

NETWORK TESTING LABS REVIEW:

DNS, DHCP AND IPAM – INTELLIGENT IP ADDRESSING FOR INTELLIGENT BUSINESSES

WE LOOK AT SIX IP ADDRESS MANAGEMENT PRODUCTS. WHICH ONE IS QUICKEST, MOST SECURE, EASIEST TO USE, OFFERS THE MOST FEATURES AND IS MOST SCALABLE?

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Alcatel-Lucent's VitalQIP earns the Network Testing Labs World Class Award for its quick performance, rock steady reliability, watertight security, useful features, thoughtfully-designed user interface and expansive scalability. And VitalQIP's attractive pricing is yet another reason to take a closer look at Alcatel-Lucent's answer to your need for enterprise-ready IP address management.

IP address assignment and address resolution on a busy network – your network – are two of the last activities for which you can afford bottlenecks, inflexibility, leaky security and poor scalability. Pervasively, without exception, every user on the network is a client of IP address assignment (via DHCP) and resolution (via DNS). Because it affects everyone, occurs myriads of times throughout the day and needs to mesh smoothly and unobtrusively with your network's underlying infrastructure, IP address management is a computing environment activity that has to be quick, reliable, secure and easy to administer.

A really good IP address manager is neither seen nor heard. It quietly, quickly and efficiently assigns dynamic IP addresses to myriads of clients. Always up and running, it's reliable and problem-free. It supports every sort of client in your company, whether desktop or mobile. It's secure enough to keep out the riff-raff as well as ward off any hacker threats, such as a Denial of Service attack. A top-notch IP address manager is intuitive to use – important because network administrators shouldn't have to spend much time configuring it. An IP manager must offer the features you need, must be highly scalable across any size organization and must not cost an arm and a leg.

In our lab or at customer sites, we evaluated six vendors' IP address management products. The six were Alcatel-Lucent's VitalQIP 7.0, International Network Services' (INS) Sapphire 20 Series Appliance, BlueCat Networks' Proteus Enterprise IPAM Appliance and Adonis DNS/DHCP Server, MetaInfo's Enterprise Server Appliance, Efficient IP's IPM 2.2 and Infoblox's model 550 appliance. In our tests, we looked for excellent performance, reliability, security, features, ease of use and scalability.

Alcatel-Lucent's VitalQIP emerged the winner in our comprehensive and grueling tests. VitalQIP is quick, scalable, flexible, feature-rich, secure, easy to administer and affordable. VitalQIP earned for itself the Network Testing Labs World Class award for best enterprise IP address management product.

Performance

Every time a client computer joins the network, either locally or remotely, that client needs the loan of an address from your pool of available IP addresses. To the extent that your DHCP servers are quick, responsive and reliable, your users log on to the network faster and can go about their business with alacrity.

We found VitalQIP to be the quickest at providing clients with dynamic IP addresses (see Table 1). In these tests, a computer program running on multiple clients requested a total of 50,000 IP addresses via DHCP from each product. Other network activity, including file, database and Web server access, took place concurrently with the address assignments, and this background activity was consistently the same for all tests.

	<i>Elapsed Seconds</i>	<i>Leases Per Second*</i>
<i>VitalQIP</i>	36	1,389
<i>Sapphire 20 Series Appliance</i>	42	1,190
<i>Enterprise Server Appliance</i>	49	1,020
<i>Proteus Enterprise IPAM Appliance and Adonis DNS/DHCP Server</i>	55	909
<i>IPM</i>	62	806
<i>Infoblox 550 Appliance</i>	67	746

*50,000 divided by the elapsed seconds value

Table 1. IP address assignment performance.

Nearly every single activity on the network, for every application, begins with a client computer asking a name server to turn a URL into an IP address. The client grinds to a halt if the IP address resolution service has failed. No matter what the application, whether mission-critical business operations, e-mail retrieval, Web site access, database lookup or other function, the client cannot proceed without IP address resolution. Similarly, slow address resolution affects everyone and can be an insidious bottleneck.

Again, tests reveal VitalQIP is the quickest and most reliable. Table 2 shows performance results from running a computer program that bombarded each product with 50,000 URL-to-address name requests and that recorded the elapsed times for each run.

	<i>Elapsed Seconds</i>	<i>Names Resolved Per Second*</i>
<i>VitalQIP</i>	20	2,500
<i>Sapphire 20 Series Appliance</i>	28	1,786
<i>Enterprise Server Appliance</i>	30	1,667
<i>Proteus Enterprise IPAM Appliance and Adonis DNS/DHCP Server</i>	35	1,429
<i>IPM</i>	42	1,190
<i>Infoblox 550 Appliance</i>	44	1,136

*50,000 name requests divided by the elapsed seconds value

Table 2. DNS resolution performance.

Because you choose the power of the server on which you run VitalQIP, it's finely granular across a wide scale of computing environments. In contrast, we found the Sapphire, Enterprise Server, Proteus/Adonis and Infoblox appliances to be not as scalable as VitalQIP. Some of these vendors offer two or three versions of these appliances (INS offers a Sapphire 10 as well as a Sapphire 20). However, the ability to precisely fit and size the better-performing VitalQIP clearly makes it the most scalable.

IPM's slow performance kept it far down in the contention for most scalable IP address manager.

Ease of Use

VitalQIP's user interface is responsive and intuitive to navigate. This is important because network administrators, once VitalQIP is up and running, won't need to constantly babysit its ongoing operation. Making the occasional VitalQIP configuration change, such as adding a new block of available IP addresses, is effortless and quick with VitalQIP's always-know-where-you-are interface.

We also found the Sapphire 20 easy to administer, and its helpful network topology map is a joy to use. Enterprise Server Appliance's user interface is simple to use but was a bit sluggish in our tests. In contrast, working with the Proteus/Adonis, IPM and model 550 appliance user interfaces was a chore that left us wishing the designers had put more thought into usability.

Deploying VitalQIP, the Sapphire 20, the Enterprise Server Appliance or the model 550 is easy and consists simply of telling the address manager about your IP address pools, your client computers and your network. IPM required somewhat more effort to get up and running. The combination of Proteus and Adonis machines similarly required more effort to install.

Both VitalQIP's and Sapphire 20's documentation sets are clear, comprehensive and easy to follow. Enterprise Server Appliance's documentation, we found, doesn't adequately explain the relationship between administrative actions and the resulting effects on the server's behavior. The model 550's documentation is just too brief, as was the Proteus/Adonis documentation, while IPM's manuals appear to suffer some French-to-English language barrier issues.

Conclusion

Finely scalable from small networks up through high volume environments needing high performance and high availability, VitalQIP excels at managing a corporation's pool of IP addresses, no matter what kinds of client computers are on the network. As icing on the cake, VitalQIP even has a pricing option that allows you to pay not for the administration of a block of 5,000 or 50,000 addresses but rather for just those addresses you actually use.

We think Alcatel-Lucent's answer to IP address management is well worth a closer look.

Testbed and Methodology

Our test environment consisted of six routed Fast Ethernet subnet domains and a T-1 Internet connection. The Internet link let us perform massive zone transfers and other large-scale IP address operations, but most of our testing was local. Each subnet's 50 client computers were a mix of Windows 2000 Professional, NT Workstation 4.0, Windows 98, Windows ME, Windows XP, Red Hat Linux 7.0 and Macintosh platforms. The relational databases on the network were Oracle 8i, Sybase Adaptive Server 11.5 and Microsoft SQL Server 2000. Windows Advanced Server shared files, while Internet Information Server (IIS), Netscape and Apache software served up Web pages.

We ran Alcatel-Lucent's VitalQIP and Efficient IP's IPM server software components on a 4-CPU Compaq ProLiant ML570 900 MHz computer with 2Gb of RAM and six 18Gb SCSI RAID-5 drives. The operating system was Windows 2003 Advanced Server. The other products were pre-installed on network appliances.

We tested the products' ability to dynamically distribute large quantities of IP addresses, equate IP addresses to host names, register IP addresses in directory/name resolution services and flexibly maintain a useful repository of IP addresses and host names. We also evaluated the products for scalability, security, ease of use and any special features each offered.

To simulate a high volume of DNS/DHCP requests, we ran several concurrent instances of a C++ program that issued both valid and invalid DHCP-DISCOVER messages. To test performance, we measured how quickly each DHCP server responded to 50,000 IP address requests. We also moved clients from one subnet to another, gave unique values to the DHCP client ID field and assigned different values to the user class ID and vendor class ID DHCP parameters to see how the DHCP servers responded.

DNS/DHCP Report Card

Grade scale is A through F, with F = Failing and A = Perfect

	Performance	Ease of Use	Features	Scalability	Security	Installation & Documentation	Total Score
Alcatel-Lucent VitalQIP 7.0	A	A	A	A	A-	A	A
International Network Services Inc. (INS) Sapphire 20 Series Appliance	B	A	A	C+	B	A	B
BlueCat Networks Proteus Enterprise IPAM Appliance Adonis DNS/DHCP Server	C	C	B	C	B	C	C+
MetalInfo Enterprise Server Appliance	B	B	B	C	A	B	B-
Efficient IP IPM 2.2	C	C	C	D	C	D	C-
Infoblox 550 Appliance	D	C	B	C	B	C	C

About the Author

Barry Nance is a networking expert, magazine columnist, book author and application architect. He has more than 29 years experience with IT technologies, methodologies and products. Over the past dozen years, working on behalf of Network Testing Labs, he has evaluated thousands of hardware and software products for ComputerWorld, BYTE Magazine, Government Computer News, PC Magazine, Network Computing, Network World and many other publications. He's authored thousands of magazine articles as well as popular books such as *Introduction to Networking (4th Edition)*, *Network Programming in C* and *Client/Server LAN Programming*.

He's also designed successful e-commerce Web-based applications, created database and network benchmark tools, written a variety of network diagnostic software utilities and developed a number of special-purpose networking protocols.

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