.2.2.5.3.2.**0**)
- ...
- hpnaBrSnmppReadOnlyCommunity.**0** (.1.3.6.1.4.1.8442.2.2.5.3.7.**0**)

For example,

Name/OID	Value	Type
hpnaBrSnmppEnableCtrl.0	enable	Integer
hpnaBrSnmppPortNum.0	161	Integer
hpnaBrSnmppName.0		OctetString
hpnaBrSnmppContact.0		OctetString
hpnaBrSnmppLocation.0		OctetString
hpnaBrSnmppReadWriteCommunity.0	private	OctetString
hpnaBrSnmppReadOnlyCommunity.0	public	OctetString

- hpnaBrSnmppTrapEnableTable(.1.3.6.1.4.1.8442.2.2.5.3.8) – **n** is table index
 - hpnaBrSnmppTrapEnableIndex.**n** (.1.3.6.1.4.1.8442.2.2.5.3.8.1.1.**n**)
 - hpnaBrSnmppTrapEnableType.**n** (.1.3.6.1.4.1.8442.2.2.5.3.8.1.2.**n**)
 - hpnaBrSnmppTrapEnableCtrl.**n** (.1.3.6.1.4.1.8442.2.2.5.3.8.1.3.**n**)

hpnaBrSnmppTrapEnableIndex	hpnaBrSnmppTrapEnableType	hpnaBrSnmppTrapEnableCtrl
1 0	LogInOut	enable
2 1	Upgrade	enable
3 2	EPStatus	enable
4 3	EPDiagnosis	enable
5 4	DHCP	enable
6 5	AutoConfig	enable

- hpnaBrSnmppTrapTable(.1.3.6.1.4.1.8442.2.2.5.3.9) – **n** is table index
 - hpnaBrSnmppTrapIndex.**n** (.1.3.6.1.4.1.8442.2.2.5.3.9.1.1.**n**)
 - hpnaBrSnmppTrapIPAddress.**n** (.1.3.6.1.4.1.8442.2.2.5.3.9.1.3.**n**)
- ...

For example has one trap receiver,

hpnaBrSnmppTrapIndex	hpnaBrSnmppTrapIPAddress	hpnaBrSnmppTrapPortNum	hpnaBrSnmppTrapCommunity	hpnaBrSnmppTrapRowStatus
1 0	192.168.0.123	162		1

- hpnaBrServiceSyslogTable (.1.3.6.1.4.1.8442.2.2.5.4) – **n** is table index
 - hpnaBrSyslogIndex.**n** (.1.3.6.1.4.1.8442.2.2.5.4.1.1.**n**)
 - hpnaBrSyslogIPAddress.**n** (.1.3.6.1.4.1.8442.2.2.5.4.1.3.**n**)
- ...

The example shows two syslog servers,

hpnaBrSyslogIndex	hpnaBrSyslogIPAddress	hpnaBrSyslogSeverity	hpnaBrSyslogRowStatus
1 0	192.168.0.180	debug	1
2 1	192.168.0.139	debug	1

- hpnaBrServiceSntp (.1.3.6.1.4.1.8442.2.2.5.5)

- hpnaBrSntpEnableCtrl.0 (.1.3.6.1.4.1.8442.2.2.5.1.0)
- hpnaBrSntpPrimaryServerName.0 (.1.3.6.1.4.1.8442.2.2.5.2.0)
- ...

For example,

Name/OID	Value	Type
hpnaBrSntpEnableCtrl.0	enable	Integer
hpnaBrSntpPrimaryServerName.0	time.stdtime.gov.tw	OctetString
hpnaBrSntpSecondaryServerName.0		OctetString
hpnaBrSntpTimeZone.0	GMT-plus-0800	Integer
hpnaBrSntpQueryPeriodInMinutes.0	60	Integer
hpnaBrSntpCurrentTime.0	Sep 25 12:17:13	OctetString

hpnaBrTFTPGroup (.1.3.6.1.4.1.8442.2.2.9)

To upload the 'System Firmware'/'HPNA Driver' onto CEM-538M from TFTP server, not for Auto-Config TFTP session,

- hpnaBrTFTPServerIPAddress.0 (.1.3.6.1.4.1.8442.2.2.9.1.0)
- hpnaBrTFTPFilename.0 (.1.3.6.1.4.1.8442.2.2.9.2.0)
- ...

For example, set 'hpnaTFTPGetAction' from 'idle' to 'activate' to start TFTP session, the 'hpnaBrTFTPGetStatus' will indicate 'inProgress' after beginning TFTP ...

Name/OID	Value	Type
hpnaBrTFTPServerIPAddress.0	192.168.0.123	IpAddress
hpnaBrTFTPFilename.0	CEM538M_Sysfw_V3.33.bin	OctetString
hpnaBrTFTPGetAction.0	activate	Integer
hpnaBrTFTPGetStatus.0	inProgress	Integer
hpnaBrTFTPExtensionPath.0		OctetString

Finally, the 'hpnaBrTFTPGetStatus' will indicate 'idleOrComplete' while TFTP is complete.

hpnaBrTFTPServerIPAddress.0	192.168.0.123	IpAddress
hpnaBrTFTPFilename.0	CEM538M_Sysfw_V3.33.bin	OctetString
hpnaBrTFTPGetAction.0	idle	Integer
hpnaBrTFTPGetStatus.0	normalOrComplete	Integer
hpnaBrTFTPExtensionPath.0		OctetString

Direct management – Master HPNA

hpnaBrMasterHpnaGroup (.1.3.6.1.4.1.8442.2.2.7)

- hpnaBrMasterMac.0 (.1.3.6.1.4.1.8442.2.2.7.1.0)
- hpnaBrMasterNote.0 (.1.3.6.1.4.1.8442.2.2.7.2.0) – will always be 'Local'
- ...

Name/OID	Value	Type
hpnaBrMasterMac.0	00-01-40-21-00-12	OctetString
hpnaBrMasterNote.0	Local	OctetString
hpnaBrMasterModel.0	39084	Integer
hpnaBrMasterProductName.0	Coax(3110) 12~28 Hi-Pwr MDU	OctetString
hpnaBrMasterWorkingPrivacyMode.0	off	Integer
hpnaBrMasterSettingPrivacyMode.0	off	Integer
hpnaBrMasterWorkingPrivacyKey.0	0	Integer
hpnaBrMasterSettingPrivacyKey.0	0	Integer
hpnaBrMasterDrvWorkingVersion.0	2.7.8-4	OctetString
hpnaBrMasterDrvUploadVersion.0	2.7.8-4	OctetString
hpnaBrMasterDrvUpgradeAction.0	idle	Integer
hpnaBrMasterDrvUpgradeStatus.0	normalOrComplete	Integer
hpnaBrMasterScanEPAction.0	idle	Integer
hpnaBrMasterScanEPStatus.0	normalOrComplete	Integer

Note the change of 'privacy mode/key' will take effect after you finish the upgrade driver operation. That is, set 'hpnaBrMasterDrvUpgradeAction' to 'activate' (goes back to 'idle' after upgrade is done) to run CEM-538M on changed 'privacy mode/key'.

Direct management – EP HPNA

hpnaBrEPHpnaGroup (.1.3.6.1.4.1.8442.2.2.8)

- hpnaBrEPTable (.1.3.6.1.4.1.8442.2.2.8.1) – **n** is table index
 - hpnaBrEPIndex.**n** (.1.3.6.1.4.1.8442.2.2.8.1.1.**n**)
 - hpnaBrEPMac.**n** (.1.3.6.1.4.1.8442.2.2.8.1.2.**n**)
 - ...

Here shows the table with 8 EPs,

...	hpnaBrEPMac	h...	h...	hpnaBrEPProductName	hpnaBrEPOnline...	...	...	hpn...	hpn...	...	hpnaBrEPDrvU...	...	hpnaBrEPPhyDi...	...	...	hpnaBrEPHost...	hpnat
1	0	00-01-40-1F-...	test	5292 Coax(3110) 12~28 Hi-Pwr...	on	255	yes	2.7.8-4	2.7.8-4	idle	normalOrComplete	idle	normalOrComplete	idle	normalOrComplete	active	
2	1	00-01-40-1F-...	test	5292 Coax(3110) 12~28 Hi-Pwr...	on	255	yes	2.7.8-4	2.7.8-4	idle	normalOrComplete	idle	normalOrComplete	idle	normalOrComplete	active	
3	2	00-01-40-1F-...	test	5292 Coax(3110) 12~28 Hi-Pwr...	on	255	yes	2.7.8-4	2.7.8-4	idle	normalOrComplete	idle	normalOrComplete	idle	normalOrComplete	active	
4	3	00-01-40-1F-...	test	5292 Coax(3110) 12~28 Hi-Pwr...	on	255	yes	2.7.8-4	2.7.8-4	idle	normalOrComplete	idle	normalOrComplete	idle	normalOrComplete	active	
5	4	00-01-40-1F-...	test	5292 Coax(3110) 12~28 Hi-Pwr...	on	255	yes	2.7.8-3	2.7.8-4	idle	normalOrComplete	idle	normalOrComplete	idle	normalOrComplete	active	
6	5	00-01-40-1F-...	test	5292 Coax(3110) 12~28 Hi-Pwr...	on	11	yes	2.7.8-4	2.7.8-4	idle	normalOrComplete	idle	normalOrComplete	idle	normalOrComplete	active	
7	6	00-01-40-1F-...	test	5292 Coax(3110) 12~28 Hi-Pwr...	on	255	yes	2.7.8-4	2.7.8-4	idle	normalOrComplete	idle	normalOrComplete	idle	normalOrComplete	active	
8	7	00-01-40-1F-...	test	5292 Coax(3110) 12~28 Hi-Pwr...	on	255	yes	2.7.8-4	2.7.8-4	idle	normalOrComplete	a...	inProgress	idle	normalOrComplete	active	

- hpnaBrEPHostTable(.1.3.6.1.4.1.8442.2.2.8.2) – **n** is table index
 - hpnaBrEP-MacIndex.**n** (.1.3.6.1.4.1.8442.2.2.8.2.1.1.**n**)
 - hpnaBrEP-MacType.**n** (.1.3.6.1.4.1.8442.2.2.8.2.1.2.**n**)
 - ...

The table has all the MAC address information. For example, the following shows 1 Master MAC connected to 8 EPs MAC, with 4 hosts MAC (user PCs MAC) and their attached EP.

	hpnaBrEP-MacIndex	hpnaBrEP-MacType	hpnaBrEP-EPMac	hpnaBrEP-HostMac
1	0	Master	00-01-40-21-00-12	00-00-00-00-00-00
2	1	EP	00-01-40-1F-03-20	00-00-00-00-00-00
3	2	EP	00-01-40-1F-02-DC	00-00-00-00-00-00
4	3	EP	00-01-40-1F-02-FA	00-00-00-00-00-00
5	4	EP	00-01-40-1F-02-DD	00-00-00-00-00-00
6	5	EP	00-01-40-1F-03-15	00-00-00-00-00-00
7	6	EP	00-01-40-1F-02-CD	00-00-00-00-00-00
8	7	EP	00-01-40-1F-02-E2	00-00-00-00-00-00
9	8	EP	00-01-40-1F-02-D6	00-00-00-00-00-00
10	9	Host	00-01-40-1F-03-20	00-0E- - - -
11	10	Host	00-01-40-1F-02-E2	00-11- - - -
12	11	Host	00-01-40-1F-02-FA	00-15- - - -
13	12	Host	00-01-40-1F-03-15	00-11- - - -

- hpnaBrEP-ScanHostAction (.1.3.6.1.4.1.8442.2.2.8.2.2) –set ‘**activate**’ to refresh the above host MAC table
- hpnaBrEP-ScanHostStatus(.1.3.6.1.4.1.8442.2.2.8.2.3)
- hpnaBrEPNetPerTable(.1.3.6.1.4.1.8442.2.2.8.3) – **n** is table index
 - hpnaBrEPNetPerIndex.**n** (.1.3.6.1.4.1.8442.2.2.8.3.1.1.**n**)
 - hpnaBrEPNetPerEPMac.**n** (.1.3.6.1.4.1.8442.2.2.8.3.1.2.**n**)
 - ...

NetPer is a tool to measure the online connection performance between EP and Master, and shows the estimated SNR and Rate. The value will be ‘0’ if there is no data traffic between Master and EP for more than 200 seconds (connection is idle for a while). The following example shows 4 hosts attach to 4 EPs have the NetPer results, total 8 EPs are monitored by NetPer.

	hpnaBrEPNetPerIndex	hpnaBrEPNetPer...	hpnaBrEPNetPerTxSNR	hpnaBrEPNetPerRxSNR	hpnaBrEPNetPerTxRate	hpnaBrEPNetPerRxRate
1	0	00-01-40-1F-02-CD	0	0	0	0
2	1	00-01-40-1F-02-D6	0	0	0	0
3	2	00-01-40-1F-02-DC	0	0	0	0
4	3	00-01-40-1F-02-DD	0	0	0	0
5	4	00-01-40-1F-02-E2	38	38	112	112
6	5	00-01-40-1F-02-FA	38	37	112	112
7	6	00-01-40-1F-03-15	39	38	128	112
8	7	00-01-40-1F-03-20	38	38	128	112

Direct management – Master Ethernet**hpnaBrEtherGroup (.1.3.6.1.4.1.8442.2.2.10)**

- hpnaBrEtherPort (.1.3.6.1.4.1.8442.2.2.10.1)
 - hpnaBrPortPropTable (.1.3.6.1.4.1.8442.2.2.10.1.1) – **n** is table index 1/2/3 for port LAN1/LAN2/HPNA
 - hpnaBrPortPropPID.**n** (.1.3.6.1.4.1.8442.2.2.10.1.1.1.**n**)
 - hpnaBrPortPropType.**n** (.1.3.6.1.4.1.8442.2.2.10.1.1.2.**n**)

➤ ...

Here shows the Master port LAN1/LAN2/HPNA Ethernet properties.

	hpnaBrPortPropPID	hpnaBrPortPropType	hpnaBrPortPropConfig	hpnaBrPortPropLink...	hpnaB...	hpnaBrPortPropInRate	hpnaB...	hpnaBrPortPropOutRate
1	0	ethernet	autoNegotiation	100MbpsFullDuplex	disable	1563	disable	1563
2	1	ethernet	autoNegotiation	off	disable	1563	disable	1563
3	2	coax	autoNegotiation	100MbpsFullDuplex	disable	1563	disable	1563

➤ hpnaBrPortStatsTable (.1.3.6.1.4.1.8442.2.2.10.1.2) – **n** is table index 1/2/3 for port LAN1/LAN2/HPNA

➤ hpnaBrPortStatsPID.**n** (.1.3.6.1.4.1.8442.2.2.10.1.2.1.1.**n**)

➤ hpnaBrPortStatsType.**n** (.1.3.6.1.4.1.8442.2.2.10.1.2.1.2.**n**)

➤ ...

The example shows statistics.

	...	hpna...	hpnaBrPortStatsRxPkts	hpnaBrPortStatsRxBytes	hpnaBrPortStatsTxPkts	hpnaBrPortStatsTxBytes	hpnaBrPortStatsCollisions	hpnaBrPortStatsErrors
1	0	ethernet	6663802	2488565278	4839806	789261131	0	0
2	1	ethernet	0	0	0	0	0	0
3	2	coax	5851702	853282852	7634722	6849033462	0	14

➤ hpnaBrStatsCtrl(.1.3.6.1.4.1.8442.2.2.10.1.3)

➤ hpnaBrStatsCtrlReset.**0** (.1.3.6.1.4.1.8442.2.2.10.1.3.1.0) – init to 0

➤ hpnaBrStatsCtrlRefresh.**0** (.1.3.6.1.4.1.8442.2.2.10.1.3.2.0) – refresh stats

➤ hpnaBrEtherQoS (.1.3.6.1.4.1.8442.2.2.10.2)

➤ hpnaBrQueueTable (.1.3.6.1.4.1.8442.2.2.10.2.1) – **n** is table index, 1/2/3/4 for /Q0/Q1/Q2/Q3

➤ hpnaBrQueueNum.**n** (.1.3.6.1.4.1.8442.2.2.10.2.1.1.1.**n**)

➤ hpnaBrQueueName.**n** (.1.3.6.1.4.1.8442.2.2.10.2.1.1.2.**n**)

➤ ...

➤ hpnaBrTcpUdpPriorityTable (.1.3.6.1.4.1.8442.2.2.10.2.2) – **n** is table index, 1~6 for rule 1~rule 6

➤ hpnaBrTcpUdpRuleNum.**n** (.1.3.6.1.4.1.8442.2.2.10.2.2.1.1.**n**)

➤ hpnaBrTcpUdpEnableCtrl.**n** (.1.3.6.1.4.1.8442.2.2.10.2.2.1.2.**n**)

➤ ...

➤ hpnaBrEtherIGMPSnoop (.1.3.6.1.4.1.8442.2.2.10.3)

➤ hpnaBrIGMPSnoopEnableCtrl.**0** (.1.3.6.1.4.1.8442.2.2.10.3.1.0)

➤ hpnaBrIGMPSnoopQueryInterval.**0** (.1.3.6.1.4.1.8442.2.2.10.3.2.0)

➤ hpnaBrEtherTagVLAN (.1.3.6.1.4.1.8442.2.2.10.4)

➤ hpnaBrTagVLANEnableCtrl.**0** (.1.3.6.1.4.1.8442.2.2.10.4.1.0)

➤ hpnaBrTagVLANChangePriorityCtrl.**0** (.1.3.6.1.4.1.8442.2.2.10.4.3.0)

➤ hpnaBrTagVLANCtrlTable .1.3.6.1.4.1.8442.2.2.10.4.2) – **n** is table index 1/2/3 for port LAN1/LAN2/HPNA

➤ hpnaBrTagPortPID. **n** (.1.3.6.1.4.1.8442.2.2.10.4.2.1.1.**n**)

➤ hpnaBrTagPortType. **n** (.1.3.6.1.4.1.8442.2.2.10.4.2.1.2.**n**)

➤ ...

One example that Master Tag VLAN is enabled,

	hpnaBrTagPortPID	hpnaBrTagPortType	hpnaBrTagPortPriority	hpnaBrTagPortVID	hpnaBrTagPortInRule	hpnaBrTagPortOutRule
1	0	ethernet	0	1	all	untag
2	1	ethernet	0	1	all	untag
3	2	coax	0	3	all	tag

Indirect management – Smart EP Ethernet

To change the Smart EP Ethernet properties in "Rate/QoS/IGMP/VLAN/Stats...", first select the target EP in the following 'hpnaBrEPDesignateTable'. Assume '**n**' is the target EP index in 'hpnaBrEPDesignateTable', setup 'hpnaBrEPDesignateIsTarget(.1.3.6.1.4.1.8442.2.2.11.1.1.7.**n**)' to 1 to designate.

hpnaBrSmartEPEtherGroup (.1.3.6.1.4.1.8442.2.2.11)

➤ hpnaBrEPDesignateTable (.1.3.6.1.4.1.8442.2.2.11.1) – **n** is table index

➤ hpnaBrEPDesignateEPIndex.**n** (.1.3.6.1.4.1.8442.2.2.11.1.1.1.**n**)

➤ hpnaBrEPDesignateEPMac.**n** (.1.3.6.1.4.1.8442.2.2.11.1.1.1.2.**n**)

➤ ...

➤ hpnaBrEPDesignateIsTarget.**n** (.1.3.6.1.4.1.8442.2.2.11.1.1.1.7.**n**)

For example, here we designate ‘**hpnaBrEPDesignateIsTarget.8 (.1.3.6.1.4.1.8442.2.2.11.1.1.7.8)**’, the 8th EP (Mac is ‘**00-01-40-1F-03-20**’), as our target EP for config. The follow-up SNMP manipulations on Smart EP Group will work on EP ‘**00-01-40-1F-03-20**’ only until we re-designate another new EP for config.

	hpnaBrEPDesignateEPIndex	hpnaBrEPDesignateEPMac	hpnaBrEPDesignateOnlineStatus	hpnaBrEPDesignateDeviceVersion	hpnaBrEPDesignateIsSmart	hpnaBrEPDesignateIsTarget
1	0	00-01-40-1F-02-CD	on	110	yes	no
2	1	00-01-40-1F-02-D6	on	110	yes	no
3	2	00-01-40-1F-02-DC	on	110	yes	no
4	3	00-01-40-1F-02-DD	on	110	yes	no
5	4	00-01-40-1F-02-E2	on	110	yes	no
6	5	00-01-40-1F-02-FA	on	110	yes	no
7	6	00-01-40-1F-03-15	on	110	yes	no
8	7	00-01-40-1F-03-20	on	110	yes	yes

- **hpnaBrEPetherPort(.1.3.6.1.4.1.8442.2.2.11.2)**
 - **hpnaBrEPPortPropTable(.1.3.6.1.4.1.8442.2.2.11.2.1) – n** is table index
 - **hpnaBrEPPortPropEPIndex. n.1** (.1.3.6.1.4.1.8442.2.2.11.2.1.1. **n.1**) – for LAN1 port
 - **hpnaBrEPPortPropEPIndex. n.2** (.1.3.6.1.4.1.8442.2.2.11.2.1.1. **n.2**) – for LAN2 port
 - **hpnaBrEPPortPropEPIndex. n.3** (.1.3.6.1.4.1.8442.2.2.11.2.1.1. **n.3**) – for HPNA port
 - **hpnaBrEPPortPropPID. n.1** (.1.3.6.1.4.1.8442.2.2.11.2.1.2. **n.1**) – for LAN1 port
 - **hpnaBrEPPortPropPID. n.2** (.1.3.6.1.4.1.8442.2.2.11.2.1.2. **n.2**) – for LAN2 port
 - **hpnaBrEPPortPropPID. n.3** (.1.3.6.1.4.1.8442.2.2.11.2.1.2. **n.3**) – for HPNA port
 - ...
 - ...
 - ...

Here we show the 8th EP (use table index **n=8** in oid, get EP index=7) port LAN1 (**n.1**) / LAN2 (**n.2**) / HPNA (**n.3**) Ethernet properties.

	...	...	hpnaBrEPPortPr...	hpna...	hpnaBrEPPortPr...	hpnaBrEPPortPr...	...	hp...	hpnaBrEPPortPropInRate	hp...	hpnaBrEPPortPropOutRate	hpnaBrEPPortPropEnableCtrl
1	7	0	00-01-40-1F-03-20	ethernet	autoNegotiation	100MbpsFullDuplex	on	disable	1563	disable	1563	enable
2	7	1	00-01-40-1F-03-20	ethernet	autoNegotiation	off	on	disable	1563	disable	1563	enable
3	7	2	00-01-40-1F-03-20	coax	100MbpsFullDuplex	100MbpsFullDuplex	on	disable	1563	disable	1563	enable

- **hpnaBrEPPortStatsTable(.1.3.6.1.4.1.8442.2.2.11.2.2) – n** is table index, **x** is the port 1/2/3
 - **hpnaBrEPPortStatsEPIndex. n.x** (.1.3.6.1.4.1.8442.2.2.11.2.2.1.1. **n.x**)
 - **hpnaBrEPPortStatsPID. n.x** (.1.3.6.1.4.1.8442.2.2.11.2.2.1.2. **n.x**)
 - ...

The example (...**n.x** = ...8.1/...8.2/...8.3) list the statistics of 8th EP port LAN1/LAN2/HPNA.

	...	...	hpnaBrEPPortStatsEPMac	hpna...	hpnaBrEPPortStatsRxPkts	hpnaBrEPPortStatsRxBytes	hpnaBrEPPortStatsTxPkts	hpnaBrEPPortStatsTxBytes	hpna...	hpna...
1	7	0	00-01-40-1F-03-20	ethernet	3740728	597818423	5609951	1793137907	0	0
2	7	1	00-01-40-1F-03-20	ethernet	0	0	0	0	0	0
3	7	2	00-01-40-1F-03-20	coax	5609951	1793137907	3740728	597818423	0	0

- **hpnaBrEPStatsCtrlTable(.1.3.6.1.4.1.8442.2.2.11.2.3) – n** is table index, **x** is the port 1/2/3
 - **hpnaBrEPStatsCtrlEPIndex. n.x** (.1.3.6.1.4.1.8442.2.2.11.2.3.1.1. **n.x**)
 - **hpnaBrEPStatsCtrlEPMac. n.x** (.1.3.6.1.4.1.8442.2.2.11.2.3.1.2. **n.x**)
 - **hpnaBrEPStatsCtrlReset. n.x** (.1.3.6.1.4.1.8442.2.2.11.2.3.1.3. **n.x**)
 - **hpnaBrEPStatsCtrlRefresh. n.x** (.1.3.6.1.4.1.8442.2.2.11.2.3.1.4. **n.x**)
- **hpnaBrEPetherQoS (.1.3.6.1.4.1.8442.2.2.11.3)**
 - **hpnaBrEPQueueTable (.1.3.6.1.4.1.8442.2.2.11.3.1) –n** is table index, **x** is the port 1/2/3
 - **hpnaBrEPQueueEPIndex. n.x** (.1.3.6.1.4.1.8442.2.2.11.3.1.1.1. **n.x**)
 - **hpnaBrEPQueueNum. n.x** (.1.3.6.1.4.1.8442.2.2.11.3.1.1.2. **n.x**)
 - ...
 - **hpnaBrEPTcpUdpPriorityTable (.1.3.6.1.4.1.8442.2.2.11.3.2) –n** is table index, **x** is the port 1/2/3
 - **hpnaBrEPTcpUdpEPIndex. n.x** (.1.3.6.1.4.1.8442.2.2.11.3.2.1.1. **n.x**)
 - **hpnaBrEPTcpUdpRuleNum. n.x** (.1.3.6.1.4.1.8442.2.2.11.3.2.1.2. **n.x**)
 - ...
- **hpnaBrEPetherIGMPSnoop (.1.3.6.1.4.1.8442.2.2.11.4)**
 - **hpnaBrEPIGMPSnoopTable (.1.3.6.1.4.1.8442.2.2.11.4.1) –n** is table index
 - **hpnaBrEPIGMPSnoopEPIndex. n** (.1.3.6.1.4.1.8442.2.2.11.4.1.1.1. **n**)
 - **hpnaBrEPIGMPSnoopEPMac. n** (.1.3.6.1.4.1.8442.2.2.11.4.1.1.2. **n**)
 - **hpnaBrEPIGMPSnoopEnableCtrl. n** (.1.3.6.1.4.1.8442.2.2.11.4.1.1.3. **n**)

➤ hpnaBrEPIGMPSnoopQueryInterval. **n** (.1.3.6.1.4.1.8442.2.2.11.4.1.1.4.**n**)

➤ hpnaBrEPETHERTagVLAN (.1.3.6.1.4.1.8442.2.2.11.5)

➤ hpnaBrEPTagVLANCtrlTable (.1.3.6.1.4.1.8442.2.2.11.5.1) – **n** is table index

➤ hpnaBrEPTagVLANEPIndex. **n** (.1.3.6.1.4.1.8442.2.2.11.5.1.1.**n**)

➤ hpnaBrEPTagVLANEPMac. **n** (.1.3.6.1.4.1.8442.2.2.11.5.1.1.2.**n**)

➤ hpnaBrEPTagVLANEnableCtrl. **n** (.1.3.6.1.4.1.8442.2.2.11.5.1.1.3.**n**)

➤ hpnaBrEPTagVLANChangePriorityCtrl. **n** (.1.3.6.1.4.1.8442.2.2.11.5.1.1.4.**n**)

For example, Tag VLAN in the 8th EP is enabled,

	hpnaBrEPTagVLANEPIndex	hpnaBrEPTagVLANEPMac	hpnaBrEPTagVLANEnableCtrl	hpnaBrEPTagVLANChangePriorityCtrl
1	7	00-01-40-1F-03-20	enable	disable

➤ hpnaBrEPTagPortTable (.1.3.6.1.4.1.8442.2.2.11.5.2) – **n** is table index, **x** is the port 1/2/3

➤ hpnaBrEPTagPortEPIndex. **n.x** (.1.3.6.1.4.1.8442.2.2.11.5.2.1.1. **n.x**)

➤ hpnaBrEPTagPortPID. **n.x** (.1.3.6.1.4.1.8442.2.2.11.5.2.1.2. **n.x**)

➤ ...

For example, Tag VLAN in the 8th EP is enabled,

..	..	hpnaBrEPTagPortEPMac	hpnaBrEPTagPortType	hpnaBrEPTagPortPriority	hpnaBrEPTagPortVID	hpnaBrEPTagPortInRule	hpnaBrEPTagPortOutRule
1	7 0	00-01-40-1F-03-20	ethernet	0	1	all	untag
2	7 1	00-01-40-1F-03-20	ethernet	0	2	all	untag
3	7 2	00-01-40-1F-03-20	coax	0	3	all	tag

➤ hpnaBrEPCtrl (.1.3.6.1.4.1.8442.2.2.11.6)

➤ hpnaBrEPCtrlTable (.1.3.6.1.4.1.8442.2.2.11.6.1) – **n** is table index

➤ hpnaBrEPCtrlEPIndex. **n** (.1.3.6.1.4.1.8442.2.2.11.6.1.1.**n**)

➤ hpnaBrEPCtrlEPMac. **n** (.1.3.6.1.4.1.8442.2.2.11.6.1.1.2.**n**)

➤ hpnaBrEPCtrlEtherDefaultAction. **n** (.1.3.6.1.4.1.8442.2.2.11.6.1.1.3.**n**)

➤ hpnaBrEPCtrlRebootAction. **n** (.1.3.6.1.4.1.8442.2.2.11.6.1.1.4.**n**)

For example, the 8th EP,

	hpnaBrEPCtrlEPIndex	hpnaBrEPCtrlEPMac	hpnaBrEPCtrlEtherDefaultAction	hpnaBrEPCtrlRebootAction
1	7	00-01-40-1F-03-20	idle	idle

RESET BUTTON

Factory Default #1

While Master is ON, press and hold down reset button for lasting 5 seconds then release it will reset all settings to factory default profile #1. The LED with **empty** label will be ON if the reset button is pressed down for lasting 5 seconds.

Factory Default #2

While Master is ON, press and hold reset button for lasting 15 seconds then release will reset all settings to factory default profile #2. The LED with empty label will be ON first if the reset button is pressed down for lasting 5 seconds; then the LED with label '**Diagnosis**' will be ON also if the reset button keeps be pressed down for lasting 15 seconds total.