

European Telecommunications Provider Turns to Infosim for Cross-Platform Network Configuration Management

Executive Summary

Managing large, distributed networks is a challenge from a number of perspectives. But organizations that have chosen and deployed networking equipment from multiple manufacturers have some of the greatest challenges. While monitoring and assurance has long been solved for these environments, consistent management of configurations across multi-vendor networks has been and continues to be much more difficult. The common historical approach, using element managers from each manufacturer, translates into piecemeal practices and inconsistent configuration policy adherence and controls. The eventual result is often configuration mismatches, leading to non-compliance, network degradation, and even service-impacting downtime. This ENTERPRISE MANAGEMENT ASSOCIATES® (EMA™) case study examines how one European telecommunications provider implemented Infosim StableNet to simplify and consolidate its configuration management needs across a multi-vendor network environment, creating consistent configuration policies across all networking devices, and achieving greater overall network stability along with more efficient/reliable operational management processes and workflows.

HIGHLIGHTS

Vendor name: Infosim

Product name: StableNet

Product function: Network Fault & Performance Management, Network Configuration Management



Managing Network Device Configurations

In large organizations, whether service provider or enterprise, network management is an essential aspect of planning and operations, requiring both disciplined management practices and procedures as well as advanced management tools and technologies. Anything less than a focused, rigorous approach to assuring both network availability and performance means that the network cannot truly and reliably play its essential role – delivering applications and services to end users, subscribers, and customers. The interconnected and interdependent nature of network engineering and operations also requires management practices and tools to be adapted to fully cover all aspects of the lifecycle, ideally in an integrated, converged fashion.

One particular network management discipline that has remained an area of challenge and concern over time is consistent, repeatable management controls over changes and configuration of networking devices – particularly when those devices have been sourced from more than one equipment manufacturer. Each network equipment vendor will supply standalone Element Management Systems (EMSs) that are specific to its own equipment. EMSs commonly provide complete configuration management features for their covered/support elements, but no visibility or control over configuration of devices from other vendors. Without huge investments in procedural policy compliance and customized systems integration, this leaves gaps in continuity and consistency. Further challenges arise when, once deployed, changes are made to device configurations during the course of normal operations. Keeping up with “as is” versus “as designed” can be an essential aspect of recognizing when those changes contribute to instability and degradation issues, and to understanding how to correct incidents once they occur.

Infosim offers StableNet, a network management solution that provides cross-vendor configuration management in addition to network fault, event, and performance management. StableNet has been embraced and deployed by both service providers as well as large enterprise network teams for multiple purposes, sometimes to meet needs for a single management discipline area and sometimes to cover several on an integrated basis.

Case Study: Multi-Vendor Network Configuration Management

While the challenges and objectives of network configuration management are well known and largely self-evident, the real test is in how well actual operations and engineering professionals have been able to meet and surmount them. Following is a case example of a European telecommunications services provider that sought a consistent multi-vendor approach to managing network configurations, and found success by deploying StableNet from Infosim. EMA spoke with a network engineer in charge of planning and production for the provider's MPLS services network.

The Challenge

The communications provider was facing challenges with operational costs and efficiency, and decided to outsource network monitoring as well as provisioning of new and updated subscriber services. While this transition was successful in most respects, a steadily recurring series of service quality incidents became apparent and was subjected to a deeper analysis. The underlying root cause of the incidents was traced to a finding that not all network device configurations were compliant with engineering policy guidelines. Essentially, changes that were made to correct service incidents as well as to add, remove, or update services were causing "configuration drift" from expected state, ultimately resulting in instability and less-than-optimal performance.

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The provider's team realized that they lacked a complete and consistent view of configurations across all network devices and, as a result, had no means of consistently managing or enforcing device configuration policies. Adding to the dilemma was complexity of their deployment environment, which included over 10,000 network elements from multiple vendors including Juniper, Cisco and Huawei. A mix of EMS and open source configuration tools were being used that did not interoperate or share information, contributing to the lack of consistency. The team decided it would have to rethink its approach to managing and monitoring device configurations, and would seek a single management system could accommodate multiple vendor devices to gather configurations, check them for compliance, and correct them when and where necessary.

The Infosim StableNet Solution

Following a review and evaluation of choices, the provider team chose Infosim StableNet for packet-switched element and network management, and has been using the solution for approximately one year to manage its MPLS backbone. The primary driver for choosing StableNet was its proven, flexible, cross-platform network configuration management capabilities.

Infosim StableNet now provides a single view across the entire MPLS backbone, enabling the network engineering team to determine which devices are out of configuration compliance at any point in time. Once the team had a better handle on where compliance problems existed in the network, they then used StableNet to resolve these issues and prevent the problem from happening again. This was accomplished in several ways. To ensure that all configuration changes are consistent and documented, the team integrated StableNet with their Amdocs inventory management solution. Individual device

configuration templates are now integrated with inventory data, so an entire device can be configured, along with the services it will provide, from a single console. StableNet pushes the changes out to the device and the Amdocs system documents and stores those configuration templates.

Steps have also been taken to automate the process of capturing and logging changes to configurations, so that rollback can be performed for recovery when changes don't go as planned. Configuration change events issued by network devices are captured in the provider's event management system. The event management system then sends a trap to StableNet, which automatically performs a backup of the new configuration.

With this change, the provider team has stopped using individual EMSs from their network equipment manufacturers for configuration change and management in production. The team now uses StableNet for fault and performance management for their entire fixed network. All configuration management across the MPLS environment is conducted through StableNet as well.

Benefits Realized

The key to successful service assurance is establishing both visibility and control. The provider team realized that as a part of outsourcing operations, they had lost insight into an essential aspect of network management, resulting in recurring network stability issues. The Infosim StableNet solution restored that visibility across their entire MPLS infrastructure, fully supporting the multi-vendor environment, and also added control measures.

By integrating StableNet with inventory management and event management systems, the solution has streamlined work processes for reviewing and confirming configuration compliance, substantially eliminating service incidents due to configuration drift. The team now runs change and configuration reports to further ensure that devices remain compliance. Automatically triggered configuration backups taken whenever changes occur has further improved stability and resilience.

Deploying such solutions can provide relief in the forms mentioned here, such as improved efficiency and reduced instability, but it is also important for the solution itself to be resilient and cost effective, allowing direct accommodation of inevitable changes in the managed environment. Along these lines, the network engineer was particularly appreciative that new and updated device support is part of the standard StableNet maintenance agreement, rather than requiring professional services or forcing wait time until a future product version release. Another major positive for the network engineer was Infosim's ability and willingness to work with the provider to adapt StableNet to specific management needs and environmental settings, optimizing results and improving system effectiveness. Finally, the network engineer specifically noted that he felt that Infosim offered the most tightly coupled network management and network configuration combination in a single code set, allowing the operator to consolidate management tools, reducing duplication in licensing, administration, and training costs.

Overall, the deployment of Infosim StableNet has cleaned up configuration compliance issues and eliminated expensive and embarrassing downtimes and degradations due to configuration errors occurring across a complex network infrastructure. The provider now has greater visibility and stability in their MPLS service network, and is in a better position to assure high quality services for their subscribers.

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EMA Perspective

The network does not exist in a vacuum – it exists to provide the connectivity between servers, storage, and end users/customers/subscribers for the delivery of applications and services. As such, network management systems will typically be deployed alongside any number of management and monitoring point solutions that address related/connected technologies. EMA has documented shops with upwards of 20 or 30 different tools in use to support planning, engineering, and operations. Such high counts of tools inherently aggravate efforts to optimize efficiency and improve responsiveness, as well as reign in total cost of operations and ownership. Subsequent pressures to reduce the number of management tools in use across the organization and standardize on fewer platforms makes it important for network management solutions to integrate as many capabilities as possible. Consequently, today's carrier-class, enterprise-scale network management platforms commonly provide the core capabilities and features to reduce operational risk regarding the health and availability of the network, but go further, supporting related functional capabilities such as performance monitoring, configuration management, asset management, and even integrated management of connected non-network devices.

When it comes to network configuration management, many management tools vendors offer solutions, but not all are created equal. The majority of solutions in the market to date were acquired and plugged into existing suites of products, and consequently exist as independent code bases, integrated around the edges at best. Network configuration management solutions that have been designed from the ground up as fully and totally integrated with core network management, such as Infosim StableNet, will not only deliver carrier-grade, enterprise-class capabilities, but also offer a level of tools consolidation and convergence that is a mere aspiration via other approaches.

The integrated, multi-function architecture of StableNet, combined with flexible and responsive adaptations via standard support, comprises a solution that offers broad capabilities combined with a compelling total cost of ownership. As this EMA case study illustrates, Infosim StableNet can and has been deployed to manage configurations across a large-scale multivendor environment, and goes further by allowing automation of important processes such as compliance monitoring and backups. What is most important, in the end, is that the solution has demonstrated success in meeting the needs of this operator, allowing them to successfully remove barriers to excellence in service quality and improve long term resilience.

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About EMA

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