

# Cisco Quantum Policy Suite for Mobile

The Cisco® Quantum Policy Suite for Mobile is a proven carrier-grade policy, charging, and subscriber data management solution that enables service providers to rapidly create and bring new services to market, delivering a better user experience, optimizing resource usage, and generating new monetization opportunities.

Working in conjunction with policy enforcement points in the network, the Cisco Quantum Policy Suite for Mobile is a standards-compliant solution for the real-time, dynamic management of subscribers, applications, and network resources based on service provider-configured business rules across 3G, 4G, Long Term Evolution (LTE) access networks, and IP multimedia subsystem (IMS) service architectures.

## Challenge

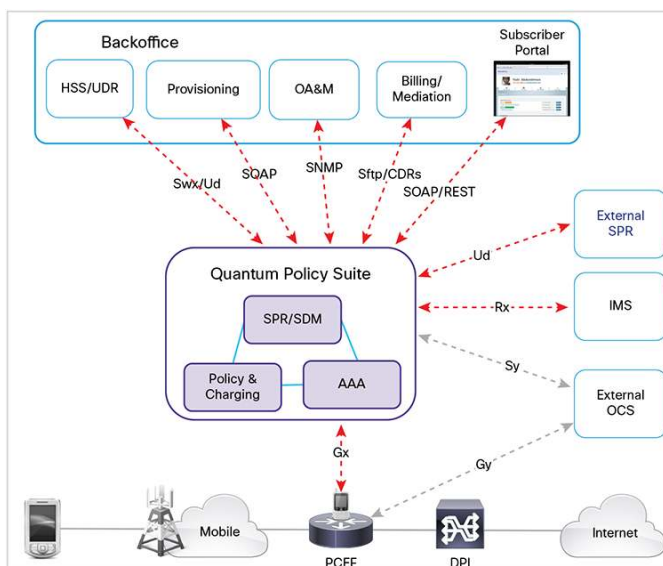
The Cisco Visual Networking Index (VNI) Global Mobile Data Traffic Forecast predicts that mobile data traffic volume will grow 18-fold from 2011 to 2016. There will be more than 19 billion mobile-connected devices in 2016, up from 10 billion in 2011. Globally, the average mobile connection will generate 1216 megabytes of mobile data traffic per month in 2016, up from 92 megabytes in 2011.

To compete in this rapidly changing environment, mobile service providers need a policy solution that does more than contain network costs. They need a solution that acts as an intelligence layer for mobile data services to provide a personalized and optimized experience for their subscribers. Policy is more than Policy and Charging Rules Function (PCRF); it is a platform for service innovation.

## Solution

The Cisco Quantum Policy Suite is a comprehensive policy, charging, and subscriber data management solution that allows service providers to control and monetize their networks and to profit from personalized services.

**Figure 1.** Cisco Quantum Policy Suite Solution Architecture



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The Cisco Quantum Policy Suite for Mobile provides an intelligent control plane solution, including southbound interfaces to various policy control enforcement functions (PCEFs) in the network, and northbound interfaces to OSS/BSS and subscriber applications, IMSs, and web applications (Figure 1). The Quantum Policy Suite modules are enabled individually or deployed as an integrated end-to-end policy, charging, and service creation solution.

The Cisco solution includes the following core modules.

- **Policy module** implements PCRF, which provides real-time management of subscribers, applications, and network resources based on service provider-configured business rules. The Quantum Policy Server controls and coordinates the subscriber's session across multiple enforcement points in the network - gateways, deep packet inspection (DPI) devices, and optimization servers. Policy control actions include:
  - Subscriber session authorization
  - Service selection and personalization
  - Quality of service (QoS) and bandwidth control
  - Session- and application-specific quota authorization and tracking
  - Application-based admission control
- **Charging module** supports online charging services (OCS) with real-time rating rules. The Quantum Charging Server offers an easily deployed prepaid OCS solution, including integration with external intelligent network (IN) systems. One-time, recurring, rollover, and top-up balances are supported, against which both default and user-personalized thresholds (for example, low-balance notifications) may be defined. Quotas may be shared across groups, such as family, corporate, or multiple-device plans.

### Optional Feature Modules

- Subscriber Management
  - Centralized, highly scalable subscriber data management
  - Real-time subscriber policy and charging control
  - Comprehensive data storage engine coupled with a virtualized bridge to federate existing subscriber databases into a unified access layer
  - Standalone or fully integrated subscriber profile repository (SPR)
- Quota
  - Store monetary and usage balances for fair-use caps, bill-shock thresholds, and roaming caps
  - Assign multiple recurring, group, and one-time balances to subscribers with capability for top-up directly by the subscriber
  - Support shared wallet and group accounts in support of family or corporation, or across multiple devices (with separate thresholds per subaccount)
  - Track and compare subscriber usage to user-defined thresholds as set up in the policy rules
  - Enable subscriber notification, browser redirects, and bandwidth downgrades
- VoLTE
  - 3GPP Rx interface to IMS voice over LTE (VoLTE) integration
  - Subscriber QoS authorization and control for voice bearers

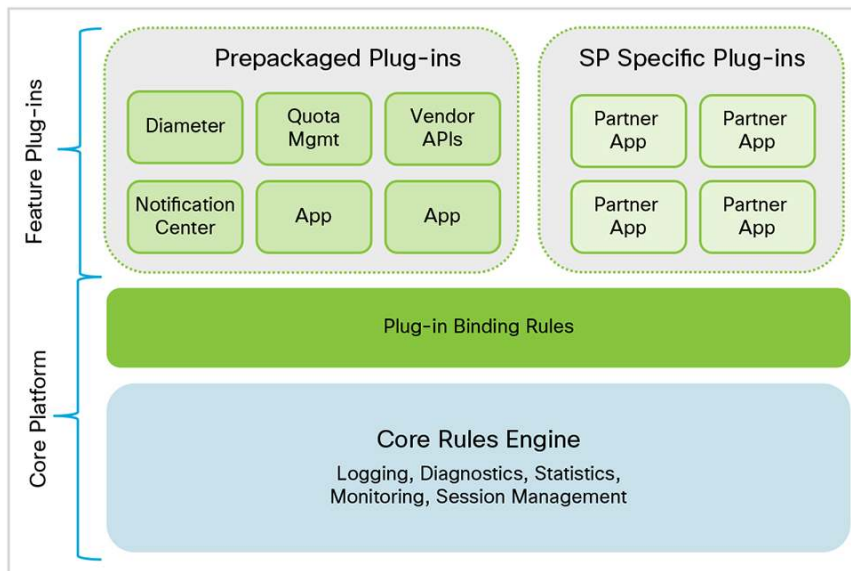
- External Policy and Charging Integration
  - 3GPP Sy interface for PCRF integration with an external OCS
  - Define policy counters and statuses
  - Reference policy counter statuses in policy rules
- External SPR Integration
  - Query subscribers from an external SPR; authentication, authorization, and accounting (AAA) system; or provisioning system
  - 3GPP Sh and Ud interfaces for external SPR integration
  - Lightweight Directory Access Protocol (LDAP), SQL, and Diameter integration can be configured in service definition GUI

Table 1 describes the features and benefits of the Cisco Quantum Policy Suite for Mobile.

## A Platform Approach to Policy and Charging Control

To support the fully virtualized solution, the Quantum Core Platform underlies Cisco Quantum Policy Suite for Mobile and is shared across all Quantum Policy Suite components (Figure 2). The cornerstone of Cisco's platform approach is a high-performance core rules engine that delivers unsurpassed performance. The feature plug-ins of Cisco Quantum Policy Suite for Mobile are a set of componentized feature modules. The core rules engine binds different feature plug-ins using policy blueprints to support use cases that are bundled into product modules. Tying the Quantum Policy Suite components and features together is the Quantum Policy Builder, through which new services and policy business rules are defined.

**Figure 2.** Quantum Policy Core Platform



## Competitive Benefits

The Cisco Quantum Policy Suite for Mobile provides these benefits over competitive solutions.

- **Carrier-Grade Reliability**

The Cisco Quantum Policy Suite for Mobile virtual architecture supports flexible and cost-effective carrier-grade strategies. Virtual instances are spread across multiple blade servers for full hardware and software redundancy within a Quantum Policy Suite cluster. Should a blade server fail, incoming requests are directed to available virtual instances on other blade servers. This helps ensure high availability and fault tolerance against software faults as well as hardware failures.

- **Unmatched Scalability**

The Cisco Quantum Policy Suite for Mobile scales to support both today's networks and upcoming next-generation networks, such as LTE with VoLTE, which are driving policy transactions per second (TPS) to unprecedented heights. The Quantum Policy Suite is built to handle high TPS at low latencies. The solution can be sized to fit your network performance requirements and grow with them through the addition of blades in the system, resulting in lower total cost of ownership when compared to traditional PCRF models.

- **Service Creation Velocity**

The Cisco Quantum Policy Suite for Mobile is purpose-built for rapid solution rollout and extensibility. Prepackaged use case templates are provided to accelerate time to market. The extensible nature of the Quantum Policy Suite enables service providers to go beyond standard policy definition to support nonstandard, proprietary interfaces and customized service logic without affecting the core platform.

**Table 1.** Features and Benefits

Feature	Benefit
<b>Carrier-Grade Architecture</b>	
<b>Web-based service definition manager</b>	Tool for rapid definition of new service plans using customizable policy building blocks, enabling, for example, bandwidth tiers and monthly fair use limits and breach rules.
<b>Powerful core rules engine</b>	Powerful rules engine that binds the various Cisco Quantum Policy Suite applications. Provides the framework for the policy rules as well as the APIs present on the system.
<b>Highly scalable, carrier-grade architecture, including geographic availability</b>	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.
<b>Extensive multivendor interoperability</b>	Proven interoperability across numerous AAA servers, broadband remote access servers (B-RASs), broadband network gateways (BNGs), mobile packet core, DPI devices, INs, OCSs, billing applications, and provisioning vendors.
<b>Policy Services</b>	
<b>Session management</b>	Authorize, manage, and terminate (as necessary) a subscriber's session and its associated bearers.
<b>Multiple Policy and Charging Enforcement Function (PCEF) controls</b>	Correlate, control, and coordinate 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.
<b>QoS control</b>	Authorize and control the subscriber's bandwidth.
<b>Time-based triggers</b>	Recognize time of day, day of week, month, year, weekday, workday, weekend, and so forth, as inputs for policy decisions.
<b>Multiple balance types</b>	Provide 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).
<b>User notification</b>	Notify subscribers through Short Message Service (SMS), email, Apple Push, browser redirect, or other notification extensions.
<b>Location awareness</b>	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.

Feature	Benefit
<b>Subscriber Data Management</b>	
<b>Flexible schema</b>	Flexible data schema that helps the Wi-Fi service manager fit the service provider's data, not the other way around.
<b>Group accounts</b>	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.
<b>Seamless provisioning</b>	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 Mobile 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

<b>CPU</b>	2 Intel® e5-2620 or higher-speed processors, depending on system performance requirements
<b>Disk space</b>	2 100-GB or larger solid state disks (SSDs) with hardware Redundant Array of Independent Disks (RAID) 1
<b>Virtualization</b>	Must be listed on the VMware Hardware Compatibility List (HCL): <a href="http://www.vmware.com/resources/compatibility/search.php">http://www.vmware.com/resources/compatibility/search.php</a>
<b>Hardware</b>	4 commercial blade servers; for example, 4 Cisco UCS B-Series blade servers or equivalent
<b>Memory</b>	48 GB minimum, 64 GB or greater recommended, depending on system performance requirements
<b>Network interface</b>	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 Mobile, contact your local account representative.




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