

Building the Next-Generation IX Infrastructure with Juniper Networks



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Next-Generation IX Consortium

The Next-Generation IX Consortium is a project that was formed in Japan to research and implement the Next-Generation Internet Exchange (IX). Its primary aim is to provide interoperability between ISPs through the use of MPLS in an INTER-DOMAIN environment. Some 70 organizations make up the consortium, which was founded as part of the R&D initiative by the Japanese Ministry of Public Management, Home Affairs, Posts and Telecommunications.

IX is the technology employed to interconnect autonomous networks, and as such it plays a key role in traffic exchange between ISPs. As broadband technology has progressed and come into widespread use, traffic volume has grown exponentially. To efficiently and securely process high-speed and large-volume traffic on the Internet, Next Generation IX is applying Multi-Protocol Label Switching (MPLS) technology to IX. The consortium has selected Juniper Networks M-series Internet Routers as the core routers of their test network, with support from Nissho Electronics.

Applying MPLS Technology to IX

Research and development in the application of MPLS technology to the IX first began as an international project in March 1999. Because no product was then available for the research, MPLS routers were devised using ATM switches and PCs, and were run on Japan Gigabit Network (JGN). But by 2000, router vendors worldwide were arriving at MPLS, and the Next Generation IX Consortium was formed to begin testing the new IX technology. Included in the consortium were researchers from academia and business, carriers, ISPs, manufacturers of information and communication devices, and content providers.

NGIX conducted function and interconnection tests of MPLS routers, and reviewed the results from the standpoints of both MPLS-IX providers and users. Concluding that the IX demonstration test network should be deployed nationwide in Japan, NGIX next undertook side-by-side evaluation of various routers from vendors worldwide. They were seeking a carrier-class routing platform that could deliver high-speed routing and uncompromising performance. Their definitive choice was Juniper Networks M-series Internet routers.

Juniper Networks Supplies Mature Technology and Interoperability

"We selected Juniper Networks M-series routers because their proven technology and interoperability represent an excellent fit with our technical requirements," says NGIX spokesman Hiroshi Esaki, a professor at the Graduate School of Information Sciences and Technology at Tokyo University.

The test network is deploying Juniper Networks M20 and M10 Internet Backbone Routers to provide reliable IP traffic forwarding across its core and edge networks. By capitalizing on the software and ASIC-based packet processing features inherent in the M-series platform, the test network has the

advanced capabilities, scalability, and wire-speed routing performance necessary to handle hundreds of thousands of Internet traffic exchanges between Japan's ISPs.

Outstanding Technical Support Proves Critical

Technological problems can naturally be expected to occur in the demonstration test network for a new technology. Vendor response time becomes critical, particularly in a nationwide network. For that very reason, Esaki notes, technical support was an important factor in the consortium's choice of vendor. So far, they have not been disappointed.

"We are impressed by the outstanding technical support we have received from Juniper and their reseller, Nissho Electronics. We are confident that we have chosen partners who can support the successful rollout of our IX infrastructure," he says.

Counting on the Continued Involvement of Juniper Networks and Nissho Electronics

NGIX is building one of the most innovative next-generation core structures developed to date. MPLS-IX technology will soon take the first step toward commercial use, and other kinds of advanced IP capabilities, such as QoS and IPv6, are already anticipated.

The consortium is looking to Juniper Networks and Nissho Electronics to take charge of routing and support for MPLS-IX. With a nod toward internationalism in the research and development community, Esaki expresses his hope that young Japanese engineers will be able to join in the vendors' future development efforts in MPLS-IX. "We were very lucky," he says, "to have had top-ranked overseas vendors join in the beta code stage of this project."



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