

Strategy to Compete Against Juniper's Claim of a Single Operating System

Competitive Strategy Overview

This document provides details on how to neutralize Juniper's claims that Juniper has a single operating system and Cisco has multiple operating systems. It is worth noting that Juniper made this claim after the launch of the Cisco® ASR routing products.

The original article can be found at <http://www.networkworld.com/news/2008/030708-juniper-q-a.html>.

COMPETITIVE STRATEGIES

Despite Juniper's claims, it does not have a single operating system. Following is a list of Juniper's operating systems and the products that each applies to:

- **JUNOS:** for M, T, MX, and J series/SSG300M/SSG500M
- **JUNOS ES (Enhanced Services):** for J-series/SSG300M/SSG500M
- **ScreenOS:** for SSG and NS products
- **JunOSe:** for the ERX and E series
- **IVE OS:** for the "Secure Access" (SSL VPN) product line
- **NetScreen-IDP:** for the dedicated IDP appliances
- **WXOS:** for the WX series (formerly Peribit)
- **CTP software:** for the CTP series (formerly Acorn)
- **Non-Juniper software:** for the Security Threat Response Manager (STRM); Juniper has an OEM agreement with Q1 labs

A single OS does not imply ubiquitous feature coverage.

Juniper's documents reveal several feature limitations. For example, the M120 just received feature parity with the M320 last November, with JUNOS 8.5, even though the M120 had been shipping for over a year. But with JUNOS 9.0 the M120 lost feature parity: U-ISSU isn't supported on the M120 but is supported on the M320.

Key Juniper OS Statements

The following presents the article text, with the green box representing Cisco's position on each statement.

Juniper founder: Cisco has too many operating systems.

– Juniper CTO Pradeep Sindhu says primary focus on making Juniper's products more scalable

By Jim Duffy, *Network World*, 03/07/2008

It's perhaps no small coincidence that Cisco makes a major announcement just days before Juniper does or hosts an important event. The day before Juniper unveiled its EX line of Ethernet enterprise switches last month, Cisco introduced its new data center switch, the Nexus 7000. This week was no different, as Cisco unveiled its next-generation ASR1000 edge routers just as Juniper held its annual analyst conference in Southern California. Network World Managing Editor Jim Duffy stole some of Juniper CTO and founder Pradeep Sindhu's time at the conference to gauge his thoughts on Cisco's new router as well as a range of other topics.

Jim Duffy: What is your impression of Cisco's ASR 1000 router?

Let me just make one broad characterization. In sharp contrast to what Juniper tries to do—which is to have a single operating system, consistent architecture—our competition seems to specialize in producing a new operating system with each product line. And this doesn't serve the customer well. We try to have a consistent single operating system and a single unified architecture for two reasons: internally (at Juniper), it is tremendously efficient because we get to solve difficult problems once rather than solving them over and over again; from a customer's standpoint products appear to be consistent and are consistent, so they are a lot easier to use. When we add functionality to the operating system, we integrate it in. We don't sort of patch it on the side. But I'm much more comfortable talking about what Juniper does rather than what our competitors do.

Cisco Position: Juniper avoids the question, as Juniper does not currently offer a competitive product. Cisco innovations have culminated in the Cisco Nexus 7000 Series Switches and the Cisco ASR 1000 Series Aggregation Services Routers. Both systems bring new capabilities to their respective markets. The ASR is a revolutionary services router with industry-leading network processor technology that has been developed with customers demands in mind. *(The workhorse behind the Cisco ASR 1000—and a pillar of innovation—is the new Cisco QuantumFlow Processor, one of the world's most advanced pieces of networking silicon and the industry's first fully integrated and programmable networking chipset. The Cisco QuantumFlow Processor is made up of 40 cores on a single chip capable of performing up to 160 simultaneous processes.)* Juniper does not currently offer a product that can compete with these features in a single device.

Juniper's strategy, by comparison, is to construct every device for every purpose on top of the JUNOS operating system. The success of the Cisco integrated services router over the Juniper J-series router proves that customers are overwhelmingly choosing the Cisco approach. J-series routers have generated approximately \$76 million in revenue since their introduction in 2005, whereas revenue for the Cisco ISRs is approximately \$8.9 billion. (Source: Dell'Oro Access Router revenues for Juniper and Cisco for 2005, 2006, and 2007)

Jim Duffy: OK, but how can your competitors remain successful if they keep coming out with multiple operating systems that increase complexity and inconsistency?

A single operating system is a need that our customers are telling us they have. They do not like the fact that they have to read manuals this thick to figure out what release of the operating system works with which particular product and products, and what the combination of limitations are that are imposed by particular subsets of the products that they are using. That becomes very complicated. Much of this is reflected in operational cost increasing for the customer.

Cisco Position: The specific question was not answered. Cisco is successful because we keep building what customers need. Is there room for improvement? Cisco continues to listen to customers and is doing its best to implement their ideas. Cisco constantly strives to improve its products and customer solutions. Customers are purchasing Cisco solutions because they help customers meet their business goals.

Jim Duffy: Where does Juniper have to go with its product line, operating system, ASICs to address next-generation data center and infrastructure opportunities?

The primary place we have to go to is larger scale. [Also, the] interaction between computing and storage and the network is going to become very important.

Cisco Position: Scalability is good but is only one part of meeting customer requirements. Juniper has not implemented distributed processing features in JUNOS similar to those in Cisco IOS® XR Software. And Juniper has yet to introduce a core routing solution that can match the Cisco CRS-1 in scalability beyond a single chassis. Many customers are looking for scalability but are also looking for other key features, such as integrated services, flexibility, resilience, and performance, and they are also seeking to reduce their carbon footprint. Within the data center, customers require all of these capabilities, as well as scalability.

The Juniper Control System 1200 is a very important product. It begins to address the scaling aspects of the control plane. One of the issues we had seen is that if you try to put the control plane into the router—and traditionally we've done that, our competition has done that—one of the issues you end up with is that as computing power has increased trying to fit it into a predetermined form factor becomes challenging over time. So the ability to go to a standards-based platform and be able to have both the latest microprocessor technology, be able to integrate it as fast as the technology is changing in the market, and to be able to have storage inside the same platform is of tremendous benefit to the scaling of the control plane.

Cisco Position: The JCS 1200 is similar in implementation to the pioneering Cisco CRS-1 with Director Response Protocols (DRPs) introduced three years ago. Not only can the Cisco CRS-1 scale the control plane with hardware-segmented secure domain routers (SDRs), it can also scale the control plane processing by dedicating processors to particular activities (such as Border Gateway Protocol [BGP]). The JCS 1200 is limited in this area, as JUNOS was purpose-built for the M40 in the 1990s and was not designed for the core to support distributed processing.

The other thing to recognize is, along with the announcement of the JCS 1200, is the announcement of the [software developer's kit]. The SDK is designed to open JUNOS so that partners and customers can add value themselves rather than rely on every line of code being written by Juniper.

Jim Duffy: Does Juniper plan to support or integrate Provider Backbone Transport (PBT) in its MX960 Carrier Ethernet switches? {Editor's note: PBT is a Nortel-developed derivative of the Ethernet standard intended to bring connection-oriented characteristics and deterministic behavior to Ethernet.}

PBT is actually a replication of much of the functionality that is inherent in MPLS. But we will listen to our customers. If our customers truly believe that this is the capability that they want, we will implement it.

Cisco Position: Cisco actively developed Tag Switching, the predecessor to Multiprotocol Label Switching (MPLS), and did so based on our experience constructing some of the largest networks in the world. Cisco listens to customer demands and implements them as the supporting technologies become available

Jim Duffy: Do you see certain applications—say, in the metro area—where PBT is more beneficial than MPLS?

I personally don't. PBT is essentially a different implementation of all of the MPLS concepts, with the exception that it is done over Ethernet encapsulation as opposed to over MPLS encapsulation. So that is not a substantive difference. What is painful to see is that if we do actually have to do this we will be replicating functionality, which is unnecessary.

Jim Duffy: In the enterprise market with your new EX switching line, what specifically is Juniper doing differently than all of Cisco's other competitors that haven't been able to gain more than 5% market share?

The Ethernet market is now going on 25 years, maybe 30 years. Ethernet has evolved a lot. Many of the companies that have been in the market for a long time, the operating systems that they have, the code and the implementation that they have reflect the total history of Ethernet along the way. And the same thing that happened in the IP world where, when Juniper came in routers were already a decade old. But we did not have to pay attention to the multi-protocol world that routers had traveled to. The same way when we entered the switching market we don't have to care so much about every detail of the place where Ethernet had been. So our implementation will be a lot cleaner, they can be a lot meaner, and by having the feature set match the current needs as opposed to what the needs were along the way, I think our implementation is going to be advantaged. They can be much more reliable, much more scalable, secure and they can be high performance.

Cisco Position: Juniper entered the LAN switching market with products built on the latest shipping merchant silicon. When building a product that is based on merchant silicon, it is difficult to develop innovative features that customers need. This means that every time a new array of silicon application-specific integrated circuits (ASICs) is delivered to the market, Juniper will be forced to release a new iteration of its switches. Other switch manufacturers are already taking this action. 3Com, HP ProCurve, Extreme, Nortel, and Foundry all use ASICs that are the same as or

similar to those Juniper uses. Juniper may tout its single operating system; however, most customers look at switching products based on their needs. In some cases they are looking for a simple checklist of features and make purchase decisions based only on these features. Juniper may end up as another vendor claiming similar switch features with limited differentiation beyond brand and price. Cisco, by contrast, has developed its own silicon ASICs and therefore has the ability to listen to and respond to customer requirements quickly. Customer support is another area in which having silicon we have developed ourselves is an asset. Should a customer experience a fault in the function of one of the features in a Juniper switch, the customer may need to wait for the merchant silicon company to fix the problem in the next ASIC iteration.

Jim Duffy: Will the NetScreen VPN and firewall products eventually go the way of the Kagoor session border controllers and Redline DX application accelerators you acquired, and be integrated into Juniper routers?

All the functionality of firewalls and deep packet inspection is actually being rewritten on top of JUNOS. That effort, which is now going on two-and-a-half years, is well along on its way. Of course we will support the NetScreen products for a long time. But all of the new development will be on JUNOS. We're going to replace ScreenOS with JUNOS. This, we believe, is absolutely the right way to do it. I don't want to give any time frames, but our effort is well along on its way.

Cisco Position: Customers do not have the luxury of waiting for companies to integrate their acquisitions. They are looking for products that deliver integrated services today, and although Juniper claims that they are "well along" in the integration of security into their routers, their capabilities are limited. Customers are requesting Wide Area Application Services (WAAS), WLAN, LAN switching, and voice and security features to be integrated and ready for deployment today.



Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV
Amsterdam, The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at www.cisco.com/go/offices.

CCDE, CCSI, CCENT, Cisco Eos, Cisco HealthPresence, the Cisco logo, Cisco Lumin, Cisco Nexus, Cisco Nurse Connect, Cisco Stackpower, Cisco StadiumVision, Cisco TelePresence, Cisco WebEx, DCE, and Welcome to the Human Network are trademarks; Changing the Way We Work, Live, Play, and Learn and Cisco Store are service marks; and Access Registrar, Aironet, AsyncOS, Bringing the Meeting To You, Catalyst, CCDA, CCDP, CCIE, CCIP, CCNA, CCNP, CCSP, CCVP, Cisco, the Cisco Certified Internetwork Expert logo, Cisco IOS, Cisco Press, Cisco Systems, Cisco Systems Capital, the Cisco Systems logo, Cisco Unity, Collaboration Without Limitation, EtherFast, EtherSwitch, Event Center, Fast Step, Follow Me Browsing, FormShare, GigaDrive, HomeLink, Internet Quotient, IOS, iPhone, iQuick Study, IronPort, the IronPort logo, LightStream, Linksys, MediaTone, MeetingPlace, MeetingPlace Chime Sound, MGX, Networkers, Networking Academy, Network Registrar, PCNow, PIX, PowerPanels, ProConnect, ScriptShare, SenderBase, SMARTnet, Spectrum Expert, StackWise, The Fastest Way to Increase Your Internet Quotient, TransPath, WebEx, and the WebEx logo are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the United States and certain other countries.

All other trademarks mentioned in this document or website are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (0903R)