

H3C AR46 Series Intelligent Multi-Service Enterprise Core Router

H3C AR46 Intelligent Multi-service Enterprise Core Routers are multi-service routers with high performance and reliability for enterprise central network, industry network and carrier network. According to the network scale, AR46 routers can serve as core routers on a corporation network, edge routers on a carrier network or convergence routers on a large industry network.

H3C AR46 routers take dual-PCI bus design, which ensure the powerful IP forwarding performance and the carrier level reliability. AR46 routers also support interface module/power module/fan groups hot-swap and power 1+1 backup.

H3C AR46 routers meet the intelligent integrated service requirements. Security, VPN, voice, application layer QoS ensurance, NQA(Network Quality Analysis) are all embedded in AR46 routers, which also support hardware encryption and data compression, ensure the secure and cost-effective networks for the users.

H3C AR46 routers provide comprehensive network management function, which can damatically ease the management complexity and save the management costs.

H3C AR46 routers provide two kinds of main prosess engine, one is RPU(Routing Processing Unit), which intergrates 2 fixed FE ports and provides 350Kpps forwarding capability, another one is ERPU (Enhanced Routing Processing Unit), which integrates 3 fixed GE ports and provides 1000Kpps forwarding capability. AR46 series routers have three models, namely, AR46-80, AR46-40 and AR46-20, which provide eight slots, four slots and two slots respectively.



AR46-20(RPU)



AR46-40(RPU)



AR46-80(RPU)



AR46-20(ERPU)



AR46-40(ERPU)



AR46-80(ERPU)

Features and Benefits

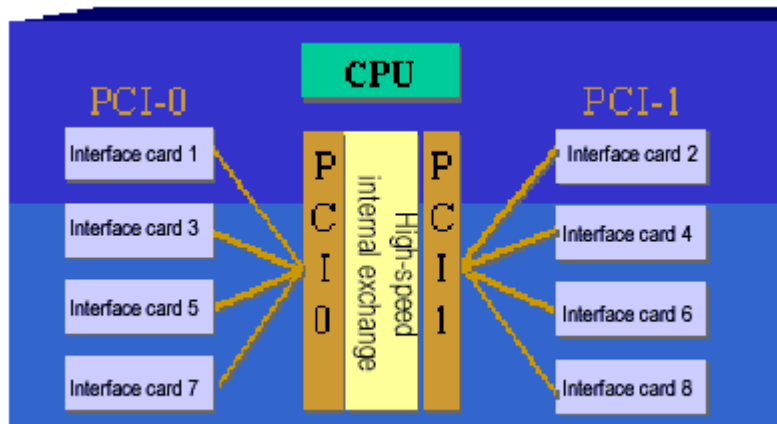
H3C AR46 routers inherit the design advantages of high-end router in four highs--high performance, high quality, high reliability and high security. Moreover, they are integrated with the service capabilities of middle/low-end routers. Therefore, AR46 routers meet requirements for network performance, service integration, high reliability, high security and tri-play solution from rapid informationized development.

⌘ High-performance architecture

H3C AR46 routers adopt unique dual bus structure, which uses two independent PCI buses, high-performance PowerPC CPU, greatly improve system forwarding performance.

The forwarding capability can reach 1000Kpps (with ERPU), much higher than other products at the same level. AR46 can also ensure high IP forwarding performance when delivering the multiple concurrent services.

H3C AR46 routers support high speed interface, such as copper and fiber Gigabit Ethernet, ATM 155M, Channelized POS(155M), fulfill the requirement of industry or enterprise central equipment.



⌘ End-to-end reliability

Redundancy design: The key components such as bus, power, fans group, all adopt redundancy design. Moreover, they adopt dual power (1+1 backup) module, supporting the input of both AC and DC power.

Hot swap: All interface modules, power supplies and fans of AR46 support hot swap, satisfying the needs of network maintenance, upgrade and optimization.

In-service software patch installation: AR46 routers provide a unique function of software in-service patch installation, ensuring service noninterruption at the software optimization.

Network reliability: Comware support Backup Center, VRRP technology, auto-detect and standby of routing to ensure the network robust and stable.

⌘ **Multi-service integrated**

Enhanced hardware encryption: IPsec DES, 3DES, and AES128/192/256 are supported on AR46 routers. The subcard-ENDE installed on ERPU do not occupy the outside FIC slot, can provide as high as 600Mbps encryption throughput and 4000 encrypted tunnels.

Comprehensive VPN and security features: Not only traditional VPN, such as L2TP and GRE VPN, but also Dynamic VPN, MPLS/BGP VPN and MPLS L2 VPN (Martini, Kompalla, CCC, SVC, etc) are supported on AR46. Other security features, such as RADIUS, ASPF (Application Specific Packet Filtering), EAD (Endpoint Access Defense), Portal and PKI/CA certificate also ensure the customer with secure and resilient network connectivity and application.

VoIP and VoFR integrated: By embedded voice service in the routers, AR46 provide a flexible and cost-effective tri-play solution for the customers. Based on the H.323 or SIP, AR46 routers provide multiple interface modules for the VoIP applications, such as FXS/FXO/ISDN BRI voice and E1/T1 digital voice.

QoS ensured: Quality of Service is enhanced on AR46 series routers. NetStream monitoring provides traffic flow analysis to optimize the network; DAR (Deeper Application Recognition) recognizes and classify the L4-L7 application and protocols flows, ensure the QoS for the different applications.

Routing and switching integrated: AR46 provide 8-port and 16-port 10/100Mbps LAN switching modules, which provide more cost-effective solutions for the customers.

⌘ **Easy maintenance and efficient deployment**

H3C AR 46 routers provide more customized management solutions.

One serial number for one device: Every AR router is sealed with a unique serial number, which can ease the locating of the network problem and network management.

Auto-config can automatically detect and configure all its interfaces upon its first use and starts Telnet, FTP, or Web service.

Easy Deployment: Based on BIMS (Branch Intelligent Management System), Auto-config and Serial Number for each router, realize the branch devices zero-touch and centralized management by the central management system.

Configuration Rollback: If there is any error occurred when the configuration deploying, the device will inform the NMS, the configuration file will get rollback, which can ensure the reliability of configuration deployment.

NetStream can provide the packet statistics function. It differentiates traffic flows through the destination IP address, source IP address, destination port No., source port No., protocol ID, ToS, and input/output interface of packets, and makes independent data statistics for different flows.

NQA(Network Quality Analysis) simulates network data and IP services to sends data across the network to measure performance between network nodes, including the state and service type of DLSw, DHCP, FTP, HTTP, or SNMP servers, realizes the service status monitoring and network quality analyzing.

H3C AR46 routers also provide RMON, SSHv2 (Secure Shell Protocol Version2) and SNMPv3 (Simple Network Management Protocols Version 3) for the secure management.

Software Specification

Network Interconnection Protocol	Ethernet, PPP, MP, SLIP, FR, LAPB, X.25, ISDN, HDLC, ATM
VPN	L2TP VPN, GRE VPN, IPSec VPN, MPLS/BGP VPN, MPLS L2VPN, DVPN
Network Layer Protocol and Application	IP, IPX, DLSw, IP Fast Switch, DHCP Client / Server /Relay.
Routing Protocol	Static Routing, OSPF, RIPv1 / v2, BGP-4, IS-IS, Policy Routing, IGMP, MSDP, PIMDM, PIM-SM, MBGP
Transmission layer protocol	TCP, UDP
Application Layer Protocol and Application	Telnet, Dumb Terminal, Terminal Server, FTP, TFTP, Callback, SNMPv1/v2/v3, RMON, POS, RTU
Security Characteristics	AAA RADIUS, SSHv2, ASPF, NAT, IPSec, IKE, Encryption card, Huawei-TACACS, RSA, CA, EAD
QoS Application	PQ, CQ, WFQ, CBWFQ, CAR, GTS, WRED, LR
Voice Application	VOIP, VOFR, IP Fax, IPHC, GK Client, ISDN BRI, E1 Voice, T1 Voice, H.323, SIP
Reliability Functions	VRRP, Backup Center

Hardware Specification

Item	AR46-80	AR46-40	AR46-20
Memory	RPU engine: default 256M, maximize 512M ERPU engine: default 512M, or default 1024M		
FLASH	RPU engine: default 32M ERPU engine: default 64M, maximize 256M(CF card)+64M		
BOOTROM	512 K	512 K	512 K
NVRAM	512 K	512 K	512 K
	RPU engine: 2 10/100 M Ethernet interface 1 AUX interface 1 console port		
Fixed interface	ERPU engine: 3 GE Combo ports(fiber and copper are optional) , or 2 GE copper ports + 1 Combo port , 1 AUX interface 1 console port		
Number of slots	8	4	2
Packet Forwarding Rate	RPU engine: 350 Kpps ERPU engine: 1000 Kpps		
Input voltage	AC: 100V-240V (+/-10%) 50/60Hz DC: -48V- -60V (+/-20%)		
Outline dimensions (mm): Width× depth × height	436.2 u420 u219.5	436.2 u420 u130.5	436.2 u420 u130.5
Weight	27.5kg	17.5kg	15 kg
Maximum power	213W	126W	86W
Security certification	The products pass security certification of various countries, including CE, UL, TUV, and others.		
Working environment temperature	0 - 40 ℃		
Environment relative humidity	10 - 90%, non-condensing		

Hosts and Modules

Table 1 AR46 Series Routers Host configurations

RT-AR4620-AC-CHASSIS	AR 46-20 Router AC Chassis, 2 Slots
RT-AR4640-AC-CHASSIS	AR 46-40 Router AC Chassis, 4 Slots
RT-AR4680-AC-CHASSIS	AR 46-80 Router AC Chassis, 8 Slots
RT-AR4620-DC-CHASSIS	AR 46-20 Router DC Chassis, 2 Slots
RT-AR4640-DC-CHASSIS	AR 46-40 Router DC Chassis, 4 Slots
RT-AR4680-DC-CHASSIS	AR 46-80 Router DC Chassis, 8 Slots
RT-AR46-RPU-256M	AR 46 Routing Processing Unit, 256M SDRAM, 2 10/100 BASE-TX FE
RT-AR46-ERPU-512M	AR 46 Enhanced Routing Processing Unit, 512M SDRAM, 3GE(RJ45 and SFP Combo), 1 CF Slot
RT-AR46-ERPU-1024M	AR 46 Enhanced Routing Processing Unit, 1024M SDRAM, 3GE(RJ45 and SFP Combo), 1 CF Slot
RT-AR46-ERPU(H)-512M	AR 46 Enhanced Routing Processing Unit, 512M SDRAM, 3GE(2*RJ45 and 1 SFP/RJ45 Combo), 1 CF Slot
AR-PWR46-AC Red	Redundant AC power
AR-PWR46-DC	Redundant DC power
RT-SDRAM-512M	512M SDRAM for AR46 RPU
CF-64M	Compact Flash Mem 64MB
CF-128M	Compact Flash Mem 128MB
CF-256M	Compact Flash Mem 256MB

Table 2 AR46 Optional interface module configurations

Ethernet WAN interface modules	
AR-FIC-1FE	1-port 10/100BASE-TX Module
AR-FIC-2FE	2-port 10/100BASE-TX Module
RT-FIC-1GBE	1-port 10/100/1000BASE-T Ethernet Interface Module, RJ45
RT-FIC-2GBE	2-port 10/100/1000BASE-T Ethernet Interface Module, RJ45
RT-FIC-1GEF	1-port 1000BASE-X Optical Interface Module (SFP, LC)
RT-FIC-2GEF	2-port 1000BASE-X Optical Interface Module (SFP, LC)
Serial modules	
RT-FIC-2SAE	2-port Enhanced Sync/Async Interface Module
RT-FIC-4SAE	4-port Enhanced Sync/Async Interface Module
RT-FIC-8SAE	8-port Enhanced Sync/Async Interface Module
RT-FIC-8ASE	8-port Asynchronous Serial Interface Module (RJ45)
RT-FIC-16ASE	16-port Asynchronous Serial Interface Module (RJ45)
Channelized and fractional E1/T1 modules	
AR-FIC-1E1	1-port E1/CE1/PRI Module
AR-FIC-2E1	2-port E1/CE1/PRI Module
AR-FIC-4E1	4-port E1/CE1/PRI Module

RT-FIC-8E1(75)	8-port E1/CE1/PRI Module (75ohm)
RT-FIC-8E1(120)	8-port E1/CE1/PRI Module (120ohm)
AR-FIC-1T1	1-port T1/CT1/PRI Module
AR-FIC-2T1	2-port T1/CT1/PRI Module
AR-FIC-4T1	4-port T1/CT1/PRI Module
RT-FIC-8T1	8-port T1/CT1/PRI Module
RT-FIC-1T1-F	1-port T1 Module-Fractional
RT-FIC-2T1-F	2-port T1 Module-Fractional
RT-FIC-4T1-F	4-port T1 Module-Fractional
RT-FIC-8T1-F	8-port T1 Module-Fractional
RT-FIC-1E1-F	1-port E1 Module-Fractional
RT-FIC-2E1-F	2-port E1 Module-Fractional
RT-FIC-4E1-F	4-port E1 Module-Fractional
RT-FIC-8E1(75)-F	8-port E1 Module-Fractional (75ohm)
RT-FIC-8E1(120)-F	8-port E1 Module-Fractional (120ohm)
DSL modules	
RT-FIC-1ADSL-I	1-port ADSL over ISDN Interface Module, RJ11
AR-FIC-1ADSL	1-port ADSL over POTS Module, RJ11
RT-FIC-1G.SHDSL	1-port G.SHDSL Interface Module, RJ11
RT-FIC-2G.SHDSL	2-port G.SHDSL Interface Module, RJ11
RT-FIC-4G.SHDSL	4-port G.SHDSL Interface Module, RJ11
RT-FIC-1SHL-4W	1-port Four Wire G.SHDSL Interface Module
ISDN and Modem modules	
RT-FIC-4BSE	4-port ISDN-BRI Module, S/T
RT-FIC-6FCM	6-port Fast Connect Modem Module
Channelized E3/T3 modules	
RT-FIC-1CE3	1-port E3/CE3 Compatible Interface Module
RT-FIC-1CT3	2-port T3/CT3 Compatible Interface Module
ATM modules	
AR-FIC-1AMM	1-port OC-3 ATM Module (Multi-Mode, SC, 2km)
AR-FIC-1ASM	1-port OC-3 ATM Module (Single Mode, SC, 15km)
AR-FIC-1ASL	1-port OC-3 ATM Module (Single Mode, SC, 30km)
RT-FIC-1AE3	1-port E3 ATM Interface Module
RT-FIC-1AT3	1-port DS3 ATM Interface Module
ATM IMA modules	
RT-FIC-IMA-4T1	4-port T1 ATM IMA Interface Module
RT-FIC-IMA-4E1(120)	4-port E1 ATM IMA Interface Module (120ohm)
RT-FIC-IMA-4E1(75)	4-port E1 ATM IMA Interface Module (75ohm)
RT-FIC-IMA-8T1	8-port T1 ATM IMA Interface Module
RT-FIC-IMA-8E1(120)	8-port E1 ATM IMA Interface Module (120ohm)
RT-FIC-IMA-8E1(75)	8-port E1 ATM IMA Interface Module (75ohm)

Analog and digital voice modules		
RT-FIC-2FXS		2-port Analog Line Interface Module, FXS
RT-FIC-4FXS		4-port Analog Line Interface Module, FXS
RT-FIC-2FXO		2-port Analog Trunk Interface Module, FXO
RT-FIC-4FXO		4-port Analog Trunk Interface Module, FXO
RT-FIC-2EM		2-port Analog Trunk Interface Module, E&M
RT-FIC-4EM		4-port Analog Trunk Interface Module, E&M
RT-FIC-E1VI		1-port E1 IP Voice Module
RT-FIC-T1VI		1-port T1 IP Voice Module
Hardware encryption modules		
RT-FIC-HNDE		High Performance Network Data Encryption Module
RT-ENDE		Enhanced Network Data Encryption Subcard for ERPU
LAN switching modules		
RT-FIC-8LS	8-port	10/100BASE-TX L2 Ethernet Switch Module
RT-FIC-16LS		16-port 10/100BASE-TX L2 Ethernet Switch Module
POS modules		
RT-FIC-1CPOS(E)		1-port Channelized POS 155M to E1 Interface Module (SFP, LC)
RT-FIC-1CPOS(T)		1-port Channelized POS 155M to T1 Interface Module (SFP, LC)
RT-FIC-POS+MM-2Km		RT-FIC-POS Bundle with SFP Transceiver Multi-Mode-2Km
RT-FIC-POS+SM-15Km		RT-FIC-POS Bundle with SFP Transceiver Single Mode-15Km
RT-FIC-POS+SM-40Km		RT-FIC-POS Bundle with SFP Transceiver Single Mode-40Km

Safety and Compliance

Emissions / Agency Approvals

CISPR 22 Class A or Class B
 FCC Part 15 Class A or Class B
 EN 55022 Class A or Class B
 ICES -003 Class A or Class B
 VCCI Class A or Class B
 AS/NZS CISPR 22 Class A or Class B
 EN 61000-3-2
 EN 61000-3-3

Immunity

Product conforms to:
 EN 55024
 EN 61000-4-2
 EN 61000-4-3
 EN 61000-4-4
 EN 61000-4-5
 EN 61000-4-6
 EN 61000-4-11

Safety Agency Certifications

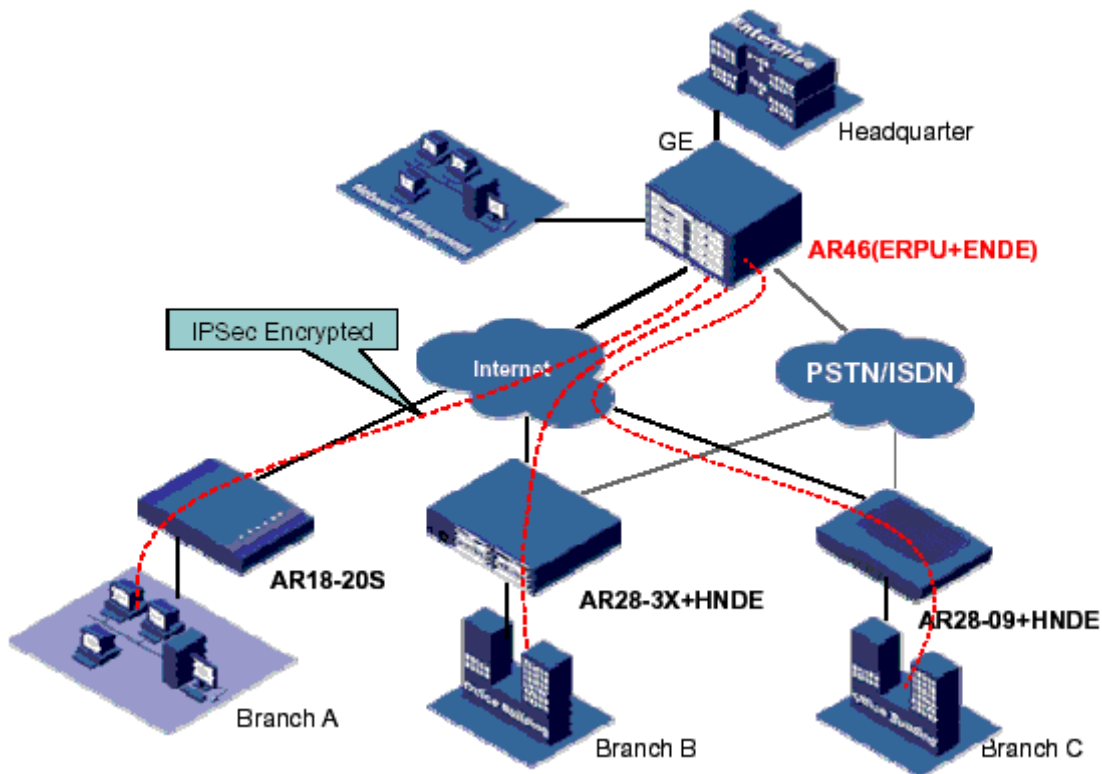
UL 60950-1
 IEC 60950-1; all national deviations
 EN 60950-1, ZB and ZC deviations
 CSA 22.2 No. 950 -1
 AS/NZS 60950-1, Australia

MTBF

AR46-20/AR46-40/AR46-80
 78.00 years

Typical Applications

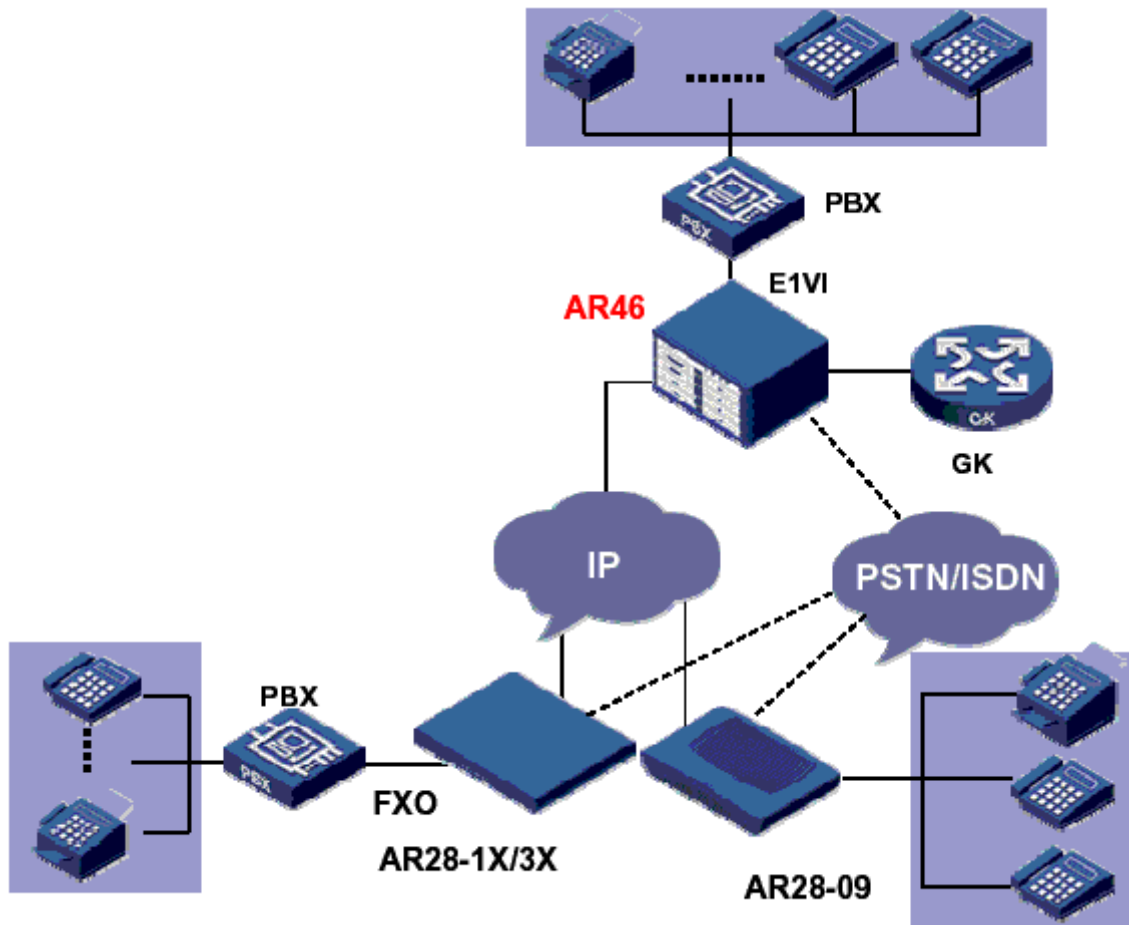
AR 46 as Core Router in Secure Enterprise Inter-connect Network



Main point of the this topology:

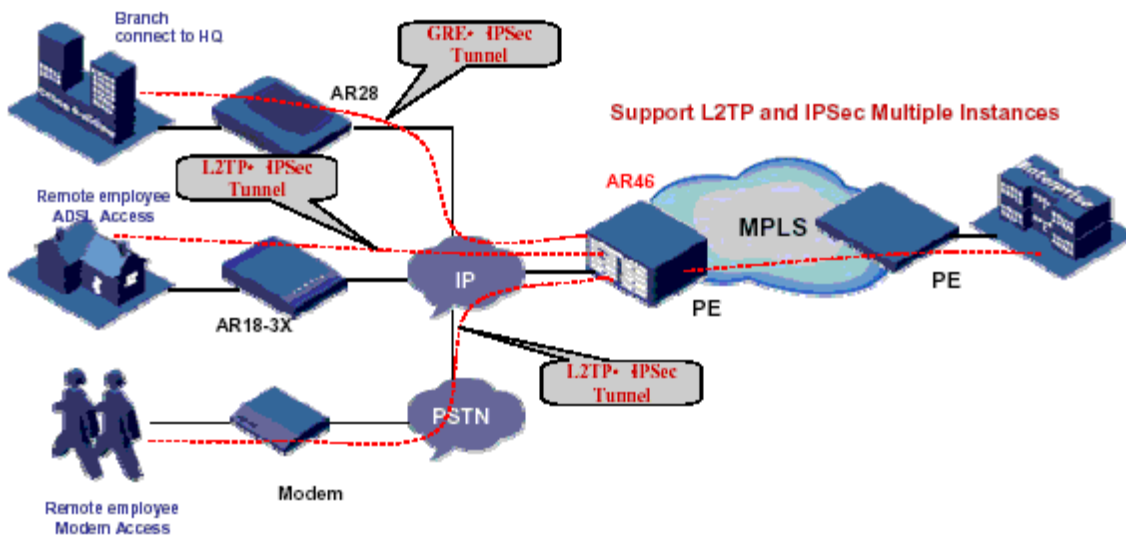
1. AR46 series routers meet all the requirement for the core router of enterprise; dual PCI bus and dual power supply, all modules and power supply are swappable ;
2. AR46 have two kind of engine, the new engine ERPU can support up to 1000Kpps forwarding performance, protect user's investment;
3. AR46 can support hardware encryption card, the encryption throughput can be as high as 600Mbps and 2500 IPsec tunnels, which can fully satisfy the enterprise's requirement.

AR 46 as Voice Router in Enterprise VoIP Solution



In the headquarters, AR46 series routers serve as the voice gateway devices to implement VoIP function on the E1 line. In each branch, AR28-09/1X router is used to connect PBX or telephone to transform the voice signals between the legacy circuit switching network and IP network, providing enterprises with voice solution of high quality and low cost.

AR 46 Integrate Traditional VPN and MPLS VPN

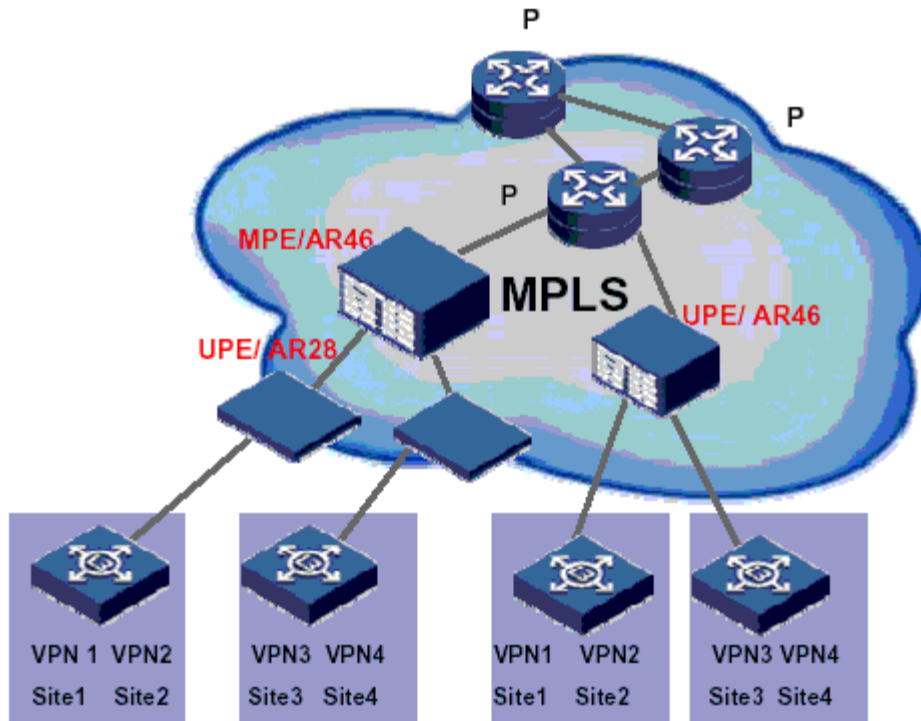


MPLS VPN: used for the enterprise network resource logical division and security isolation, often work on the core layer or convergence layer of the network.

L2TP or GRE VPN: used for the access of the remote branches or mobile users, often work with IPSec on the access layer of the network.

AR Routers can combine traditional VPN and MPLS VPN to present end-to-end solution for the customer.

AR 46 in MPLS HoPE (Hierarchy of PE) Solution



In BGP MPLS VPN, since a PE device has to aggregate multiple VPN routes, a bottleneck is likely to occur if there are too many subscribers to be accessed by a PE with relatively less capacity. To solve this problem, Huawei Technologies brought forward the Hierarchy of PE (HoPE) solution.

HoPE separates the PEs on an MPLS VPN network into different layers to form a hierarchical BGP MPLS VPN network. The PE at different layer plays different role. The PE at a higher layer requires more on routing and forwarding capacity and mainly interconnects the backbone network and accesses large VPN subscribers. A PE at a lower layer requires less on routing and forwarding capacity and mainly accesses the VPN subscribers at the edge. Such network can be infinitely nested; the scalability of BGP / MPLS VPN is also significantly improved.

Benefits:

1. Support MPLS/BGP VPN;
2. Support MPLS L2 VPN: Maritni, Compella, CCC;
3. Support HoPE(Hierarchy of PE);
4. Divide traditional high-end PE into layers, which bring low cost to introduction of low-end UPE;
5. Flexible, no influence on other PEs when adding new customers;

For more information on Huawei-3Com products, please contact our Advanced Certified Partner:



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