Cisco ISR G2 Management Overview

Introduction

The new Cisco® Integrated Services Routers Generation 2 (ISR G2) Family of routers delivers the borderless network that can transform the branch office and customers' experience while enabling business innovation and growth. Supporting the operation of these innovations, Cisco ISR G2 routers provide a rich set of management capabilities that exceed and complement what is available through industry standards. This document discusses these capabilities and related management applications that enable effective operations of Cisco ISR G2 networks and services.
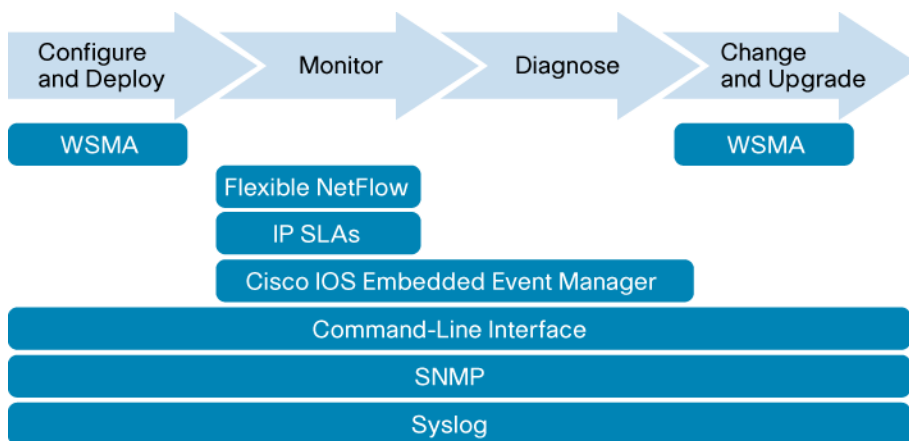
Embedded Management Capabilities

The new Cisco ISR G2 routers provide extensive support for standard Simple Network Management Protocol (SNMP) MIBs and syslogs, allowing comprehensive network management using Cisco or third-party network management systems (NMSs). For additions and updates to Cisco ISR G2-specific MIBs, syslogs, and command-line interfaces (CLIs), please refer to the *ISR G2 Manageability Document* at:
http://www.cisco.com/en/US/prod/collateral/routers/ps10537/product_bulletin_ISRG2_Manageability.pdf

In addition to the standard MIBs and syslogs, the Cisco ISR G2 routers deliver industry-leading manageability and automation capabilities with the primary objective of providing the lowest total cost of ownership (TCO). Cisco embedded management capabilities provide comprehensive network management functions, from proactive diagnostics to Web 2.0 open interface to policy-based automation.

Figure 1.   Cisco IOS® Software Embedded Management Capabilities in Cisco ISR G2 Routers

Configuration

The new Cisco IOS Web Services Management Agent (WSMA) is a management capability embedded in the software that allows advanced configuration, provisioning, and data collection using industry-standard web services. WSMA provides consistent XML messaging format to CLI commands across Cisco IOS Software releases, eliminating the need for error-prone "screen scraping" many companies use to configure, manage, and provision.

For more information about WSMA, please visit:
http://www.cisco.com/en/US/docs/ios/netmgmt/configuration/guide/nm_cfg_wsma.html.

Monitoring

While SNMP and syslog provide the standard protocols for monitoring, the Cisco ISR G2 routers provide many additional capabilities for higher visibility into networks and services. Table 1 shows the recommended usage.

Table 1.   Cisco IOS Embedded Management Monitoring Features

Feature	What It Does for Monitoring	Recommended Usage
SNMP	Collects SNMP MIB data and monitors events (standard protocol)	Used by Cisco and third-party applications for performance and fault monitoring
syslog	Monitors events (standard protocol)	Used for monitoring through the console; can also be used by monitoring applications
IP Service-Level Agreements (IP SLAs)	Mimics real traffic to measure traffic statistics	Used for measuring service-level indicators, including delay, jitter, and availability
Flexible NetFlow	Collects packet header information	Monitors application performance and usage pattern, as well as security
Cisco IOS Embedded Event Manager (EEM)	Monitors events and reacts based on user-defined policy	Enables onboard automation for fault detection, troubleshooting, and recovering

The Cisco ISR G2 routers provide the network platform for borderless services. As you run more services on your network, you can use IP SLAs to monitor critical network traffic performance indicators, including delay, jitter, and link availability. IP SLAs mimic real-world traffic to proactively identify service-level problems before your users do. Integrating with a broad set of Cisco and third-party NMS applications, IP SLAs set the standard for leadership in proactive performance monitoring.

With the Cisco ISR G2 routers, Cisco extends IP SLA capabilities to support 30 different types of simulated traffic, delivering complete performance measurement from application monitoring (HTTP, FTP, etc.) to transport monitoring (User Datagram Protocol [UDP] jitter, Multiprotocol Label Switching [MPLS], etc.).

For more information about IP SLAs, please go to http://www.cisco.com/go/ipslas.

Flexible NetFlow (FNF) is the next generation in NetFlow technology. As more services and applications such as business video run in the network, FNF provides the visibility of the network infrastructure needed for optimizing resource usage and planning capacity, reducing operation costs, and detecting security incidents. FNF provides more flexibility and scalability beyond traditional NetFlow by enabling customization of traffic identification, such as source, destination, timing, and application information. Further, FNF provides enhanced network anomaly and security detection to help quickly identify and remediate security risks.

For more information about Flexible NetFlow, please go to http://www.cisco.com/go/fnf.

Automation

Cisco IOS EEM is a powerful and flexible feature in Cisco IOS Software that provides real-time event detection and onboard automation. Using EEM, you can program the behavior of the network devices to align with your business needs. EEM supports more than 20 event detectors that are highly integrated with different Cisco IOS Software components to trigger actions in response to network events. You can program these actions using a simple CLI-based interface or Tool Command Language (Tcl) scripting language.

Cisco IOS EEM enables network managers to build significant intelligence within Cisco devices to create highly customizable and cost-effective solutions for automated troubleshooting, fault detection and recovery, device configuration, and provisioning.

For more information, please go to http://www.cisco.com/go/eem.

Network Management Applications

Network management applications are instrumental in lowering operating expenses (OpEx) while improving network availability by simplifying and automating many of the day-to-day tasks associated with managing an end-to-end network. Supporting the new Cisco ISR G2 routers, these management applications enable quick and easy deployment, monitoring, troubleshooting, and ongoing changes.

Cisco provides a wide array of management applications to suit different operation needs. Table 2 provides an overview of the relevant applications for managing the Cisco ISRs and the new Cisco ISR G2 routers.

Table 2.   Cisco Network Management Applications for Cisco ISR G2 Routers

Application Name	Primary Scope	Description
Cisco License Manager	License management	Application for managing Cisco licenses and pay-as-you-grow service model
Cisco Configuration Professional	Device management	GUI-based device configuration application for access routers and service modules
CiscoWorks LAN Management Solution (LMS)	Network management	Comprehensive network management suite for all operation phases
CiscoWorks QoS Policy Manager	Network management	Quality-of-service (QoS) management application
Cisco Branch Office Network Analysis Module	Network management	Cisco ISR G2 service modules that provide traffic monitoring, reporting, diagnostics, and deep packet inspection
Cisco Configuration Engine	Network management	Application that allows zero-touch and near zero-touch deployment; suitable for large-scale deployment
Cisco Security Manager and Cisco Security Monitoring, Analysis and Response System (Cisco Security MARS)	Service management	Security management application
Cisco Unified Communications Management Suite	Service management	Cisco Unified Communications management application
Cisco Wide Area Application Services (WAAS) Central Manager	Service management	Cisco WAAS management application

IP Network Infrastructure Management

Cisco Licensing Manager v3.0 is a secure client/server-based application to manage Cisco software licenses and enable the pay-as-you-grow service model. It automates Cisco Software Activation workflow through its wizard-based GUI and scales for large network deployments. The application accelerates deployment of software licenses using a simple, rule-based policy interface and enables rapid rollout of advanced services in the network.

For more information about Cisco License Manager, please visit: http://www.cisco.com/go/clm.

Cisco Configuration Professional v2.0 is a GUI-based device management tool for Cisco ISR and Cisco ISR G2 routers. This tool simplifies routing, firewall, IPS, VPN, unified communications, WAN, and LAN configuration through GUI-based easy-to-use wizards.

Cisco Configuration Professional is a valuable productivity-enhancing tool for network administrators and channel partners for deploying routers with increased confidence and ease. It offers a one-click router lockdown and an innovative security auditing capability to check and recommend changes to router configuration.

Cisco Configuration Professional is free and can be downloaded at http://www.cisco.com/go/ciscocp.

CiscoWorks LAN Management Solution v3.2 is an integrated suite of management tools that simplify the configuration, administration, monitoring, and troubleshooting of Cisco networks. Built upon popular Internet-based standards, CiscoWorks LMS applications help network operators manage their network through a browser-based interface that is accessible anytime from anywhere within the network. CiscoWorks LMS maintains a centralized list of all Cisco network devices and their credentials; the list serves as a single repository for all CiscoWorks applications, whether they are installed locally or distributed in a multiserver deployment.

CiscoWorks LMS quickly discovers, inventories, configures, troubleshoots, and manages the new Cisco ISR-G2 routers as soon as they are deployed in the network. For these new routers, CiscoWorks LMS provides additional value-added functions for managing the Cisco Services Ready Engine (SRE) module, including: discovery of SRE modules and their attributes, software image deployment, and initial setup and configuration of a single or multiple SRE instances. It also provides configuration, monitoring, and reporting for the Cisco EnergyWise solution.

For more information about CiscoWorks LMS, please visit: http://www.cisco.com/go/lms.

CiscoWorks QoS Policy Manager (QPM) v4.3 provides comprehensive QoS provisioning and monitoring capabilities. It allows network managers to manage and fine-tune the delay, jitter, bandwidth, and packet-loss parameters required for successful end-to-end services such as TelePresence. It can identify and monitor—in real time—the performance of networked applications, and it centrally creates and deploys to Cisco devices QoS policies to track, manipulate, and control the behavior of those applications in order to meet business demands and application requirements. The end result is networkwide intelligent, consistent, and effective QoS that allows performance protection for voice, video, and business applications while reducing costs and optimizing the use of network resources.

For more information about CiscoWorks QPM, please visit: http://www.cisco.com/go/qpm.

Cisco Branch Routers Series Network Analysis Module v4.1 is an integrated performance-monitoring and traffic-analysis solution that offers deeper insight into the branch office at both the network and application levels. It offers real-time visibility into the applications running on the network, how the network resources are being utilized, and how the end users experience the services being delivered in the branch office. The visibility also enables IT to effectively use control and optimization mechanisms such as QoS and Cisco Wide Area Application Services (WAAS) to improve performance of these services.

The innovative design of the Cisco Branch Routers Series NAM combines a rich set of embedded data-collection capabilities and performance analytics with a remotely accessible, web-based management console, all of which reside on a single network module that you can easily install into selected Cisco ISRs and ISR G2 routers. The embedded analytics can both characterize the user experience and quickly isolate and resolve any performance problems, minimizing the effect on users. The NAM further improves the operational efficiency by allowing remote troubleshooting, thereby eliminating the need to send personnel to remote sites or send large amounts of data over WAN links to the central site.

For more information about the Cisco Branch Routers Series Network Analysis Module, please go to http://www.cisco.com/go/nam.

Cisco Configuration Engine v3.0 is a network management application that provides highly scalable, secure, efficient initial deployment and day-2 configuration and image upgrades. Using a set of Cisco IOS Software agents, the Cisco Configuration Engine automates the deployment of Cisco IOS Software configuration files and images—eliminating the need for traditional staging or onsite technical presence, and achieving zero-touch deployment. This application can streamline the deployment process to drastically reduce deployment time and costs.

For more information about Cisco Configuration Engine, please go to: http://www.cisco.com/en/US/products/sw/netmgtsw/ps4617/index.html.

Unified Communications Management

Cisco Unified Communications Management Suite v7.1(2) is designed specifically for managing Cisco Unified Communications Solutions. The Cisco Unified Communications Management Suite offers integrated provisioning, monitoring, troubleshooting, and reporting capabilities. Operators can view and operate all applications in the suite from a customizable, web-based dashboard interface. This interface simplifies management of the entire unified

communications network, including the network infrastructure, call control, user endpoints, and unified communications applications.

The suite comprises four applications:

- Cisco Unified Provisioning Manager v2.2
- Cisco Unified Operations Manager v2.2
- Cisco Unified Service Monitor v1.3.1
- Cisco Unified Service Statistics Manager v1.2

Cisco Unified Communications Management Suite supports the Cisco ISR G2 routers both as a platform for the Express call control family and as a gateway for call trunking in the network.

For more information about Cisco Unified Communications Management, please go to: http://www.cisco.com/go/ucmanagement.

Security Management

Cisco Security Manager v3.3 is an enterprise-class management application designed to configure firewall, VPN, and intrusion-prevention-system (IPS) security services on Cisco network and security devices, including the new Cisco ISR G2 routers. You can use Cisco Security Manager in networks of all sizes by using policy-based management techniques. Cisco Security Manager works in conjunction with Cisco Security MARS. Used together, these two applications provide a comprehensive security management solution that addresses configuration management, security monitoring, analysis, and mitigation.

For more information, please go to http://www.cisco.com/go/csmanager.

Cisco Security MARS v6.0.4 provides security monitoring for network devices and host applications supporting both Cisco and other vendors. Security monitoring with Cisco Security MARS greatly reduces false positives by providing an end-to-end topological view of the network, helping improve threat identification, mitigation responses, and compliance.

For more information about Cisco Security MARS, please go to http://www.cisco.com/go/csmars.

Cisco Wide Area Application Services Management

Cisco Wide Area Application Services Central Manager (WCM) 4.1 is a management application that runs on Cisco Wide Area Application Engine (WAE) Appliances. Cisco WCM provides scalable, secure, robust, and centralized web management for all Cisco WAE appliances and Wide Area Application Services (WAAS) network modules in the Cisco ISR G2 routers. It allows a network manager to easily perform device-specific or systemwide configuration, including policy configuration and distribution within the WAAS deployment. It can also monitor and generate reports on the WAAS environment.

For more information about Cisco WCM, please go to: http://www.cisco.com/en/US/prod/collateral/contnetw/ps5680/ps6870/prod_white_paper0900aecd8051c0c8.html.

Summary

The new Cisco ISR G2 routers provide the platform for borderless networking and borderless services with low TCO. The embedded management capabilities and the extensive Cisco and third-party network management applications that support the new Cisco ISR G2 routers help ensure that you can confidently deploy and manage your borderless network. This document provides only high-level descriptions of these capabilities and applications. For more details, please visit the respective URLs, or contact your Cisco account representatives.

Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV
Amsterdam, The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at www.cisco.com/go/offices.

Printed in USA

C78-556313-00   10/09