

# STATE OF MARYLAND INCREASES COMMUNITY DEVELOPMENT USING BROADBAND STIMULUS

## Summary

**Company:** State of Maryland

**Industry:** Government

**Challenge:**

- Increase performance, capacity, and scale of public sector network
- Meet increased demands for video, voice, and subscribers
- Expand high-speed broadband access to rural areas

**Selection Criteria:** High-performance, carrier-class solution for the network core to support a statewide 10GbE network.

**Network Solution:**

- MX480 3D Universal Edge Router
- MX80 3D Universal Edge Router

**Results:**

- Delivers affordable, high-performance network services
- Creates significant economic and quality-of-life advantages for the community
- Supports greater use of video and prepares for cloud services
- Simplifies operations to reduce OPEX

In Maryland, state, county, and municipal government agencies and departments, public libraries, K-12 schools, and higher education share a common high-speed network infrastructure, called networkMaryland; and it provides affordable, high-speed bandwidth for public sector use. The state is expanding networkMaryland as well as building out the One Maryland Broadband Network, which will link more than 1,000 government facilities and community anchor institutions and interconnect other broadband networks in the state. As a result, the State of Maryland will provide faster connectivity and advanced services to more state agencies, counties, and K-12 school districts, and it will support more video and collaborative applications.

## Challenges

"As a service provider for the State of Maryland and the government within Maryland, we are seeing a lot of new applications on the network," says Greg Urban, deputy chief information officer, State of Maryland Department of Information Technology. "Video from public safety and intelligent transportation applications has been a major driver of network usage, and we needed a network that could support high bandwidth real-time traffic."

A network's role in ensuring public safety, opening access to government, and improving public education should not be underestimated as mere plumbing. A high-performance network can create a significant advantage for a community by bringing educational, public safety, and health resources to citizens in the furthest corners of the state, which in turn creates economic and quality-of-life advantages.

networkMaryland plays a vital role in ensuring public safety. For example, the state's emergency operations center makes incident management and mapping tools available to all counties and municipalities over the high-speed statewide network. Police can improve situational awareness during traffic stops by accessing motor vehicle databases to identify stolen cars, check terrorist watch lists, or view Amber alerts. Intelligent transportation systems on the state's highways can read vehicle registration plates and compare the number to selected federal or state databases.

While the State of Maryland already has significant broadband services coverage, many citizens and businesses in rural areas do not have access to high-speed Internet. To remedy the disparity between metropolitan and rural communities, the One Maryland network is bringing broadband access to rural areas with a grant from the American Reinvestment and Recovery Act Broadband Stimulus Plan.

With a pervasive high-speed network, schools, no matter where they are located, can tap into educational resources at University System of Maryland, support distance learning, and conduct virtual field trips, thereby improving access to high-quality education. "This network can level the playing field," says Urban. "We can provide communities access to the same resources whether they're the richest or poorest communities in Maryland."

## Selection Criteria

"In the past, every application got its own network, and you ended up with multiple weak networks," says Urban. "We want to build the best core network that everyone can benefit from."

Juniper Networks' high-performance routers have been an integral part of networkMaryland since its inception in 2003. When the Department of Information Technology wanted to increase network capacity and extend services to new locations, it continued to rely on Juniper solutions. The State of Maryland selected Juniper Networks® MX Series 3D Universal Edge Routers because of their rich routing features, high availability, and operational efficiency that comes from the consistency of Juniper Networks Junos® operating system.

## Solution

With the addition of the Juniper MX Series 3D Universal Edge Routers, the capacity of networkMaryland will increase fourfold to 10 Gbps. In the initial phase, the Baltimore and Annapolis metropolitan area networks were upgraded to 10GbE as were four major points of presence across the state. As part of the network build-out, the SONET network will be retired in favor of a pure IP network, allowing the Department of Information Technology to sunset remaining legacy services such as ATM. Moving networkMaryland to a pure IP network will increase service flexibility, lower operational expenses, and make it easier to connect customers.

MX Routers support the advanced network services and applications on networkMaryland. MX Series routers provide maximum scale and intelligent service delivery. They offer powerful Junos OS routing features with no performance compromise, including traffic segmentation and virtualization with MPLS, ultra low latency multicast, and comprehensive security.

MX480 routers are used for the MPLS network core. networkMaryland has a long history of using MPLS to segment traffic from its different customers, including public sector agencies, departments, and schools. networkMaryland uses MX80 routers to aggregate customer traffic at the provider edge.

With low-latency IP multicast running on the MX Series routers, the State of Maryland can efficiently distribute high-definition video for distance learning and public safety surveillance, as well as support its intelligent transportation system of cameras and speed sensors. IP multicast allows the state to deliver video efficiently and with the low latency that's essential to a quality user experience.

To ensure dependable service to its customers, networkMaryland takes advantage of the many high availability capabilities of the MX Series routers. The MX Series delivers carrier-class reliability and high availability features that include graceful restart, nonstop routing (NSR), fast reroute, unified in-service software upgrade (unified ISSU), and virtual private LAN service (VPLS) multihoming.

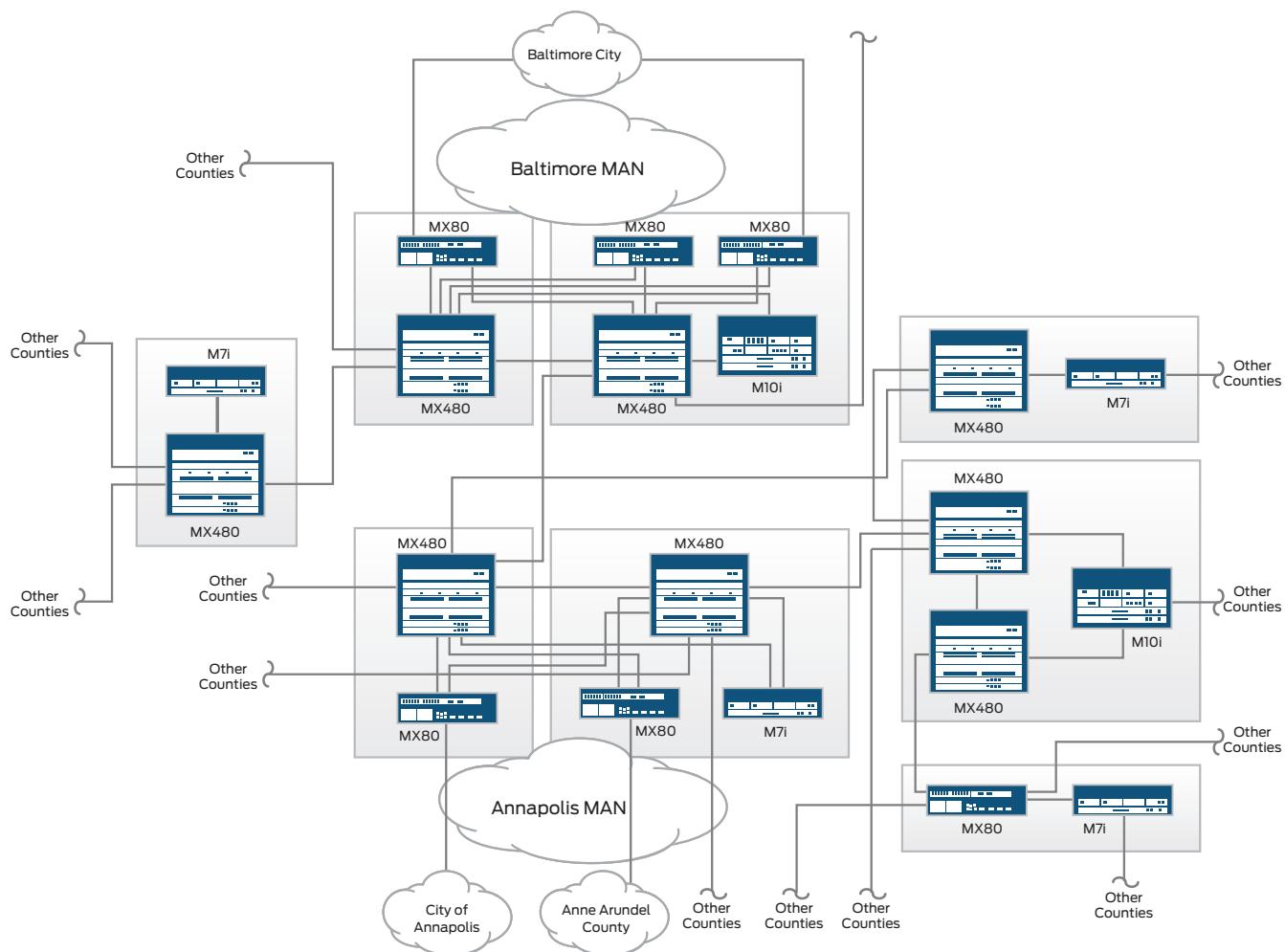


Figure 1: Partial view of One Maryland Broadband Network and Statewide Government Intranet (SwGI)

Junos OS provides a consistent operating environment that streamlines network operations and improves the availability, performance, and security of all types of services on networkMaryland. "My engineering staff likes the consistency of Junos operation system. They love that every device that they touch has a consistent interface and syntax," says Urban. "So instead of having to be experts in different models of products, they can focus on how the network works. That results in greater operational efficiency and less operator error."

**"We built a high-performance, highly reliable network and made it available to our constituents to improve transportation, public safety, and education. With the new network based on the MX Series routers, we can continue to improve the network to meet the needs of our community and improve quality of life."**

Greg Urban,  
Deputy CIO, Department of Information Technology,  
State of Maryland

## Results

"We built a high-performance, highly reliable network and made it available to our constituents to improve transportation, public safety, and education," says Urban. "With the new network based on the MX Series routers, we can continue to improve the network to meet the needs of our community and improve quality of life."

Ultimately, Urban sees his department as fostering collaboration among state agencies and the community. "All of the folks on the network can use it as a springboard for their own purposes. At the end of the day, it's great to offer the service and see what other people will use it for," he says.

Urban predicts that the different entities will be able to offer services to each other over the network. State agencies, departments, or schools can offer services of their own across the statewide network to others in the Maryland public sector. For example, Maryland public television can broadcast its video and educational content to K-12 schools, or University of Maryland

can offer distance learning classes to high school students in the state. "We're going to see subscribers developing services for other subscribers because we're all in this together," says Urban. "It's an opportunity to coordinate problem solving and efforts."

In the meantime, networkMaryland is meeting K-12 school districts' exploding demands for educational video, bandwidth, and Internet2 connectivity. The Department of Information Technology also plans to consolidate and move the state's voice systems to the network, which will reduce telecom costs and modernize its communications. It is also looking to consolidate the public safety wireless broadband network onto networkMaryland, which will create even greater efficiencies.

Maryland's Department of IT has had an ongoing positive relationship with Juniper Networks. "Juniper does a great job of focusing on our unique set of needs," says Urban. "There's good back and forth, and the sales are low pressure. When we have the inevitable issue, they support us and get us through the storm at the moment."

## Next Steps and Lessons Learned

With a highly reliable 10GbE infrastructure from Juniper, networkMaryland has the performance, scale, and capacity to meet its customers' requirements today—and to forge a clear path to cloud services tomorrow. "We think that cloud services, whether storage or computational resources, will be a driver for our network in the next two to three years," says Urban. With the MX Series and the scalable virtualization services at its heart, networkMaryland will be ready to deliver cloud services to its constituencies.

## For More Information

To find out more about Juniper Networks products and solutions, visit [www.juniper.net](http://www.juniper.net).

## About Juniper Networks

Juniper Networks is in the business of network innovation. From devices to data centers, from consumers to cloud providers, Juniper Networks delivers the software, silicon and systems that transform the experience and economics of networking. The company serves customers and partners worldwide. Additional information can be found at [www.juniper.net](http://www.juniper.net).

### Corporate and Sales Headquarters

Juniper Networks, Inc.  
1194 North Mathilda Avenue  
Sunnyvale, CA 94089 USA  
Phone: 888.JUNIPER (888.586.4737)  
or 408.745.2000  
Fax: 408.745.2100  
[www.juniper.net](http://www.juniper.net)

### APAC Headquarters

Juniper Networks (Hong Kong)  
26/F, Cityplaza One  
1111 King's Road  
Taikoo Shing, Hong Kong  
Phone: 852.2332.3636  
Fax: 852.2574.7803

### EMEA Headquarters

Juniper Networks Ireland  
Airside Business Park  
Swords, County Dublin, Ireland  
Phone: 35.31.8903.600  
EMEA Sales: 00800.4586.4737  
Fax: 35.31.8903.601

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