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Enterprise

Rule your network

HPE Intelligent Management Center

The new network reality

We understand how tough your job is as a network or IT administrator. You're dealing with a growing wave of enterprise video content, and your network is struggling to keep pace with the exponential increase in traffic with the dawn of the Bring Your Own Device (BYOD) trend. You're trying to address the escalating demands of the virtualized and cloud-ready data center. And you've seen how difficult—make that nearly impossible—it is for the network to secure and orchestrate services in the virtual cloud and the virtualized workplace.

At the same time, your customers' expectations are higher than before. Today's enterprise users demand constant and immediate connectivity across wired and wireless networks. They want access to business applications from their fixed and mobile workstations. And they expect to switch seamlessly and transparently from traditional IT to private and public clouds, and back.

Keeping pace with these demands is a tall order—one made no easier by “swivel-chair management,” which results from having to use the mismatched management tools provided by network vendors. As a result, many organizations find that large chunks of IT staff time and budget are spent on ongoing operations and maintenance, rather than on developing new projects or expanding capacity to support business growth.

As you virtualize applications, there are expectations to further speed the delivery of application deployment. The current toolset for provisioning applications on most legacy networks is a command-line interface (CLI). The use of CLI is error prone and time consuming, and it lacks scalability. This operational model is in stark contrast with the model used by server administrators who use modern toolsets based on templates.

With the given situation, there's merit in considering a new type of network management—one that combines a capability for integrated multivendor management with automated VM orchestration and automatic synchronization of network connectivity. At HPE, we call this FlexManagement. And it's available with HPE Intelligent Management Center (IMC).

IMC is a unified, single-pane-of-glass infrastructure management solution that provides visibility across entire networks, enabling complete management of resources, services, and users. The management platform unifies management of wired, wireless, physical, and virtual resources—and their users—leading to increased performance, enhanced security, and reduced infrastructure complexity and costs.

Transforming static networks

As legacy networks remain static and unable to meet new business demands, IMC is designed to make these networks more dynamic and agile. IMC simplifies network management by delivering uniform visibility of the network elements and abstracts network data clutter to present actionable information. You can proactively manage your network with IMC, which dynamically responds to network changes and yields the agility your business requires. Also, IMC automates and orchestrates traditional and software-defined networks to efficiently deliver network services tailored to support your business momentum.

IMC is a comprehensive, modular platform with the flexibility and scalability to meet the network needs of small-to-medium-sized businesses as well as global enterprises. It consolidates a host of traditionally separate management tools, including those for managing network infrastructure, its services, and its users. The management platform's integrated toolset covers the entire network, from the data center to the edge, even if it is geographically dispersed. And it supports the management of all HPE Networking equipment as well as over 7,000+ third-party devices from a variety of vendors.

In the data center, IMC provides insight into what is a “black hole” for many network administrators—the virtualized network environment. IMC offers the capability to automate VM orchestration and synchronize network connectivity information, helping bridge the management and operational divide between physical and virtual worlds. At the network edge, campuses, or branch offices, IMC offers converged wired and wireless infrastructure management, and traffic analysis. The result is a substantial reduction in manual involvement by the IT department and in the time typically wasted on problem recognition.

Ultimately, IMC enables peace of mind for IT administrators as it:

- **Aligns with industry standards:** IMC aligns with all areas of the ISO Telecommunications Management Network’s highly regarded Fault, Configuration, Accounting, Performance, and Security (FCAPS) model. It also supports the IT Infrastructure Library (ITIL®) operational center of excellence IT-practices model and relies on a service-oriented architecture framework to provide unparalleled resource, service, and user management.
- **Scales and expands with the network:** An IMC deployment begins with a base management system—either IMC Standard for single-network deployments or IMC Enterprise, which is a “manager of managers” for controlling geographically distributed networks. In most cases, the base platform is all you need; the platform is highly flexible and a single server can manage up to 10,000 nodes of a network. While the base platform provides a broad set of features, you can choose from an “à la carte” menu of additional software modules to enable a deeper level of functionality across the FCAPS model. Functions you can add include sophisticated traffic analysis, secure access management for any type of device, endpoint posturing, powerful wireless management, and extensive quality-of-service (QoS) or service-level-agreement (SLA) management.

With IMC, you can quickly deploy applications by automating VM connectivity and monitoring its network performance. The same goes for devices, which you can remotely deploy and manage in a secure fashion. You can add multiprotocol label switching (MPLS) and IPSec VPN management too. You can even add service health monitoring and service operations to provide full IT workflow management, from problem recognition, ticket creation, and problem resolution—all the way to knowledge-base creation. In short, IMC is a unified solution that knits together all your infrastructure management components in a single console.

- **Answers the hard questions:** IMC answers questions such as:
 - What is the configuration state and software level of all my network resources?
 - What is the network topology and state of each link and interface?
 - How can I quickly deploy new network resources, while conforming to my company’s standards?
 - What applications are running in my network?
 - Is my VLAN architecture intact? And how can I gain visibility to determine if changes are necessary, and where to add or prune?
 - How can I audit all the adds, changes, and deletions to all of my network resources?
 - How can I deliver important services? And how should I change resource deployment when services change?
 - What traffic is affecting my network? And who or what is consuming bandwidth?
 - Where am I over- or undersubscribed?
 - Which users need to be controlled, and how?
 - How can I link the network to my organization’s business processes?

Top five reasons to choose IMC for network management

1. Lower operating expenses and improved total cost of ownership, because of automated features, default alerts, and a consolidation of tools and correlated information
2. Improved network availability and reliability with fewer trouble tickets, thanks to automated configuration management and comprehensive auditing
3. Quicker problem recognition and troubleshooting through improved visibility
4. Enhanced endpoint defense, control, and visibility
5. Integrated management of wired and wireless networks as well as physical and virtual networks—enabling excellent flexibility and scalability for networks of all sizes

How IMC helps you gain greater control of your network ecosystem

With its vast array of capabilities, IMC is uniquely capable of simplifying network management, even as it sifts through thousands of network nodes. The management platform highlights the areas that need attention and provides insight and health information on the network as a whole. Additionally, the the new desktop UI is designed to enhance user experience with the ability to organize dashboards and view critical data efficiently. The highlights of the network management solution include:

- **Single-pane management:** The single-pane management feature of IMC enables you to get the information you need at a glance, including a display of both physical and virtual assets as well as wired and wireless elements. Convenient color-coded displays, topology overlays, and focused zooming make it easy for you to view the entire network or to concentrate on an area of interest.
- **Unified control of virtual and physical worlds:** IMC unifies physical and virtual network management and helps IT overcome the challenges of administering the new virtual server edge. It maps the topology of the entire network, making it clear which devices are virtual and which are physical. Management focus and policies remain linked to virtual assets, even if the physical assets are moved.
- Management of virtualized resources is made a lot easier with:
 - Automatic discovery of VMs and virtual switches, as well as their relationships with the physical network
 - Template-based approach for connection policy definition and automation and orchestration of VM network connectivity—to help eliminate the manual provisioning process
 - VM and virtual switch resource management, including the creation of virtual switches and port groups
 - Virtual/physical topology views and status indicators for networks, workloads, and virtual switches
 - Automatic reconfiguration when virtual workloads are moved within and across the data center
 - Network policies remain bound to VMs during migration

With these features, IMC can help eliminate service interruptions caused by virtual/physical network configuration errors. It can reduce administration and troubleshooting by providing unified management of physical and virtual network infrastructure. And it can accelerate the delivery of new applications and services by automating configuration of both virtual and physical network infrastructures.

- **Integrated management of wired and wireless networks:** IMC can work in conjunction with Aruba ClearPass and AirWave to provide a broad-based campus network management environment for both wired and wireless devices.
- **Comprehensive multivendor support, including support for Cisco:** IMC provides comprehensive management of network devices, including those from HPE as well as Cisco and other vendors. Management begins with the automatic discovery and mapping of all devices on the network, and it is further enhanced by in-depth monitoring of those devices. Unlike a few other solutions, IMC goes beyond monitoring and enables sophisticated management of multivendor equipment, interoperability, and cross-vendor communication.

Having a consolidated management platform that covers multivendor support not only reduces the number of required management tools, but also increases the efficiency of troubleshooting and cuts the mean time to repair (MTTR) with correlated information. The efficiency gains with MTTR are due to the fact that the data is stored within a single database rather than across a disparate management architecture.

- **Powerful administration and control:** With IMC's comprehensive configuration and management tools at your disposal, managing individual devices in a serial, one-off fashion is a thing of the past. In addition, with IMC, you can view the health and state of VMs, provision VM connectivity with policy-driven automation, migrate VMs while keeping network profiles intact, and recognize where virtual resources connect to the physical network.

After devices are deployed, your job is made easier by unified resource management. Color-coded displays show at a glance if a device is out of service and offer detailed physical topology views that help technicians pinpoint the exact rack, slot, and device where trouble is occurring.

- **Management for data center networks:** IMC can manage the lifecycle of your data center network, from deployment of infrastructure to provisioning of new virtualized connections to maintenance and monitoring of your physical and virtual environments. The information presented by IMC gives you a better understanding of the health of your data center network and enables you to act on those issues within IMC, saving you time in administering the most critical part of the network.

The new provisioning capabilities within IMC allow you to manage virtual resource connections, FCoE, and virtual slices tied to specific network services. You can also automate the deployment of your switches and even Transparent Interconnection of Lots of Links (TRILL) and Shortest Path Bridging (SPB) fabrics. These capabilities make IMC a complete data center network management tool.

- **Flexible centralized reporting:** IMC receives and logs SNMP traps and syslog reports, and it can generate online and historical network performance information in highly adaptable report formats. The reports enable powerful fault finding and event generation. In addition, flexible historical reports provide the information you need for network trend analysis and capacity planning. You can also easily create inventory reports that show network device details, such as model, firmware, available memory, IP address, and serial number. The reports can be run with a mouse click or can be scheduled to run at regular intervals. And you can view reports in a number of formats, including .pdf and .xls, and send them automatically via email.

- **Hierarchical management:** In forward-thinking organizations, larger and larger portions of the network are being combined in ways that actually make the network easier to manage. And even the standard version of IMC offers distributed management capabilities that allow multiple servers with different installed modules to retain the appearance of a single user interface. The enterprise version provides the greatest span of control, with a hierarchical deployment mode that can extend visibility across multiple networks, multiple countries, and even multiple continents—all while acting as a “manager of managers.” IMC is designed to handle many tens of thousands of users and offer them varying levels of access to network resources. For greater flexibility and convenience, you can combine the distributed and hierarchical modes of deployment.

- **Compliance Center:** IMC's Compliance Center offers an event notification system that can take action for remediation, based on user-defined policies. Policies can be set up to notify administrators of activities such as SNMP and broadcast traffic. Administrators can then take appropriate action for remediation to enable seamless network operations.

With the Compliance Center, administrators can adopt a proactive approach to management with audit capabilities. IT can audit the infrastructure to maintain network consistency and ensure that device configurations comply with policies defined in the Compliance Center.

- **Trouble-free administration that transcends the network:** IMC includes features designed specifically to make life easier for network administrators. This management solution is scalable from SMBs to service providers, so organizations undergoing dynamic changes or transformations can be confident that their network administration will remain stable.

- **Extended APIs:** You get over 200 APIs that provide access to core platform services. IMC is built on an open and extensible architectural platform that leverages representational state-transfer-style Web services. These services enable third-party developers to create applications that interface with IMC.

As a software solution, IMC enables you to utilize your server of choice, and it supports multiple operating systems—including Microsoft® Windows® XP, Windows 2003 and 2008 Server, and Red Hat Linux. You can also employ different backend databases, including MySQL, SQL Server, and Oracle database. Moreover, IMC can link to other business solutions, including HPE Software, making it a perfect solution for enterprise-wide management that encompasses business processes as well as the network. The combination of IMC with HPE Software gives HPE an unrivalled total solution with massively scalable management, intelligent automation, and reporting capabilities—across an entire converged infrastructure.

A closer look at the base IMC platform

As mentioned earlier, IMC is based on a service-oriented architecture—which uses a business-application-flow model as the core and leverages a modularized on-demand design. The architecture enables efficient implementation of end-to-end network management, and the modular design allows effective integration of traditionally separate management tools—providing complete management of resources, services, and users. Even if you don't go beyond IMC Standard or Enterprise, you benefit from a remarkable array of integrated management tools at your fingertips. IMC's ready-to-use capabilities include:

Management

- Overall management of HPE and thousands of third-party vendor network resources such as routers and switches
- Network element-level management for data communication devices
- Management of network assets
- Management of VLAN resources
- Management of virtual network elements
- Management of guest accounts

Configuration

- Extraction, transformation, and loading of databases
- Configuration of access control lists for devices to implement traffic-flow control
- Intelligent software-upgrade management for network devices and device configurations

Monitoring and analysis

- Monitoring and analysis of network performance
- Monitoring of network events
- Monitoring and troubleshooting of network faults in real time
- Sampling and analysis of network-performance data
- Analysis of data collected from managed devices to measure network-service performance
- Collection, filtering, and analysis of device syslog messages

Reporting and scheduling

- Issuance and display of service reports
- Task scheduling
- Alarm generation

Add-on modules that let you tailor the IMC solution to your needs

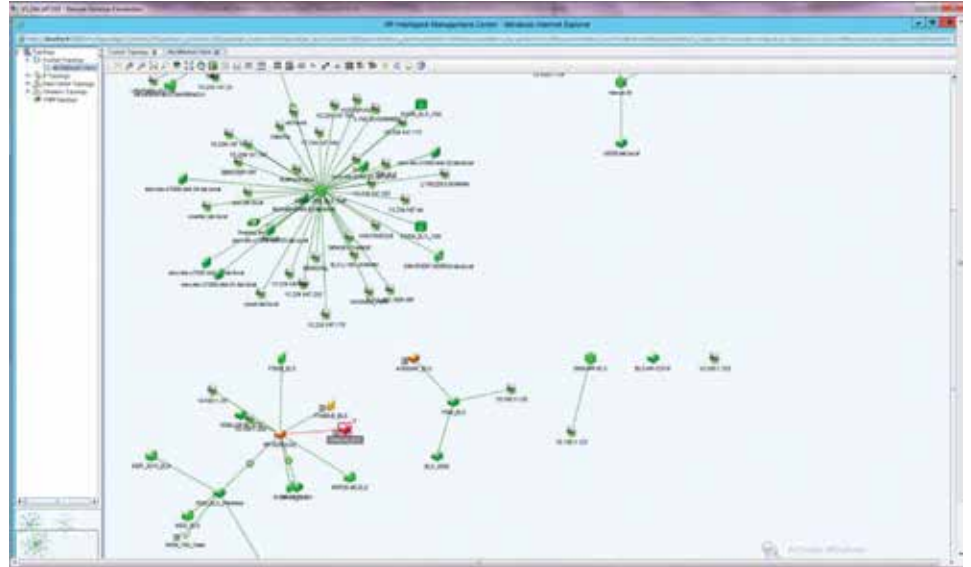
On top of the base IMC system, you can deploy additional modules with a wide range of specific management, analysis, and security capabilities. Here's a list of the value-add modules available with IMC:

- **Application Performance Manager (APM):** The APM module provides key performance indicators that are based on the performance of various applications. When used with Service Health Manager, this module provides you with a holistic view of the performance of your servers and applications. Applications such as Microsoft Exchange and Oracle databases are supported.
- **Branch Intelligent Management System (BIMS):** The BIMS module provides zero-touch deployment for remote branch devices. It also offers resource, configuration, service, alarm, group, and privilege management. And it allows the remote management of customer-premise equipment in the WAN.
- **Business Services Performance (BSP):** The BSP module provides datacenters and large enterprise customers an end-to-end business services dashboard for monitoring real-time service performance based on resource health, utilization and availability. The aggregated health score accounts for not only applications, but also databases, network interconnects, servers, VM environments and other elements that make up a complex service.
- **Endpoint Admission Defense (EAD):** The EAD module reduces network vulnerabilities by integrating security policy management and endpoint posture assessment to identify and isolate risks right at the network edge. EAD can also provide continual monitoring of each endpoint's traffic, installed software, running processes, and registry changes.
- **IPSec VPN Manager (IVM):** This module reduces the complexity of deploying, monitoring, and managing IPSec virtual private networks. It provides detailed accounts of the health and performance of the IPSec VPN, resulting in quicker problem recognition and resolution as well as faster configuring and managing of IPSec VPN devices. The module also provides templates for dynamic VPN configuration.
- **MPLS/VPN Manager (MVM):** To facilitate the administration of heterogeneous private MPLS VPN connections, IMC offers this module. It enables you to architect and deploy network resources as well as monitor and manage the MPLS VPN network. The MVM module provides management functions such as VPN auto discovery, topology, monitoring, auditing, performance evaluation, VPN deployment, and service deployment—helping you optimize allocation of network resources. VPNs can be either manually added or automatically discovered.
- **Network Traffic Analyzer (NTA):** The NTA module provides easy-to-understand network traffic monitoring reports to enable a better understanding of your network's bandwidth utilization. This graphical network monitoring tool uses industry-supported traffic-flow standards to provide real-time information about the key users and applications consuming network bandwidth.
- **Quality of Service Manager (QoSM):** The QoSM module provides real-time network detection of QoS configurations, enabling unified management of QoS policies. The module allows administrators to organize traffic into different classes, based on configurable criteria, to provide differentiated services as well as insight into committed access rates, generic traffic shaping, priority marking, and queue scheduling.
- **Remote Site Manager (RSM):** The RSM module securely manages remote sites that are behind a firewall/NAT proxy through the use of IMC remote agents. These agents can manage and monitor the remote network as well as apply policies and configurations to the remote network devices on behalf of the central IMC server. Only one port is required for communication back to the central IMC server.

- **Service Health Manager (SHM):** The SHM module enables you to graphically monitor the health of services based on quality indicators. Key performance indicators can be applied to various aspects of service delivery controlled by the infrastructure—including bandwidth, configuration, link performance, and traffic patterns. Indicators are aggregated to key quality indicators to provide information on the overall service health and compliance to SLAs. This information allows network administrators to adjust network parameters to meet service delivery requirements.
- **Service Operations Manager (SOM):** The SOM module helps information technology departments with workflow management by providing control, measurement, and audit capabilities around configuration changes, fault identification, and recovery processes. Based on a Universal Configuration Management Database, the SOM offers configurable flow management and options for self-service, including knowledge-based creation and user-kiosk capabilities.
- **Unified Communications Health Manager:** Unified Communications Health Manager (UCHM) monitors the health of networks deployed with Microsoft Lync. You can visualize and monitor, in real time, components associated with Lync, including Lync servers, PSTN gateways, and Lync client endpoints. UCHM provides you the tools to troubleshoot poor user experience and help optimize the delivery of the UC&C service.
- **User Behavior Auditor (UBA):** The addition of the UBA module helps you deal with potential security threats from internal users. Leveraging and mining data from other IMC service modules, the UBA module provides an essential view for observing user activity, allowing you to discover and preempt potential network security risks.
- **VAN Connection Manager:** The VAN Connection Manager module accelerates the provisioning of cloud applications by delivering IMC-defined connection policy templates. These templates are available for use by the VMware vCenter Hypervisor Manager through a plug-in. Server administrators can deploy VMs and connect them to the network automatically, using the policies defined via the IMC templates.
- **VAN Fabric Manager:** The VAN Fabric Manager module provides a unified view of network and storage devices in the data center fabric, alongside fabric health, to enable quick troubleshooting and proactive management. It automates deployment and configuration of various data center fabrics. You gain a better understanding of workload mobility. With an optional add-on license, data center network management can be extended to physical and virtual FC SAN fabrics.
- **VAN Resource Automation Manager:** The VAN Resource Automation Manager module helps optimize the utilization of network resources, applications, or tenants. This tool accelerates the deployment of applications, while tuning the network to enhance the user experience. It has an easy-to-use service-model design tool that allows you to associate a specific application or tenant, desired network resources, and characteristics to a service model, which result in orchestrated virtual service paths.
- **VAN SDN Manager:** The IMC VAN SDN Manager module monitors and manages all three layers of the SDN architecture: infrastructure, control, and application layers. You can visualize the state and location of your infrastructure and traffic flow across the SDN domain. These capabilities enable fast troubleshooting. With the IMC SDN Manager integrated with the base platform, you obtain a single-pane-of-glass view of a hybrid network, traditional and software defined.
- **Wireless Service Manager (WSM):** While HPE Aruba AirWave provides the backbone for managing wireless environments, WSM can augment the wireless management experience of wireless environments. WSM is now included in the HPE IMC Enterprise Platform and is optional for the IMC Standard Platform.

A glimpse of IMC-enabled network management

Imagine how easy network management would be with these IMC tools:



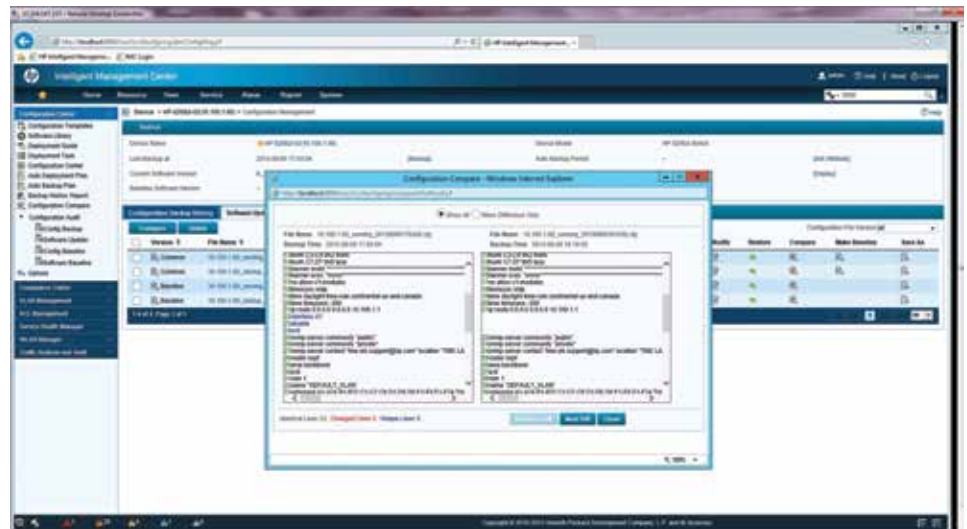
IMC automatically creates network topology layouts, with high-speed links shown as heavier lines and features such as focused zooming. Different colors for active and offline devices help you identify problem areas at a glance.



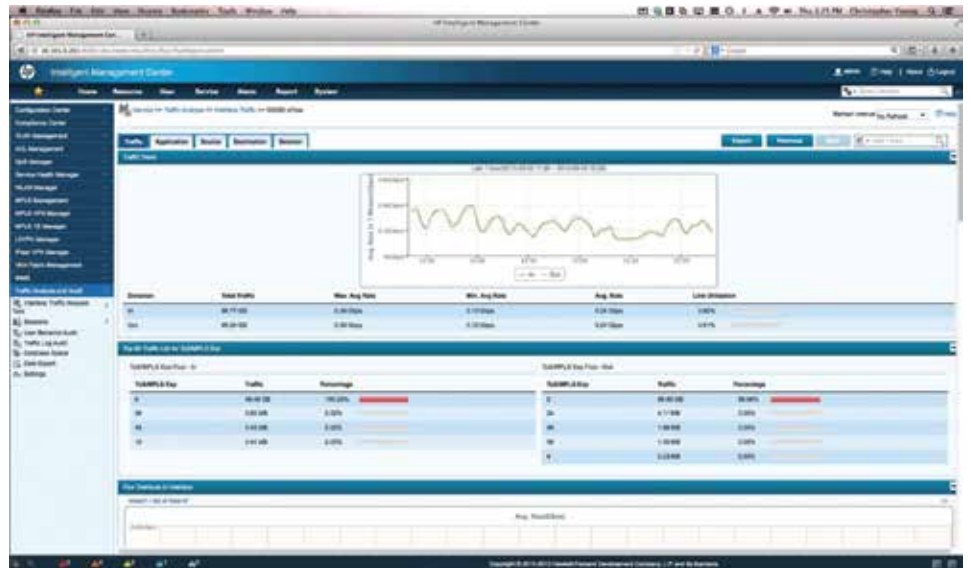
You can customize IMC's home page with your choice of displays, data, alarms, and other important network and device information.



IMC provides guided setup for a wide array of tasks via the Quick Service Process pages that define and provide quick links to the tasks needed, and in what order.



IMC's handy configuration comparison tool is ideal for ferreting out problems caused by incorrectly configured devices.



The NTA module gives you real-time insight into the total traffic flow between all network applications.



The BSP module presents an end-to-end business service health.

Brochure

Customize your IT lifecycle management, from acquisition of new IT, management of existing assets, and removal of unneeded equipment hp.com/go/hpfinancialservices

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The SHM module interprets network data across the network to deliver meaningful, actionable information about specific network services.

The road ahead

It's evident that if you're trying to reduce complexity, depending on multiple tools is not the best way to do it. That's why IMC is the choice of so many efficiency-focused organizations. The standards-based management tool provides the integrated toolset you need to architect, deploy, manage, and maintain your network—to meet today's challenges and complexities. It pulls together wired, wireless, physical, and virtual environments under a single management umbrella. And it can reduce overhead costs, while freeing IT staff time for new initiatives and projects that support business goals. Whether or not you're aiming for a mobile enterprise, IMC is the answer for networks of today and the dynamic, agile networks of tomorrow.

Learn more at hp.com/networking/imc



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