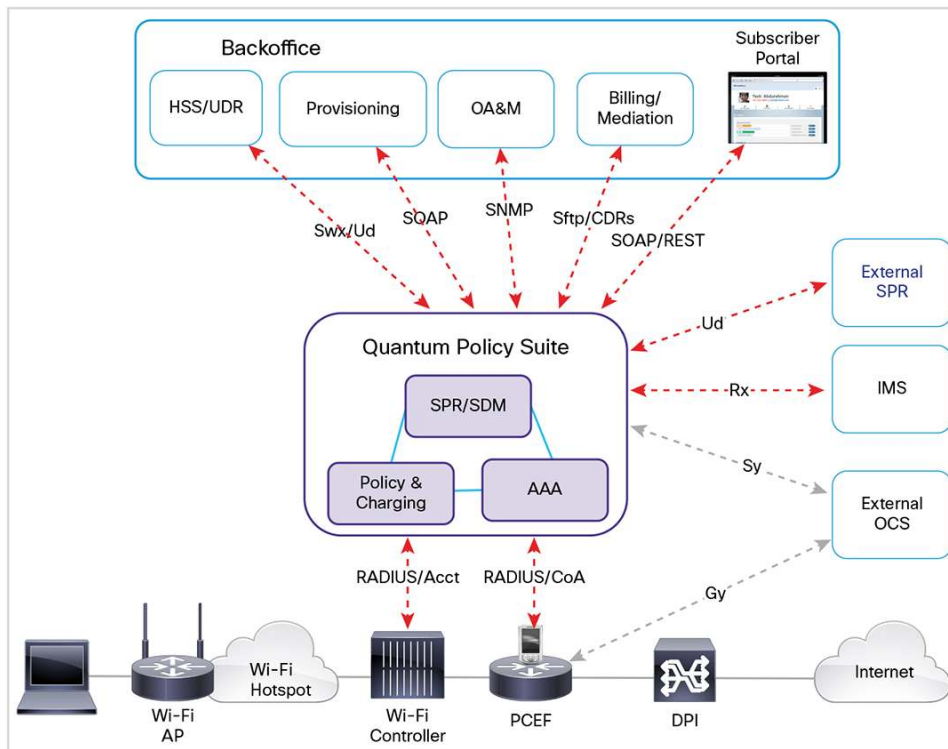# Cisco Quantum Policy Suite for Wi-Fi

Solution Overview

The Cisco® Quantum Policy Suite for Wi-Fi is a proven carrier-grade policy and subscriber data management software solution that helps enable service providers to control, monetize, and personalize Wi-Fi offerings on their networks. The solution offers a platform for delivering a variety of new services that take unique advantage of intelligent Wi-Fi network attributes such as location, presence, and seamless access. It also enables mobile service providers to optimize their networks by offering a cost-effective method of off-loading their mobile data traffic.

Some of the capabilities enabled by the Cisco Quantum Policy Suite for Wi-Fi include:

- Rapid rollout of loyalty-building Wi-Fi services
- Seamless off-loading of mobile traffic to a local Wi-Fi network
- Ability to activate, authenticate, and authorize, and to track usage
- Personalized services and billing through a GUI web-based portal

Figure 1.　Cisco Quantum Policy Suite for Wi-Fi Architecture

The Cisco Quantum Policy Suite for Wi-Fi enables service providers to improve the quality of the subscriber's experience accessing and using Wi-Fi services. The solution automatically validates a subscriber's identity, allows immediate access to personalized Wi-Fi services, tracks usage, matches usage to policy-based or personalized thresholds, and charges for services in real time. New subscribers can be granted access through customized portals, including creating an account, selecting services, and accepting terms and conditions through click-and-go options. The Cisco Quantum Policy Suite for Wi-Fi also helps service providers address their data congestion problems by off-loading mobile traffic to Wi-Fi networks.

Features and Benefits

The Cisco Quantum Policy Suite for Wi-Fi offers industry-leading performance, high availability, and disaster recovery, and it simplifies network architectures by using a single subscriber repository that draws from older data sources without conversion or revision. The solution includes Cisco's virtualized, purpose-built policy platform that has been independently validated for record-breaking performance and scalability. The Quantum Policy platform provides real-time management of subscriber sessions, applications, and network resources based on service provider-configured business rules and subscriber data management.

The Cisco Quantum Policy Suite for Wi-Fi provides the following features.

- **Subscriber Authentication and Authorization**
  - RADIUS and Diameter authentication protocols
  - Wireless Internet Service Provider roaming (WISPr) protocol 1.0
  - Transparent Automatic Login (TAL), helping enable end users to maintain an always-on connection without the need to authenticate each time they connect
  - 3rd Generation Partnership Project (3GPP) compliant Policy and Charging Rules Function (PCRF)
  - Wi-Fi federation for roaming among different service provider Wi-Fi networks
- **Tiered Services**
  - Application of policy rules based on the service plan, such as bandwidth speed, usage limits, number of logins, and more, on a per-tier basis
  - Segmentation of a service provider's subscriber base by differentiated services and pricing (for example, a service provider may offer premium, high-speed access targeted to business users and gamers and basic access speeds for email and browsing users)
- **Quota and Usage Control**
  - Creation of time and/or usage-limited passes, for example, passes that are good for an hour, day, week, or month
  - Tracking and application of daily, weekly, or monthly billing cycle usage limits
  - Application of pay-as-you-go (PAYG) top-ups and/or downgrades when subscribers exceed usage limits
  - Control of roaming overages and reduction of customer bill shock, which also assists in compliance with European Union roaming regulations
- **Subscriber Management**
  - Subscriber data management, ID management, and user data persistence
  - Account, subaccount, and user group management

- User credential management: Username and password, MAC, SIM card vectors and quintuplets, certificates, etc.
- Service Plan association and Account Balance Management
- Provisioning Integration and Subscriber self-registration

- **3GPP Mobile Data Offload**
  - A cost-effective option for reducing mobile data traffic congestion by offloading traffic through the Wi-Fi network
  - 3G Mobile Long Term Evolution (LTE) integration with Gateway GPRS Support Node/Packet Data Serving Node (GGSN/PDSN) technology, including the Cisco ASR 5000 Evolved Packet Core (EPC)
  - Diameter and RADIUS Extensible Authentication Protocol (EAP) authentication
  - Diameter Gx/Gy Policy and Charging Control (PCC) for 3GPP LTE architecture functionality

Additional features and benefits are listed in Table 1.

Optional Feature Modules

In addition to the capabilities listed above, Cisco offers optional feature modules that include:

- Enhanced location: Location resolution based on Service Set Identifier (SSID) and/or access point MAC address
- Mobile data offload: EAP for GSM Subscriber Identity Module (EAP-SIM) and EAP for UMTS Authentication and Key Agreement (EAP-AKA) authentication with SIGTRAN Mobile Application Part Gateway (MAP GW) for integration with Home Location Registers (HLRs)
- Geographic high availability: Geographical redundancy and disaster recovery; can be deployed in active-active mode and active-passive mode
- Wi-Fi federation: Support for CableLabs® Wi-Fi Roaming Architecture
- Subscriber service web portal: Web-based tool for building and managing location-based captive portals that support a variety of login behaviors, voucher distributions, and quota top-ups

Table 1.   Features and Benefits

Feature	Benefit
Carrier-Grade Architecture	
Web-based service definition manager	Tool for rapid definition of new service plans using customizable policy building blocks; for example, bandwidth tiers and monthly fair use limits and breach rules.
Powerful core rules engine	Powerful rules engine that binds the various Cisco Quantum Policy Suite for Wi-Fi applications. This engine provides the framework for the policy rules as well as the APIs present on the system.
Highly scalable, carrier-grade architecture, including geographic availability	Architecture that supports the scale required by large mobile networks while maintaining low latency at high transaction rates. Operators can easily add capacity simply by adding blades. In addition, carrier-grade geographic high availability is available as an option. Geographic high availability provides for geographical redundancy and disaster recovery and can be deployed in active-active mode and active-passive mode.
Extensive multivendor interoperability	Proven interoperability across numerous authentication, authorization, and accounting (AAA) servers, broadband remote access servers (B-RASs), broadband network gateways (BNGs), mobile packet cores, deep packet inspection (DPI), intelligent network (IN), online charging systems (OCSs), billing applications, and provisioning vendors.
Policy Services	
Session management	Ability to authorize, manage, and terminate (as necessary) a subscriber's session and its associated bearers.
Multiple Policy and Charging Enforcement Function (PCEF) controls	Correlation, control, and coordination of policies across multiple policy enforcement points; for example, a Cisco Intelligent Services Gateway (ISG) and/or Cisco Service Control Engine (SCE) DPI for a subscriber's session.

Feature	Benefit
QoS control	Authorization and control of the subscriber's bandwidth.
Time-based triggers	Recognition of time of day, day of week, month, year, weekday, workday, weekend, and so forth as inputs for policy decisions.
Multiple balance types	Provision of one-time, recurring, rollover, and top-up balances. Service providers determine how recurring and rollover balances are replenished (such as daily, weekly, monthly, or per billing cycle).
User notification	Notification of subscribers through Short Message Service (SMS), email, Apple Push, browser redirect, or other notification extensions.
Location awareness	Use of the subscriber's location as an input for policy decisions; for example, different portal pages or policy rules based on the subscriber's location.
Subscriber Data Management	
Flexible schema	Flexible data schema that helps the Wi-Fi service manager fit the service provider's data, not the other way around.
Group accounts	Multiple-user support (support for multiple users in a single account, along with shared as well as individually assigned services and multiple identities and credentials). Helps enable quota sharing, parental controls, and multiuser plans.
Seamless provisioning	Simple Object Access Protocol/Representative State Transfer (SOAP/REST) web services API support for simplified integration to OSS/BSS applications. Onboard subscriber management GUI provides a single interface for viewing data from multiple repositories.

System Requirements

The Cisco Quantum Policy Suite for Wi-Fi is certified for many commercial blade-server platforms, including Cisco Unified Computing System™ (Cisco UCS®) B-Series. The specifications listed in Table 2 are the minimum hardware requirements. Please consult with your account manager for your specific deployment requirements.

Table 2.   System Requirements

CPU	2 Intel® Xeon® X5650s or higher speed
Disk space	2 100-GB or higher SSDs with hardware Redundant Array of Independent Disks (RAID) 1
Virtualization	Must be listed on the VMware Hardware Compatibility List (HCL): http://www.vmware.com/resources/compatibility/search.php
Hardware	4 commercial blade servers; for example, 4 Cisco UCS B-Series blade servers or equivalent
Memory	24 GB RAM for 0 to 500,000 subscribers 48 GB RAM for 500,001 to 1,000,000 subscribers 72 GB RAM for greater than 1,000,000 subscribers
Network interface	Dual Gigabit Ethernet ports

Why Cisco?

Cisco leads the industry in policy management deployments with the only policy platform to offer network control, subscriber awareness, application integration, and service monetization. Cisco is committed to promoting innovation in the service provider market and continues to develop new products and solutions to help service providers transform their networks to more profitable, service-rich, and flexible IP next-generation networks (IP NGNs). Cisco provides world-class networking solutions that help enable service providers to dramatically boost sales, improve customer satisfaction, and increase profitability.

Service and Support

Using the Cisco lifecycle services approach, Cisco and its partners provide a broad portfolio of end-to-end services and support that can help increase your network's business value and return on investment. This approach defines the minimum set of activities needed, by technology and by network complexity, to help you deploy and operate Cisco technologies and optimize their performance throughout the network lifecycle.

For More Information

For more information about the Cisco Quantum Policy Suite for Wi-Fi, contact your local account representative.

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