

<http://www.gummadi.net/ajay> : Ajay Gummadi

List of awards won.



This story appeared on Network World at

<http://www.networkworld.com/allstar/2006/092506-automated-change-management-bnsf-railway.html>

Automating the management freight

A railway's network overhaul begins with automation and saves \$600,000.

By [Beth Schultz](#), Network World, 09/25/06

NETWORK MANAGEMENT ALL-STARS

[BNSF Railway](#) | [Evolution Benefits](#) | [PHH Mortgage](#) | [Priceline.com](#) | [Wilson & Company, Engineers and Architects](#)

BNSF Railway prides itself on its 150-year history. That a historic transportation company has become a modern, agile shipping giant has much to do with its sophisticated use of network-management technology.

BNSF Railway has embraced automated management processes to handle changes across thousands of network devices. Without such automation, the company's efforts to revamp both its [wireless](#) and wired infrastructures would derail, says Greg Britz, manager, Technology Services, for the Fort Worth, Texas-based railway.

"Engineering needs a consistent way of configuring and managing devices systemwide. Up to this point, configuration had been a manual process. We had manuals and guidelines, but any error could occur," he says. "An automated tool helps keep configurations consistent across platforms."

BNSF Railway earns distinction as a 2006 Enterprise All-Star for its adoption of automated change and configuration management, using Opsware's Network Automation System, and for applying the technology in massive network upgrades. BNSF Railway

<http://www.gummadi.net/ajay> : Ajay Gummadi

List of awards won.

reports an expected \$600,000 in cost savings over three years, on its Opsware investment of \$295,000.

Configuring the wireless net

On the wireless side, the network team has been using Opsware to run automated configuration management as part of a \$2.5 million, two-year [Wi-Fi](#) network migration to a centralized switch architecture. Through the project, BNSF Railway is doubling the number of wireless switches, up from a dozen, and making sure each switch runs the same operating system version, says Mike Garrett, senior systems engineer with BNSF Railway.

The network team has been able to download the operating system image to all IP routers and switches - Aruba Networks' Mobility Controllers - en masse in a process that took about five minutes. "It's a mouse click, a push and a boot," Garrett says. Prior to using Opsware, the team could handle configuration upgrades remotely but individually in a process that took 30 minutes per switch, he adds.

The project, which is nearly complete, also entails upgrading 600 legacy Cisco access points, Britz says. Because of the automated management processes, he adds, "this has been a breakout year for us with wireless."

Automated change for the wired net

On the wired side, BNSF Railway has been using the Opsware autodiscovery function to scan its infrastructure and input the IP addresses of 600 [routers](#) and 2,500 hubs and switches into the change-management system.

"The features available in this type of configuration management tool provide BNSF with multiple automated resources to manage a complex network," says Clint Wise, [WAN](#) analyst for the railway.

For example, the tool assigns a primary management IP address for each device, and automatically de-duplicates devices it has discovered via multiple IP addresses. Once a device's configuration information is recorded in the Opsware system, any change to that switch or router triggers a change notification process that ends with an alert for



"Having [the Opsware] policing device solidifies our configurations and the stability and reliability of the network." - Greg Britz, manager, technology services, BNSF Railway, with project team members Clint Wise, left, and Mike Garrett.

<http://www.gummadi.net/ajay> : Ajay Gummadi

List of awards won.

centralized maintenance personnel. Those staff members confirm or deny the change once they review the potential network impact. The Opsware system maintains the change history, should a rollback be required, Garrett says.

The network team also has set up device templates to make sure each configuration change complies with network policies. The Opsware software checks a device's configuration against the template, and if it is out of sync, sends out a notice describing the noncompliance, Garrett says.

Once all devices have been input into the Opsware system, the network team will be able to undertake its planned \$13 million, three-year infrastructure overhaul, Britz says. It will use the Opsware tool to push out configuration updates across switches and routers. Britz expects the autodiscovery process to be complete by the end of September, and the overhaul to begin shortly thereafter.

"With Opsware," Britz says, "we [will] be much more efficient. We'll be handling configuration updates in milliseconds compared to minutes or hours when configuring by hand."

All contents copyright 1995-2007 Network World, Inc. <http://www.networkworld.com>