HUAWEI TECHNOLOGIES

Established in 1988, Huawei Technologies is a high-tech enterprise which specializes in research and development (R&D), production and marketing of communications equipment, providing customized network solutions for telecom carriers in optical, fixed, mobile and data communications networks. Huawei's customers include China Telecom, China Mobile, China Netcom, China Unicom as well as Thai AIS, South Korea Telecom, SingTel, Hutchison Telecom, PCCW HKT, Telemar (Brazil), Rostelecom (Russia), etc.

Huawei's products can be divided into the following categories: fixed network, mobile network, data communications and optical network --- ranging from switching, access network, optical transport, intelligent network, support network, GSM, GPRS, W-CDMA, cdma2000 1x, full series of routers and LAN switches, videoconferencing to other key telecom technology fields. Most important of all, Huawei products are based on its independently designed ASIC chips. Its ASIC designing capability is among the most advanced in this field worldwide. This allows Huawei to consider the needs of its customers from start to finish, from the chip to the network.

This experience is invaluable as Huawei expands its penetration into international markets, with its international revenues saw strong growth of 68%, reaching US$552 million in 2002 compared with US$328 million in 2001.

In order to support its global operations Huawei has set up 32 branch offices worldwide. Eight regional headquarters and a host of customer support and training centres have been established. Several research institutes including Dallas (USA), Bangalore (India), Stockholm (Sweden), Moscow (Russia), Beijing and Shanghai have been set up, and a joint venture in Russia is operating successfully. Huawei's products are in application in over 40 countries, including Germany, Spain, Russia, Brazil, Thailand, Singapore, Egypt and South Korea.

Among Huawei's 22,000 employees, 46% are engaged in R&D. Each year, Huawei invests no less than 10% of its sales revenue into R&D. To ensure a steady and sustainable growth and to sharpen the core competitive edge, Huawei emphasizes the importance to partner with leading global players in the industry on both product development and marketing. Huawei has been cooperating with Texas Instruments, Motorola, Microsoft, Intel, Sun Microsystems and others.

Since 1997, Towers Perrin, Hay Group, PwC and FhG have been acting as Huawei's consultants on employee stock option plan, human resource management, financial management and quality control.

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Product Catalogue for Quidway IP Network Solutions

HUAWEI

Who gives you advanced systems for today and peace of mind for tomorrow?

Huawei does.

In today's rapidly changing telecom market, being ahead of the game right now is no longer enough. You need a partner with the know how, commitment and track record to keep you a step ahead tomorrow as well.

That's why more and more companies around the world are looking to Huawei for total solutions from fixed to mobile and optical networks, value added services and datacom products.

For datacom, we offer a complete range of high-performance products including low, middle, and high-end and core routers, a full series of Ethernet switches, and remote access server, complete with VoIP solutions: all compatible with every international standard vendor product so you can plug into advanced Huawei technology right now without compromising your existing investments.

Huawei's datacom products have been massively deployed among telecom operators and enterprise customers including large and medium-scale businesses, banking, government organizations, campus networks, commercial buildings and residential areas.

With over 10,000 R&D staff, Huawei is dedicated to finding the most advanced and effective solutions for you at every level. In fact Huawei's software development center at Bangalore, India earned the highly prestigious SEI-CMM Level-4 in 2001.

So if you are looking for advanced, cost-effective datacom solutions to put you a step ahead today, plus the research and development support you need to stay ahead tomorrow, it may be time you gave Huawei a call.

http://datacomm.huawei.com

Huawei Technologies

Partner for a Networked World

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Now landing, the latest series of AR routers from Huawei.

With new VRP software and new modules.

After intensive in-house efforts at Huawei's CMM Level 4 Research Centre, the new Quidway AR series is a complete range of high-performance, low and middle-end routers designed to satisfy a full spectrum of requirements, from branch access all the way to service aggregation and multiple applications solutions.

With features that include new VRP software based on carrier-class architecture design, the Quidway AR18/28 offers powerful service capability including routing, QoS, VPN, security, and VoIP/FR with high availability that can be implemented in different networks.

Multi-service Interface Modules include: 1/2FE, 4BS, 8/16AS, 1/2/4 E1/T1, 2/4 SA, 8LSA, 2S1B, 2/4 FXS, 2/4 FXO, 2/4 E&M, E1VI, T1VI, 6/12AM, 6FCM, NDEC, E3/T3, 6AME/12AME, E1-F/T1-F, 0C-3 ATM, ATM E1/T1, ATM E3/T3, plus new modules: G.SHDSL, ADSL, RPS.

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Huawei Technologies

partner for a networked world

Preface

Huawei Technologies started the R&D of data communications products in 1994. In the following years, the datacom department witnessed a rapid growth and has already become one of the most important members in the family of Huawei. Taking the best people to best serve customers is what Huawei is thinking and doing. The current R&D team dedicated to data communications totals around 2,500 staff. Among Huawei's global research institutes, Beijing, Nanjing in China, Bangalore in India and Silicon Valley in USA focus on data communications. In order to guarantee his R&D advantages, Huawei invests no less than 10% of its sales revenue into R&D each year. Today Huawei is capable of providing a full range of data communications products including a full line of low-, middle- and high-end Router products and LAN Switch products, as well as Security Firewall, Internet Access Server Series and VoIP GW/GK. The products feature high performance, customization and cost-effectiveness for addressing to today and tomorrow's diverse market requirements that arise from the worldwide markets. With self-developed software platform VRP and core ASIC chips, Huawei data communications products gain a powerful competitive position in the market and provide customized end-to-end solutions together with high customer service quality.

In the past years, the sales revenue from data communications maintained a growth rate of more than 100% annually, winning increasing recognitions from the worldwide markets. Up to December, 2003, more than 210,000 routers and more than 8.1 million ports of LAN switches, including over 4,100 sets of Quidway NetEngine series products, are running on the worldwide networks. According to the recent report issued by IDC, Huawei has ranked second for competitive Quidway series routers and LAN switches in China since 2000. Huawei's Remote Access Servers have been applied in 18 countries and regions on a large scale with 70% market share in 2001 in China, Huawei data communications products have already been successfully applied in 43 countries and regions including the United Kingdom, Germany, Brazil, Russia, Egypt, Singapore, Thailand and Hong Kong.

Router

Quidway AR 18-10 series routers

Quidway AR 18-12

Quidway AR 18-13

Quidway AR 18-15

Quidway AR 18-16

The Quidway AR 18-10 series routers are new generation, SOHO product developed by Huawei. With diverse and flexible interfaces, it is flexible, robust in packet processing, and is easy to configure and maintain. And it comes with a soft- and smooth looking design and excellent cost-performance ratio. It finds extensive application as a branch router in such network solutions as network banks, and centralized control.

The AR 18-10 series routers include AR18-12, AR18-13, AR18-15 and AR 18-16, which have diverse fixed interface.

Product Features

- **Diverse and flexible interface:** Quidway AR 18-10 series routers support a RJ45 Ethernet port, a synchronous/asynchronous serial port, and diverse WAN interface according to different model. Subscribers can flexibly select a solution among such WAN technologies as the PSTN, Frame Relay, X.25, DDN and ISDN.
- **Robust capacity to process package:** Advanced CPU technology, highly effective, real time and multi-task operating system and unique software are used to remarkably enhance its capacity to process messages.
- **Network Management complied with international standards:** The network management system of the router is compliant with the SNMP standard, and NM platform developed by Huawei, hence it is convenient in centralization network management.

Main Supported Protocols and Applications

- **Data link layer Protocols and Applications:** Ethernet, PPP, PPP link quality monitor, SLIP, FR, LAPB,X.25, X.25 PAD, X.25 Hunt Group, XOT, ISDN, HDLC, DDR, MODEM, MP and MP load-balance
- **Network Layer Protocols and Applications:** DLSw, IP, IP Fast Switch, DHCP

Server, IPX and VLAN

- **Routing Protocols:** Static Routing, OSPF, RIP, RIP2, BGP, Policy Routing, and Multicast Routing
- **Application Layer Protocols and Applications:** Telnet, FTP, TFTP, Callback, Configuration function, SNMP, RMON, Private MIBs
- **Security Characteristics:** AAA RADIUS, FireWall, NAT, L2TP, GRE, IPSec, IKE, Encryption card QoS Applications FIFO, PQ, CQ, WFQ, CBWFQ, CAR, GTS, WRED and LR (Line Rate)
- **High Availability Functions:** VRRP, Backup Center

System Configuration

Description	Specification			
Interface	AR18-12 2 multi-protocol synchronous/asyn-chronous serial interfaces	AR18-13 1 ISDN BRI S/T, 1syn/asyn serial interface	AR18-15 1 ISDN BRI U, 1syn/asyn serial interface	AR18-16 1 cT1/PRI inter face
	1 console port 1 10/100Mbps Ethernet interface 1 AUX port			
Default SDRAM	64MB			
Default Flash	8MB			
Maximum power	20W			
Power module (External)	Input voltage: 100 to 240V AC Frequency: 50/60Hz Input current: 0.5A to 1A			
	Output voltage: 12V Output current: 4A			
Dimensions (W x H x D)	251 x 36.5 x 187mm (the maximum dimensions)			
Operating temperature	0 to 40°C			
Operating relative humidity	10 to 90% (non-condensing)			

Quidway AR 18-30 series

Quidway AR 18-30/ 31

Quidway AR 18-33/ 34

Quidway AR 18-32/ 35

Quidway AR 18-30 series routers are ADSL routers intended for providing high bandwidth to the small-and-medium-sized enterprises and relatively large branches and offices in a new approach.

In the uplink direction, AR 18-30 series routers provide ADSL over POTS, ADSL over ISDN, G.SHDSL or ISDN interfaces that can be connected to the equipment at the central office end via one or two subscriber-lines to provide the network access service. The ISDN interface primarily functions as a secondary interface that can take over traffic in case the ADSL(G.SHDSL) line fails, thus ensuring the normal communications without interruption.

Quidway AR 18-30 series routers include AR18-30, AR18-31, AR18-32, AR18-33, AR18-34, AR18-35.

Specifications of AR 18-30 series routers

Description	Specification		
Interface	AR 18-30/18-31 One ADSL over POTS One Console port Four 10/100M Ethernet interface One ISDN BRI S/T (only for AR 18-31/AR18-34/AR18-35)	AR 18-32/18-35 One ADSL over ISDN	AR 18-33/18-34 One G.SHDSL
Processor	MPC859		
SDRAM	64MB		
Flash	8MB		
Max. power consumption	20W		
Power supply module (external)	nput Rated voltage: 100-240v a.c.; 50/60Hz Max. voltage: 90-264V a.c.; 50/60Hz Current: 0.5A-1A Output: Voltage: 12V d.c. Current: 4A		
Dimensions (W x D x H)	300mm x 180mm x 45mm (Maximum dimensions, with the highest arc point of the plastic panel.)		
Weight	1kg		
Operating temperature	0-40˚C		
Operating humidity	10-90% (noncondensing)		

Quidwa

ADSL interface attributes

Attributes	ADSL over POTS	ADSL over ISDN
Series	AR 18-30/18-31	AR 18-32/18-35
Connector	RJ11	
Interface rate	ADSL Full Rate mode (i.e., ITU-T 992.1 G.DMT/ ANSI T1.413): Upline rate: 8160Kbps Downlink rate: 896Kbps	ADSL Full Rate mode (i.e., ITU-T 992.1 G.DMT) Upline rate: 8160Kbps Downlink rate: 896Kbps
Interface standard	ITU-T 992.1 G.DMT Annex A ITU-T 992.2 G.Lite ANSI T1.413 Issue 2	ITU-T 992.1 G.DMT Annex B
Service supported	Provides ADSL access over ordinary telephone line	Provides ADSL access over ISDN line

G.SHDSL interface attributes

Series	AR 18-33/18-34
Connector	RJ11
Interface rate	Supports independent and symmetrical transmitting and receiving rate when working in two-line mode. One way rate ranges from 192 Kbps to 2312kbps. Rate change step is 8 Kbps.
Interface standard	ITU-T G991.2
Service supported	Provides G.SHDSL access over ordinary telephone line

ISDN BRI S/T interface attributes

Series	AR 18-31/18-34/18-35
Connector	RJ45
Protocol standard	Compliant with ITU-T I.430, Q.921 and Q.931 recommendations
Operation mode	ISDN dial-in mode ISDN leased line mode
Supported service	ISDN ISDN supplementary services Multi-user number Sub-address Backup
Supported protocol	PPP MP FR

Quidway AR 28-09

Quidway AR 28-09

Quidway AR 28-09

Product Introduction

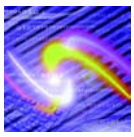
Quidway AR 28-09 modular router is the border access router developed by Huawei Technologies. Quidway AR 28-09 router is designed into a modular structure, and can provide not only integrated Fast Ethernet interfaces (FE), AUX ports and synchronous/asynchronousserial interfaces, but also abundant optional SICs (Smart Interface Cards) and MIMs(Multifunction Interface Modules). Quidway AR 28-09 modular router feature higher cost effectiveness and well expandability when compared with the similar products. Therefore, it can serve as not only the access routers in some large branches but also the core routers in the small and medium Intranets.

Quidway AR 28-09 support the network protocols below

- **Network Interconnection Protocol:** Ethernet, PPP, PPP link quality monitor, PPPoE, SLIP, FR,LAPB, X.25, X.25 PAD, X.25 Hunt Group, XOT, ISDN,HDLC, DDR, MODEM, MP and MP load balancing
- **Network Layer Protocol and Application:** IP, DLSw, IP Fast Switch, DHCP Server/ Relay, IPX and VLAN
- **Routing Protocol:** Static Routing, OSPF, RIPv1/V2, RIPv2, BGP-4, Policy Routing and Multicast Routing
- **Transmission layer protocol:** TCP, UDP
- **Application Layer Protocol and Application:** Telnet,Dumb Terminal, Terminal Server, FTP, TFTP, Callback, Configuration function, SNMP, RMON, Private MIBs
- **Security Characteristics:** AAA RADIUS, Firewall, NAT, L2TP, GRE, IPSec, IKE, Encryption card
- **Voice Application:** VOIP, VOFR, IP Fax, IPHC, GKClient, E1 Voice, T1 Voice
- **QoS Application:** PQ, CQ, WFQ, CBWFQ, CAR, GTS, WRED, LR
- **Reliability Functions:** VRRP, Backup Center

Product Configuration

Module Slots	2 SIC slots (Up to 2 SICs can be configured as needed.)
	1 MIM slot (Up to 1 MIM can be configured as needed.)
Fixed interface	1 10/100Mbps Ethernet interface
Fixed interface	1 synchronous/asynchronous serial interface
	1 AUX port
	1 console port
Processing Capability	40kpps
Boot ROM memory	512KB
Default SDRAM	64MB
Maximum SDRAM	256MB
Flash	8MB
Dimensions (W x H x D)	376.2 X 79.4 X 287.9mm (including the rubber feet)
Weight	2.5kg
Input voltage	AC: 100V to 240V 50/60Hz
	DC: -40V to -60V
	RPS: +3.3V , +5V and +12V DC
Maximum Power	30W
Operating temperature	0 to 40℃
Operating relative humidity	10 to 90% (non-condensing)


Quidway AR 28-10 series routers

Quidway AR 28-10

Quidway AR 28-11

Quidway AR28-10/28-11 Router is developed for the enterprise-level networks. Quidway AR28-10/28-11 Router adopts modular design and provides multiple Multifunctional Interface Modules (MIMs) and Smart Interface Cards (SICs). To further satisfy the special requirements of carrier-level network on high reliability, Quidway AR28-10/28-11 Router provides three host options: AC-powered host, DC-powered host and RPS (Redundancy Power System)-powered host. Therefore, Quidway AR28-10/28-11 Router is also suitable for the application in the carrier-level networks such as telecom management networks and billing networks. They adopt 64-bit high speed micro-processor technology and use the network operating system platform VRP (Versatile Routing Platform) of Huawei Technologies to provide rich software characteristics. Quidway AR28-10/28-11 routers support the functions of dumb terminal access server, SNA/DLSw and VoIP characteristics, and provide plenty of backup technologies and QoS characteristics.

Product features

Abundant interface types including synchronous serial interface, asynchronous serial interface, FE, E1/T1/PRI, ISDN BRI,E3 , FXS, FXO, E&M, E1VI, T1VI, ATM, ADSL and so on.

Perfect security protecting system containing: packet filter technique, network address translation (NAT), AAA, VPN technique, Call Back service, log administration, and so on.

Powerful backup function support interface backup link backup and route backup. They support backups between various data link technique including DDN, FR, X.25, PSTN and ISDN Constructing VPN. AR28-10/28-11 could work as both LAC and LNS in the L2TP VPN framework.

Voice over IP features Quidway AR 28-10/28-11 routers support voice features. For different conditions of the users, the following types of voice modules are provided: 2FXS, 2FXO, 2E&M, 4FXS, 4FXO, 4E&M, E1VI and T1VI.

The voice modules support multiple kinds of encoding algorithms such as G.711, G.723 and G.729, and also support H.323 protocol stack and GK interface, implementing interworking with VoIP devices from many manufacturers such as Cisco, AudioCodec, VocalTec and Motorola.

Support SNA

Implement crossing-WAN transmission of SNA, realizing interconnection between LLC2 and SDLC.

Supporting the functions of dumb terminal access server.

Complete QoS function supply medium/small enterprises with a high cost effective solution data, voice, video integrated network.

Main Supported Protocols and Applications

- **Data link layer Protocols and Applications:** Ethernet, PPP, PPP link quality monitor, SLIP, FR, LAPB,X.25, X.25 PAD, X.25 Hunt Group, XOT, ISDN, HDLC, DDR, MODEM, MP and MP load-balance
- **Network Layer Protocols and Applications:** DLSw, IP, IP Fast Switch, DHCP Server, IPX and VLAN
- **Routing Protocols:** Static Routing, OSPF, RIP, RIP2, BGP, Policy Routing, and Multicast Routing
- **Application Layer Protocols and Applications:** Telnet, Dumb Terminal, Terminal Server, FTP, TFTP, Callback, Configuration function, SNMP, RMON, Private MIBs
- **Security Characteristics:** AAA RADIUS, FireWall, NAT, L2TP, GRE, IPSec, IKE, Encryption card
- **Voice Application:** VOIP, VOFR, IP Fax, IPHC, GKClient, E1 Voice, T1 Voice
- **QoS Application:** PQ, CQ, WFQ, CBWFQ, CAR, GTS, WRED, LR
- **Reliability Functions:** VRRP, Backup Center

System Configuration

Description	AR 28-10 specification		AR 28-11 specification
Fixed interface	1 10/100Mbps Ethernet interface		2 10/100Mbps Ethernet inter faces
Fixed interface	1 synchronous/asynchronous serial interface 1 AUX port and 1 console port		
Module Slots	2 SIC slots and 1 MIM slot		
Processing Capability	80kpps		
Boot ROM memory	512KB	Default SDRAM	64MB
Maximum SDRAM	256MB	Flash	8MB
Dimensions (W x H x D)	442 x 44.4 x 300mm	Weight	6kg
Input voltage	AC: 85V to 264V 50/60Hz DC: -40V to -75V RPS: +3.3V , +5V and +12V DC		
Maximum Power	60W	Operating temperature	0 to 40°C
Operating relative humidity	10 to 70% (non-condensing)		

Quidway AR 28-09/28-10/28-11 provide the diverse interface modules including multifunction interface modules(MIM) and smart interface cards(SIC) , and some are listed below:

MIM

- 1-port 10/100Base-TX Ethernet network module (1FE)
- 1-port 100Base-FX Ethernet network module (1SFX /MFX)
- 2-port 10/100Base-TX Ethernet network module(2FE); Not support by AR 28-09
- 2/4/8-port synchronous/asynchronous serial network module (2/4 /8 SA);
- 8/16-port asynchronous serial network module (8/16AS);
- 8 low-speed port synchronous serial network module (8 LSA);
- 6/12-port analog Modem module (6/12AM)
- 1/2/4-port E1/CE1/PRI module (1/2/4cE1)
- 1-port channelized E3 module (1cE3)
- 1/2/4-port T1/CT1/PRI module (1/2/4cT1)
- 1-port channelized T3 module (1cT3)
- 1/2-port ADSL module (1/2 ADSL)
- 1-port ATM OC-3 module (1OC3-ATM)
- 2/4/6-port fast connect modem module (2/4/6 FCM)
- 2/4-port voice network module with analog SLIC line module (2/4 FXS)
- 2/4-port voice network module with analog trunk module (2/4 FXO)
- 2-port voice network module with E&M trunk module (2/4 E&M);
- 1-port E1 voice module (E1VI)
- 1-port T1 voice module (T1VI)
- Network Data Encryption Card interface module (NDEC)

SIC

- 1-port 10/100M Fast Ethernet interface card (SIC-1FEA) note; Not support by AR28-11
- 1-port 10M Ethernet interface card (SIC-1ETH); Not support by AR28-11
- 1-port synchronous/asynchronous serial interface card (SIC-1SA)
- 3-port asynchronous serial interface card (SIC-3AS)
- 1/2-port ISDN BRI S/T interface card (SIC-1/2BS)
- 1/2-port ISDN BRI U interface card (SIC-1/2BU)
- 1-port E1/cE1/PRI interface card (SIC-EPRI)
- 1-port fractional E1 interface card (SIC-FE1)
- 1-port T1/cT1/PRI interface card (SIC-TPRI)
- 1-port fractional T1 interface card (SIC-FT1)
- 1/2-port analog Modem interface card (SIC-1/2AM)
- 1/2-port voice user circuit interface card (SIC-1/2FXS)
- 1/2-port voice AT0 Foreign Exchange Office interface card (SIC-1/2FXO)



Quidway AR 28-30/31 Series Routers

Quidway AR 28-30

Quidway AR 28-31

Quidway AR 28-30/31 series comprises enterprise network-oriented routers independently developed by Huawei Technologies Co., Ltd.. They adopt 64-bit micro-processor technology and use the network operating system platform - VRP (Versatile Routing Platform) of Huawei Technologies to provide rich software characteristics. Modular structure is used in hardware to provide rich and selectable modules in addition to the integrated highspeed Ethernet interface and synchronous serial port. Compared to Quidway R2620 series routers, Quidway AR 28-30/31 series routers are more flexible in configuration and more powerful in processing capability. They can act as the core routers in medium/small enterprise networks as well as the access routers in some larger branches. Quidway AR 28-30/31 series routers include AR 28-30 and AR 28-31 routers.

Main Supported Protocols and Applications

Network Interconnection Protocols and Applications	Ethernet, PPP, PPP link quality monitor, SLIP, FR, LAPB, X.25, X.25 PAD, X.25 Hunt Group, XOT, ISDN, HDLC, DDR, MODEM, MP and MP load balance
Network Layer Protocols and Applications	DLSw, IP, IP Fast Switch, DHCP Server, IPX and VLAN
Routing Protocols	Static Routing, OSPF, RIPv1, RIPv2, BGP, Policy Routing, Multicast Routing
Application Layer Protocols and Applications	Telnet, Dumb Terminal, Terminal Server, FTP, TFTP, Callback,Configuration function, SNMP, RMON, Private MIBs
Security Characteristics	AAA RADIUS, FireWall, NAT, L2TP, GRE, IPSec, IKE, Encryption card
Voice Applications	VOIP, VOFR, IP Fax, IPHC, GK Client, E1 Voice, T1 Voice
QoS Applications	FIFO, PQ, CQ, WFQ, CBWFQ, CAR, GTS, WRED and LR (Line Rate)
Reliability Functions	VRRP, Backup Center

System Configuration

System Configuration Table of Quidway AR 28-30/31 Series

Item	AR 28-30 Specification	AR 28-31 Specification
Fixed Interfaces	1 10/100M Ethernet interface	2 10/100M Ethernet interface
Module Slots	Slot 3 (3 interface modules can be configured in maximum)	
LAN Interface Modules	1FE/2FE (10/100Base-TX), 1SFX / 1MFX	
WAN Interface Modules	2/4/8SA (high-rate Sync/Async. Serial interface module) 8LSA (low-rate Sync/Async. Serial interface module) 2S1B (2-port Sync/Async and 1-port ISDN BRI S/T module) 1/2/4E1 (channelized cE1/PRI module), 1/2/4T1, 1 E3/T3 4BS (ISDN BRI S/T interface module) 8AS/16AS (Asynchronous Serial interface module) 1/2 ADSL (ADSL module) 1OC3-ATM (ATM OC-3 module) 6/12AM (Asynchronous Modem module), 6FCM (Fast Connect Modem module) NDEC (Network Data Encryption Card)	
Voice Modules	2/4FXS (FXS interface voice module) 2/4FXO (FXO interface voice module) 2/4E&M (E&M interface voice module) 1 E1VI (E1 voice module), 1 T1VI (T1 voice module)	
Processor	MPC8240 200MHz	
NVRAM	128KB	
FLASH	8MB	
Default SDRAM	64MB Max.: 256MB	
Flash	8MB	
Dimensions (W x H x D)	440mm x 43mm x 400mm (including the rubber feet)	
Weight	8kg	
Input voltage	AC: 110 ~ 240 V 50 ~ 60Hz DC: -48 ~ -60V	
Maximum Power	67W	
Operating temperature	0 to 40°C	
Operating relative humidity	10 to 90% (non-condensing)	

Quidway AR 28-40/80 Series Routers

Quidway AR 28-40

Quidway AR 28-80

Introduction

Quidway AR 28-40/80 series routers are enterprise network-oriented routers independently developed by Huawei Technologies Co., Ltd.. They adopt 64-bit micro-processor technology and use the network operating system platform - VRP (Versatile Routing Platform) of Huawei Technologies to provide rich software characteristics. Modular structure is used in hardware so that they possess more powerful processing capability and more access density. They can act as the core routers in medium/small enterprise networks as well as the aggregation layer routers in large networks. Quidway AR 28-40/80 series includes Quidway AR 28-40 and Quidway AR 28-80 routers.

Main Supported Protocols and Applications

Network Interconnection Protocols and Applications	Ethernet, PPP, PPP link quality monitor, SLIP, FR, LAPB, X.25, X.25 PAD, X.25 Hunt Group, XOT, ISDN, HDLC, DDR, MODEM, MP and MP load balance
Network Layer Protocols and Applications	DLSw, IP, IP Fast Switch, DHCP Server, IPX and VLAN
Routing Protocols	Static Routing, OSPF, RIPv1, RIPv2, BGP, Policy Routing,Multicast Routing
Application Layer Protocols and Applications	Telnet, Dumb Terminal, Terminal Server, FTP, TFTP, Callback,Configuration function, SNMP, RMON, Private MIBs
Security Characteristics	AAA RADIUS, FireWall, NAT, L2TP, GRE, IPSec, IKE, Encryption card
Voice Applications	VOIP, VOFR, IP Fax, IPHC, GK Client, E1 Voice, T1 Voice
QoS Applications	FIFO, PQ, CQ, WFQ, CBWFQ, CAR, GTS, WRED and LR (Line Rate)
Reliability Functions	VRRP, Backup Center

System Configuration

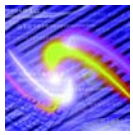
System Configuration Table of Quidway AR 28-40/80 Series

Item	AR 28-40 Specification	AR 28-80 Specification
Slots	4	8
Dimension (W x D x H)	440mm x 400mm x 43mm	440mm x 400mm x 86mm
Weight	8kg	14kg
Power Consumption	67W	114W
LAN Interface Modules	1FE/2FE (10/100Base-TX) 1SFX / 1MFX	
WAN Interface Modules	2/4/8SA (high-rate Sync/Async. Serial interface module) 8LSA (low-rate Sync/Async. Serial interface module) 2S1B (2-port Sync/Async and 1-port ISDN BRI S/T module) 1/2/4E1 (channelized cE1/PRI module), 1/2/4T1, 1 E3/T3 4BS (ISDN BRI S/T interface module) 8AS/16AS (Asynchronous Serial interface module) 1/2 ADSL (ADSL module) 1OC3-ATM (ATM OC-3 module) 6/12AM (Asynchronous Modem module), 6FCM (Fast Connect Modem module) NDEC (Network Data Encryption Card)	
Voice Modules	2/4FXS (FXS interface voice module) 2/4FXO (FXO interface voice module) 2/4E&M (E&M interface voice module) 1 E1VI (E1 voice module), 1 T1VI (T1 voice module)	
Processor	MPC8240 250MHz	
NVRAM	128KB	
FLASH	8MB	
SDRAM	Default: 128MB Max.: 256MB	
Input voltage	AC: 110 ~ 240 V 50 ~ 60Hz	
	DC: -48 ~ -60V	
Operating temperature	0 to 40°C	
Operating relative humidity	10 to 90% (non-condensing)	

Quidway AR 28-30/28-31/28-40/28-80 provide the diverse multifunction interface modules (MIM), some are listed below:

MIM

- 1-port 10/100Base-TX Ethernet network module (1FE)
- 1-port 100Base-FX Ethernet network module (1SFX /MFX)
- 2-port 10/100Base-TX Ethernet network module (2FE);
- 2/4/8-port synchronous/asynchronous serial network module (2 /4 / 8 SA);
- 8/16-port asynchronous serial network module (8/16AS);
- 8 low-speed port synchronous serial network module (8 LSA);
- 6/12-port analog Modem module (6/12AM)
- 1/2/4-port E1/CE1/PRI module (1/2/4cE1)
- 1-port channelized E3 module (1cE3)
- 1/2/4-port T1/CT1/PRI module (1/2/4cT1)
- 1-port channelized T3 module (1cT3)
- 1/2-port ADSL module (1/2 ADSL)
- 1-port ATM OC-3 module (1OC3-ATM)
- 2/4/6-port fast connect modem module (2/4/6 FCM)
- 2/4-port voice network module with analog SLIC line module (2/4 FXS)
- 2/4-port voice network module with analog trunk module (2/4 FXO)
- 2-port voice network module with E&M trunk module (2/4 E&M);
- 1-port E1 voice module (E1VI)
- 1-port T1 voice module (T1VI)
- Network Data Encryption Card interface module (NDEC)


Quidway AR 46 series routers

Introduction

Quidway AR 46 Series Routers are high-performance edge routers for the service providers and enterprise networks. Depending on the number of provision slots, the routers fit into three models: Quidway AR 46-80, AR 46-40 and AR 46-20. In addition, these routers can work as the core routers or the high-performance aggregating routers in the enterprise networks.

Quidway AR46-20

Quidway AR 46 Series Routers adopt modular design and provide multiple Multi-functional Interface Module (MIM). To provide high reliability for the carrier-class networks, Quidway AR 46 Series Routers support hot swapping of interface module, power supply, and fan modules, and offer redundant power supply.

Quidway AR46-40

Quidway AR 46 Series Routers adopt high speed PowerPC microprocessor and the Versatile Routing Platform (VRP). Quidway AR 46 Series Routers provide various access means for the users with various link layer protocols. The routers can also support DLSw, multicast, various types of VPN (including L2TP, GRE, IPSec, and MPLS VPN), voice, and DDR services. The routers provide the backup scheme based on the backup center technology and VRRP (Virtual Router Redundancy Protocol) for high availability. In addition, abundant QoS (Quality of Service) features are available. Thereby, Quidway AR 46 Series Routers can operate together with other Quidway Series Routers and Ethernet switches to provide overall end-to-end network solutions for the medium-to-large-sized enterprises and telecom carrier.

Quidway AR46-80

Product Features

- **Powerful forwarding//Service Processing Capacity:** deliver the maximal throughput of 350Kpps.
- **Abundant Interfaces:** synchronous/asynchronous serial, Ethernet, ADSL, E1/T1, E1-F/T1-F, E3/T3, ISDN BRI/PRI, FCM (Fast-Connection Modem), AM (Analog Modem), voice interface, etc.
- **Diversified Services:** ATM and ADSL; MPLS VPN and traditional VPN; DLSw (Data-link switch); DDR((Dial-on-Demand Routing); and VOIP gateway.
- **High availability:** redundant power supply and hot-swappable interface/power/fan; patent backup center functionality and VRRP.
- **Extraordinary Diff-Serv/QoS:** Complete IP/MPLS Diff-serv and the mapping

between IP and MPLS domain. Diff-Serv is implemented mainly through the technologies including CAR of traffic policing, GTS of traffic shaping, PQ/ CQ/ WFQ/CBWFQ of congestion management, and WRED of congestion avoidance.

- **Sound Security Mechanism:** Authentication of router protocol; ACL implementation; and NAT with ALG (application layer gateway).

Main Supported Protocols and Applications

System description of Quidway AR 46-80/46-40/46-20 Routers

Item	AR 46-80 Description	AR 46-40 Description	AR 46-20 Description
Slot	8	4	2
Fixed port	2 10/100Mbps Ethernet ports 1 AUX port 1 console port		
Boot ROM	512KB		
SDRAM	256MB		
Flash	32MB		
Dimensions (W X D X H)	436.2 X 420 X 219.5 436.2 X 420 X 130.5 436.2 X 420 X 130.5		
Weight	27.5Kg	17.5Kg	15Kg
Input voltage	AC: 100V to 240V (+/-10%) 50/60Hz DC: -48V to -60V (+/-20%)		
Max power	213W	186W	86W
Operating temperature		0 to 40°C	
Relative humidity		10 to 90% (non-condensing)	



Quidway AR 46-80/46-40/46-20 Routers are compatible with the MIMs (Multifunctional Interface Modules) of medium-and-low end Quidway Series Routers, including

Ethernet module

- 1-port 10Base-TX/100Base-TX FE interface module (1FE)
- 2-port 10Base-TX/100Base-TX FE interface module (2FE)
- 1-port 100Base-FX Ethernet multi-mode fiber interface module (1MFX)
- 1-port 100Base-FX Ethernet single-mode fiber interface module (1SFX)

WAN module

- 2-port multi-protocol synchronous/asynchronous serial interface module (2SA)
- 4-port multi-protocol synchronous/asynchronous serial interface module (4SA)
- 8-port multi-protocol synchronous/asynchronous serial interface module (8SA)
- 8-port low speed synchronous/asynchronous serial interface module (8LSA)
- 4-port ISDN BRI S/T interface module (4BS)
- 8-port asynchronous serial interface module (8AS)
- 16-port asynchronous serial interface module (16AS)
- 6-port analog modem interface module (6AM)
- 12-port analog modem interface module (12AM)
- 2-port fast-connect modem interface module (2FCM)
- 4-port fast-connect modem interface module (4FCM)
- 6-port fast-connect modem interface module (6FCM)
- 1-port channelized T1/PRI module (1T1)
- 2-port channelized T1/PRI module (2T1)
- 4-port channelized T1/PRI module (4T1)
- 1-port fractional T1 interface module (1T1-F)
- 2-port fractional T1 interface module (2T1-F)
- 4-port fractional T1 interface module (4T1-F)
- 1-port channelized E1/PRI module (1E1)
- 2-port channelized E1/PRI module (2E1)
- 4-port channelized E1/PRI module (4E1)
- 1-port fractional E1 interface module (1E1-F)
- 2-port fractional E1 interface module (2E1-F)
- 4-port fractional E1 interface module (4E1-F)

- 1-port channelized T3 module (1CT3)
- 1-port channelized E3 module (1CE3)
- 1-port ATM 155M multi-mode fiber interface module (1ATM-OC3MM)
- 1-port ATM 155M single-mode fiber interface module (1ATM-OC3SM)
- 1-port ATM 155M single-mode long-distance fiber interface module (1ATM-OC3SML)
- 1-port ADSL interface module (1ADSL)
- 2-port ADSL interface module (2ADSL)

Voice module (Support in Q4 2004)

- 2-port voice subscriber circuit interface module (2FXS)
- 2-port voice AT0 analog trunk interface module (2FXO)
- 4-port voice subscriber circuit interface module (4FXS)
- 4-port voice AT0 analog trunk interface module (4FXO)
- 1-port E1 voice module (E1VI)
- 1-port T1 voice module (T1VI)



Who gives you more choice in the data market?

Huawei does.

Huawei offers a full series of routers across the entire spectrum of customer needs. From low, middle, high end and core routers, to a full series of Ethernet switches and remote access servers, complete with VoIP solutions.

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Best of all, Huawei datacom products offer substantial cost advantages at every stage. From initial purchase all the way to cost-effective operation, maintenance, upgrades and training, Huawei helps you keep saving long after installation is complete.

You'll find Huawei products successfully deployed by telecom operators and enterprises customers around the world. From large and medium scale businesses, to banks, governments, universities, commercial buildings and even residential areas.

So if you're looking for a wider, more reliable, more cost-effective choice for routers and datacom products, simply choose Huawei.

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Huawei Technologies

partner for a networked world

Quidway NetEngine 16E/08E/05

Quidway NE 05

Quidway NE 08E

Quidway NE 16E

Introduction

The Quidway NetEngine series routers are the high-end network products designed and developed by Huawei Tech-nologies Co. Ltd., aiming at both the telecom networks and Enterprise core networks. The Quidway NetEngine series routers include three types: NetEngine16E, NetEngine08E and NetEngine05.The Quidway NetEngine series products can meet various requirements of each kind of present IP backbone networks for the high performance, high reliability, multi-service, scalability, etc. The Quidway NetEngine series routers are based on the distributed route searching and the message forward-ing architecture as well as the high-speed switching highway.

Product Features

High-performance

CPUs to realize the distributed multi-task processing, as well as meeting the requirement for the high perfor-mance of routing devices in forwarding IP packets at the network cores.

High reliability

Thanks to Huawei's abundant experiences in the field of telecommunications, the Quidway NetEngine series routers have been designed to fully ensure the telecom carrier-class reliability with the comprehensive adoption of backup technology. The redundant configurations are adopted for all the major system components such as RSU, power supply and bus. All boards are hot swappable which can reduce as much as possible the possibility of network disconnection due to failures, and ensuring the full-time uninterrupted network services.

Scalability

The Quidway NetEngine series routers provide a variety of extension functions: extension from single RSU to dual configuration, bus extension from 2G to 4G and slot extension from 5 slots to 17 slots. Each VIU(versatile interface unit board) can be deployed with any two kinds of interface modules so as to allow users not only to flexibly carry out networking but also to extend and adjust them whenever required, and protecting users' invest-ments in the networks.

Service supported

Based on our operating system--VRP (Versatile Routing Platform), the Quidway

NetEngine series routers sup-port distributed processing all-around; support various of routing protocols, the end-to-end QoS based on RSVP, multicast forwarding, MPLS, etc. They can also provide entire VPN and network security solutions.

Main Supported Protocols and Applications

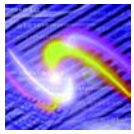
Network Interconnection Protocols and Applications	Ethernet, PPP, SLIP, FR, LAPB, X.25, HDLC, MP, ATM, VLAN
Network Layer Protocols and Applications	IP, IP Fast Switch, IPX, DHCP Relay, and ICMP
Routing Protocols	Static Routing, OSPF, RIP, IS-IS, BGP, Policy Routing,Routing Policy and Multicast Routing (IGMP,PIM-DM,PIM-SM)
Application Layer Protocols and Applications	Telnet, ping, FTP, SNMP, DNS,Netstream
Security Characteristics	AAA RADIUS, FireWall, NAT, L2TP, GRE, IPSec, IKE,ISPKeeper, ASPF,
QoS Applications	PQ, CQ, WFQ, CAR, GTS and WRED
Access Applications	PPPOE, PPPOA, PPPOEOA, VLAN Access, RMC, Portal

System Configuration

Description	Specification
number of Versatile Interface Unit board(VIU)	Quidway NetEngine 16E:12 VIUs Quidway NetEngine 08E:6 VIUs Quidway NetEngine 05:4 VIUs
Interface Module Configuration (identical in NE16E,NE08E and NE05)	1-port fast Ethernet electrical Network Module 1-port fast Ethernet electrical SM/MM optical Network Module 4-port Synchronous serial Network Module 8-port channelized E1/T1 Network Module 4-port channelized E1 Network Module 1-port channelized E3 Network Module 1-port ATM/POS OC-3 MM/SM/long-Range SM Optical Network Module 1-port Gigabit MM/SM/long-Range SM/ ultra long-Range optical Network Module 1-port ATM E3/T3 Network Module 1-port channelized T3 Network Module 2-port ATM OVER E3/T3 Network Module

	8-port ATM E1/T1 IMA Network Module
Inserted	Versatile Interface Unit board: Power PC 750 (233MHz)
Processor	Routing Switch Unit board: Power PC 750 (366MHz)
Typical SDRAM	Versatile Interface Unit board: 128M
Memory	Routing Switch Unit board: 256M
Maximum	Versatile Interface Unit board: 256M
SDRAM Memory	Routing Switch Unit board: 512M
Flash	Versatile Interface Unit board: 8M
	Routing Switch Unit board: 8M
Dimension	19-inch standard rack
	NetEngine 16E: H xWxL=619.5 x482.6 x420mm
	NetEngine 08E: H xWxL=420 x482.6 x441.7mm
	NetEngine 05: H xWxL=175 x482.6 x420mm
Power	Supporting two types of power inputs: 110V/220V AC and -48V
configuration	DC. Power
	inputs for different components are varied.
	AC:
	Voltage: 90V ~ 132V,190V ~ 260V;
	Frequency: 50 ~ 60Hz;
	DC:
	Voltage: 36V ~ 72V;
	Max. Power Dissipation: 750W(NE16E); 400W(NE08E); 350W(NE05)
Operating Temperature	0℃ ~ 40℃
Temperature for	-20℃ ~ 60℃
Store	
Operating Humidity	10% ~ 90%, noncondensing



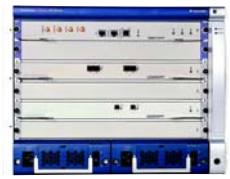


Quidway NetEngine40 Series USR

Introduction

Quidway NetEngine 40 Series Universal Switching Routers (NE40 series for short) are a series of high-end routers following NetEngine 80 Core Router developed by Huawei. They are mainly oriented to the edge of WAN backbone and the convergence layer of MAN as well as various business and enterprise networks. Nowadays, the development of the IP MAN is entering a new stage. The IP MAN is not only limited to carry on simple individual broadband network accessing service but also embracing such services as enterprise interconnection, virtual leased line, IP telephony, video conference, content service and security service, etc. In this case, users have more requirements on MAN devices. Huawei's NE40 series have been developed conforming to the development of the IP MAN. The routers not only have such features as high capacity, high performance and high reliability, but also endow the MAN with abundant services required, such as MPLS (Multi-Protocol Label Switching) VPN (Virtual Private Network), line rate NAT (Network Address Translation), Ethernet switching and multicast. NE40 series integrate powerful IP service processing capacity of a router and low cost Ethernet switching capacity of a layer 3 switch and is the preferable device for the new MAN. NE40 series inherit the excellent features of NetEngine 80 core router and provide the line rate forwarding capacity of the high-rate interface, perfect QoS function and carrier-class reliable design. Meanwhile, NE40 series provide full service processing capacity and flexible networking capacity targeting at the network requirements on the MAN convergence layer. NE40 series fully support MPLS VPN and can serve as the Provider and Provider Edge in the MAN. The emergence of NE40 series enriches and perfects Huawei's high-end series routers. NE40 series and NE80 are complementary to each other. They provide network solutions with satisfactory performance/price ratio and provide users with more choices.

Quidway NE 40-2



Quidway NE 40-4

Quidway NE 40-8

Product Features

Series Products

NE40 series universal switched routers comprise NE40-8, NE40-4 and NE40-2. They share the same system architecture but have different number of slots. The LPUs (Line Processing Unit) of various types of NE40 series are compatible with each other. The LPUs of NE40 series are also compatible with that of NE80

core router. The compact size of NE40 series requires less room to install while providing high capability and high density interfaces. The chassis width is 19 inches. The height is 18U for NE40-8, 8U for NE40-4, and 5U for NE40-2 (1U=44.45mm).

5th Generation Router with NP technology

NE40 series are 5th generation router which adopt state-of-art Network Processor (NP) technology. NP provides the perfect integration of uncompromised performance and great flexibility. The hardware-based processing of packets by NP guarantees line-rate forwarding performance. Compared to ASIC, NP provides great flexibility, such as easy upgrading to support new features like VPN and IPv6, which is critical since the network evolves so fast and new services emerge frequently.

Integration of Gigabit Switch Router & Ethernet Switch

NE40 series combines Gigabit Switch Router and Ethernet Switch functions seamlessly. NE40 series not only have router features such as various interfaces, large-capacity routing table, abundant services, an etc, but also have Ethernet Switch features like high port-density, layer 2 switching, low cost, and etc.

Line rate Forwarding Performance

NE40 series can implement IP/MPLS line rate forwarding on all interfaces, including the 2.5G bps interface, thus meeting the bandwidth requirements when used at POP (Point of Presence), or in convergence layer and the backbone.

Various Interfaces

At present, NE40 series provide FE, GE, POS, cPOS (Channelized POS), ATM and RPR interface with high interface density. Users can select them flexibly as required, thus meeting the requirements for different networking solutions and network growth.

Abundant Services Capability

NE40 series support various VPN technologies, such as BGP/MPLS VPN, MPLS L2 VPN, VPLS, GRE, etc., and can work as P and PE simultaneously. To further extend VPN service to branch offices of business users, Huawei proposed the Hierarchy of PE (HoPE) technology, which is a RFC draft at present. The IP multicast forwarding feature provides the foundation for operators to carry on various voice and video services (Web TV, Tele-education, Tele-medicine and video conference). NAT supports mixed public and private network addresses in the MAN and expands IP address space, thus resolving the shortage of public network IP addresses. The rich routing features enable the device to have strong

adaptation in complex environments. The policy service mechanism enables the system to have powerful performance optimization capability, satisfactory anti-attack capability and QoS guarantee while ensuring the line rate forwarding capability.

Perfect Diff-Serv/QoS

NE40 series support Diff-Serv perfectly among other QoS features. NE40 series implement six groups of PHB (EF, AF1 to AF4 and BE) defined in the standard and other services, through traffic classification, policing, shaping, queuing management and queue scheduling. NE40 series provide much more queues for each interface board than the corresponding gear from competitor. NE40 series enable the network operators to provide users with differentiated QoS guarantee and make the network carry data, voice and video services simultaneously.

Carrier-class Reliability

The key parts of NE40 series adopt redundant hot backup design, including system control, data switching, route processing system, internal management bus and power supply. All the components are hotswappable. The unique hot patch technology guarantees that software upgrading will not affect normal operation of the device. NE series support VRRP, fast re-routing, 50ms automatic protection switching function of RPR, etc.

Excellent Security Mechanism

NE40 series provide packet filtering/ACL mechanism to prevent illegal access and malicious attack. NE40 series provide multiple authentication methods (plain text authentication, MD5) for important routing protocols, local and remote RADIUS authentication to prevent illegal configuration of the device. In addition, NE40 series provide abundant statistics information to locate abnormal traffic.

Network Service Management

NE40 can not only support Huawei's network element management and network management products, like Quidview NMS and iManager N2000, but also can be integrated with Huawei's Quidview NSM, Network Service Management System, to provide VPN management, QoS management, etc. With VPN manager function, carriers can easily deliver VPN service to business users.

NetEngine 40 Hardware Specifications

	NE40-8	NE40-4	NE40-2
System architecture	19-inch standard rack architecture		
	All the key units are hot-swappable		
Dimension (mm L_M_H)	482.6_420_797.3 (18U)	482.6_420_352.8 (8U)	482.6_420_219.5 (5U)
Switch fabric	64G bps, dual SRU	32G bps, dual SRU	16G bps, single SRU
Forwarding capability	48Mpps	24Mpps	12Mpps
Service slot	8	4	2
Environment	Temperature range: 0°C~45°C Max altitude height: 4,000m Relative humidity: 5%~90%,without condensation		
Power supply	DC: 1+1 redundant,max power 2,800W; max current 75A; input voltage -38V~-75V AC: 1+1 redundant,max power 2,800W; max current 15A; input voltage: 90~264V		

NetEngine 40 Software Specifications

Interface	Ethernet: Encapsulation: Ethernet_II, SNAP, SAP VLAN: IEEE802.1Q, 16K VLANs/System Ethernet Trunk: IEEE802.3ad ARP: Dynamic and Static POS Rate: OC-3c/STM-1, OC-12c /STM-4, OC-48c/STM-16 Channelized POS: 2.5G cPOS can be channelized to 155M 155M cPOS can be chanelized to E1/T1, support MP APS: 1:1 hot backup mode or 1+1 load balance mode ATM Rate: STM-1/OC-3c Support InARP RPR Rate: STM-16c/OC-48c IPS: Wrap and steering mode, Switching time <50 mS Support ARP
Unicast	Static: 5000 routing entries

	RIP: Version 1 & 2, 20K routing entries
	OSPF: Version 2, >1.1M routing entries
	IS-IS: ISO10589, >1.1M routing entries
	BGP: Version 4, >1.8M routing entries
	Routing policy
Multicat	Static
	IGMP: Version 2
	PIM SM & DM
	MBGP
	MSDP
MPLS	Support LDP (RFC3036)
	6M pps forwarding rate
VPN	BGP/MPLS VPN Comply with RFC2547bis
	Support MP-BGP4
	Can act as PE and P simultaneously
	Support HoPE
	Support direct Internet access via PE from VPN
	1K VRF
	200 sites per VPN
	GRE Support QoS on GRE tunnels
	10K GRE tunnels per system
QoS	Support Diff-Serv
	NP implemented.
	Traffic classification: DSCP, COS, 5K rules per board
	Traffic monitoring-CAR: 1K streams per board
	Traffic queuing: 2K per board
	Traffic shaping: GTS, 2K streams per board
	Congestion control: PQ/CP/WFQ/CBWFQ, LLS/NLS, PBS technology
	Congestion avoidance: RED/WRED/SARED
Network Security	AAA
	Support Radius
	Support PAP/CHAP
	FTP user authentication
	EXEC user authentication
	NAT

	Support NAT and NAPT
	Support NAT ALG
	Support MPLS VPN with overlapping IP address
	Support Multiple NAT board with load balancing
	Up to 1M sessions per board, 1G bps duplex traffic
	ACL
	Standard ACL
	Extended ACL
Configuration management	CLI
	Local and remote configuration via console port
	Local and remote configuration via telnet
	Download by FTP, TFTP, XMODEM
	Support SNMP V1, V2c, V3
	Support Syslog
Reliability	Support IP fast re-routing, <50mS switching time
	Support hot patching on SRU and LPUs
	Support route consistence check (Routing aging)
	Support VRRP
	Support RSTP
Service	Traffic Sampling
	Traffic sampling according to ACL rules
	Up to 16 traffic can be sampled
	Local or remote log
	Port Mirror
	Up to 16 mirrored ports
	Ingress and egress traffic can be mirrored to different port
	Support NTP

Quidway NetEngine80 Core Router

Introduction

Quidway NE 80

With the rapid increase of Internet users and new services, the data traffic on the Internet grows by leaps and bounds. At the core of the network, data traffic has exceeded 1 gigabit per second. Due to the development of high-speed transmission techniques, especially the appearance of DWDM, the forwarding capability of the network nodes becomes the main bottleneck of the core network, instead of the transmission bandwidth. To meet the requirements for fast data forwarding in the core network, Gigabit Switch Router rises to the challenge. The high-end router adopts large-capacity switching architecture and high-speed forwarding technology of the hardware, thus greatly enhancing the forwarding speed of the packets. At the same time, such functions as high-speed traffic classification, traffic monitoring and intelligent queuing are adopted to provide services of different levels. Quidway NetEngine 80 core router (NE80 for short) developed by Huawei Technologies Co., Ltd., is a high-end network product oriented to the carrier-class operation network and the backbone core network. With large-capacity switch fabric chips and high performance network processor, the system has a throughput of 128G bps. The capacity of a user port is up to 80G bps. NE80 provides multiple network solutions. In cooperation with other Huawei-made products, it can provide integrated solutions for operators and the private networks.

Product Features

5th Generation Router with NP technology

NE80 is 5th generation router which adopt state-of-art Network Processor (NP) technology. NP provides the perfect integration of uncompromised performance and great flexibility. The hardware-based processing of packets by NP guarantees line-rate forwarding performance. Compared to ASIC, NP provides great flexibility, such as easy upgrading to support new features like VPN and IPv6, which is critical since the network evolves so fast and new services emerge frequently.

Line Rate Forwarding Performance

NE80 can implement IP/MPLS line rate forwarding on all interfaces (including the 2.5Gbit/s interface), thus meeting the bandwidth requirements for switching node

of the backbone network.

Various Interfaces

At present, NE80 provide FE, GE, POS, cPOS (Channelized POS), ATM and RPR interface with high interface density. Users can select them flexibly as required, thus meeting the requirements for different networking solutions and network growth.

Abundant Services Capability

NE80 support various VPN technologies, such as BGP/MPLS VPN, MPLS L2 VPN, GRE, etc., and can work as P and PE simultaneously. To further extend VPN service to branch offices of business users, Huawei proposed the Hierarchy of PE (HoPE) technology, which is a RFC draft at present. The IP multicast forwarding feature provides the foundation for operators to carry on various voice and video services (Web TV, Tele-education, Tele-medicine and video conference). NAT supports mixed public and private network addresses in the MAN and expands IP address space, thus resolving the shortage of public network IP addresses.The rich routing features enable the device to have strong adaptation in complex environments. The policy service mechanism enables the system to have powerful performance optimization capability, satisfactory anti-attack capability and QoS guarantee while ensuring the line rate forwarding capability.

Perfect Diff-Serv/QoS

NE80 supports Diff-Serv perfectly among other QoS features. NE80 implements six groups of PHB (EF,AF1 to AF4 and BE) defined in the standard and other services, through traffic classification, policing, shaping, queuing management and queue scheduling. NE80 enable the network operators to provide users with differentiated QoS guarantee and make the network carry data, voice and video services simultaneously.

Carrier-class Reliability

The key parts of NE80 adopt redundant hot backup design, including system control, data switching, route processing system, internal management bus and power supply. All the components are hot-swappable. The unique hot patch technology guarantees that software upgrading will not affect normal operation of the device. NE series support VRRP, fast re-routing, 50ms automatic protection switching function of RPR, etc.

Excellent Security Mechanism

NE80 provide packet filtering/ACL mechanism to prevent illegal access and malicious attack. NE80 provide multiple authentication methods (plain text

authentication, MD5) for important routing protocols, local and remote RADIUS authentication to prevent illegal configuration of the device. In addition, NE80 provide abundant statistics information to locate abnormal traffic.

Network Service Management

NE80 can not only support Huawei's network element management and network management products, like Quidview NMS and iManager N2000, but also can be integrated with Huawei's Quidview NSM, Network Service Management System, to provide VPN management, QoS management, etc. With VPN manager function, carriers can easily deliver VPN service to business users.

NetEngine 80 Hardware Specifications

System architecture	19-inch standard rack architecture All the key units are hot-swappable
Dimension(mm L_M_H)	600mm x 800mm x 2200mm
Switch fabric	128G bps, dual NET
Forwarding capability	96Mpps
Service slot	16
Environment	Temperature range: 0℃~45℃ Max altitude height: 4,000m Relative humidity: 5%~90%,without condensation
Power supply	DC: input voltage -42V~-58V AC: 4+1 redundant, max power 4,250W; input voltage: 150~280V

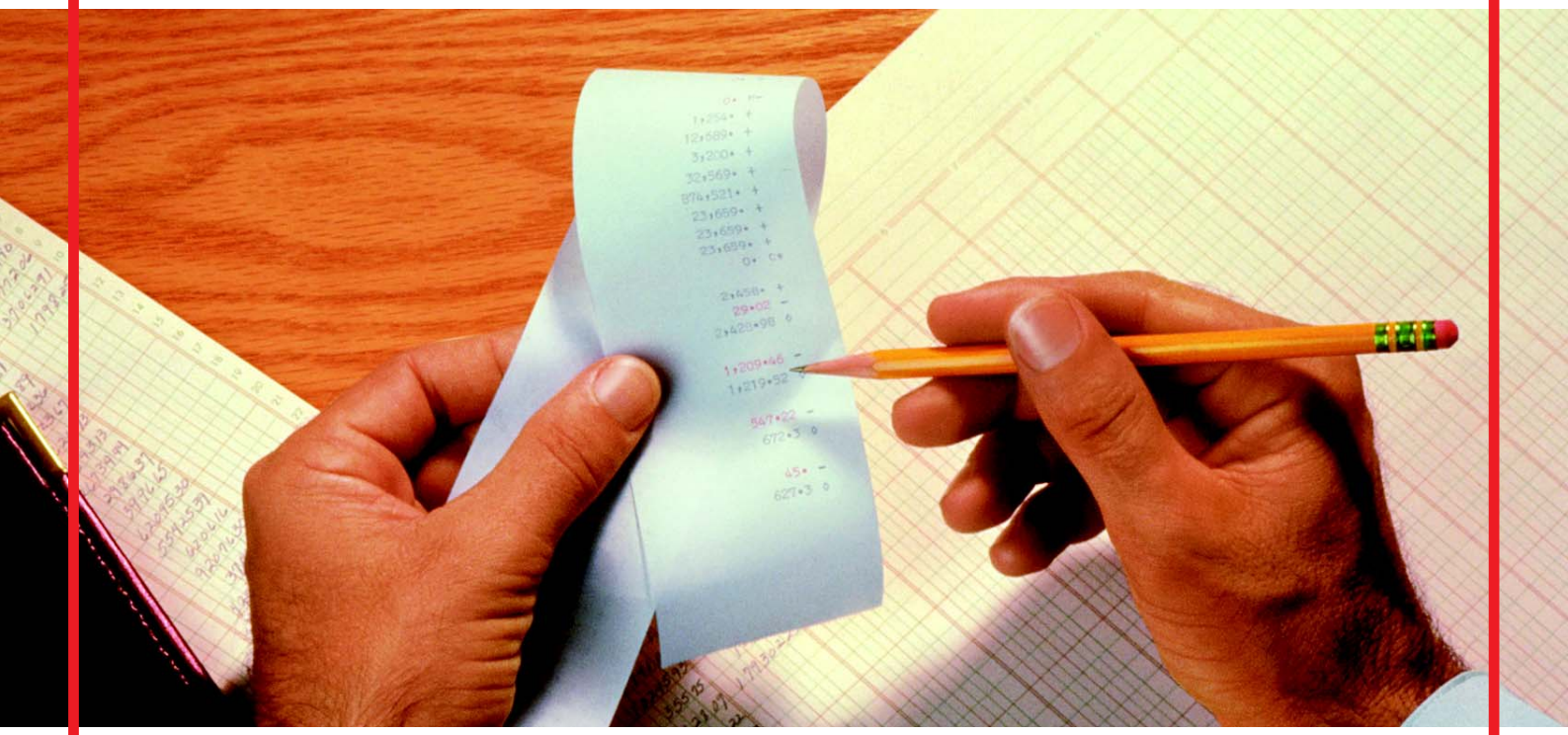
NetEngine 80 Software Specifications

Interface	Ethernet Encapsulation: Ethernet_II, SNAP, SAP VLAN: IEEE802.1Q, 16K VLANs/System Ethernet Trunk: IEEE802.3ad ARP: Dynamic and Static POS
	Rate: OC-3c/STM-1, OC-12c /STM-4, OC-48c/STM-16 Channelized POS: 2.5G cPOS can be channelized to 155M 155M cPOS can be chanelized to E1/T1, support MP
Interface	APS: 1:1 hot backup mode or 1+1 load balance mode ATM

	Rate: STM-1/OC-3c
	Support InARP
	RPR
	Rate: STM-16c/OC-48c
	IPS: Wrap and steering mode, Switching time <50 mS
	Support ARP
Unicast	Static: 5000 routing entries
	RIP: Version 1 & 2, 20K routing entries
	OSPF: Version 2, >1.1M routing entries
	IS-IS: ISO10589, >1.1M routing entries
	BGP: Version 4, >1.8M routing entries
	Routing policy
Multicat	Static
	IGMP: Version 2
	PIM SM & DM
	MBGP
	MSDP
MPLS	Support LDP (RFC3036)
	6M pps forwarding rate
VPN	BGP/MPLS VPN Comply with RFC2547bis
	Support MP-BGP4
	Can act as PE and P simultaneously
	Support HoPE
	Support direct Internet access via PE from VPN
	1K VRF
	200 sites per VPN
	GRE Support QoS on GRE tunnels
	10K GRE tunnels per system
QoS	Support Diff-Serv
	NP implemented.
	Traffic classification: DSCP, COS, 5K rules per board
	Traffic monitoring-CAR: 1K streams per board
	Traffic queuing: 2K per board
	Traffic shaping: GTS, 2K streams per board
	Congestion control: PQ/CP/WFQ/CBWFQ, LLS/NLS, PBS technology
	Congestion avoidance: RED/WRED/SARED

Network Security	AAA
	Support Radius
Network Security	Support PAP/CHAP
	FTP user authentication
	EXEC user authentication
	NAT
	Support NAT and NAPT
	Support NAT ALG
	Support MPLS VPN with overlapping IP address
	Support Multiple NAT board with load balancing
	Up to 1M sessions per board, 1G bps duplex traffic
	ACL
	Standard ACL
	Extended ACL
Configuration management	CLI
	Local and remote configuration via console port
	Local and remote configuration via telnet
	Download by FTP, TFTP, XMODEM
	Support SNMP V1, V2c, V3
	Support Syslog
Reliability	Support IP fast re-routing, <50mS switching time
	Support hot patching on SRU and LPUs
	Support route consistence check (Routing aging)
	Support VRRP
	Support RSTP
Service	Traffic Sampling
	Traffic sampling according to ACL rules
	Up to 16 traffic can be sampled
	Local or remote log
	Port Mirror
	Up to 16 mirrored ports
	Ingress and egress traffic can be mirrored to different port
	Support NTP

How can you tell one top-of-the-line router from another?



Ask your accountant.

In these tough economic times, when so many products perform equally well, saving on capital costs alone is not enough. You need to keep saving during operation as well.

That's why more and more successful companies are choosing Huawei datacom products and network system solutions.

Not just because we offer a complete range of high-performance datacom products including low, middle, high-end and core routers, a full series of Ethernet switches, and remote access server, complete with VoIP solutions.

Nor because Huawei technology is compatible with and matches or surpasses every other vendor in the world for quality, reliability, range and performance, so you can plug in right now without compromising your existing investments. But because at Huawei we believe the true partner's value is measured long after installation.

That's why we don't stop at giving you customized, cost-effective solutions faster than anyone else. We also ensure you enjoy savings on training, operating and maintenance support, and upgrades, long after installation is completed.

Which is why Huawei datacom products are massively deployed among telecom operators and enterprise customers including large and medium-scale businesses, banking, government organizations, campus networks, commercial buildings and residential areas.

So if you are looking for advanced, cost-effective datacom solutions that keep you saving long after installation, then maybe it's time you talked to Huawei. And then to your accountant.

http://datacomm.huawei.com

Huawei Technologies

Partner for a Networked World

LAN Switch

Quidway S2403H Enterprise Desktop Switch

Introduction

Quidway S2403H

Quidway S2403H Ethernet Switch, developed by Huawei independently, is a type of in-building / desktop Layer 2 wire-speed Ethernet switch. Coupled with the traditional Ethernet functions, it has more advanced hardware and software features, and serves well for broadband Ethernet access.

Types of Interface Modules

24 port 10/100Base-TX + 1 port 100Base-TX uplink fixed interface + 1 uplink slot, which support:

1-port 100Base-FX single-mode optical module

1-port 100Base-FX multi-mode optical module

Product Features

- **High performance:** Wire-speed layer 2 forwarding on each port.
- **User authentication:** Extended 802.1x authentication (MAC based) and built-in 802.1x authentication server.
- **MAC address customized management:** Limit the number of MAC address learning, and set aging time of address table.
- **Cluster management:** Configure one public IP address on the command switch to configure and manage several switches; topology discovery and displaying function; software upgrade and parameter configuration to multiple switches simultaneously.
- **Ease to maintenance:** multilevel console security, operation log management and online help functions; system status query, and debugging & tracing functions, suitable recovering solutions.

Software Specifications

Layer 2 function:

- **VLAN:** 32 global VLANs; port-based VLAN; GVRP; VLAN Trunk.

Link aggregation: support a group of 4 ports aggregation.

- **STP & RSTP:** complied with IEEE 802.1D and IEEE 802.1w.
- **Port mirroring:** port-based mirroring.
- **MAC address table:** self-learning address and up to 4k MAC address.
- **QoS:** 2 priority queues; 802.3x flow control (full-duplex); back-pressure flow control (half-duplex).
- **Network management:** CLI; Telnet; Console; SNMP, RMON (1, 2, 3, 9 group), Huawei iManager Quidview ; system log; alarm/debugging information filtering, output and statistics; the maintaining and diagnosis tools such as Ping and Tracert; remote maintenance through Telnet and HGMP.

Main Protocols Supported

Ethernet protocols	IEEE 802.1D, IEEE 802.1w, IEEE 802.3, IEEE 802.3u, IEEE802.3x, IEEE 802.3z, IEEE 802.1Q, IEEE 802.1p and IEEE 802.1x.
IP protocols	IP, TCP, UDP, ICMP, ARP.
Application protocols	FTP, TFTP, BOOTP, Telnet.
NM protocol	SMI, SNMP, RMON, MIB-II, Ethernet-like MIB, Bridge MIB, Ether-like MIB.

Hardware Specifications

Module slots	1 FE slot
CPU	ARM125MHz
SDRAM	18M
FLASH	8M
Buffer RAM	6M
Switching Capacity	9.6G
Forwarding Capacity	3.87Mpps
Dimension (H x W x Dmm)	42 x 436 x 240
Power Consumption	30W
Power Configuration	DC input voltage: -40V ~ -60V AC input voltage: 100 ~ 240V (50/60Hz)
Operating Temperature	0°C ~ 45°C
Environmental Humidity	10% ~ 90%, no condensation

Quidway S3000 (S3026/3026E) Series Enterprise Workgroup Switch

Introduction

Quidway S3026

Quidway S3026E

Quidway S3026/S3026E are box-type layer 2 wire-speed Ethernet switch with 10/100M aggregation in service provider data centers, metropolitan area networks and wiring closets. They provide 24 10/100M auto-sensing ports and 2 optional slots which support 2 FE/GE ports uplinks. Comparing with S3026, S3026E provides intelligent quality of service (QoS), powerful ACL and rate limiting for operable network.

Types of Interface Modules

Quidway S3026/3026E: 24 port 10/100Base-T; 1 RS232 (RJ-45) console ;2 optional expandable module slots; 1-port 1000Base-SX, 1-port 1000Base-LX, 1-port 1000Base-LH, 1-port 1000Base-ZX, 1-port 1000Base-T, 1-port 100Base-FX SMF, 1-port 100Base-FX MMF, 1-port 10/100Base-TX (S3026), and 1-port GE stack module.

Product Features

- **High performance:** Wire-speed layer 2 forwarding on each port.
- **Perfect compatibility:** Fully compatible with the existing network equipment, support interoperable with other manufacturers' equipment.
- **Smooth upgrade and scalability:** Easy for upgrading; good expandability: provide GE/FE uplink, support electrical and optical interface.
- **Supporting abundant service features:**

  QoS: (S3026) 2 priorities queue per port, (S3026E) 4 priorities queue per port, 3026E support L2-L7 ACLs and rate limiting with 1M granularity.

  Multicast: IGMP Snooping.

  Security: Static setting of MAC address table and limiting the number of MAC address learning per port.

  VLAN: port-based VLAN, VLAN Trunk, VLAN MUX (S3026E).

  Port Mirroring: N: 1 port mirroring (S3026); flow-based mirroring (S3026E).
- **Convenient remote diagnosis:** port loopback test; IP/MAC address reverse check.

Software Specifications

- **Layer 2 function:** 4K (3026)/8K (3026E) MAC address table; 802.1D STP and 802.1w RSTP; 802.3x flow control; 802.3ad link aggregation; 32(3026)/256(3026E) VLANs (vlan ID can range form 1 to 4094); multicast (IGMP snooping); port mirroring.
- **QoS:** 802.1p, 2 priority queues (3026), 4 priority queues (3026E) on each port.
- **Security:** Extended MAC based 802.1x authentication and built-in 802.1x authentication server; MAC+port binding to avoid address spoofing.
- **Network management:** CLI; Telnet; Console; SNMP, RMON (1, 2, 3, 9 group), Huawei iManager Quidview ; system log; alarm/debugging information filter, output and statistics; the maintaining and diagnosis tools such as Ping and Tracert; remote maintenance through Telnet and HGMP.

Main Protocols Supported

Ethernet protocols	IEEE 802.1D, IEEE 802.1w, IEEE 802.3, IEEE 802.3u, IEEE 802.3x, IEEE 802.3z, IEEE 802.1Q, IEEE 802.1p and IEEE 802.1x.
IP protocols	IP, TCP, UDP, ICMP, ARP.
Application protocols	FTP, TFTP, BOOTP, Telnet.
NM protocol	SMI, SNMP, RMON, MIB-II, Ethernet-like MIB, Bridge MIB, Ether-like MIB.

Hardware Specifications

Module slots	2
CPU	ARM125MHz (S3026); MIPS 150MHz (S3026E)
SDRAM	18M (S3026); 64M(S3026E)
FLASH	8M
Buffer RAM	6M (S3026); 32M (S3026E)
Switching Capacity	12.8G
Forwarding Capacity	6.55Mpps
Dimension (H x W x Dmm)	42 x 436 x 340 (S3026); 42 x 436 x 368(S3026E)
Power Consumption	35W (S3026); 30W (S3026E)
Power Configuration	DC input voltage: -40V ~ -60V AC input voltage: 100 ~ 240V; +/- 10%
Operating Temperature	0℃ ~ 45℃
Environmental Humidity	10% ~ 90%, no condensation

Quidway S3000 (S3050C/3026G/3026T/3026C) Series Enterprise Workgroup Switch

Introduction


Quidway S3050C


Quidway S3026C


Quidway S3026G


Quidway S3026T

Quidway S3000 Series switches are box-type layer 2 wire-speed Ethernet switch with 10/100M aggregation in service provider data centers, metropolitan area networks and wiring closets. They provide 24/48 10/100M auto-sensing ports and 2 optional slots which support 2 FE/GE ports uplinks. Quidway S3000 series Ethernet switches includes 4 types: S3050C, S3026G, S026T, and S3026C. They provide intelligent quality of service (QoS), powerful ACL and rate limiting for operable network.

Types of Interface Modules

- **Quidway S3050C:** 48 port 10/100Base-T; 1 RS232 (RJ-45) console ;2 optional expandable module slots; 1-port 1000Base-SX, 1-port 1000Base-LX, 1-port 1000Base-LH, 1-port 1000Base-ZX, 1-port 1000Base-T, 1-port 100Base-FX SMF, 1-port 100Base-FX MMF, and 1-port GE stack module.
- **Quidway S3026G:** 24 port 10/100Base-T; 1 RS232 (RJ-45) console; 2 1000Base-X GBIC uplink interface; and 1-port GBIC stack module.
- **Quidway S3026T:** 24 port 10/100Base-T; 1 RS232 (RJ-45) console; 2 fixed 1000Base-T interface;
- **Quidway S3026C:** 24 port 10/100Base-T; 1 RS232 (RJ-45) console ;2 optional expandable module slots; 1-port 1000Base-SX, 1-port 1000Base-LX, 1-port 1000Base-LH, 1-port 1000Base-ZX, 1-port 1000Base-T, 1-port 100Base-FX SMF, 1-port 100Base-FX MMF, and 1-port GE stack module.

Software Specifications

- **Layer 2 function:** 8K MAC address table; (802.1D)STP and (802.1w)RSTP; 802.3ad link aggregation; 256 VLANs (VLAN ID can range form 1 to 4094); multicast (IGMP snooping); port mirroring.
- **QoS:** 802.1p, 4 priority queues on each port.
- **Security:** Extended MAC based 802.1x authentication and built-in 802.1x authentication server; MAC+port binding to avoid address spoofing.
- **Network management:** CLI; Telnet; Console; SNMP, RMON (1, 2, 3, 9 group), Huawei iManager Quidview ; system log; alarm/debugging information filter,

output and statistics; the maintaining and diagnosis tools such as Ping and Tracert; remote maintenance through Telnet and HGMP.

Main Protocols Supported

Ethernet protocols	IEEE 802.1D, IEEE 802.1w, IEEE 802.3, IEEE 802.3u, IEEE 802.3z, IEEE 802.1Q, IEEE 802.1p and IEEE 802.1x.
IP protocols	IP, TCP, UDP, ICMP, ARP.
Application protocols	FTP, TFTP, BOOTP, Telnet.
NM protocol	SMI, SNMP, RMON, MIB-II, Ethernet-like MIB, Bridge MIB, Ether-like MIB.

Hardware Specifications

Module slots	2(S3050C/3026C)
CPU	MIPS 150MHz
SDRAM	64M
FLASH	8M
Buffer RAM	32M (S3026G/T/C); 64M (S3050C)
Switching Capacity	12.8G (S3026G/T/C); 18.5G (S3050C)
Forwarding Capacity	6.55Mpps (S3026G/T/C); 10.13Mpps (S3050C)
Dimension (H x W x D mm)	42 x 436 x 240 (S3026G/T/C); 42 x 436 x 360(S3050C)
Power Consumption	55W (S3050C); 30W (S3026G/T/C)
Power Configuration	DC input voltage: -40V ~ -60V AC input voltage: 100 ~ 240V; +/- 10%
Operating Temperature	0℃ ~ 45℃
Environmental Humidity	10% ~ 90%, no condensation

Quidway S3500 series Enterprise Central Routing Switch

Introduction

Quidway S3500 series routing switches are box-type layer 3 wire-speed Ethernet switch with 10/100M aggregation in service provider data centers, server farms, wiring closets and metropolitan area networks. Quidway S3500 series Ethernet switches includes 7 types: S3526, S3526E, S3526C, S3526FS, S3526FM, S3526E-FS and S3526E-FM.

Quidway S3526E

Quidway S3526F

Types of Interface Modules

- **Quidway S3526:** 24 port 10/100Base T + 2 expandable slots, each slot support: 1-port 1000Base-SX; 1-port 1000Base-LX; 1-port 1000Base-LH; 1-port 1000Base-ZX, 1-port 1000Base-T, 1 port GE stack module;
- **Quidway S3526E:** 24 port 10/100Base T + 2 expandable slots, each slot support: 1-port 1000Base-SX; 1-port 1000Base-LX; 1-port 1000Base-LH; 1-port 1000Base-ZX, 1-port 1000Base-T, 1-port 100Base-FX SMF; 1-port 100Base-FX MMF, 1 port GE stack module;
- **Quidway S3526C:** 24 port 10/100Base T + 2 expandable slots(Front panel), each slot support: 1-port 1000Base-SX; 1-port 1000Base-LX; 1-port 1000Base-LH; 1-port 1000Base-ZX, 1-port 1000Base-T, 1-port 100Base-FX SMF; 1-port 100Base-FX MMF, 1 port GE stack module;
- **Quidway S3526FS/S3526E-FS:** 12 port 100Base-FX SMF ports; 2 FE expandable slots: 6 x 10/100Base-TX, 6 x 100Base-FX SMF,6 x 100Base-FX MMF, 2 GE expandable slots: 1-port 1000Base-SX; 1-port 1000Base-LX; 1-port 1000Base-LH; 1-port 1000Base-ZX, 1-port 1000Base-T, 1 port GE stack module;
- **Quidway S3526FM/S3526E-FM:** 12 port 100Base-FX MMF ports; 2 FE expandable slots: 6 x 10/100Base-TX, 6 x 100Base-FX SMF,6 x 100Base-FX MMF, 2 GE expandable slots: 1-port 1000Base-SX; 1-port 1000Base-LX; 1-port 1000Base-LH; 1-port 1000Base-ZX, 1-port 1000Base-T, 1 port GE stack module.

Software Specifications

- **Layer 2 function:** MAC address table ---16K (S3526/S3526F), 8K (S3526E/ S3526E-F/S3526C); 802.1D STP and 802.1w RSTP; 802.3x flow control; 802.3ad link aggregation; 4k VLAN (S3526/S3526F), 256 VLAN (S3526E/ 3526EF/3526C), GMRP, GVRP.
- **Layer 3 protocol:** Unicast (RIP, OSPF), Multicast (IGMP, PIM-SM, PIM-DM), 16K IP address

table (S3526/S3526F), 2K IP address table (3526E/S3526E-F/S3526C), HCBM.

- **QoS:** 4 802.1p priority queues for each port.
- **Security:** Extended MAC based 802.1x authentication and built-in 802.1x authentication server; MAC+port binding to avoid address spoofing.
- **Network management:** CLI; Telnet; Console; SNMP, RMON (1, 2, 3, 9 group), Huawei iManager Quidview ; system log; alarm/debugging information filtering, output and statistics; the maintaining and diagnosis tools such as Ping and Tracert; remote maintenance through Telnet and HGMP.

Main Protocols Supported

Ethernet protocols	IEEE 802.1D, IEEE 802.1w, IEEE 802.3, IEEE 802.3u, IEEE 802.3x, IEEE 802.3z, IEEE 802.1Q, IEEE 802.1p and IEEE 802.1x.
IP protocols	IP, TCP, UDP, ICMP, ARP.
Route protocols	RIP I/II, OSPF
Application protocols	FTP, TFTP, BOOTP, Telnet.
NM protocol	SMI, SNMP, RMON, MIB-II, Ethernet-like MIB, Bridge MIB, Ether-like MIB.

Hardware Specifications

Module slots	2
CPU	MPC 8240 200MHz (S3526/S3526F); MIPS 150MHz (S3526E/ S3526E-F/S3526C)
SDRAM	64M
FLASH	8M
Buffer RAM	6M (S3526/3526F); 32M (S3526E/S3526E-F/S3526C)
Switching Capacity	12.8G
Forwarding Capacity	6.55Mpps
Dimension (H x W x D mm)	42 x 436 x 340 (S3526); 88 x 436 x 340 (S3526F); 42 x 436 x 368(S3526E); 88 x 436 x 368 (s3526E-F); 42 x 436 x 240 (S3526C).
Power Consumption	40W (S3526); 30W (S3526E/S3526C); 100W (S3526F); 80W (s3526E-F)
Power Configuration	DC input voltage: -40V ~ -60V AC input voltage: 100 ~ 240V; +/- 10%
Operating Temperature	0ºC ~ 45ºC
Environmental Humidity	10% ~ 90%, no condensation

Quidway S3500 (S3528G/3528P/3552G/3552P) Series Enterprise Central Routing Switch

Introduction

Quidway S3500 series routing switches are box-type layer 3 wire-speed Ethernet switch with 10/100M aggregation in service provider data centers, server farms, wiring closets and metropolitan area networks. Quidway S3500 series high performance Ethernet switches includes 4 types: S3528G, S3528P, S3552G, and S3552P. Running on the VRP (Versatile Routing Platform) network operating system designed for Huawei network products, Quidway S3500 series switches provide abundant routing protocols, VLAN switching, traffic management, QoS, powerful bandwidth control and user management.

Quidway S3528G

Quidway S3528P

Quidway S3552

Types of Interface Modules

- **Quidway S3528G:** 24 port 10/100Base-T; 1 RS232 (RJ-45) console; 4 1000Base-X GBIC uplink interface; and 500m~70km 1000Base-X GBIC optical modules;
- **Quidway S3528P:** 24 port 10/100Base-T; 1 RS232 (RJ-45) console; 4 1000Base-X SFP uplink interface; and 500m~70km 1000Base-X SFP optical modules;
- **Quidway S3552G:** 48 port 10/100Base-T; 1 RS232 (RJ-45) console; 4 1000Base-X GBIC uplink interface; and 500m~70km 1000Base-X GBIC optical modules;
- **Quidway S3552P:** 48 port 10/100Base-T; 1 RS232 (RJ-45) console; 4 1000Base-X SFP uplink interface; and 500m~70km 1000Base-X SFP optical modules.

Product Features

- **High performance:** Wire-speed layer 2/3 packet by packet forwarding based on longest-prefix match algorithm.
- **Smooth upgrade and scalability:** Easy for upgrading; good expandability: provide GE uplink, support electrical and optical interface.
- **High availability:** Support MSTP, ECMP, VRRP, policy-based routing and QinQ VLAN VPN.
- **Supporting abundant service features:**

A. Powerful QoS: support L2-L4 flow classification and flexible rules, CAR and rate limiting with 8k granularity.

B. Multicast: IGMP, PIM SM, PIM DM.

C. Security: Support extended ACL based on source and destination MAC and IP address, TCP/UDP port, IP protocol etc., and SSH functions.

D. VLAN: port-based VLAN, VLAN Trunk.

E. Port Mirroring: flow-based port mirroring.

■**HCBM--Huawei Constrained-based Multicast:** enhanced multicast user management and multicast service management.

Software Specifications

■ **Layer 2 function:** MAC address table ---14K; 802.1D STP; 802.1w RSTP; 802.1s MSTP; 802.3x flow control; 802.3ad link aggregation; 4k VLAN, GMRP, GVRP.

■ **Layer 3 protocol:** Unicast (RIP, OSPF, BGP), Multicast (IGMP, PIM-SM, PIM-DM), 4K IP address table, HCBM.

■ **QoS:** 8 802.1p priority queues for each port.

■ **Security:** Extended MAC based 802.1x authentication and built-in 802.1x authentication server; MAC+port binding to avoid address spoofing.

■**Network management:** CLI; Telnet; Console; SNMP, RMON (1, 2, 3, 9 group), Huawei Quidview ; system log; alarm/debugging information filtering, output and statistics; the maintaining and diagnosis tools such as Ping and Tracert; remote maintenance through Telnet and HGMP.

Main Protocols Supported

Ethernet protocols	IEEE 802.1D, 802.1w, 802.1s, 802.3, 802.3u, 802.3x, 802.3z, 802.1Q, 802.1p and 802.1x.
IP protocols	IP, TCP, UDP, ICMP, ARP.
Route protocols	RIP I/II, OSPF, BGP
Application protocols	FTP, TFTP, BOOTP, Telnet.
NM protocol	SMI, SNMP, RMON, MIB-II, Ethernet-like MIB, Bridge MIB, Ether-like MIB.

Hardware Specifications

Module slots	4GBIC/SFP modules
CPU	MPC 8241 200MHz
SDRAM	64M
FLASH	16M
Buffer RAM	64M
Switching Capacity	32G
Forwarding Capacity	9.53Mpps(S3528G/P);13.1Mpps(S3552G/P)
Dimension (H x W x D mm)	42 x 436 x 240(S3528G/P); 42 x 436 x 360(S3552G/P);
Power Consumption	120W
Power Configuration	DC input voltage: -40V ~ -60V AC input voltage: 100 ~ 240V; +/- 10%
Operating Temperature	0℃ ~ 45℃
Environmental Humidity	10% ~ 90%, no condensation



Quidway S5000 Series Gigabit Ethernet Switches

Quidway S5012G

Quidway S5012T

Quidway S5024G

Introduction

Quidway S5000 Gigabit Ethernet Switch are layer 2 Ethernet switches which are featured by wire-speed performance and powerful QoS for bandwidth management and Gigabit access. Quidway S5000 series Ethernet switches includes 3 types: S5012G, S5012T-12/10GBC, and S5024G-24/20TP. They provide intelligent quality of service (QoS), powerful ACL and rate limiting for gigabit to desktop solutions.

Types of Interface Modules

- **Quidway S5012G:** 12 port 10/100/1000Base-T; 1 RS232 (RJ-45) console; 4 1000Base-X GBIC uplink interface (4 combo GBIC interfaces); and 500m~70km 1000Base-X GBIC optical modules;
- **Quidway S5012T-12/10GBC:** 4 port 10/100/1000Base-T; 1 RS232 (RJ-45) console; 10 1000Base-X SFP interface (including 2 combo GBIC interfaces); and 500m~70km 1000Base-X GBIC optical modules;
- **Quidway S5024G-24/20TP:** 20 port 10/100/1000Base-T; 1 RS232 (RJ-45) console; 4 1000Base-X GBIC interface; and 500m~70km 1000Base-X GBIC optical modules.

Software Specifications

- **High density:** full wire-speed performance with 12/24 gigabit interface to desktop.
- **Flexible configuration:** As you need, you can choose any media interface such as 1000Base-T electric interface and hot-pluggable GBIC interfaces, and support flexible long distance optical connection from 500 m to 70 km.
- **Abundant service abilities:**

A. QoS: Flow classification (1536 flow classes); different queue priorities and bandwidth management for different user groups or service types; configure 802.1p priority and forwarding queue priority according to 802.1p, VLAN and layer 2/3 forwarding information; 802.1x authentication based on port or MAC address.

B. Support abundant layer 2 protocols: STP/RSTP, 802.1Q, 4K VLAN, VLAN Trunk; GVRP, 802.3x flow control, back pressure for half-duplex ; link

aggregation; layer 2/3/4 traffic rules filter provides abundant ACL security mechanism, and wire-speed filtering ability.

Software Specifications

- **Layer 2 functions:** 16K MAC address table; 802.1D STP and 802.1w RSTP; 802.3x flow control; 802.3ad link aggregation; 4k VLAN.
- **QoS:** 8 802.1p priority queues for each port.
- **Security:** Extended MAC based 802.1x authentication and built-in 802.1x authentication server; MAC+port binding to avoid address spoofing.
- **Network management:** CLI; Telnet; Console; SNMP, RMON (1, 2, 3, 9 group), Huawei Quidview ; system log; alarm/debugging information filter, output and statistics; the maintaining and diagnosis tools such as Ping and Tracert; remote maintenance through Telnet and HGMP.

Main Protocols Supported

Ethernet protocols	IEEE 802.1D, 802.1w, 802.3, 802.3u, 802.3x, 802.3z, 802.1Q, 802.1p and 802.1x.
IP protocols	IP, TCP, UDP, ICMP, ARP.
Application protocols	FTP, TFTP, BOOTP, Telnet.
NM protocol	SMI, SNMP, RMON, MIB-II, Ethernet-like MIB, Bridge MIB, Ether-like MIB.

Hardware Specifications

VLAN	4k
SDRAM	64M
FLASH	8M
Buffer RAM	1M
Switching Capacity	24G(S5012); 48G(S5024)
Forwarding Capacity	17.8Mpps(S5012); 35.6Mpss(S5024)
Dimension (H x W x D mm)	43.5 x 436 x 245
Power Consumption	30W(S5012G/S5012T-12/10GBC) 50W(S5024G-24/20TP)
Power Configuration	DC input voltage: -40V ~ -60V AC input voltage: 100 ~ 240V; +/- 10%
Operating Temperature	0℃ ~ 45℃
Environmental Humidity	10% ~ 90%, no condensation

Quidway S5516 Gigabit Routing Switch

Quidway S5516

Introduction

Quidway S5516 Gigabit Routing Switch is a layer 3 Ethernet switch which is featured by modular design, wire-speed performance and powerful QoS for bandwidth management and traffic management. With different gigabit modules such as 4-port 1000Base-SX, 4-port 1000Base-LX, 4-port 1000Base-ZX, 4-port 1000Base-X SFP and 4-port 1000/100/10Base-T modules, Quidway S5516 comes with layer 3 switching using RIP v1/v2, OSPF routing protocols. It can serve as the core device in middle and small-sized enterprise networks or as convergence layer device in IP MAN.

Types of Interface Modules

- 4-port 1000Base-SX module
- 4-port 1000Base-LX module
- 4-port 1000Base-ZX module
- 4-port 1000/100/10Base-T module
- 4-port 1000Base-X SFP slot (500m~70km 1000Base-X SFP optical module)
- 4 port stack module

Software Specifications

- **Layer 2 functions:** 16K MAC address table; 802.1D STP and 802.1w RSTP; 802.3x flow control; 802.3ad link aggregation (1Max. 16 GE binding); 4k VLAN.
- **Layer 3 functions:** Unicast (RIP, OSPF, and BGP), Multicast (IGMP, PIM-SM, and PIM-DM), 32K routing table, 512 ACL, VRRP.
- **QoS:** 8 802.1p priority queues for each port.
- **Security:** Extended MAC based 802.1x authentication and built-in 802.1x authentication server; MAC+port binding to avoid address spoofing.
- **Network management:** CLI; Telnet; Console; SNMP, RMON (1, 2, 3, 9 group), Huawei iManager Quidview ; system log; alarm/debugging information filter, output and statistics; the maintaining and diagnosis tools such as Ping and Tracert; remote maintenance through Telnet and HGMP.

Main Protocols Supported

Ethernet protocols	IEEE 802.1D, IEEE 802.1w, IEEE 802.3, IEEE 802.3u, IEEE 802.3x, IEEE 802.3z, IEEE 802.1Q, IEEE 802.1p and IEEE 802.1x.
IP protocols	IP, TCP, UDP, ICMP, ARP.
Route protocols	RIP I/II, OSPF,BGP
Application protocols	FTP, TFTP, BOOTP, Telnet.
NM protocol	SMI, SNMP, RMON, MIB-II, Ethernet-like MIB, Bridge MIB, Ether-like MIB.

Hardware Specifications

Module slots	4
CPU	MPC 860 50MHz
SDRAM	128M
FLASH	8M
Buffer RAM	128M
Switching Capacity	32G
Forwarding Capacity	24Mpps
Dimension (H x W x D mm)	86 x 436 x 400
Power Consumption	120W
Power Configuration	DC input voltage: -40V ~ -60V AC input voltage: 100 ~ 240V; +/- 10%
Operating Temperature	0°C ~ 45°C
Environmental Humidity	10% ~ 90%, no condensation



Quidway S6500 Series Backbone Routing Switch

Quidway S6503

Quidway S6506R

Quidway S6506

Introduction

Quidway S6500 series modular Ethernet Switch, developed by Huawei independently, designed specially for IP MAN, large enterprise network and campus network. As high capacity L3 wire-speed Ethernet Switches, Quidway S6500 series extend control from the backbone to the network edge with intelligent network services. Including perfect traffic management, advanced QoS guarantee, powerful security management, and excellent network management. Running on the powerful VRP (versatile routing platform), Quidway S6500 series includes 3 types: S6503, S6506, S6506R.

Types of Interface Modules

- 48-port 10BASE-T/100BASE-TX module
- 24-port 100BASE-FX MMF module
- 24-port 100BASE-FX SMF module
- 8-port 1000Base-X GBIC (550m~70Km GBIC optical module)
- 8-port 10/100/1000BASE-T module

Software Specifications

- **Layer 2 functions:** 32K(S6506/6506R)/16K(S6503) MAC address table, 802.1D STP and 802.1w RSTP, 802.3x flow control, 802.3ad link aggregation (Max. 8GE/16FE binding), 4K VLANs(IEEE 802.1Q), GARP and GVRP, VLAN Trunk.
- **Layer 3 functions:** Unicast (RIPI/II, OSPF, BGP4), Multicast (IGMP, PIM-SM and PIM-DM), 64K(S6506/6506R)/32K(S6503) routing Table, access control (6144 ACL rules), ARP, DHCP Relay, VRRP, etc.
- **QoS:** support traffic classification, CAR (64K granularity), 8 802.1p queues for each port, PQ, SP and WRR queue dispatch algorithm.
- **Security:** 802.1x authentication modes: local and remote; 2 protocol authentication modes: plain text and MD5 authentication (RIP, OSPF, etc.); ACL (Access Control List), L2-4 information filtration. Realize access control upon any of following conditions or their combination: source IP address, destination IP address, DSCP, IP protocol type, TOS, etc.
- **Network management:** CLI; Telnet; Console; SNMP, RMON (1, 2, 3, 9 group),

Huawei iManager Quidview ; system log; alarm/debugging information filter, output and statistics; the maintaining and diagnosis tools such as Ping and Tracert; remote maintenance through Telnet and HGMP.

Main Protocols Supported

Ethernet protocols	IEEE 802.1D, IEEE 802.1w, IEEE 802.3, IEEE 802.3u, IEEE 802.3x, IEEE 802.3z, IEEE 802.1Q, IEEE 802.1p and IEEE 802.1x.
IP protocols	IP, TCP, UDP, ICMP, ARP.
Route protocols	RIP I/II, OSPF,BGP
Application protocols	FTP, TFTP, BOOTP, Telnet.
NM protocol	SMI, SNMP, RMON, MIB-II, Ethernet-like MIB, Bridge MIB, Ether-like MIB.

Hardware Specifications

Switching and Routing System (Main control system)	S6506R: 2 (redundant); S6506/6503: 1
Slots	S6506: 7 slots; S6506R: 8 slots; S6503: 4 slots
Module slots	S6506/S6506R:6 slots; S6503:3 slots
CPU	MPC 8260 200MHz
SDRAM	256M
FLASH	16M
Buffer RAM	128M
Switching Capacity	S6506/6506R: 64G; S6503: 32G
Forwarding Capacity	S6506/6506R: 48Mpps; S6503: 24Mpps
Dimension (H x W x D mm)	S6506: 482.6 x 436 x 480; S6506R: 530.6 x 436 x 480; S6503: 352.8 x 436 x 480;
Power Configuration	S6506: 650W; S6506R: 800W; S6503:350W DC input voltage: -40V ~ -60V AC input voltage: 100 ~ 240V; +/- 10%
Operating Temperature	0°C ~ 45°C
Environmental Humidity	10% ~ 90%, no condensation

Quidway S8500 Series 10G Core Routing Switch

Quidway S8505

Quidway S8512

Introduction

Quidway S8500 series chassis switches, developed by Huawei independently, designed specially for large campus core/distribution and high-performance MAN network. As high capacity 10G core Switches, Quidway S8500 series switches meet the requirement from the core to distribution layer with intelligent network services, Including perfect traffic management, advanced QoS guarantee, powerful security management, and excellent network management. Teaming with Quidway S series Ethernet switches presented by Huawei Company, Quidway S8500 series provide high reliability network solutions for IP MAN and campus networks. Running on the powerful VRP (versatile routing platform), Quidway S8500 series includes 2 types: S8505, S8512.

Types of Interface Modules

- 48-port 10Base-T/100Base-TX module
- 20-port 100Base-X SFP module
- 12-port 1000Base-X SFP module
- 12-port 10/100/1000Base-T module
- 32-port 100Base-T+4-port 1000Base-X SFP module
- 4-port OC3c+8-port 1000Base-X SFP module
- 1-port 10GbE Xenpack module

Software Specifications

- **Advanced architecture:** full distributed architecture and packet by packet forwarding technology based on longest-prefix match algorithm.
- **High capacity and density:** 300G/720G switching capacity, 60/144 ports 1000Base-X SFP interfaces, 240/576 ports Fast Ethernet interfaces, and 5/12 10G ports Ethernet interfaces.
- **Carrier-class Reliability:** Key ports redundant design such as main control, switch fabric, power supply (dual power cords input) and fan trays backup, hot-swappable service modules, and MSTP/VRRP supported.
- **Perfect DiffServ/QoS:** 1M flow classifications per slot, 8 802.1p priority queues, traffic policing (64K CAR per line card, 8Kpbs granularity), SP/WRR queue dispatch algorithm, GRED and Tail drop congestion discarding strategy, etc.

- **Abundant L2/L3 Features:** 802.3ad link aggregation, port mirroring, DHCP relay, multicast routing protocols like PIM-DM and PIM-SM, etc.
- **User Authentication and Security Mechanism:** user access control, filtration and validity authentication of the packets, user privilege management and password protection, extended MAC based 802.1x user authentication, SNMP V3 encryption authentication.

Software Specifications

- **Layer 2 functions:** 14K MAC table per line card, 802.1D STP, 802.1w RSTP, 802.1s MSTP, 802.3x flow control, 802.3ad link aggregation, 4K VLANs (IEEE 802.1Q), GARP and GVRP, VLAN Trunk, IGMP snooping.
- **Layer 3 functions:** Unicast (RIPI/II, OSPF, BGP4), Multicast (IGMP, PIM-SM, PIM-DM, MSDP and MBGP), 128K IPv4 route Table, access control (1k PCL rules per line card), ARP, DHCP Relay, VRRP, etc.
- **QoS:** support traffic classification, CAR (8K granularity), 8 802.1p queues for each port, SP and WRR queue dispatch algorithm.
- **Security:** 802.1x authentication modes: local and remote; 2 protocol authentication modes: plain text and MD5 authentication (RIP, OSPF, etc.); ACL (Access Control List), L2-4 information filtration. Realize access control upon any of following conditions or their combination: source IP address, destination IP address, DSCP, IP protocol type, TOS, etc.
- **Network management:** CLI; Telnet; Console; SNMP, RMON (1, 2, 3, 9 group), Huawei Quidview ; system log; alarm/debugging information filter, output and statistics; the maintaining and diagnosis tools such as Ping and Tracert; remote maintenance through Telnet .

Main Protocols Supported

Ethernet protocols	IEEE 802.1D, 802.1w, 802.1s, 802.1v, 802.3, 802.3u, 802.3x, 802.3z, 802.1Q, 802.1p, 802.1x.
IP protocols	IPv4, TCP, UDP, ICMP, ARP, VRRP, PIM-SM/DM, MSDP, MBGP.
Route protocols	RIP I/II, OSPF,BGP
Application protocols	FTP, TFTP, BOOTP, Telnet.
NM protocol	SMI, SNMP, RMON, MIB-II, Ethernet-like MIB, Bridge MIB, Ether-like MIB.

Hardware Specifications

Switching and Routing System (Main control system)	redundant
Slots	S8505:7 slots; S8512:14 slots
Module slots	S8505:5 slots; S8512:12 slots
SDRAM	512M (Main control system)
FLASH	16M (Main control system)
Switching Capacity	S8505:300Gbps; S8512:720Gbps
Forwarding Capacity	S8505:85Mpps; S8512: 204Mpps
Backplane Capacity	S8505:375Gbps; S8512:900Gbps
Dimension (H x W x D mm)	S8505: 397.2 x 436 x 420 S8512: 752.8 x 436 x 420
Power Configuration	DC input voltage: -40V ~ -60V AC input voltage: 100 ~ 240V; +/- 10%
Operating Temperature	0℃ ~ 45℃
Environmental Humidity	10% ~ 90%, no condensation



Eudemon Security Gateway

Along with the network development, a majority of enterprises and organizations face the problem of exhausting IP addresses. Furthermore, there is a high demand on the network security.

Quidway Eudemon 100

Introduction

Eudemon 100

Quidway Eudemon 100, a new type of dedicated service gateway device, recently developed by Huawei Technologies Co., Ltd. provides NAT services much more complete than those provided by common routers, and possesses much more powerful connection and processing capability. Firewall, encrypt authentication and virtual private network (VPN) techniques are the frequently used network security solutions. Quidway Eudemon 100 provides perfect security features and VPN services. Quidway Eudemon 100 also supports the ITU H.323 recommendation suite, thus can fully support the networking requirements of video conference, providing a perfect video conference solution. Quidway Eudemon 100 is necessary for an operator to carry out the multi-media services.

Quidway Eudemon 200

Introduction

Eudemon 200

Quidway Eudemon 200 firewall is a new-generation, high-performance state-inspection firewall providing a high performance-price solution to the network security of the small-/medium-sized Intranet. It not only supports rich protocols (e.g., H.323, FTP and SMTP), but also checks the malicious commands. In addition, it provides multiple features such as algorithm-based advanced ACL searching, static and dynamic blacklist filtering, proxy-based SYN Flood defense. Meanwhile, with the help of the rich analysis and statistics function as well as the detailed and classified log output function provided by Quidway Eudemon 200, you can keep track of the illegal events.

Feature List

Features of Quidway Eudemon 100

Functional module		Feature description
Interconnecting protocol	LAN	• Supports the frame structure of Ethernet_II and Ethernet_SNAP (Subnetwork Access Protocol)
	WAN	• Supports PPP and PPPOE
	Dialing network	• Supports dial-on-demand
	VPN	• Supports L2TP, implements Virtual Private Dialup Net work (VPDN), supports Digital Number Identification • Service (DNIS) user, domain name users, and full name users • Supports the L3TP Generic Routing Encapsulation (GRE) • Supports IPSec
Network protocol	IP service	• Supports the Address Resolution Protocol (ARP) and Proxy ARP • Supports the static domain name resolution • Supports IP unnumbered • Supports the IP packet filtering • Supports the IP fast forwarding • Supports IP option packets • Supports the Dynamic Host Configuration Protocol (DHCP) relay
	IP performance	• Supports the Transmission Control Protocol (TCP) packet header compression
	IP routing	• Supports the static routing • Supports the IP policy routing
	Multicast routing	Supports multicast forwarding
Network Security	AAA	• Provides PPP and login user authentication • Supports RADIUS • Supports the local authentication • Supports PAP and CHAP authentication
	Status firewall	• Supports the detection of the status of Simple Mail Trans fer Protocol (SMTP), H.323, Hyper Text Transport Pro tocol (HTTP), File Transfer Protocol (FTP), TCP and User Datagram Protocol (UDP) • Supports the safeguard against the DoS attacks
	Packet filtering firewall	• Supports the standard ACL • Supports the extended ACL • Supports the interface-based ACL • Supports the timerange-based ACL
	NAT	• Supports the users within a LAN to use the IP addresses in the address pools to access external networks • Controls the address translation using the ACL

		• Implements the address translation (Easy IP) directly using the address of interface • Supports the external network hosts to access the in ternal server • Supports the valid time for address translation • Supports H.323 • Supports ICMP • Supports DNS • Supports NetMeeting • Supports NetBIOS over TCP (NBT)
	Data security	• Supports the terminal access security (User hierarchical protection, EXEC user login authentication) • Supports IPSec, provides tunneling and transporting en capsulation modes and supports AH and ESP security authentication • Supports IKE and auto-negotiation security key, and es tablish Security Association (SA)
Network reliability	Hot backup	• Supports VRRP
Quality of Service (QoS)	Traffic classification and traffic policing	• Supports the Committed Accessing Rate (CAR) and packet priority, and monitors the network traffic com ing in the ISP • Supports the physical interface Limited Rate (LR) to limit the overall rate that a physical interface transmit packets
	Traffic shaping	Provides GTS using the buffer and token bucket
	Congestion Management	• Supports FIFO • Supports PQ • Supports CQ • Supports WFQ
	Congestion avoidance	• Supports WRED to implement the traffic-based conges tion avoidance
Configuration and management terminal service	Command line interface	• Implement the local or remote configuration in Telnet mode via the console port • On-line help information is available • Command line hierarchical protection prevents unautho rized users from accessing the device • Detailed debugging information is available for network diagnosis • Provides network testing tools like the commands tracert and ping for network diagnosis • Log function is available
Network management		• Supports SNMPv1, v2c and v3

RAS and VoIP GW

Quidway A8010 Expert Carrier-class RAS and VoIP GW

Quidway A8010

Overview

Huawei Quidway A8010 Expert is a carrier class product designed expressly for ISPs, carriers and enterprises, helping them construct a carrier class dial-up access network or VoIP network quickly. The access capacity of A8010 Expert reaches to 3840 ports per chassis, which will meet the high-density requirement of the carriers. The signaling system of A8010 is very powerful, especially the build-in SS7 signaling processing makes the network more simple and available. It supports AnyPort function and can process modem/ISDN/VoIP/FoIP/POS access in a same E1 at the same time. Also the A8010 Expert supports NGN protocols such as H.248, MGCP and SIP, by co-networking with Huawei SoftX 3000, current network will evolve to NGN smoothly and easily.

Key Features

- Carrier-class reliability
- 3840 ports access per chassis, 11520 ports access per rack
- AnyPort for Modem/ISDN/VoIP/FoIP/POS
- Build-in SS7, PRI and R2, integrated in one chassis
- Access server, VoIP GW and traditional Switch integrated in one chassis
- Supports leading NGN protocols including H.248, MGCP, SIP and H.323, Smoothly evolves to NGN
- Supports SDP (Signaling Distribution Point) technology
- STM-1 SDH direct connection to PSTN/ISDN
- 5G data bus
- Conform to CE,UL and FCC
- Virtual ISP technology fully satisfies large scale port wholesale requirement

Quidway A8010 Expert Quick Look

System Data

Max access E1 number	128	Slot number	16
Max access ports	3840	Dimensions (H x W x D)	800mm x 483mm x 590mm
Port number of each module	120/480	Cooling Direction	down to up vertical
Backplane bus capacity	5G	Operation temperature	-25℃---55℃
WAN Interfaces	10/100 FE, GE, E3 ATM, OC3 ATM, OC3 POS,E1/T1 FR/PPP/ HDLC, V.35 FR/PPP/ HDLC	Power consumption (full configuration)	750W
PSTN Interfaces	E1,T1,STM-1	Weight(Full configuration)	58KG
Power supply input	220V/110V AC -48V DC	Relative humidity	10%RH~100%RH
Power supply Redundancy	2+1/2+2	Air pressure	70kPa~106kPa

Specifications

Signaling	SS7, R2, PRI	Forwarding rate	800K pps
Anyport	RAS/ISDN/VoIP/FoIP /POS universal access	Clock source	BITS/E1/T1
Port wholesale	3 Mode: Radius proxy /CMC + RMC/CMC + L2TP	Management	Console port, Telnet, SNMP, Syslog, Web/ JAVA
Subscribers number when adopt SDP	200,000	System MTBF	230000 hours
Certification	CE, UL, FCC	Backplane bus	Cell Bus, TDM, Serial bus

Services

Dial-up services	Modem/ISDN access	WAP access	MP/MMP (multi-link PPP/ chassises bundling)
	Port wholesale	Universal	TMG in NGN
	Call back	VPDN	Signaling Distribution Point(SDP)
VoIP services	Traditional VoIP	FoIP	O.N.L.Y
	PC to Phone	Phone to PC	Web phone

	Voice mail	IP 800	ICW
Protocols			
Modem Protocol	ITU-T V.22, V.22bis, V.32, V.32bis, V.34, V.34bis, V.42, V.42bis, V.44, V.90, V.92, K56Flex, V.110, V.120, V.17, V.29, V.27ter		
IP Phone/Fax Protocol	H.323 V2(1998), H.245 V3(1998), H.225.0 V2(1998, Q.931(1993), RTP/RTCP(RFC1889), support IP Fax ITU-T T.38, T.30,SIP		
Voice Coding Protocol	G.711, G.711A, G.723.1, G.729A, voice compression protocol supports DTMF inspection, mute inspection, echo cancellation, generating of com fortable noise, and gain control function.		
NGN protocol	MGCP, H.248		
Link Layer	RFC1661 (PPP), LCP, RFC1332(IPCP), IPXCP, RFC1994(CHAP), RFC1334 (PAP), RFC1990(MP)		
Network Layer	RFC0791(IP), RFC0826(ARP), RFC0903(RARP), RFC0792(ICMP)		
Transmission Layer	RFC0793(TCP), RFC0768(UDP)		
Application Layer Protocol	RFC2661(L2TP), RFC 2637(PPTP), RFC1282(Rlogin) RFC1157(SNMP), RFC0854(Telnet), RFC1034, RFC1035(DNS) RFC1_350 (TFTP), RFC0959(FTP, RFC2068(HTTP)		
Authentication, Authorization,and Charging	RFC 2865 (RADIUS), RFC 2866 (RADIUS Accounting), RFC 2867 (RADIUS Accounting Modifications for Tunnel Protocol Support), RFC 2868 (RADIUS Attributes for Tunnel Protocol Support)		
Network Management Protocol	Support H.341 Network Management Protocol(1999), RFC1213, RFC2495, RFC2668, RFC2665, RFC1696, RFC 1471, RFC 1473		
SDP	RFC 2960(SCTP), M3UA: IEFT Sigtran M3UA Draft 02		



Quidway A8010 Mini-Expert Cost-effective VoIP GW and RAS

Overview

Quidway A8010 Mini-Expert

The Huawei Quidway A8010 Mini-Expert Access Server is designed for telecom operator's small-scale node application and enterprise network to supply a cost-effective VoIP network or a dial-up access solution. It could serve in the network as small-capacity multi-service access server, or VoIP / FoIP Gateway. A8010 Mini-expert Access Server distinguishes itself by built-in SS7 signaling processing function which is the only product that could provide built-in SS7 among the same scale products in the field. A8010 Mini-Expert is suitable for diverse network application for certain features. One highlight is its abundant uplink interface types including FE, E3 ATM, V.35 FR and E1 FR. Besides, through configuration, any port of A8010 Mini-Expert could support universal access of Modem/ISDN/FoIP/VoIP/POS.

Key Features

- 600 ports access per chassis
- AnyPort for Modem/ISDN/VoIP/FoIP/POS
- SS7, PRI and R2 integrated in one Chassis
- Access server, VoIP GW and traditional Switch integrated in one chassis
- Supports leading NGN protocols including H.248, MGCP, SIP and H.323, Smoothly evolves to NGN
- 5G data bus
- Conforms to FCC/UL and CE standard
- Powerful security policy
- QoS support

Quidway A8010 Mini-Expert Quick Look

System Data			
Max access E1 number	20	Slot number	4
Max access ports	600	Dimensions (H x W x D)	220mm x 482mm x 445mm
Port number of each module	120/480	Cooling Direction	left to right
Backplane bus capacity	5G	Operation temperature	-25℃ ~ 55℃
WAN Interfaces	10/100 FE, E3 ATM, E1/T1 FR/ PPP/HDLC, V.35 FR/PPP/HDLC	Power consumption (full configuration)	230W
PSTN Interfaces	E1,T1	Weight(Full configuration)	26 KG
Power supply input	220V/110V AC -48V DC	Relative humidity	10%RH~100%RH
Power supply Redundancy	1+1	Air pressure	70kPa~106kPa

Specifications			
Signaling	SS7, R2, PRI	Forwarding rate	800K pps
Anyport	RAS/ISDN/VoIP/ FoIP/POS universal access	Clock source	BITS/E1/T1
Port wholesale	3 Mode: Radius proxy/CMC + RMC /CMC + L2TP	Management	Console port, Telnet, SNMP, Syslog, Web/JAVA
Backplane bus	Cell Bus, TDM, Serial bus	System MTBF	200000 hours
Certification	CE, UL, FCC	Range of voltage changes	:90V ~ 275V

Services			
Dial-up services	Modem/ISDN access	WAP access	MP/MMP (multi-link PPP/ chassises bundling)
	Port wholesale	Universal access	TMG in NGN
	Call back	VPDN	Signaling Distribution Point(SDP)
VoIP services	Traditional VoIP	FoIP	O.N.L.Y
	PC to Phone	Phone to PC	Web phone

	Voice mail	IP 800	ICW
Protocols			
Modem Protocol	ITU-T V.22, V.22bis, V.32, V.32bis, V.34, V.34bis, V.42, V.42bis, V.44, V.90, V.92, K56Flex, V.110, V.120, V.17, V.29, V.27ter		
IP Phone/Fax Protocol	H.323 V2(1998), H.245 V3(1998), H.225.0 V2(1998, Q.931(1993), RTP/RTCP(RFC1889), support IP Fax ITU-T T.38, T.30,SIP		
Voice Coding	G.711, G.711A, G.723.1, G.729A, voice compression protocol supports		
Protocol	DTMF inspection, mute inspection, echo cancellation, generating of com fortable noise, and gain control function.		
NGN protocol	MGCP, H.248		
Link Layer	RFC1661 (PPP), LCP, RFC1332(IPCP), IPXCP, RFC1994(CHAP), RFC1334 (PAP), RFC1990(MP)		
Network Layer	RFC0791(IP), RFC0826(ARP), RFC0903(RARP), RFC0792(ICMP)		
Transmission Layer	RFC0793(TCP), RFC0768(UDP)		
Application Layer Protocol	RFC2661(L2TP), RFC 2637(PPTP), RFC1282(Rlogin) RFC1157(SNMP), RFC0854(Telnet), RFC1034, RFC1035(DNS) RFC1_350 (TFTP), RFC0959(FTP, RFC2068(HTTP)		
Authentication, Authorization, and Charging	RFC 2865 (RADIUS), RFC 2866 (RADIUS Accounting), RFC 2867 (RADIUS Accounting Modifications for Tunnel Protocol Support), RFC 2868 (RADIUS Attributes for Tunnel Protocol Support)		
Network Management Protocol	Support H.341 Network Management Protocol(1999), RFC1213, RFC2495, RFC2668, RFC2665, RFC1696, RFC 1471, RFC 1473		
SDP	RFC 2960(SCTP), M3UA: IEFT Sigtran M3UA Draft 02		



Quidway A8010 GateKeeper

Quidway A8010 GateKeeper

- Providing "workstation/minicomputer+Unix" and "PC server+Linux" platforms, which may satisfy different demands of the carrier-class users and small-/medium-sized enterprise network users respectively.
- Complying with H.323 protocol. Possessing good inter-working ability, the Quidway A8010 GK supports inter-working with VoIP devices of other manufacturers compatible with H.323 protocol. For example, Quidway A8010 GK can inter-work with Cisco GW or GK.
- Supporting H.235 protocol so as to reject the access of unauthorized users and achieve high security.
- Having flexible networking modes and supporting hierarchical multi-zone networking.
- Supporting GK group to realize load sharing and mutual backup.
- Meeting various service demands of the operators by adopting multiple transform modes of number and route.
- Supporting transmission of LRQ query in Seq or Blast mode when the route-searching result shows multiple GKs.
- Supporting allocation of routes based on the metric value.
- Supporting QoS management, and can dynamically collect the status information of GW and GK. Combined with the route selection policy, it can select the suitable route according to the priority, load and resources.
- Providing CDR (Call Detailed Record). The top GK also has the clearing and billing functions to settle accounts between different operators.
- Automatic disk file management function.
- Only a few data is required to configure during the system installation, making the installation simple and convenient.
- Providing log file to record abundant fault diagnosis information such as operation maintenance information and alarm information. The system has alarming and debugging functions.
- Perfect message statistics function enables multiple statistic modes such as in period of time, call loss, the calling/called, and zone, etc. so as to satisfy the management requirement of operator.
- Providing Web-based configuration management system, which enables the user to configure and manage data in the graphical interface. The simple

operation makes watch unnecessary and may realize remote maintenance.

- Providing the configuration management system based on the command line, which enables the user to perform local or remote configuration via Telnet connection so as to realize the actual zero client.
- Supporting SNMP V3 and can perform centralized monitoring and maintenance via the NM station.

Main Performance of Quidway A8010 GK

The performance of Quidway A8010 GK mainly includes two aspects: call processing capability and the number of managed GWs.

GK Call Processing Capability

GK call processing capability is measured by number of calls processed per second and number of calls held simultaneously.

Call processing capability of carrier-class GK

- Call processing capability when Sun Netra t1 serves as the hardware platform

  When Sun Netra t1 is used as the hardware platform, the processing capability of a single Quidway A8010 GK is:

  The number of calls processed per second: 40

  The number of calls held simultaneously: 7500

- Call processing capability when Sun Netra t1125 serves as the hardware platform

  When Sun Netra t1125 is used as the hardware platform, the processing capability of a single Quidway A8010 GK is:

  The number of calls processed per second: 50

  The number of calls held simultaneously: 9000

- Call processing capability when Sun Netra t1405 serves as the hardware platform

  When Sun Netra t1405 is used as the hardware platform, the processing capability of a single Quidway A8010 GK is:

  The number of calls processed per second: 50

  The number of calls held simultaneously: 9000

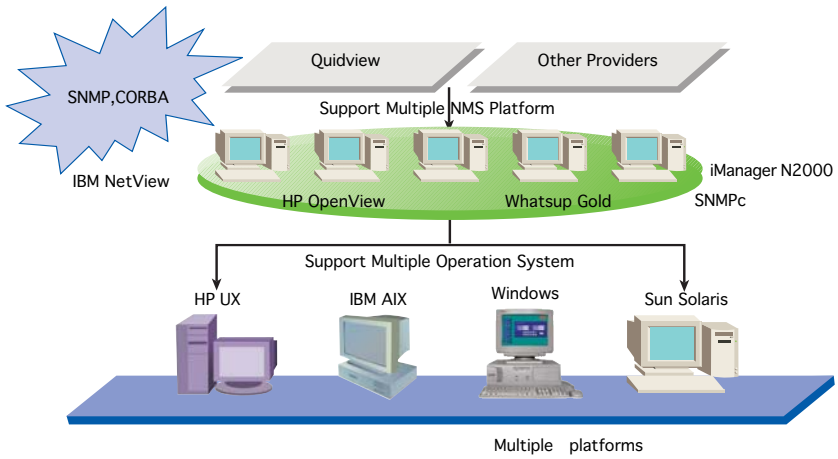
The Number of Managed GWs

The performance of GK can also be described with the number of managed GWs (or lower GKs). The total amount of lower GKs and interoperating proxy modules managed by the top GK is 40. The number of GWs managed by a level-1 GK is 200.

iManager Quidview

Overview

Quidview network management software is the network management product developed by Huawei for the unified management and maintenance of data communication equipment such as router and switch. Located in the management layer of the network solution, it is able to implement the network element and network management functions. It offers a network wide solution with the data communication equipment products of Huawei, supports data communication equipment maintenance and network management, and provides support and interface to OSS of the telecom network.



Main Features

Network Centralized Monitoring

Quidview provides uniform topology discovery function for whole-network monitoring. It monitors the running status of all network elements in real time, and provides the suitable mode for configuration and modification of network parameters according to the variance of network running environment, so as to guarantee the optimum performance of the network.

Cluster Management and Stack Management

For the application environment of large number of low-end devices like Level 2 switches, Quidview provides the cluster management function for the management of the network through a designated public network IP device (called command switch).

Stack can use a public IP address to implement the management of all the switches

within the stack. Through the stack management, Quidview can implement centralized management on a large number of low-end devices, and provides the user with a uniform NM interface, so as to facilitate the user to perform uniform management and maintenance on a large number of devices.

Fault Location and Address Inverse Search

For the most common port faults, Quidview provides the convenient location and detection tools - path tracing and port loopback test. When the user reports network port abnormality, the network administrator can perform a loopback test on the port designated by the user, and directly locate the port fault.

WEB-based network management

It provides Web features with the good security mechanism, so that users can manage the network in any time and at any place to lower the network management difficulty and intensity, and normalize the network operation and maintenance as procedures. It can also organize equipment aggregation flexibly, and obtain various kinds of information of the equipment quickly.

Integrated with universal NM platforms

Quidview can be Integrated with universal NM platforms, including HP Openview, IBM Netview, What's Up gold and SNMPc. Thus, Quidview can support flexible network structure and reduce customer investment availably.

Multiple operating systems

Quidview also support multiple operating system, such as Windows 2000/NT¢SUN Solaris¢IBM AIX¢HP UX.

Abundant interface protocols

Quidview can support multiple interface protocols, including SNMP V1/V2/V3, RMON, TFTP/FTP, SYSLOG, TELNET, CORBA , XML .

Multiple hardware platforms

Quidview can support All kinds of PC and mainstream machines including IBM, HP, SUN workstations.

Multi-equipment management

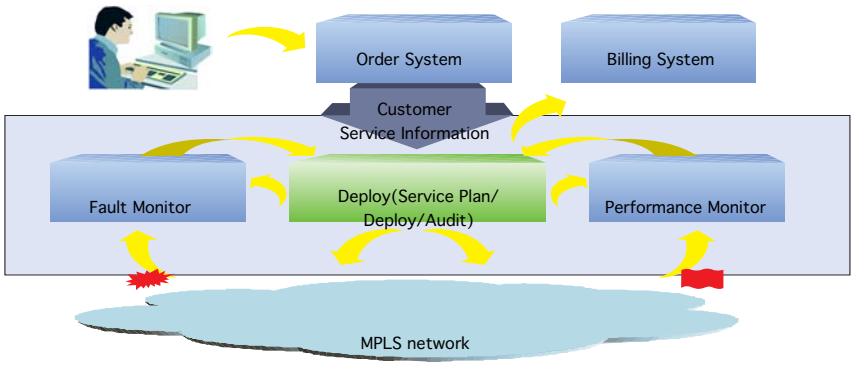
The Quidview NM software can manage the following equipment:

- The Quidway series routers,
- The Quidway series Ethernet switch products
- Video equipment: ViewPoint 8620 and Media Center

iManager NSM VPN Manager

Overview

MPLS VPN is quite popular in recent years, but it differs from previous IP services: MPLS VPN involves many complicated technologies, so it is more difficult for management. Thus, VPN operation calls for better IP network management. The NM system is required to provide an effective solution for VPN planning, deployment, and auditing. For this purpose, Huawei provides MPLS VPN service management solution known as iManager NSM (Network Service Management Solution) VPN Manager.



VPN Manager in operating system

Main Features

Fast, visible service planning and service deployment

iManager NSM VPN Manager enables fast ,visible service planning and service deployment, so that the administrator can release MPLS VPN service quickly. It can support graphical wizard for the user to plan the VPN quickly.

Automatic discovery the deployed service

iManager NSM VPN Manager can automatically discover the deployed VPN service, establishes a relationship between the service and the customer in the Network Management system, and constructs the service topology.

Perfect network performance management

iManager NSM VPN Manager performance management enables the collection, statistics and statement of performance or traffic data, including the number of input/output bytes, input/output lost packets, time delay, jitter data and traffic data between CE-PE, PE-PE, CE-CE. Specifically.

Service fault alarm and detection

iManager NSM VPN Manager can diagnose the affected service or customer by the network element faults. Closely integrated with the Topology Management, Fault Management is used to display network and service fault on the topology, so as to remind the maintenance staff to locate and remove faults in time.

Customer Management and overall network resource management

Centered on VPN customers, iManager NSM VPN Manager Customer Management provides basic customer information, leased VPN service, network resource in use and customer report in order for operators to offer support to customers with ease and thus improve customer satisfaction.

Multi-vendor equipments management

iManager NSM VPN Manager can solve the problem of multi-vendor equipment management by good expandability and by provisioning of drive modules for equipment of different vendors.

At present, iManager NSM VPN Manager is able to manage Huawei and other mainstream vendors' equipments.

Web based VIP customers self management

iManager NSM VPN Manager provides CNM (Customer Network Management) features, so that VPN customer can access iManager NSM VPN Manager through WEB browser.

Managed equipment

PE router supports:

Huawei NE80/NE40, NE05/NE08E/NE16E, AR 28-40/AR 28-80

Other mainstream vendors' equipments

CE router supports:

Huawei's low and medium-end router series

Other mainstream vendors' equipments

(Other vendor's equipment can be added to the system based on negotiation between Huawei and customer)

Basic Specification

Attribute	Description
Interface protocols	SNMP V1/V2/V3, TELNET, SSH
Hardware platforms	SUN workstation, PC Server,
Operating systems	SUN Solaris8.0, Windows 2000
Database systems	Sybase 12.0, SQL Server2000