

Extend

**and simplify the management
of your heterogeneous
network environment**



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Network management complexity

An enterprise network doesn't usually grow in an orderly, planned fashion. In the real world, enterprise networks expand in bursts through mergers and acquisitions or they grow organically to keep pace with new products. Companies may extend their networks according to their budget cycles, installing new technologies to meet users' changing needs.

That growth often means adding wireless networks to the wired infrastructure, provisioning virtual LANs on the fly, adding capacity for streaming video traffic along with voice data, and increasing bandwidth or deploying new virtual machines (VMs) to provide cloud-based services. Enterprise networks now stretch around the world. They are always on, consistent, agile, and ready to respond to business demands—instantly—in any time zone.

A large network might begin as a homogenous environment. Switches, routers, servers, and wireless access points can all be from the same vendor and use the same network management software. But as the network expands, it can get equipment from a variety of manufacturers—each with its own set of network management tools. A single manufacturer might even have multiple versions of its network management software. It's this increasing network management complexity that bogs down IT. A network manager may need to be proficient with several different management tools to keep the enterprise up and running reliably.

Compounding the management complexity problem is the move by enterprises to embrace virtualization and cloud computing. Businesses need a management platform that can rein in this complexity, tie together all of the various multivendor devices, and give them comprehensive insights into the enterprise. IT administrators need to be able to keep the network running at top speeds so they can spend more time delivering business-critical innovations tailored to their environment.

HP Intelligent Management Center

The answer to these problems lies in a management platform that ties together all of the multivendor devices in an enterprise network. HP Intelligent Management Center (IMC) is a unified single-pane-of-glass network management platform that provides visibility across the entire enterprise—from wired and wireless networks to physical and virtual environments. IMC lets the IT administrator manage all network resources, services, and users, regardless of device manufacturer. This is achieved from a single-pane-of-glass management platform.

HP IMC supports the management of all HP networking devices, as well as more than 6,000 third-party devices from over 220 vendors—including Cisco. HP has extended the reach of IMC by publishing the IMC Extended Application Programming Interfaces (eAPIs) to enable third-parties to leverage the rich information and functionality of IMC.

With HP IMC, network management is simplified and made less costly. Network performance is improved and made more reliable. IMC eAPIs allow administrators to extend their reach even deeper into network devices for a fully customized management environment.

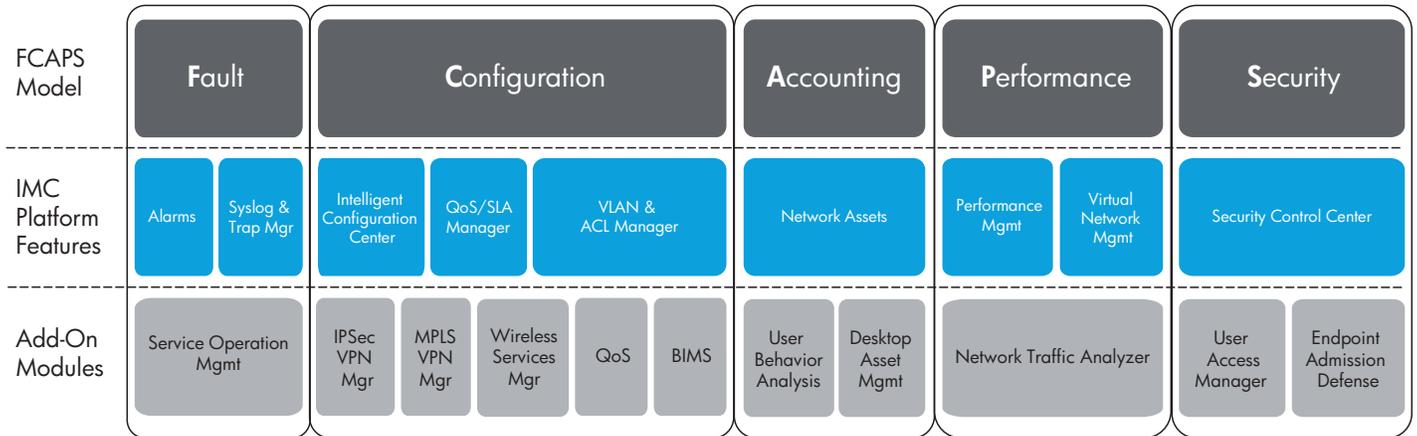
HP IMC: full management and visibility

HP IMC is a flexible service-oriented architecture platform tailored for managing enterprise networks so they can effectively deliver network services to customers and employees around the world and support dozens of remote locations. It aggregates information from network devices and services to give visibility into the enterprise—from the data center to the network's edge. It provides seamless wired and wireless infrastructure management, user access policies, and traffic analysis across a mixed environment.

HP IMC eliminates the need to use dozens of separate, vendor-specific network management tools. It provides a holistic view of the enterprise, giving network administrators the insights they need to enhance network configuration and improve performance. IMC also integrates security into network management by providing network access control across the enterprise.

HP IMC helps organizations make more efficient use of their IT staff's resources and budgets. IMC is easy to use, deploy, and operate, which translates for most organizations into significant savings on training, network management, and operations. With just one network management tool that everyone in IT can use, network managers can dedicate less budget on individual software maintenance licenses. IT employees can turn their attention to delivering new services that increase their organization's business productivity.

IMC Platform and Modules



HP IMC: modular and scalable

The modular, scalable architecture of HP IMC lets organizations choose the functionality they need today and install new features as they grow into them for a solution tailored to their needs. With eAPIs, organizations can integrate their in-house management tools with those of IMC.

To provision, monitor, and manage network elements, IMC provides a broad set of features across the Fault, Configuration, Accounting, Performance, and Security (FCAPS).

IT administrators can use IMC to perform a wide variety of network management tasks across their heterogeneous networks. IMC supports HP and third-party devices for:

- Discover and topology
- Monitoring and performance management
- Data center orchestration
- Bulk configuration, configuration backup, and restore

HP IMC: open and extensible APIs

HP IMC is based on service-oriented architecture (SOA) and uses a business application flow model as the core. This enables its modular, on-demand design and its integration of separate network management tools.

The eAPIs are an extension of HP IMC's open and extensible platform and can be used to share this SOA platform with an organization's homegrown and in-house applications. Developers can write their programs only once to interface with IMC, instead of many times to integrate with the operating system of each third-party device on their network. By integrating with IMC, developers can ensure their applications work with all the aggregated network data collected by the management platform. This allows the IT administrator to control the entire mixed network from a single management tool.

The eAPIs further extend the openness of HP IMC. Third-parties are now able to access and control functions that were only available from a CLI interface, or only from the IMC interface. The eAPIs help extend the value of IMC beyond the network operations center to other parts of the business.

The eAPIs are designed to be developer friendly. They include more than 200 pre-defined calls with error codes and input variables for accessing IMC functionality. The eAPIs can be used to tap into IMC's range of features: device configuration and monitoring, change management, resource management, user management, alarm, logging, performance and analysis, virtual LAN management, quality of service (QoS) management, asset management, virtual management, and reporting. For each of these areas, the eAPIs have anywhere from 15 to 35 procedural calls that allow read-and-write functionality.

The eAPIs enable organizations to provide new services to their customers and add new capabilities to their devices—and the IT staff can do it with the speed and efficiency they have never had before.

Providing a path to the cloud

The eAPIs play a crucial role in automating the orchestration of enterprise networks for virtualization and cloud computing. They are part of the HP Virtual Application Networks vision of delivering end-to-end network virtualization—creating a unified platform for the dynamic and rapid deployment of cloud applications and services.

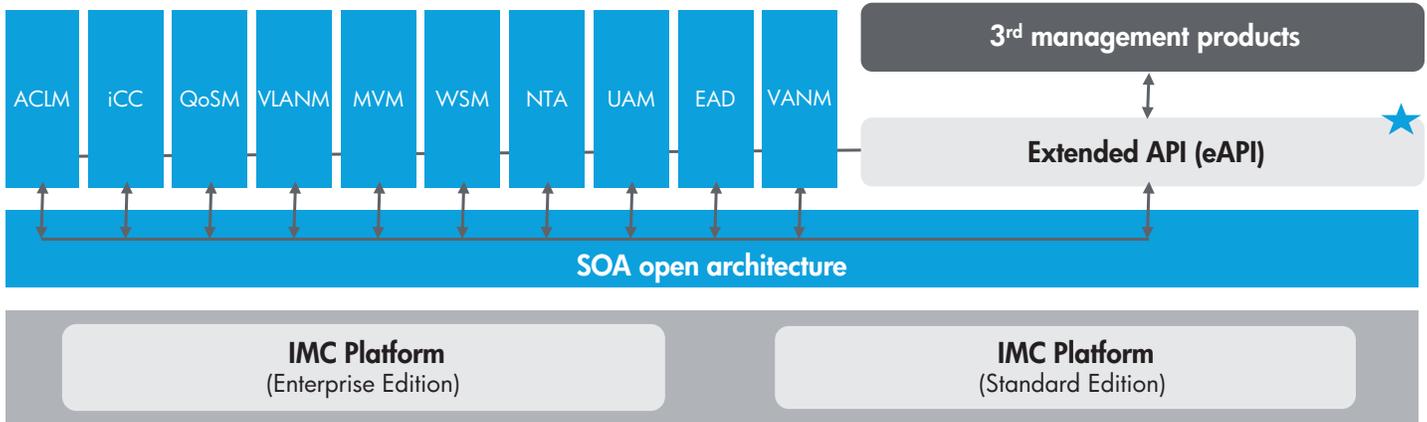
- Virtual Application Networks is enabled by HP IMC VAN Manager Module, which allows network managers to create consistency, reliability, and repeatability across the entire network infrastructure.
- Virtual Application Networks enables administrators to create programmable and agile networks that are automatically orchestrated to streamline operations.
- Virtual Application Networks is the next logical step in the path to the cloud. Customers are able to focus less on managing network infrastructure and more on connecting users to applications.

Extending HP IMC with RESTful eAPIs

The eAPIs are a representational state transfer (RESTful) implementation of Web services and uses a SOAP/XML interface. At the heart of the eAPIs is a data abstraction layer that is leveraged by the eAPIs to cohesively manage a mixed network environment. The REST-style Web services enable third-party developers to create applications that interface and leverage IMC services, including those for HP Virtual Application Networks.

The eAPIs enable integration of virtual machine edge profile administration and control. Cloud orchestration is enabled using IMC with VAN Policy Engine to deploy HP Virtual Application Networks. Organizations can rapidly and dynamically connect users to applications and services while eliminating device-level management. RESTful eAPIs enable external access to HP Virtual Application Networks functions from cloud and network orchestration frameworks. They allow network and enterprise IT administrators to programmatically access, configure, provision, and manage connection resources in conjunction with virtual machine operations.

The Extended API integrates across IMC: Organizations can use the eAPI to integrate third-party applications with IMC's open and extensible SOA platform.



Integration scenarios: how IMC and eAPI can benefit you

Organizations can use the eAPIs to develop customized management solutions for their enterprise. They can be used for internal development to create new services for easier network management or for building out new capabilities for third-party networking devices.

- **Networking hardware manufacturers**

Security appliances, load balancers, and other networking devices connect to the physical network, collect data about the network, and send it to IMC. Hardware manufacturers can use the eAPIs to develop applications for their devices to work more effectively and send comprehensive information to IMC.

For example, an intrusion prevention system (IPS) captures data about traffic that travels through the network core, but won't necessarily collect information about traffic that stays on the edge of the network. The eAPIs can get information logged in IMC from switches and provide this to the IPS, which makes the IPS more likely to catch security threats across the enterprise.

- **Internal IT shop**

Organizations with growing enterprise networks often need to manage a wide variety of equipment. The eAPIs let internal IT shops freely develop applications to make their enterprise networks more agile without having to interface directly with myriad networking equipment.

For example, an internal IT shop could use the eAPIs to create an IT help desk system that lets everyone in IT connect to the network, see network status information, and configure certain parameters on network devices. This could be useful for provisioning network connections for new users, or creating new VLANs anywhere on the enterprise network. Internal IT shops can use the eAPIs to grab traffic analysis and network performance data from IMC and visualize it in any way that makes sense for their business needs.

- **Cloud service provider**

The HP Virtual Application Networks-related eAPIs allow cloud service providers to rapidly deploy cloud services. System administrators can speed the deployment of new virtual machines and orchestrate VM migrations without compromising connectivity. Administrators can deploy the VMs directly from their cloud management systems, which can now interface with the HP Virtual Application Networks eAPIs.

Service providers and networking hardware manufacturers writing to IMC eAPIs can be supported by the HP AllianceONE program for improved competitive advantage, easier collaboration, and greater exposure to HP sales, channel partners, and customers. AllianceONE gives you the framework, tools and resources you need to have a successful collaborative relationship with HP.

HP IMC & eAPIs: efficient, fast, simple

HP IMC—coupled with the new eAPIs—give IT administrators more control and deeper insight into their enterprise networks than ever before. IT works more efficiently, faster, and with less complexity when network management is unified in a single-pane-of-glass management platform.

HP IMC eAPIs support the growing DevOps movement, which encourages better communication and collaboration among applications development and IT operations teams. The eAPIs can be used by organizations of all sizes to meet the fundamental goal of DevOps: to develop applications that perform better and meet intended business and service-level requirements.

HP IMC's single-pane-of-glass management platform forms the basis of HP FlexManagement Solutions that converge network management and network orchestration. It's also at the heart of HP FlexNetwork Architecture, an open and standards-based way to build a scalable, secure, agile, and consistent enterprise.

The eAPIs are included with the HP IMC Enterprise Software Platform and are a licensable option for the IMC Standard Software Platform.

Additional resources

To learn more about HP products, contact your HP sales representative. For more information on HP Networking visit hp.com/go/networking

Download the HP Intelligent Management Center solution brief

Learn more about HP FlexManagement solutions

Explore the HP FlexNetwork Architecture

Learn how the HP AllianceONE program can help support your networking business

Read the Virtual Application Network white paper

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