



AEOC Series

AM300C

User Guide

Revision A

ACT Ethernet over Coax (EoC) Series

EoC Master (AM300C) & EoC Client (AC100C)

User Guide

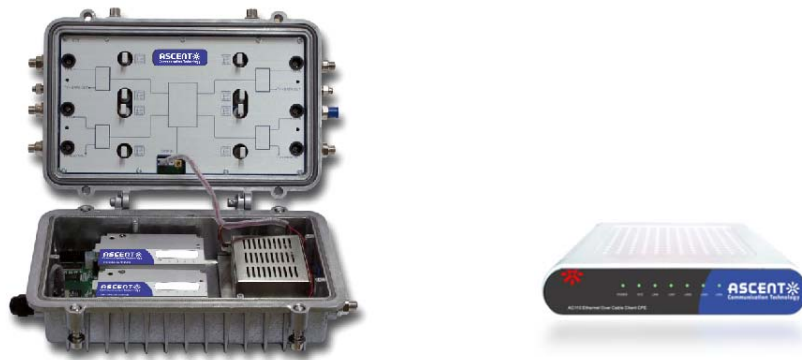
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This document is produced to assist professional and properly trained personnel with installation and maintenance issues for the product. The capabilities, system requirements and/or compatibility with third-party products described herein are subject to change without notice.

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Revision History

Revision	Date	Reason for Change
A	08/01/2012	Initial Release

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Chapter 1 Overview

1. Overview

1.1. Introduction

AM300C is a series of outdoor networking EoC master device designed to deliver multimedia services to subscriber's home through cost effective last mile CATV coaxial network. AM300 features two main plug and play components in one compact IP67 aluminium housing, 2 Ethernet over Cable (EoC) Master unit and 2/4 ports CATV module.

AM300C provides the easy migration path from traditional HFC to PON/P2P type of Fiber to the Building (FTTB) application. It offers high quality CATV signal together with high speed broadband data access, which can be managed through the SNMP management system.

The AM300C EoC module is fully compliant with IEEE802.3, 802.3x, 802.3au, IEEE P1901 standards. It provides great flexibility to network service operator to connect MDUs with multiple low cost AMAP-EoC CPE AC100C unit. With outstanding performance, quality, and features packed in a compact sized device, the AM300C series is a great selection for Network Operators and Services Providers in Fibre to the Building and business networks.

Features and Benefits

- Advanced Outdoor EoC Node Platform designed for Fiber to the Building application
- Suitable for last mile CATV Coaxial HFC system
- Optional built-in 10/100/1000Mbps media converter which supports IEEE 802.3, 802.3ab, 802.3u, 802.3z standards as well as full duplex and half duplex mode
- SC/PC optical connector for 1000Base-SX or 1000Base-Lx
- 10/100/1000M auto-negotiable Ethernet RJ45 interface supports Auto MDI/MDIX.
- Deliver high speed internet, and CATV services
- EoC bandwidth from 7.5 to 65MHz
- Support NTSC, PAL, DVB-C, DVB-T video standards
- Optimize the service performance as well as utilization of limited IP resource for service providers
- Aluminium die-casting housing, water-proof and heat dissipation
- Network monitoring and management through SNMP

1.2. Specifications

AM300C Outdoor EoC Master Platform (HFC+ EoC)

Gigabit Ethernet Ports	2 x 10/100/1000Mbps Ethernet port
CATV RF Output	2/4 RF Outputs, CATV Coaxial F Connector
CATV RF Local Input	2/4 CATV Coaxial F Connector
System Console	1 port
EoC Specification	P1901 HomePlug AV
RF Bandwidth	7.5~65MHz
Modulation Scheme	OFDM 2690, 16/64/128/256/512/1024/4096-QAM, QPSK, BPSK
Typical EoC Link Range	1km coaxial cable
Output Power	105±5dBuV
Receive sensitivity	-65dBm
MAC Speed (Max)	350Mbps Symmetrical @ 7.5MHz to 65MHz
VLAN	IEEE802.1Q (VLAN Tagging)
QoS	ToS and CoS Classification
SNMP	SNMP v1, v2, v3
Security	128-bit AES encryption
General Specifications	
Management	Support user management based at SNMP,WEB and CLI
Operating Temp, °C	-25 to 60
Storage Temp, °C	-40 to 70
Power Supply VAC	100 to 240 / 60V Network
Operating relative humidity, %	10 to 95
Power Consumption W	9
Dimensions (W x D x H) mm	289x206x128
Weight, kg	3.5

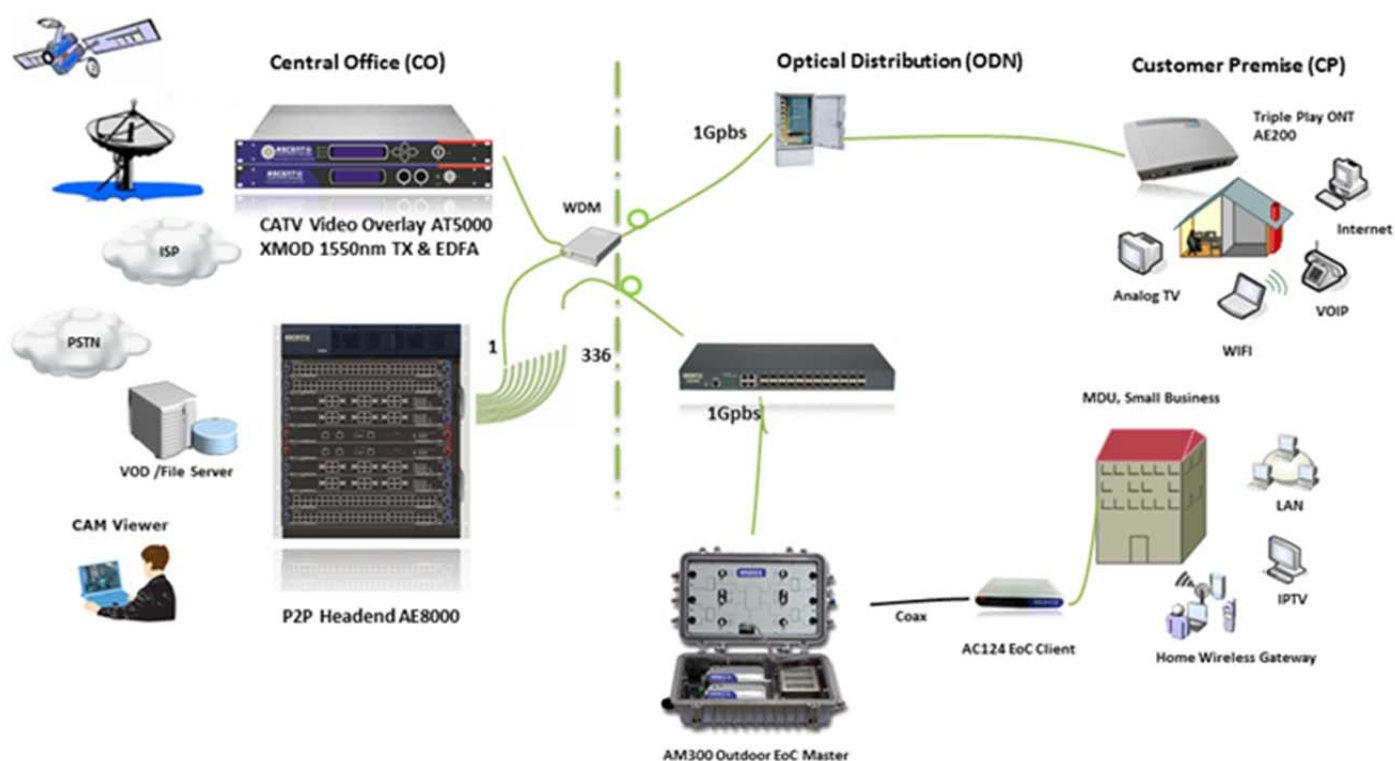
Indoor AC100 EoC Client CPE Unit



AC124C-HP-65-1 AMAP EoC Client CPE Device

Fast Ethernet Ports	4x 10/100bps LAN port
CATV RF Output	1 x CATV Coaxial F Connector
CATV RF Input	1 x CATV Coaxial F Connector
EoC Specification	HomePlug AV
Modulation	OFDM 1024/256/64/16/8-QAM, QPSK, BPSK
RF Bandwidth	7.5~65MHz
Typical EoC Link Range	1km
Receive sensitivity	-65dBm
Output Power	15dBm
Data Performance	
MAC Speed (Max)	350Mbps
Physical Layer Speed	500Mbps
IEEE	IEEE 802.3, IEEE 802.3x IEEE 802.u Auto MDI(X), 802.1x
Protocol	TDMA, CSMA/CA
VLAN/QoS	IEEE 802.1P, IEEE 802.1Q
Encryption	128-bit AES
General Specifications	
Operating Temp	-5 to 55 °C
Storage Temp	-40 to 70 °C
Power Supply	12V, 100~240 VAC Adaptor
Operating relative humidity,	10 to 90%
Power Consumption	<7 W
Dimensions (W x D x H)	155x 108 x 27 mm
Weight, kg	0.32 kg

1.3. Application Diagram



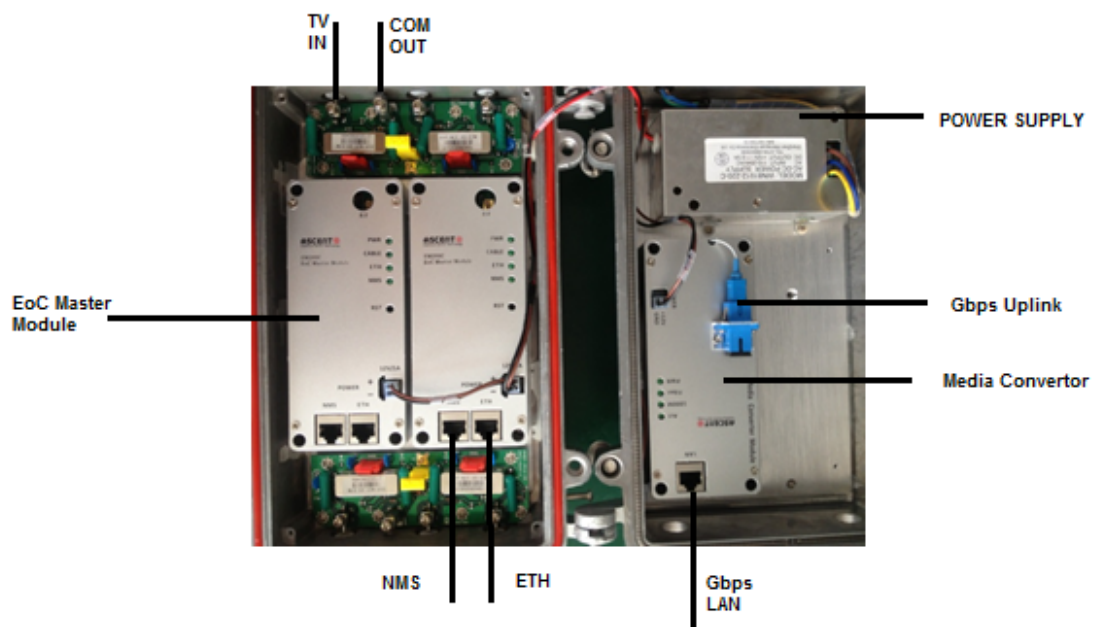
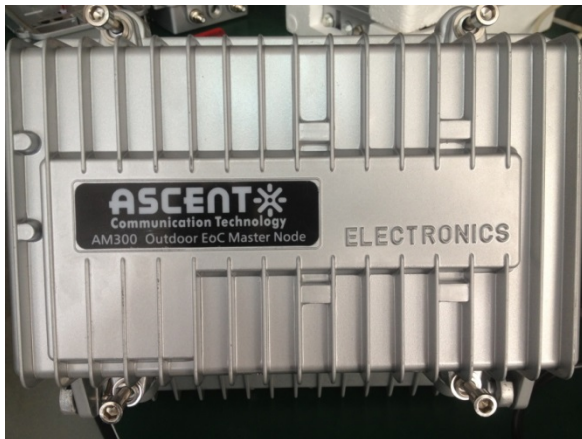
1.4. Ordering Information

AM342-HP-M1-65-2	AMAP Outdoor EoC Master Unit AM300C Series, 2 RF Input Ports, 2 RF Output Ports, 1 EoC Master, Home Plug, 7.5 to 65MHz, 100 to 240VAC
AM344-HP-M1-65-2	AMAP Outdoor EoC Master Unit AM300C Series, 4 RF Input Ports, 4 RF Output Ports, 1 EoC Master, Home Plug, 7.5 to 65MHz, 100 to 240VAC
AM342-HP-M2-65-2	AMAP Outdoor EoC Master Unit AM300C Series, 2 RF Input Ports, 2 RF Output Ports, 2 EoC Master, Home Plug, 7.5 to 65MHz, 100 to 240VAC
AM344-HP-M2-65-2	AMAP Outdoor EoC Master Unit AM300C Series, 4 RF Input Ports, 4 RF Output Ports, 2 EoC Master, Home Plug, 7.5 to 65MHz, 100 to 240VAC
AM344C-HP-M2-65-1	AM300 Series Outdoor EoC Master Node, 4 RF Input Ports, 4 RF Output Ports, 2 EoC Master, Home Plug, 7.5 to 65MHz, 60VAC
AM342C-HP-M2-65-1	AM300 Series Outdoor EoC Master Node, 2 RF Input Ports, 2 RF Output Ports, 2 EoC Master, Home Plug, 7.5 to 65MHz, 60VAC
AC124-HP-65-1	AMAP EoC Client CPE Unit AC100 Series, 1 RF Input Port, 1 RF Output Port, 4 FE Data Ports, Home Plug, 7.5 to 65MHz, 100 to 240VAC Adapter included
AC122C-HP-65-1	AMAP EoC Client CPE Unit AC100 Series, 1 RF Input Port, 1 RF Output Port, 2 FE Data Ports, Home Plug, 7.5 to 65MHz, 100 to 240VAC Adapter included

***Contact Ascent Local Representative for additional EoC Product Information**

1.5. Product Description

AM300C EoC Master Housing



AM300C EoC Master Top panel



ITEM	Descriptions	Function	
Power	Power indicator light	OFF	Power is OFF
		ON	Power is ON.
ETH	Uplink Ethernet indicator light	OFF	Ethernet Port is not connected
		ON	Ethernet Port Connection Normal
		Blinking	Ethernet Port Communication Normal
NMS	Network Management Light	ON	NMS Works Normal
		RED	System Alarm
CABLE	Cable Network light	OFF	No EoC Client connected
		ON	EoC Client Connected
		Blinking	Data Communication with EoC Client
RESET	RESET EoC Master		To reset the EoC Master Unit. Press reset button for 3 seconds, the unit will restart, press reset button for more than 5 seconds, the EoC Master unit will restore to factory default settings.

AC100 EoC Client Top panel



Side panel



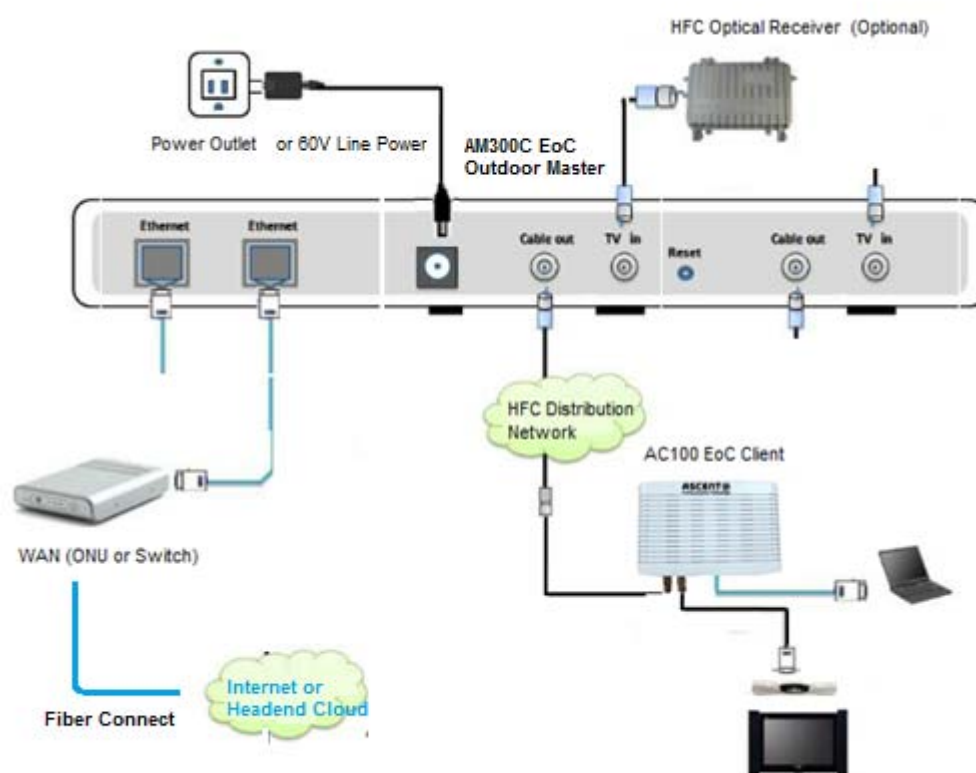
Connection	Description	Function
CABLE	Network Input Port	Network Receiver Port to receive the EoC + TV signal from the EoC Master
TV	TV Signal Port	Connector to the TV Set or STB
LAN1	Local Network Port 1	Connect to Local Area Network or PC
LAN2	Local Network Port 2	Connect to Local Area Network or PC
LAN3(option)	Local Network Port 3	Connect to Local Area Network or PC
LAN4(option)	Local Network Port 4	Connect to Local Area Network or PC
POWER	Power Input	12V Power Input from the Adaptor
On/Off	Power On / Off	Turn On and Off the EoC Client

Side panel



LED	Descriptions	Function	
Power	Power indicator light	OFF	Power is OFF
		ON	Power is ON.
LAN1	Local Ethernet 1 indicator light	OFF	Ethernet Port is not connected
		ON	Ethernet Port Connection Normal
		Blinking	Ethernet Port Communication Normal
LAN2	Local Ethernet 2 indicator light	OFF	Ethernet Port is not connected
		ON	Ethernet Port Connection Normal
		Blinking	Ethernet Port Communication Normal
LAN3 (option)	Local Ethernet 3 indicator light	OFF	Ethernet Port is not connected
		ON	Ethernet Port Connection Normal
		Blinking	Ethernet Port Communication Normal
LAN4 (option)	Local Ethernet 4 indicator light	OFF	Ethernet Port is not connected
		ON	Ethernet Port Connection Normal
		Blinking	Ethernet Port Communication Normal
LINK	Cable Network Connection Status light	OFF	No EoC Master connected
		Green Blinking	EoC Master Connected Normal, Data Connection Normal
		Orange	EoC Master Connected with Low Quality Data Connection

1.6. Quick Installation



1. Connect the TV signal (RF cable) to the EoC Master unit.
2. Connect the EoC Master Unit to the Cable TV Distribution network through the “COM 1, 2, 3, 4 Port”.
3. The output frequency range is from 7.5MHz to 65MHz. Output (Narrowcast signal) level is at around 105dBuV.

Note: Make sure that the total RF link loss is less than 50dB for proper reception at the EoC Client side. SNR should be above 20dB. Please also refer to the section 2.3.6.

Note: When measuring the RF output power of EoC master, it is recommended to use a Spectrum Analyser for accurate reading.

Note: While connecting, please keep the RF connectors tightly fastened.

4. Connect the uplink EoC Master Unit to the WAN network through Fiber Link. On WAN side, it could be a Data Switch or Router. For some applications, the EoC master can also be connected to the WAN through the ONU at the same location.
5. The unit uses the line 60V power or optionally use the power adapter to the wall outlet.
6. After the power is ON, LED indicators should light up as for normal operation. Check whether the POWER status LED is on continuously. And the Cable LED is one for active RF output to the distribution network.
7. Connect RF input to the AC100 Network Port

8. Connect the TV port to either the set top box or TV set
9. Connect the LAN port 1 – 4 to the Home network, router or Personal Computer
10. Plug the power adapter to the wall outlet and also the 12V power input port of EoC Client.
11. After the EoC Master is ON, LED indicators should light up as for normal operation. Check whether the Ethernet and Cable status LED is on continuously. If yes, the connection is normal; otherwise there is either issue with the physical connection or the RF levels at either end. This may be caused by either too much or too little attenuation over the RF cable. Please refer to the Layout Description section of this installation manual for nominal LED activity.
12. Check all signal levels and services on all the communication ports.

Note: EoC Client Unit Installation Adjustment

1. Installing the AC100 on a horizontal surface (Bench top)

Put the EoC Client on a clean, flat, sturdy bench top. Suggest keep the clearance for all sides of the unit to more than 10cm for heat dissipation.

2. Installing the AC100 on a vertical surface (Hanging on a wall)

You can install the EoC Client on a vertical surface by using the moulded mounting holes on the bottom of the unit chassis (refer to Figure below) and two flat-head wood screws.



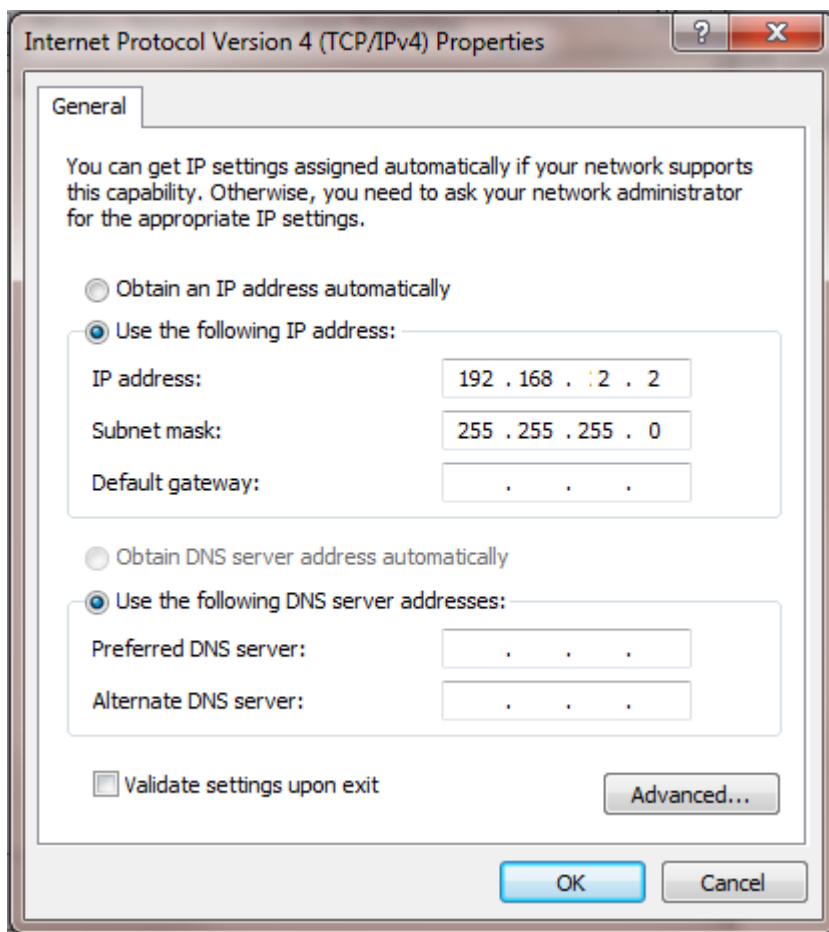
Chapter 2 Configuration

2. Configuration

2.1. EoC Master Web Interface Login

The EoC Master and Client devices are configured using the web GUI interface. The EoC Master has a default IP Address of 192.168.2.2 and subnet mask of 255.255.255.0. The following steps will enable the administrator to login:

- 1、 Config the management computer in the same LAN network with IP address in the same subnet.



- 2、 Connected both EoC Master and Client as described in section "1.6 Quick Installation" ;
- 3、 Ping EoC Master 192.168.2.2. If successful, go to next step.
- 4、 Open the IE web browser, type the device IP address 192.168.2.2 in address bar;
- 5、 Entry of the username and password will be prompted. Enter the default login User Name and Password:

The default login User Name of the administrator is “**admin**”, and the default login Password is “**admin**”.



2.2. EoC Master Information and Configuration

This section shows you how to use the EoC Web Management GUI Software.

2.2.1. EoC Master Device Information

This Device Information page shows EoC Master information. You can modify the unit specific information such as Device name, description etc.

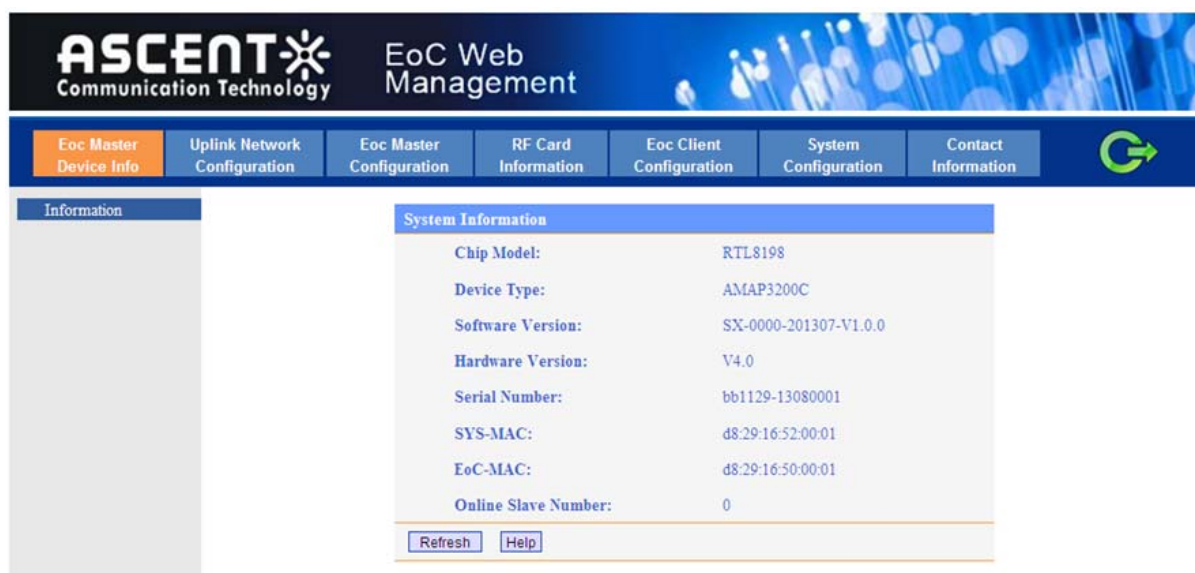


Figure 2.2.1.1: Device information

2.2.2. Change EoC Master Uplink Config

In the “Uplink Network Configuration” setting, user can change the default IP address of the EoC Master. This page shows the IP Setting function.

The page also shows MAC address information such as below.



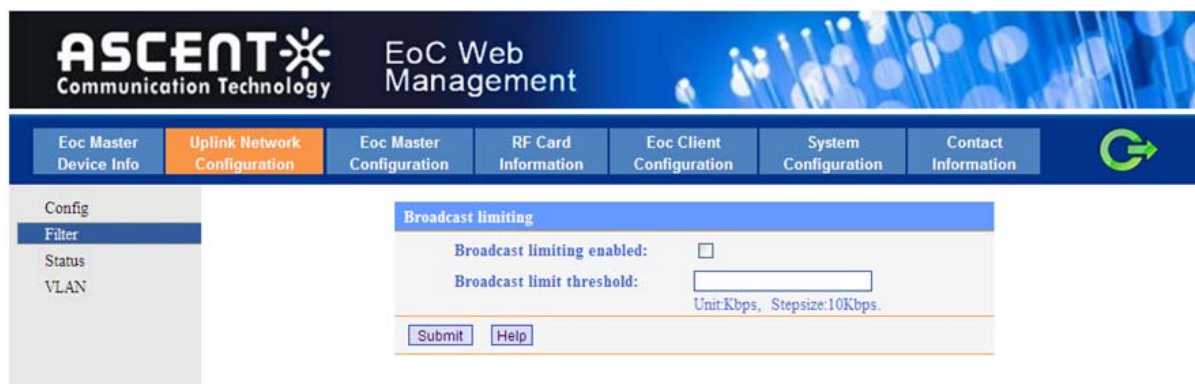
The screenshot shows the EoC Web Management interface. The top navigation bar includes the Ascent Communication Technology logo and the title "EoC Web Management". Below the navigation bar, there are several tabs: "Eoc Master Device Info", "Uplink Network Configuration" (highlighted), "Eoc Master Configuration", "RF Card Information", "Eoc Client Configuration", "System Configuration", and "Contact Information". A green circular arrow icon is also present. On the left side, there is a sidebar menu with "Config", "Filter", "Status", and "VLAN". The main content area is titled "Network Information" and contains the following fields:

MAC address:	D8:29:16:52:00:01
Connect type:	Static IP
IP address:	192.168.1.6
Subnet mask:	255.255.255.0
Default gateway:	192.168.1.1

At the bottom of the form, there are "Modify" and "Help" buttons.

Figure 2.2.2.1: Uplink Network information

Under “Uplink Network Configuration” setting, user can setup the Broadcast Filter.



The screenshot shows the EoC Web Management interface. The top navigation bar includes the Ascent Communication Technology logo and the title "EoC Web Management". Below the navigation bar, there are several tabs: "Eoc Master Device Info", "Uplink Network Configuration" (highlighted), "Eoc Master Configuration", "RF Card Information", "Eoc Client Configuration", "System Configuration", and "Contact Information". A green circular arrow icon is also present. On the left side, there is a sidebar menu with "Config", "Filter", "Status", and "VLAN". The main content area is titled "Broadcast limiting" and contains the following fields:

Broadcast limiting enabled:	<input type="checkbox"/>
Broadcast limit threshold:	<input type="text"/>

Below the threshold field, it says "Unit:Kbps, Stepsize:10Kbps.". At the bottom of the form, there are "Submit" and "Help" buttons.

Figure 2.2.2.2: Broadcast Filter information



Figure 2.2.2.3: Uplink Network Status information

This page shows VLAN information you have configured. Once the VLAN ID is set, only the computers connected to the corresponding VLAN port on the network switch can access the management information of the EoC master.

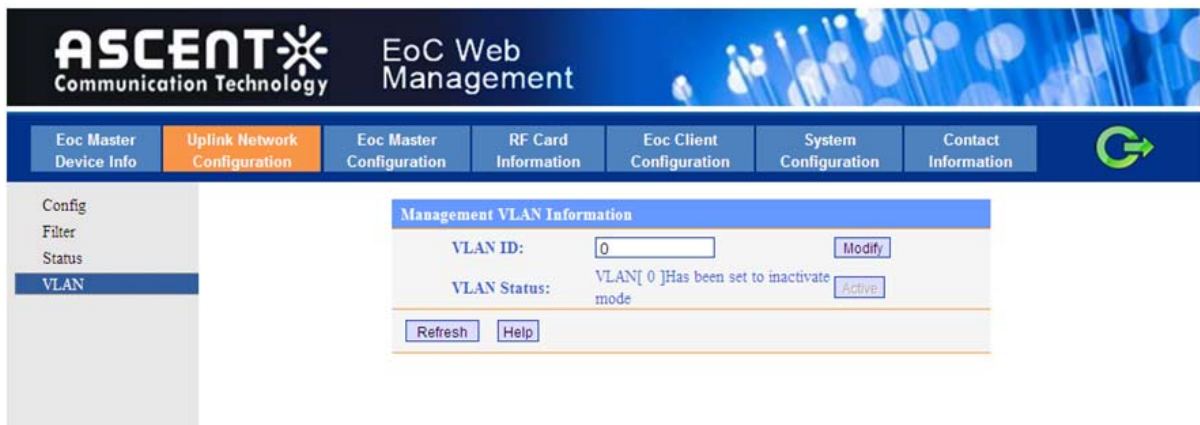



Figure 2.2.2.4: VLAN Setting

2.2.3. Change EoC Master ID

In the “EoC Master Configuration” setting, user can change the default SNID of the EoC Master. This page shows the SNID Setting function.



The screenshot displays the 'EoC Web Management' interface. The top header features the 'ASCENT Communication Technology' logo and the title 'EoC Web Management'. Below the header is a navigation bar with several tabs: 'Eoc Master Device Info', 'Uplink Network Configuration', 'Eoc Master Configuration' (which is highlighted in orange), 'RF Card Information', 'Eoc Client Configuration', 'System Configuration', and 'Contact Information'. A green circular arrow icon is located on the right side of the navigation bar. The main content area is divided into two sections. On the left, there is a sidebar with a tab labeled 'SNID'. On the right, the 'Master SNID Information' section is visible. It contains a form with a label 'SNID:' followed by a text input field containing the number '8'. To the right of the input field is a 'Modify' button. Below the input field are two buttons: 'Refresh' and 'Help'.

Figure 2.2.3.1: SNID Setting Information

2.2.4. EoC Master RF Information

Under “RF Card Information” page, it shows EoC master RF related parameters and information such as output power.

The screenshot displays the 'EoC Web Management' interface. The top navigation bar includes the 'ASCENT Communication Technology' logo and the title 'EoC Web Management'. Below this, a secondary navigation bar contains several menu items: 'Eoc Master Device Info', 'Uplink Network Configuration', 'Eoc Master Configuration', 'RF Card Information' (which is highlighted in orange), 'Eoc Client Configuration', 'System Configuration', and 'Contact Information'. A green circular arrow icon is located on the far right of this bar. The main content area is divided into two sections. On the left, there is a sidebar with a single item 'RF Info'. On the right, the 'RF Information' section is displayed, featuring a table with the following data:

RF Information	
Maximum Slave QTY:	253
RF Output Level(dBμV):	129
Downstream Starting Frequency:	7.5M
Downstream Ending Frequency:	65M
Upstream Starting Frequency:	7.5M
Upstream Ending Frequency:	65M

At the bottom of the table, there are two buttons: 'Refresh' and 'Help'.

Figure 2.2.4: RF Card information

2.3. EoC Client Management

2.3.1. EoC Client Access Control:

Authorization Mode:

Auto (default setting): All the connected EoC Client can access the EoC Master

Manual: Only the added(registered) EoC Client can access the EoC Master

Add Client: This function is to add the EoC Client to the registered EoC Client list.

NOTE: The authorization process could take around 1 minute to finish.

The screenshot displays the 'EoC Web Management' interface. The top navigation bar includes links for 'EoC Master Device Info', 'Uplink Network Configuration', 'EoC Master Configuration', 'RF Card Information', 'EoC Client Configuration' (highlighted), 'System Configuration', and 'Contact Information'. A green circular arrow icon is on the right. The left sidebar shows 'Authorization' as the selected menu item, with sub-items 'Online', 'Port', and 'Template'. The main content area is titled 'Authorization Mode' and shows 'Authorization Mode:' with radio buttons for 'Auto Auth' (selected) and 'Manual Auth'. Below are 'Submit', 'Refresh', and 'Help' buttons. The 'Slave Authorization' section contains a table with columns: ID, MAC, Auth Enable, Online Status, Output Level (dBmV), Slave Type, Auto Update Enable, Starting Time, Ending Time, Template Selection, and Operation. The first row shows ID 1, MAC 00:85:86:87:00:23, Auth Enable checked, Online Status Offline, Output Level 105, Slave Type Unknown, Auto Update Enable checked, Starting Time 00:00, Ending Time 23:59, Template Selection 1, and Operation buttons 'Modify' and 'Delete'. Below the table are 'Add An Authorized Slave', 'Refresh', and 'Help' buttons. The 'Unauthorized Slave' section has columns for Index, MAC, and Operation, with 'Refresh' and 'Help' buttons below.

Figure 2.3.1.1: EoC Client Access Control

The screenshot shows the 'Add Authorization Item' form. It contains the following fields and controls: 'Slave MAC Address' (text input), 'Slave Eth Port Number' (dropdown menu showing '2'), 'Slave Output Level' (text input showing '129'), 'Starting Time' (text input showing '00:00'), 'Ending Time' (text input showing '23:59'), 'Register Enable' (checkbox checked), and 'Auto Update Enable' (checkbox checked). At the bottom are 'Submit', 'Reset', 'Back', and 'Help' buttons.

Figure 2.3.1.2: Add Authorized EoC Client

After EoC Client MAC address is added, then click “submit”. The EoC client will be added to the authorized client list. In the “authorization client” list, click slave MAC address in the window, the following window will show up:

[00:a1:02:00:00:10]

Port Information									
Port	Port Enable	VLAN-ID	Egress TAG	Rules Set	QoS Priority	Rule Match Value	Upstream Maximum Rate (kbps)	Downstream Maximum Rate (kbps)	Operation
1	<input checked="" type="checkbox"/>	0	<input type="checkbox"/>	--	--	--	--	--	Modify
2	<input checked="" type="checkbox"/>	0	<input type="checkbox"/>	--	--	--	--	--	Modify

[Refresh](#) [Help](#)

Port Status				
Port	Link	Auto Negotiation	Speed	Duplex
1	linkdown	enable	10Mbps	half
2	linkdown	enable	10Mbps	half

Device Information	
Device Type	EoC-Slave
Port Number	2
Software version	V1.0.1
Attenuation	0
Upstream Rate	0 Mbps
Downstream Rate	0 Mbps

[Refresh](#) [Help](#)

Other Information
Reboot

Figure 2.3.1.3: Add Authorized EoC Client MAC Address

NOTE: when you make any configuration changes, please do **save** the configuration before reboot, otherwise the information/configuration will not be saved after EoC Master is rebooted.

2.3.2. Online EoC Client Status

This page shows EoC Client Online Status. The template is to allow network administration to reboot EoC Client in the network.


ASCENT
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EoC Web Management

EoC Master
Device Info

Uplink Network
Configuration

EoC Master
Configuration

RF Card
Information

EoC Client
Configuration

System
Configuration

Contact
Information



Authorization
Online
 Port
 Template

Online Slaves Number: 0

ID/MAC	User Information	Attenuation (dB)	Upstream SNR (dB)	Downstream SNR (dB)	Upstream Speed (Mbps)	Downstream Speed (Mbps)	Operation
							Reboot All Online Slaves Refresh Help

2.3.3. EoC Client Port Management

This page shows EoC Client Port Management function. You could make below configuration: port service rule, port VLAN, and enable port.

NOTE: the speed limitation will be only valid after set and apply for service rule.

The screenshot displays the 'EoC Web Management' interface. The top navigation bar includes 'EoC Master Device Info', 'Uplink Network Configuration', 'EoC Master Configuration', 'RF Card Information', 'EoC Client Configuration' (highlighted), 'System Configuration', and 'Contact Information'. A sidebar on the left shows 'Authorization', 'Online', 'Port', and 'Template'. The main content area is titled 'Slave Port Management' and contains a table with columns: ID, MAC, Port, Port Enable, VLAN Mode, PVID, Allowed VLAN, COS, UpLink MAX Speed (0-102400)Kbps, DownLink MAX Speed (0-102400)Kbps, and Modify. The table shows a single entry for ID 1 with MAC 00:85:86:87:00:23 and four ports (1-4) all enabled and set to 'Disable' for VLAN Mode. Below the table are 'Refresh' and 'Help' buttons.

Figure 2.3.3: Port Management

2.3.4. EoC Client Template Management

This page shows EoC Client Template Management function. The template is to set different parameters for the EoC Client, such as VLAN, Filter, Port Speed Limit, etc.

The screenshot displays the 'EoC Web Management' interface. The top navigation bar is the same as in Figure 2.3.3. The sidebar on the left shows 'Authorization', 'Online', 'Port', and 'Template' (highlighted). The main content area is divided into two sections. The first section, 'Default Template', has a 'Default Template:' label with radio buttons for 'Enable' (selected) and 'Disable'. Below this is a note: 'When the default templates is enabled, the new registered slaves will apply the default template configuration.' and buttons for 'Submit', 'Refresh', and 'Help'. The second section, 'Template Management', contains a table with columns: Template Index, Template Name, Broadcast Restriction Enable, and Operation. The table shows a single entry for Template Index 1 with Template Name 'DefaultTemplate' and Broadcast Restriction Enable checked. Below the table are buttons for 'Add New Template', 'Refresh', and 'Help'.

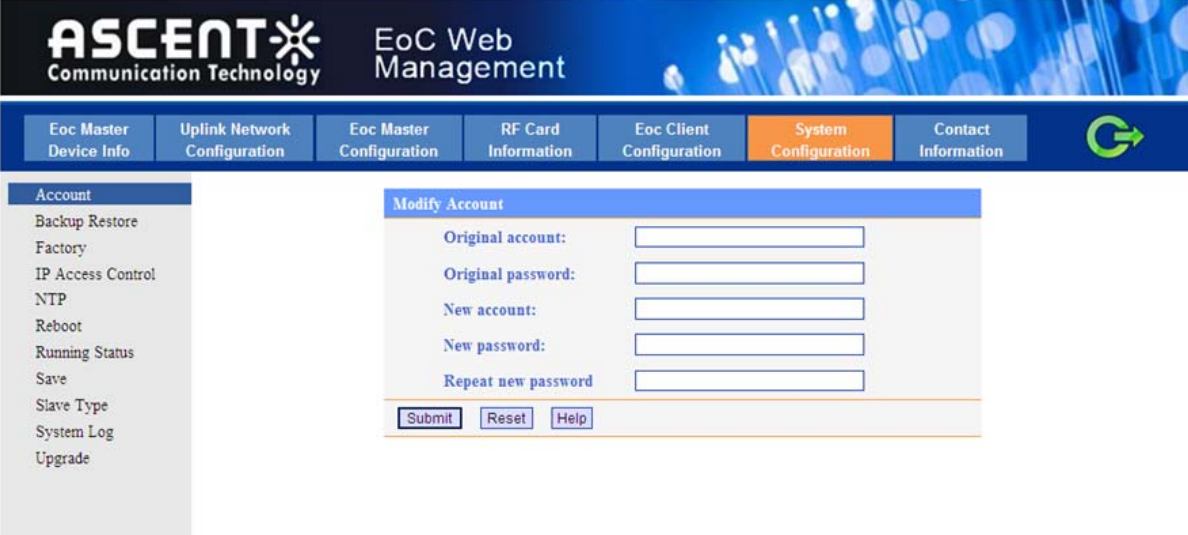
Figure 2.3.4: Template Management

The Administrator can add new template for the EoC Client. The EoC Client can have different services levels which can be achieved by applying different EoC Client template.

2.4. EoC System Configuration

This page shows the steps to manage the EoC system configuration.

2.4.1. System Admin Account Setting



The screenshot shows the 'EoC Web Management' interface. The top navigation bar includes 'EoC Master Device Info', 'Uplink Network Configuration', 'EoC Master Configuration', 'RF Card Information', 'EoC Client Configuration', 'System Configuration' (highlighted), and 'Contact Information'. A left sidebar lists various system functions, with 'Account' selected. The main content area is titled 'Modify Account' and contains five input fields: 'Original account:', 'Original password:', 'New account:', 'New password:', and 'Repeat new password:'. At the bottom of the form are three buttons: 'Submit', 'Reset', and 'Help'.

Figure 2.4.1: EoC System information

2.4.2. EoC System Backup Restore



The screenshot shows the 'EoC Web Management' interface with the 'System Configuration' tab selected. The left sidebar has 'Backup Restore' selected under the 'Account' category. The main content area is titled 'Configuration Backup and Restore' and contains four input fields: 'FTP Server' (192.168.2.100), 'Port' (21), 'User name' (admin), and 'Password' (admin). Below these is a 'File Name' field with the value '1_20130904131031'. A note states: 'Please enter the file name when you restore configuration'. At the bottom are five buttons: 'Backup', 'Restore', 'Reboot', 'Refresh', and 'Help'.

Figure 2.4.2: Backup Restore

2.4.3. EoC System Restore Factory Default Setting



Figure 2.4.3: Restore Factory Default Setting

2.4.4. EoC System IP Access Control



Figure 2.4.4: IP Access Control

2.4.5. EoC System Time Setting

The screenshot displays the EoC Web Management interface. The top header features the ASCENT Communication Technology logo and the title 'EoC Web Management'. Below the header is a navigation bar with tabs: 'Eoc Master Device Info', 'Uplink Network Configuration', 'Eoc Master Configuration', 'RF Card Information', 'Eoc Client Configuration', 'System Configuration' (highlighted in orange), and 'Contact Information'. A green circular arrow icon is on the right. On the left side, a vertical menu lists various system functions: 'Account', 'Backup Restore', 'Factory', 'IP Access Control', 'NTP' (highlighted in blue), 'Reboot', 'Running Status', 'Save', 'Slave Type', 'System Log', and 'Upgrade'. The main content area is titled 'Current Time' and shows 'Current Time: 2013-11-18 14:41:36'. Below this is a 'Set Up' section with a 'Time Zone' dropdown menu set to 'GMT +8:00Beijing,Chongqing,Hongkong,Urumchi'. There are two radio button options: 'NTP Server Set Up' (unselected) and 'Manually Configure Date And Time' (selected). The 'NTP Server Set Up' section includes fields for 'NTP Server IP' (0.0.0.0), 'Update Interval(min)' (30), and 'The Latest Synchronizing Time' (Never). The 'Manually Configure Date And Time' section includes a date/time field set to '2013-11-18 14:41:36'. At the bottom of the 'Set Up' section are three buttons: 'Apply', 'Refresh', and 'Help'.

Figure 2.4.5: NTP Time Setting

2.4.6. EoC System Reboot

The screenshot displays the EoC Web Management interface. The top header features the ASCENT Communication Technology logo and the title 'EoC Web Management'. Below the header is a navigation bar with tabs: 'Eoc Master Device Info', 'Uplink Network Configuration', 'Eoc Master Configuration', 'RF Card Information', 'Eoc Client Configuration', 'System Configuration' (highlighted in orange), and 'Contact Information'. A green circular arrow icon is on the right. On the left side, a vertical menu lists various system functions: 'Account', 'Backup Restore', 'Factory', 'IP Access Control', 'NTP', 'Reboot' (highlighted in blue), 'Running Status', 'Save', 'Slave Type', 'System Log', and 'Upgrade'. The main content area is titled 'Reboot System'. It contains a text instruction: 'Click this button to reboot the system. Please [Save Configuration](#) before rebooting.' Below the instruction is a 'Reboot System' button. At the bottom of the section is a 'Help' button.

Figure 2.4.6: Reboot

2.4.7. EoC System Operation Status

The screenshot displays the EoC Web Management interface. The top header features the ASCENT Communication Technology logo and the title "EoC Web Management". Below the header is a navigation bar with tabs: "Eoc Master Device Info", "Uplink Network Configuration", "Eoc Master Configuration", "RF Card Information", "Eoc Client Configuration", "System Configuration" (highlighted in orange), and "Contact Information". A green circular arrow icon is on the right. On the left, a sidebar menu lists various options, with "Running Status" highlighted. The main content area shows the "System Running Status" table.

System Running Status	
Online Time:	0 days0 hours 53 minutes 22 seconds
Memory Size(kB):	24788
Remaining Memory(kB):	4880
Storage Space(kB):	1984
Remaining Space(kB):	1868
Space Utilization:	6%

At the bottom of the table are "Refresh" and "Help" buttons.

Figure 2.4.7: Operation Status

2.4.8. EoC System Backup

The screenshot displays the EoC Web Management interface. The top header features the ASCENT Communication Technology logo and the title "EoC Web Management". Below the header is a navigation bar with tabs: "Eoc Master Device Info", "Uplink Network Configuration", "Eoc Master Configuration", "RF Card Information", "Eoc Client Configuration", "System Configuration" (highlighted in orange), and "Contact Information". A green circular arrow icon is on the right. On the left, a sidebar menu lists various options, with "Save" highlighted. The main content area shows the "Save Configuration" section.

Save Configuration

Clicking this button would enable the system to save all the configuration to FLASH.

Figure 2.4.8: System Backup

2.4.9. EoC Client Group Config

The screenshot displays the 'EoC Web Management' interface. The top navigation bar includes 'EoC Master Device Info', 'Uplink Network Configuration', 'EoC Master Configuration', 'RF Card Information', 'EoC Client Configuration', 'System Configuration' (highlighted), and 'Contact Information'. A sidebar on the left lists various system functions, with 'Slave Type' selected. The main content area is titled 'Slave Type Management' and contains a table with the following columns: ID, Slave Type, UserHFID, OUI, Port Number, Port, Mapping Port, and Operating. The table lists four slave types: SX-CNU, SX-CNU-04A-TeWang, SX-CNU-04A-YinHe, and SX-CNU-04A-SaiRuiQi. Each entry has a 'Port' column with values 1, 2, 3, and 4, and a 'Mapping Port' column with values 1, 2, 3, and 4. The 'Operating' column contains 'Modify' and 'Delete' buttons for each entry.

ID	Slave Type	UserHFID	OUI	Port Number	Port	Mapping Port	Operating
1	SX-CNU	SX-CNU	any	4	1	1	Modify Delete
					2	2	
					3	3	
					4	4	
2	SX-CNU-04A-TeWang	SX-CNU-04A-TeWang	any	4	1	1	Modify Delete
					2	2	
					3	3	
					4	4	
3	SX-CNU-04A-YinHe	SX-CNU-04A-YinHe	any	4	1	1	Modify Delete
					2	2	
					3	3	
					4	4	
4	SX-CNU-04A-SaiRuiQi	SX-CNU-04A-SaiRuiQi	any	4	1	1	Modify Delete
					2	2	
					3	3	
					4	4	
					1	1	

Figure 2.4.9: EoC Client Type

2.4.10. EoC System Log File

The screenshot displays the 'EoC Web Management' interface. The top navigation bar is the same as in Figure 2.4.9. The sidebar on the left has 'System Log' selected. The main content area is titled 'Log Options' and 'Log Information'. It contains a 'Log Setup' section with a 'Log Enable' checkbox checked. Below this is a 'Note: The option controls all system information output.' and a 'Remote Log Host Setup' section. The 'Remote Log Host Setup' section includes a 'Log Level' dropdown menu set to 'Level7', a 'Host IP' text box with '192.168.1.100', and a 'Host Port' text box with '514'. At the bottom of the 'Remote Log Host Setup' section are 'Apply', 'Refresh', and 'Help' buttons.

Log Setup	
Log Enable	<input checked="" type="checkbox"/>
Note: The option controls all system information output.	
Remote Log Host Setup	
Log Level	Level7
Host IP	192.168.1.100
Host Port	514
Apply	Refresh Help

Figure 2.4.10: System Log

2.4.11. EoC System Upgrade

The screenshot displays the 'EoC Web Management' interface. At the top, the 'ASCENT' logo and 'Communication Technology' are on the left, and 'EoC Web Management' is on the right. Below this is a navigation bar with tabs: 'Eoc Master Device Info', 'Uplink Network Configuration', 'Eoc Master Configuration', 'RF Card Information', 'Eoc Client Configuration', 'System Configuration' (highlighted in orange), and 'Contact Information'. A green circular arrow icon is on the far right of the navigation bar. On the left side of the main content area, there is a vertical menu with options: 'Account', 'Backup Restore', 'Factory', 'IP Access Control', 'NTP', 'Reboot', 'Running Status', 'Save', 'Slave Type', 'System Log', and 'Upgrade' (highlighted in blue). The main content area is titled 'System Upgrading' and contains a form with the following fields: 'FTP Server' (192.168.2.100), 'Port' (21), 'User' (admin), 'Password' (admin), and 'File name' (update). Below these fields are three buttons: 'Download', 'Upgrade', and 'Reboot'.

System Upgrading	
FTP Server	192.168.2.100
Port	21
User	admin
Password	admin
File name	update
<input type="button" value="Download"/> <input type="button" value="Upgrade"/> <input type="button" value="Reboot"/>	

Figure 2.4.11: EoC System Upgrade

3. Command Line Interface (CLI)

3.1. Configuration preparation

3.1.1. CLI Network connecting

AM300C support both in-band management (network connect to 10/100 BASE-TX interface) and out-band management (network connect to MGMT interface), manage EOC equipment through telnet connecting to CLI configuration interface.

Default out band manage IP: 192.168.2.2

192.168.1.2 Default in band manage IP: 192.168.1.2

3.1.2. User Login

When connect EOC through debug interface or telnet, you could use below default account to login in.

User name	Pass word
admin	admin

It will pop up below screen when you connect EOC successfully.

```
+-----+
| Hello, This is          |
| EoC System Management Program. |
| Version: V1.6.12        |
+-----+

EoC CLI starting....

username: admin
Password: admin
vtysh>
```

After enter user name and pass word, you will see below command.

vtysh>

You could then input configuration command to configure the eoc equipment or view the EOC configuration information.

3.2. Command description

3.2.1. Command format

EOC CLI commands formed as "command name + command parameter", command name must be unique, command parameter could be various, from 0 to unlimited number, the extra parameter will be invalid. Command name and command parameters are separated by one or more space.

Command name could be combination of multiple words; you could display all the command names by run command "list".

Commands are case sensitive, the entire command name must be lowercase, command parameter could be uppercase, lowercase, or mixed case letters, same letter sequence but different case combination are regarded as different parameters, such as "hello" and "Hello"

Command line support online editing, you could use "left" and "right" key to move the cursor, then through "insert" key to change to insert mode or overwrite mode. If insert mode, the new character will be added to the space of cursor indicate; If overwrite mode, the new character will replace the character of cursor indicates. "Delete" key could delete the character where cursor indicates, "Backspace" key could delete the character before cursor indicates.

Command line supports automate command completion. When input part of command, press "TAB" key, it will match and complete the commands automatically. If there is only one command could match the input characters, the whole command characters will be completed to command line; if there are multiple commands may match the input character, all the matched commands will be listed on the screen, then indicate a new command line, include the part characters you already input.

In any mode, input command "exit", you could then exit to current mode.

3.3. System directory

When you login successfully, input "vtysh>list", you will see below:

```
vtysh> list
enable
exit
list
```

3.3.1. Enable mode

Command	vttysh> enable
Function description	when enter into enable management mode, pssword is needed.

【example】

e.g: get into "enable" management mode

```
vttysh>enable
username:admin
password:admin
vttysh#
```

The default password for enable management mode is admin.

input "list" to display below commands

```
vttysh # list
configure terminal
disable
exit
list
master <1-2>
ping WORD
reboot
factory
slave (all|WORD|<1-64>)
start-shell
telnet WORD
telnet WORD PORT
write configure
```

3.3.2. EOC master management

Get into management mode

Command	vtysh # configure terminal
Function description	Get into management mode

Reboot master

Command	vtysh(config)# reboot
Function description	Reboot master

Get into master module management

Command	vtysh(config)# master <1~2>
Function description	get into master chipset management, default value is 1. Current equipment support 1 module.

Show current on line slave list

Command	vtysh(config-master 1)# show online
Function description	Display as below table, show all the on line slave connect to this master, line attenuation, physical bandwidth and authorization status.

e.g: show current on line slave list.

vtysh(config-master 1)# show online					
ID	MAC-Address	ATT(dB)	TX/RX(Mbps)	TX/RX(SNR)	Authorized
2	00:a1:02:02:20:40	0.00	59/0	7.71/0.00	0
Total [1] slaves online.					

Show authorized slave list.

Command	vttysh(config-master 1)# show legal-slaves
Function description	List all the authorized slaves connect to this master.

e.g: show authorized slave list

vtysh(config-master 1)# show legal-slaves						
ID	MAC-Address	Auth-Enable	Online	RF-Output	Auto-Upgrade	
1	00:a1:02:02:20:5b	Enable	-----	129	Enable	
2	00:a1:02:02:20:40	Enable	-----	129	Enable	
3	00:a1:02:02:20:5f	Enable	-----	129	Enable	
4	00:a1:02:02:20:47	Enable	-----	129	Enable	
5	00:a1:02:00:00:10	Enable	-----	129	Enable	
6	00:a1:02:02:20:62	Enable	-----	129	Enable	
7	00:a1:02:02:20:5e	Enable	-----	129	Enable	
8	00:a1:02:02:20:46	Enable	-----	129	Enable	
Total [17] slaves.						

Show current rules configuration

Command	vttysh(config-master 1)# show service-rule
Function description	show current rules parameter

e.g: show current rules configuration

vttysh(config-master 1)# show service-rule								
ID	Name	MValue	QoS	DownPIR	DownCIR	UpPIR	UpCIR	Latency
1	123	0	1	2097152	1048576	2097152	1048576	0
Total [1] service rules.								

Add slave to master white list

Command	vttysh(config-master 1)# bind slave-id <1-64> mac mac-address <0-1> <80-120> <0-1> <XX:XX> <XX:XX>
Function description	add slave to master white list, set slave ID, enable or disable authorization(0 is disable, 1 is enable), output level, enable or disable upgrading (0 is disable, 1 is enable), authorization start time and ending time.

e.g: add a slave with mac address 00:a1:02:02:20:40 to master white list, slave ID is 20, enable authorization and enable upgrading. the start time of authorization is 00:00 and ending time is 23:59

vttysh(config-master 1)# bind slave-id 20 mac 00:a1:02:02:20:40 1 120 1 00:00 23:59								
Add mac address (00:A1:02:02:20:40) successful.								

Delete slave from master white list.

Command	vttysh(config-master 1)# no bind mac mac-address
----------------	---

Function description	delete a slave from aster master white list.
-----------------------------	--

e.g: delete a slave with mac address 00:a1:02:02:20:40 from master white list.

<pre> vtysh(config-master 1)# no bind mac 00:a1:02:02:20:40 No bind mac address (00:A1:02:02:20:40) successful </pre>

Set master management VLAN

Command	vtysh(config-master 1)# set vlan active/inactive/ <2-4094>
Function description	set manage vlan as active mode, configurate vlan ID.

e.g: set management VLAN mode is active, manage VLAN ID is 10, display current VLAN configuration.

<pre> vtysh(config-master 1)# set vlan active Set vlan successful. vtysh(config-master 1)# set vlan 10 Set vlan successful. vtysh(config-master 1)# show vlan VLAN_ENABLE = no MASTER_VID = 10 </pre>

Get into slave module management

Command	vtysh(config)# slave slaveid <1~64>
Function description	get into slave management, "slaveid is" the slave ID, check in 4.1.1.1.2.1 .

Show slave port status

Command	vtysh[slave-id]# show port list
Function description	show current slave port status.

e.g: check the port status of slave with mac 00:a1:02:02:20:40.

<pre> vtysh[00:A1:02:02:20:40]# show port list MAC-Address PORT RULE VLAN_EN VLAN_ID PORT_EN 00:A1:02:02:20:40 1 0 0 0 1 00:A1:02:02:20:40 2 0 0 0 1 Total [2] ports. </pre>

Manage slave port

Command	vtysh[slave-id]# set port<1-4> <1-65535> (enable/disable) <2-4094> (enable/disable)
Function description	manage slave port, add rules to appointed port, open/close port enable, set port VLAN ID, set port tag mode.

e.g: manage the port 1 of slave with mac 00:a1:02:02:20:40, add a rule ID 1 for port 1, enable port, set the VLAN ID as 10, and set the port as tag mode.

```
vtysh[00:A1:02:02:20:40]# set port 1 1 enable 10 enable
Set port [1] successful.
```

4. Trouble shooting

Note: During the initial lab testing, if the same computer is used to setup the EoC Master and then used to test the EoC Client through the Client LAN port, it will take about 10 mins for the EoC Client to sync the MAC address with the EoC master.

Solution: Power cycle the EoC Client can refresh the MAC and expedite the process.



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