Miercom

Lab Testing Summary Report

March 2012

Report SR120222B

AR Series Routers

Access and Interconnection

Vendor Tested:

HUAWEI

Products Tested:

AR207V-P
AR1220VW
AR3260
Enterprise Routers

Miercom PERFORMANCE VERIFIED™

Key findings and conclusions:

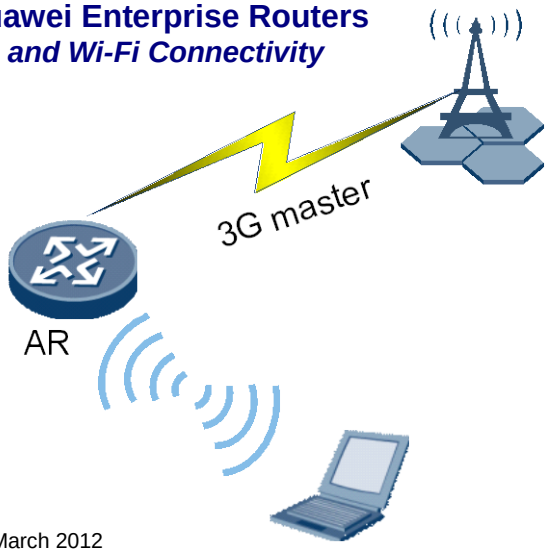
- **Dual 3G uplinks provide fully redundant WAN connectivity**
- **Interoperability proven with Cisco routers for IPsec and GRE tunneling**
- **AR1200/AR2200/AR3200 series support GPON and EPON for flexible network deployments**
- **Provides wireless Internet access using 3G and Wi-Fi**

Huawei Technologies engaged Miercom to evaluate several series of enterprise routers for access and interconnection. The features of each individual router are common to the rest of the Huawei router series product line. The features and capabilities discussed in this report by product can be supported in the entire family of products.

In the AR200 series of routers, Miercom tested the AR207V-P router. This family of routers provides a rich set of functions including routing, switching, voice, security, and wireless capabilities. They are ideal for small branches or small business deployments. The AR200 series are fixed port devices without modules.

The AR Series routers supports plug-and-play configuration and deployment using a USB flash drive. The AR200 series offers eight FE ports and two WAN uplinks, which provide both load balancing and link redundancy. The AR200 series also reduces office noise with its fan-free design.

Figure 1: Huawei Enterprise Routers
3G and Wi-Fi Connectivity



Source: Miercom, March 2012

Setup topology used to test Internet connectivity over Wi-Fi. The AR1200/3200 use 3G and Wi-Fi to provide Internet connectivity with an endpoint device.

Miercom tested the AR1220VW, a small branch router for an enterprise network. The AR1200 series of routers have four models available, the AR1220, 1220V, 1220W, and 1220VW. The 1220V model has voice features and DSP with 32 supported channels. The 1220W is a wireless router with 802.11 b/g/n capabilities. The AR1200 series have two card slots for various interface cards supporting different network uses and deployments.

The final router Miercom evaluated was the AR3260 enterprise router. The AR3200 series of routers are for use in an enterprise environment such as a headquarters office. The AR3200 series has six card slots for Layer 2 / Layer 3, FX0 voice, and serial port cards.

IPsec VPN with Cisco

AR G3 routers support IPsec tunnels for use with VPN. A test was designed to verify that the AR G3 routers can support an IPsec VPN with a third party router. For this testing, the third party router was a Cisco 881. To set up the test bed, the AR router and the Cisco router were connected through an IPsec tunnel using an AR1220VW router, which was was strictly used as a reference router. *Figure 2* shows the setup used for the AR207V-P router test.

This same topology was used for testing the AR207V-P, AR1220VW, and the AR3260 routers. In each case, the first AR router was swapped out for the device under test (DUT). To test that the IPsec tunnel worked properly, packets were sent from the AR router under test to the Cisco 881 router. In all test cases, the packets were sent and received without any issues. IPsec VPN with third party routers worked properly on all of the Huawei AR G3 router series tested.

Table 1: Huawei AR G3 Routers Feature Comparison

Model	AR200 Series	AR1220 Series	AR3200 Series
Service Slots	N/A	2 Slots	6 Slots
IPSec	✱	✱	✱
Hot-Swappable	N/A	✱	✱
USB Ports	1	2	2
QoS	✓	✓	✱
IPv6 Routing	✓	✓	✓
Voice Features	✱	✱	✱
Memory	512 MB	512 MB	2 GB

Source: Miercom, March 2012

✱ - Tested Feature
✓ - Vendor Data

GRE VPN with Cisco

AR G3 routers can support GRE VPN tunnels with third party routers. This test was designed to verify that the AR G3 routers could support a GRE VPN tunnel with a Cisco 881 router. The setup and topology of this testing was identical to the IPsec VPN test. However, instead of an IPsec tunnel connecting the routers, a GRE tunnel was used. This test was performed three times, one time for each of the following routers, AR207V-P, AR1220VW, and AR3260. During the testing, all packets were sent and received without any issues or problems. GRE VPN with third party routers worked properly on all the AR series tested.

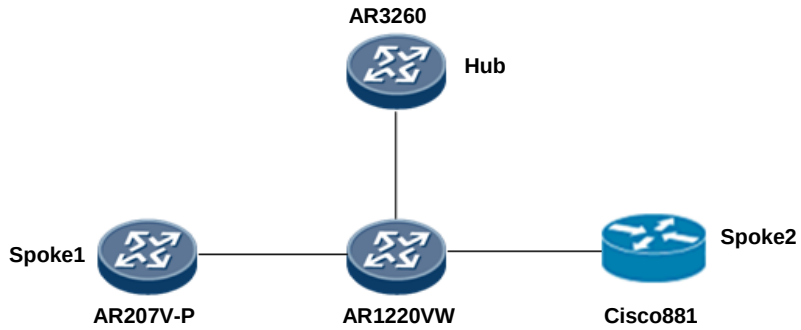
Figure 2: Huawei Enterprise Routers IPsec Testing Topology

Source: Miercom, March 2012

Both routers under test were connected to either end of an AR1220 router and set up to use an IPsec tunnel.

Topology of Huawei enterprise routers and Cisco routers used as spokes in the Dynamic Smart VPN setup.

Figure 3: Huawei Enterprise Routers
Spoke and Hub Network used for DSVPN Test



Source: Miercom, March 2012

DSVPN with Cisco

Huawei AR G3 routers can support spoke and hub networks. To prove this, we wanted to verify that the AR routers could support a DSVPN (Dynamic Smart VPN) setup with a third party router. Again, we chose the Cisco 881 as the third party router to be used in this testing. The topology in *Figure 3* displays the setup that was used for this portion of testing.

Packets were sent between the spokes of the network to the Cisco 881 router and back again to verify that the DSVPN was working properly. All packets were received without error, verifying that DSVPN works with third party routers.

Dual 3G Uplink for Backup

The AR1220VW routers support 3G cards. To test the dual 3G uplink for WAN backup, the AR1220VW router was configured with two 3G cards. The router was configured to transmit data over the Internet using the primary 3G card. During the test, the primary card was disabled and traffic switched over to the secondary 3G card. This test verified that the dual 3G uplinks on the AR1200 series router provide redundant WAN links.

3G and Wi-Fi

The AR1220VW also has the ability to use 3G and Wi-Fi to provide Internet connectivity with an endpoint device. For this test, we connected a laptop to the AR1220VW router using the Wi-Fi card installed. The router was then connected to the Internet using the 3G card. From the laptop, the user could browse the Internet, indicating that traffic did travel over Wi-Fi to the router and then over 3G to the outside network. The diagram in *Figure 1* on *page 1* illustrates the topology used in testing.

GPON and EPON

The AR1220/AR2200/AR3200 series of routers can support both Gigabit Passive Optical Network (GPON) and Ethernet Passive Optical Network (EPON). GPON and EPON both use a passive optical network (PON). This is used in a deployment environment where non fiber cable can be split to serve multiple locations. This is very useful in a network where there may only be one fiber cable coming into the system.

Both features were tested by connecting an AR1220VW router to a splitter and then to a Digital Subscriber Line Access Multiplier (DSLAM) before connecting to another AR1220VW router. Pings were passed between the routers to confirm the connection was working properly. The test was performed on both GPON and EPON.

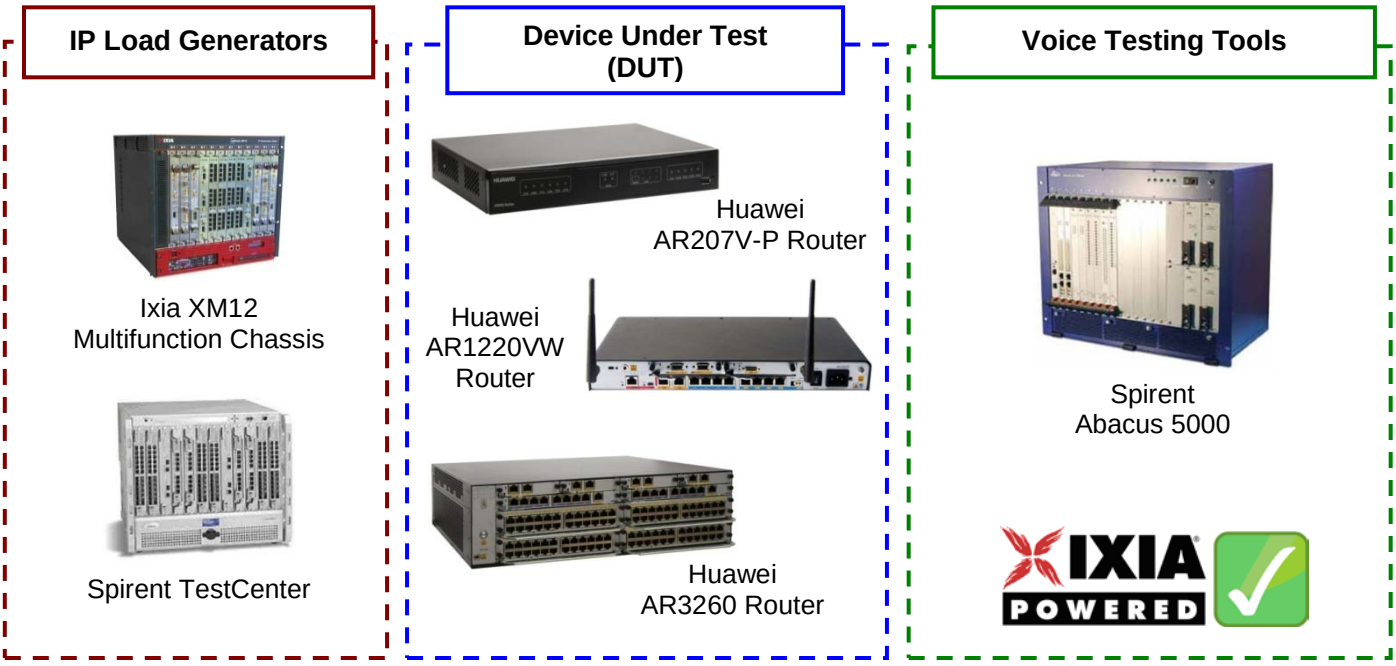
Bottom Line

With complete IPsec functionality, the AR G3 routers provide security for communication and traffic on the network. AR G3 also supports interoperability with third party routers for IPsec tunneling, as well as DSVPN and GRE tunnels.

3G and Wi-Fi cards give the routers wireless Internet access for mobile clients, as well as redundancy in the network. Dual 3G cards give the system added resiliency in the event that one of the 3G cards breaks or becomes disabled while the system is running.

GPON and EPON support allow network administrators greater flexibility in setting up network environments. GPON and EPON can be used to split individual fiber cables to serve multiple locations in the network.

Test Bed Diagram



Source: Miercom, March 2012

How We Did It

The Huawei AR207V-P, AR1220VW, and AR3260 routers were fully evaluated for throughput and IPsec capabilities as well as other performance features. Testing was conducted to verify that each of the features outlined in this report operated as described. Although we tested each individual router, the features in this model are supported on the other devices in the router series making the results applicable for the entire series.

Sections of this test required the use of a traffic generator to evaluate the features of the router. Two different traffic generators were used during the course of the testing, Ixia XM12 running IxNetwork version 5.50.121.48 and Spirent TestCenter running version 3.76.0076.

We used the Spirent Abacus 5000 to generate voice and SIP calls and to stress the voice portion of the router. The Abacus 5000 is capable of testing scalability, voice quality, and load handling.

Miercom recognizes Ixia (www.ixiacom.com) as an industry leader in energy efficiency testing of networking equipment. Ixia's unique approach utilizes coordination of energy measurements with network traffic load – allowing energy consumption to be graphed against network traffic volume. Real-world traffic is generated by Ixia's test platform and test applications, principally IxNetwork for Layer 2-3 routing and switching traffic and IxLoad for Layer 4-7 application traffic.

The tests in this report are intended to be reproducible for customers who wish to recreate them with the appropriate test and measurement equipment. Current or prospective customers interested in repeating these results may contact reviews@miercom.com for details on the configurations applied to the Device Under Test and test tools used in this evaluation. Miercom recommends customers conduct their own needs analysis study and test specifically for the expected environment for product deployment before making a product selection.

Miercom Performance Verified

The access and interconnect performance of Huawei AR Series of routers was verified by Miercom. In hands-on testing, Huawei demonstrated advanced performance features such as:

- Dual 3G uplinks for fully redundant WAN connectivity
- Interoperability proven with Cisco routers for IPsec and GRE tunneling
- AR1200/AR2200/AR3200 series support GPON and EPON for flexible network deployments
- Wireless Internet access using 3G and Wi-Fi

AR207V-P Router

AR1220VW Router

AR3260 Router

HUAWEI

Huawei Technologies Co., Ltd.
http://enterprise.huawei.com

About Miercom's Product Testing Services

Miercom has hundreds of product-comparison analyses published over the years in leading network trade periodicals including Network World, Business Communications Review, Tech Web - NoJitter, Communications News, xchange, Internet Telephony and other leading publications. Miercom's reputation as the leading, independent product test center is unquestioned.

Miercom's private test services include competitive product analyses, as well as individual product evaluations. Miercom features comprehensive certification and test programs including: Certified Interoperable, Certified Reliable, Certified Secure and Certified Green. Products may also be evaluated under the NetWORKS As Advertised program, the industry's most thorough and trusted assessment for product usability and performance.

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