CHAPTER 1

Cisco Application Performance Assurance Overview

This module provides a general overview of the Cisco Application Performance Assurance solution. It introduces the Cisco Application Performance Assurance concept and the Application Performance Assurance capabilities.

It also briefly describes the hardware capabilities of the Network Module Enhanced Application Performance Assurance (NME-APA) and the Cisco specific applications that together compose the total Cisco Application Performance Assurance solution.

Cisco Application Performance Assurance Solution

The Cisco APA solution is delivered through a combination of purpose-built hardware and specific software solutions that address various traffic management challenges faced by enterprises. The NME-APA is designed to support classification and analysis of Internet/IP traffic.

Cisco APA enables enterprises to accommodate more traffic while capitalizing on their existing infrastructure. With the power of Application Performance Assurance, enterprises have the ability to analyze IP network traffic at high speeds. The Cisco APA solution also gives enterprises the tools they need to identify and target overhead content-based traffic.

Application Performance Assurance for Enterprises

Enterprises of any industry must find new ways to get maximum leverage from their existing infrastructure, while differentiating their offerings with enhanced IP capabilities.

The Cisco APA solution adds a layer of service intelligence and control to existing networks that can:

- Report and analyze network traffic at user and aggregate level for capacity planning
- Identify network abusers who are violating the acceptable use policy (AUP)
- Identify peer-to-peer and NNTP (news) traffic

- Integrate Application Performance Assurance solutions easily with existing network elements and business support systems (BSS) and operational support systems (OSS)

Cisco Application Performance Assurance Capabilities

The core of the Cisco APA solution is the application for managing traffic including:

- User and application awareness—Application-level drilling into IP traffic for real-time understanding and controlling of usage and content at the granularity of a specific user.
  - User awareness—The ability to map between IP flows and a specific user to maintain the state of each user transmitting or receiving traffic through the NME-APA.
  - Application awareness—The ability to understand and analyze traffic up to the application protocol layer (Layer 7).

  For application protocols implemented using bundled flows (such as FTP, which is implemented using Control and Data flows), the NME-APA understands the bundling connection between the flows and treats them accordingly.
- Programmability—The ability to quickly add new protocols and easily adapt to new services and applications in the ever-changing enterprise environment. Programmability is achieved using the Cisco Service Modeling Language (SML).

  Programmability provides an easy upgrade path for network and application growth.
- Robust and flexible back-office integration—The ability to integrate with existing third-party systems at the enterprise, including provisioning systems, user repositories, billing systems, and OSS systems. The NME-APA provides a set of open and well-documented APIs that allows a quick and robust integration process.
- Scalable high-performance service engines—The ability to perform all these operations at high-speed.

Application Performance Assurance Technology

The network devices perform application-layer stateful-flow inspection of IP traffic, and control that traffic based on configurable rules. The network device uses ASIC components and reduced instruction set computer (RISC) processors to exceed beyond packet counting and expand into the contents of network traffic. Providing programmable, stateful inspection of bidirectional traffic flows, and mapping these flows with user ownership, the network devices provide real-time classification of network usage. The classification provides the basis of the advanced traffic-control and bandwidth-shaping functionality. Where most bandwidth shaper functionality ends, the Cisco APA solution provides further control and shaping options, including:

- Layer 7 stateful packet inspection and classification
- Robust support for over 1000 protocols and applications, including:
  - Business—Systems, Applications, and Products (SAP), Oracle, Citrix, Digital Imaging and Communications in Medicine (DICOM), Healthcare Level 7 (HL7), FIX, and Blackboard
  - General—HTTP, HTTPS, FTP, Telnet, Network News Transfer Protocol (NNTP), Simple Mail Transfer Protocol (SMTP), Post Office Protocol 3 (POP3), Internet Message Access Protocol (IMAP), Wireless Application Protocol (WAP), and others

  - Peer-to-Peer (P2P file sharing—FastTrack-KazaA, Gnutella, BitTorrent, Winny, Hotline, eDonkey, DirectConnect, Piolet, and others
  - P2P VoIP—Skype, Skinny, DingoTel, and others
  - Instant Messaging—Yahoo Messenger, AIM, Google Talk, and MSN
  - Streaming and Multimedia—Real Time Streaming Protocol (RTSP), Session Initiation Protocol (SIP), HTTP streaming, Real Time Protocol (RTP) and Real Time Control Protocol (RTCP), and others
- Programmable system core for flexible reporting
- Transparent network and BSS and OSS integration into existing networks
- User awareness that relates traffic and usage to specific customers

About APA Device Console Components

APA provides a Graphical User Interface (GUI) for configuration and security functions. You use the GUI, called the Application Performance Assurance Device Console (APADC) to perform the functions described in this guide. The APADC includes a complete management infrastructure that provides the following management components to manage all aspects of the solution:

- Device management
- Traffic management
- User management
- Reporting
- Admin management

These management interfaces are designed to comply with common management standards and to integrate easily with existing OSS infrastructure.

Device Management

Cisco provides network Fault, Configuration, Performance, and Security Management.

Three interfaces provide network management:

- Graphical User Interface (GUI)—Accessible through the intranet, the GUI is used for configuration and security functions.
- SNMP—Provides fault management (through SNMP traps) and performance monitoring functionality.
- Command-line interface (CLI)—Accessible through a Telnet connection, the CLI is used for configuration and security functions.

Traffic Management

APA traffic management includes functionality that allows you to define various traffic classes and related protocols. In addition, APA allows you to set global policies and global filtering. In addition, you can set global settings such as calendars and ToS marking settings.

Data Collection

The APA generates usage data and statistics and manages them as Raw Data Records (RDRs), using a simple TCP-based protocol (RDR-Protocol). The APA implements the collection system and processes them on the local machine. The data is then stored for analysis and reporting functions, and for the collection and presentation of data to additional OSS systems.

Class Configuration Management

APA allows you to configure classes for your network applications. You can add, edit, and delete the various classes of traffic to be used for traffic classification. A class configuration file containing settings for traffic classification, accounting and reporting, and control is created and applied to the APA. The APA provides a tool to distribute these configuration files to the APA hardware on which APA is running.

The APA provides a GUI to edit and create these files.

Policy Management

APA allows you to define policies, which are a collection of rules that define APA's reaction when it encounters flows that match the criterion you specify. You can define global filtering, global policies, and user policies.

User Management

APA user management functionality allows you to define the users and groups of users on the network, for which traffic might be mapped for enabling user-awareness in system reporting. You can also view a list of active users on the network.

Reporting

APA reporting functionality provides the means of defining the data retrieval parameters, as well as the ability to generate application traffic reports.

Admin Management

APA administration management allows you to define each APA Device Console operator and the corresponding access rights.