Models for Monetizing Virtualization in the Control Plane

Go beyond cost management—increase service agility, innovation and velocity with virtualized policy control
Virtualization—a Paradigm Shift for Mobile Services

In the world of big data, rising competition and changing consumer demand, monetization models for mobile services are in a constant state of rapid flux. Service providers are looking for a networking infrastructure that can adapt to their business models—and move beyond the constraints of complex architecture and expensive proprietary hardware.

Driven by the need to reduce capital expenditures (CAPEX) and operational expenditures (OPEX), service providers are exploring the potential for standard IT virtualization technology to re-engineer the traditional hardware model and prepare their networks for future workloads, greater automation and highly differentiated services.

Virtualization comes with inherent challenges in the mobile network—it’s distributed, large-scale and multi-service, and has rigorous performance and reliability requirements. Network Functions Virtualization (NFV) takes a telecom-centric approach to implementing network systems that can be deployed as virtual appliances on a wide range of commercial off the shelf (COTS) hardware and hosted on centralized servers. Resources can be shared and easily moved around as needed—without installing new boxes or incurring incremental costs for storage space and power.

Since the Evolved Packet Core (EPC) is a relatively recent investment, it’s the obvious choice for early network virtualization and provides the starting point for a new, service-oriented “foundation architecture” that can be extended in the future.

Service providers can:

- Monetize new services with highly targeted offers for B2B and B2C customers
- Implement NFV applications while developing roadmaps for Software Defined Networking (SDN)
- Enable cloud-based management and increased service agility
Creating New Models for Monetization

Network virtualization introduces a software approach that opens up a wide range of customer-centered business models. Control-plane applications—such as policy servers, subscriber databases and IMS—can be easily ported to COTS hardware and virtual machine (VM) environments.

In a recent survey by Heavy Reading, more than 50 percent of service providers named policy control as the highest priority for NFV implementations—to reduce costs and improve the flexibility of their networks. But there’s enormous potential for monetization by leveraging virtualized policy control to accelerate the launch of new services, support emerging business models (enterprise, M2M, and MVNO) and create custom promotions for targeted populations.

Virtualized policy control enables:

- **Service agility**—just-in-time provisioning to scale resources up or down
- **Service velocity**—faster configuration and delivery of targeted services
- **New revenue streams**—shared services, over-the-top (OTT) partnerships and market development

Virtualization Use Cases

In this guide, we will discuss six use cases that explore the potential for virtualization in the control plane to monetize innovative services and expand into new customers and markets.

- **Extended Applications for Galaxies**—targeted rollouts of new services in geographic regions
- **Virtual Enterprise**—tailored services for divisions, working groups and specialized teams

**MONETIZATION USE CASES FOR VIRTUALIZED POLICY CONTROL**

- **Public Safety Networks**—shared RAN and virtual dedicated networks for priority services
- **Big Data Analytics**—contextual information for value-added B2B2C services
- **Personalized Subscriber Offers**—time- and location-based
- **Network-aware Provisioning**—intelligent offload and elastic scaling
Use Case #1: Extended Applications for Galaxies

Under the traditional hardware model, new services and upgrades typically require network-wide implementation, forcing trade-offs for multi-national service providers with regional properties in small or developing markets.

Through virtualization, service providers can:

- Reduce costs to replicate services in regional, low-volume markets
- Validate monetization models in lower-risk regions
- Improve flexibility to differentiate services and respond to demand

**B2C SCENARIO: GALAXIES**

**Multi-National Service Provider**

**Profile:** Galaxy service provider with a number of regional subsidiaries.

**Strategy:** Improve data speed and launch media-rich services.

**Investment:** Upgrades to infrastructure for LTE, VoLTE and RCS.

**Virtualization Model:** Instead of a network-wide rollout, the company plans to introduce services in local markets, based on subscriber demand and usage patterns.

- Multi-tenancy on a centralized, common platform with virtualized PCRF instances
- Virtualized policy runs locally on VMware and commercial servers, with no subscriber minimums

**Market 1: Testing the Model**

**Characteristics:** Urban population with high demand for social applications—enhanced messaging, live video and file sharing across devices

**Result:** Uptake of new RCS service is highest in urban regions and surpasses the 10% growth benchmark

**Markets 2+: Replicating the Service**

The service provider replicates the virtual PCRF to additional markets with similar demographics.

- Deploy a new instance of the virtualized PCRF
- Apply the configuration from the original test market

**Monetization Opportunities**

Virtualization enables regional service providers to control when and how to deliver applications to local markets without incurring heavy costs for proprietary hardware.

- Test uptake for new services and explore different packaging options to increase subscriber adoption
- Rapidly introduce new services and “pay as you go” options to build regional demand
- Limit CAPEX and OPEX through centralized delivery, cost sharing and lowering the hardware footprint
- Automatically scale system resources up or down
Use Case #2: Virtual Enterprise

A virtualized control plane enables business-to-business opportunities for the monetization of network services that can be tailored to meet the needs of different locations, business units and specialized work teams.

Virtualization makes it possible to:
- Create “virtual private networks” through partitioning
- Meet security, access, and privacy needs of key enterprise verticals—financial, M2M
- Enable delegated administration to accelerate service turn-up

B2B SCENARIO: ENTERPRISE

Financial Services
Profile: A large financial services company with offices in 15 countries requires a complex set of private networks, security controls and local server farms.
Strategy: Reduce costs and increase service agility by creating flexible and elastic work environments
Virtualization Model: Centralize network policy and deploy virtual PCRFs for each location and specialized work team.
- Control center for centralized policy with QoS settings and partitioning for virtual private networks
- Virtual instances of PCRF deployed to different user groups

Centralized Delivery, Local Control
Network administrator can configure virtual work environments for various user groups, such as:
- Internet Access: Traders are restricted from accessing the Internet during trading hours. Policies are set based on user profile, time and function
- CRM System: Provide mobile access to the company CRM for users with varying rights to different levels of information
- Financial Transactions: Priority QoS is given to users managing financial transactions during trading hours. High levels of security are placed on client and financial data

Monetization Opportunities
Through virtualization, service providers can deliver the carrier-grade security and performance of a private, dedicated network without the complexity and cost of deploying separate control planes and network resources.
- Create value-added services to meet the security, access and privacy needs of large enterprises and key verticals
- Increase customer loyalty by providing more localized control over network configuration
- Reduce OPEX by delegating management for local administration of security, access and QoS policies
Use Case #3: Public Safety Network

Public safety agencies have a mandate to deliver high-quality services, maintain fast response times and manage budgets. Communications are critical—but supporting dedicated private networks is costly and complicated.

Public safety organizations can:
- Share network resources across agencies and commercial users
- Ensure secure communications and priority QoS for emergency personnel
- Access bandwidth resources to meet unpredictable demand

B2B SCENARIO: EMERGENCY SERVICES

Mid-size Municipality

Profile: Mid-size city with a population of just over 100,000 residents with the mandate to manage rising costs for the delivery of emergency services.

Strategy: Use a shared RAN infrastructure to support the communications needs for its public safety agencies.

Virtualization Model: Virtualized policy control running on commercial server platforms.
- Centralized policy with virtual PCRF instances on COTS hardware
- Configured for specialized functionality for different groups—such as secure channels for police communications and QoS priority for 911 call centers

Emergency Deployment
- During a recent severe storm, the city’s Emergency Response Team evacuated residents from flood zones and fires from downed power lines
- Available bandwidth is diverted from the commercial carrier RAN to support the sharp increase in mobile traffic
- Network administrators adjust the centralized policy rules to assign high-priority QoS to the fire service and emergency response teams involved in the evacuation

Monetization Opportunities

Agencies can manage their costs without sacrificing the performance and QoS for essential communications and emergency response.
- Create customized services for agencies—including QoS and security
- Scale on demand—time, location, state of emergency
- Create partnerships for virtual networks
- Reduce OPEX by sharing radio access across agencies and commercial networks
Use Case #4: Big Data Analytics

Service providers can monetize “big data” by using contextual information and intelligence to provide analytics for highly targeted B2B2C services for retail outlets, hotels, entertainment, sporting venues and other consumer-oriented businesses.

Virtualization enables:
- Use of analytics to create promotions based on behaviors, preferences and location
- Pay as you go network turn-up to increase or reduce resources
- Localized application management for rapid introduction of new offers

B2B2C SCENARIO: ANALYTICS-BASED OFFERS

Theme Park Promotion
Profile: Service provider delivers mobile network services to a large theme park that brings in thousands of visitors every day.
Strategy: Create special promotions to advertise new attractions and create a personalized experience for visitors.
Virtualization Model: Use information about mobile usage, time and location to create custom policies for theme park visitors.
- Provision customized policies based on subscriber data for usage, preferences and location
- Dedicated virtual PCRF appliance enables service provider to create highly targeted, personalized offers for specific users without incurring the high costs of additional servers and custom hardware

Subscriber Experience
- Subscribers who are Facebook users get access to special coupons that can be redeemed at the park for rides and purchases from vendors
- Visitors snap photos at locations in the park and share them on Facebook—and accumulate points towards more coupons
- Following the success of the first promotion, the park offers a free stage show pass weekdays from 3 p.m. to 6 p.m. for subscribers who post “park experience” videos on Instagram

Monetization Opportunities
Using mobile data analytics to create highly differentiated offerings can generate new sources of revenue from B2B and B2C customers.
- Develop “opt in” services for B2B customers while delivering a personalized data experience for subscribers
- Reduce OPEX and enable rapid provisioning for new services by eliminating custom hardware development
- Explore opportunities for revenue-sharing partnerships with content and OTT providers
Use Case #5: Targeted Subscriber Promotions

Demand for access to rich media services from sporting venues, concerts and special events creates a unique opportunity for service providers to deliver differentiated services and a high-quality data experience for subscribers.

Virtualization provides:
- Personalized offers based on time and location
- Secure billing and authentication for upsell promotions
- Real-time management of bandwidth and QoS requirements

B2C SCENARIO: LOCATION-BASED PROMOTIONS

Special Event: World Cup
Profile: Subscribers attending the FIFA World Cup™ in Brazil can access LTE mobile services at the venues.
Strategy: Monetize the high demand for video messaging and other media-rich services during popular events—such as the opening match in São Paulo—by offering QoS and speed boosts during specific time periods.
Virtualization Model: Virtualization supports demand for media-rich services without adding new hardware.
- Centralized policy for speed and QoS with virtualized PCRF instances for location and time-based services
- Secure authentication and real-time updates for entitlements

Subscriber Experience
- Value-added packages for guaranteed QoS and speed: $10 per day or $50 per week
- Subscribers can pay for the speed boost from their smartphone using a credit card or add the charges to their monthly bill
- Once the payment transaction is completed, subscribers immediately start enjoying the superior response and performance of the high-speed service

Monetization Opportunities
Service providers can use virtualization to elastically increase their bandwidth to handle data volume during high-traffic periods and create customized policies for individual subscribers.
- Generate upsell revenue from subscribers and promote higher-tier packages
- Strengthen customer loyalty by delivering a better data experience during high-volume periods
- Reduce CAPEX by scaling performance and QoS requirements elastically
Use Case #6: Network-Aware Provisioning

Combining a more pervasive network awareness with virtualization enables service providers to drive intelligent offload decisions and seamlessly re-allocate resources to respond to changing network conditions and data usage by their subscriber base.

Using virtualization, service providers can:

- Proactively manage temporary network congestion
- Enable just-in-time provisioning to handle increased traffic during peak times
- Provide a high-quality data experience for subscribers—even during unplanned surges

B2C SCENARIO: ELASTIC SCALING

New Year’s Eve Congestion

Profile: On New Year’s Eve between 11 p.m. and 1 a.m., data usage on the service provider’s VoLTE surges, as people use their smartphones to call friends and family around the world.

Strategy: Meet expected congestion during peak periods and support the increased performance and signaling demands for VoLTE, including high definition (HD) voice services.

Virtualization Model: Rather than over-provision, use virtualization to elastically respond to network congestion.

- Add virtual PCRF instances to manage call load as demand increases
- Automatically shift bandwidth to locations such as New York’s Times Square, where thousands are expected to ring in the New Year
- Handle unexpected surges intelligently—as people access and upload video and other media-rich content on the VoLTE network

Subscriber Experience

- Subscribers enjoy HD voice quality with no service degradation or dropped calls—even during periods of congestion
- High reliability for critical voice services such as emergency call prioritization and voice roaming with guaranteed Quality of Service (QoS)
- Premium speed tiers create a better data experience for streaming video, photo sharing and video chat

Monetization Opportunities

By virtualizing policy control, service providers can handle network congestion without over-provisioning—and monetize upsell services.

- Provide guaranteed QoS for voice and premium upsell offers for data services
- Increase retention and loyalty with unmetered access to popular applications as part of tiered subscriber plans
- Limit CAPEX on network expansion—manage infrastructure investments and scale elastically to handle predicted and unpredicted congestion on VoLTE networks
Summary—Monetization Models for Virtualization

Virtualization creates the opportunity to move beyond inflexible, expensive hardware infrastructure to a software-based framework that enables rapid service innovation, customization and new business models.

Control plane virtualization gives service providers new ways to monetize mobile services while preparing their networks for the future. Virtualized policy control can be implemented to support innovative, revenue-generating services while service providers establish the new architectures that can encompass the entire virtualized EPC and evolve into tomorrow’s SDN and cloud strategies.

Service providers can monetize the virtual control plane by:

- Accelerating the launch of new, differentiated services
- Creating customized workflows to support customer use cases
- Enabling new partnerships and business models for increased revenue share
- Targeting service introduction to develop new markets with “pay as you go” models
- Increasing customer loyalty by delivering carrier-grade performance, QoS and security

Top Five Considerations for Monetizing the Virtual Control Plane

1. Adopt a flexible framework that can adapt to changing technology and commercial needs.
2. Choose lead applications for virtualization that can be run in parallel with your existing network architecture.
3. Create an organizational structure that fosters software-centric network development and use cases.
4. Work with vendors who have a clear path to virtualization and can support your initiatives.
5. Identify innovative services and use cases that go beyond cost savings and efficiencies to create new business models and opportunities for monetization.
Modular, virtualized control plane technology from Amdocs enables service providers to achieve faster time to market for new services with higher elasticity for performance and scalability. The virtualized environment is characterized by distributed software architecture, self-contained application clusters with no scale limitations and independence from centralized session/state storage.

Amdocs leads the industry with future-ready virtualization technologies and strategic investments in NFV and SDN. Amdocs’ virtualized network control solutions enhance service velocity and agility, allowing for the rapid introduction of innovative new services that can be targeted for specific subscribers and geographies, including dynamic QoS on demand. Virtualized solutions offer multi-network support and extensive interoperability with network elements, enabling ease of deployment in mixed vendor heterogeneous network (HetNet) environments.

About Amdocs Virtualized Control Plane Solutions
Advanced Capabilities for Virtualization

Amdocs control plane solutions encompass virtualization use cases that can be easily configured for rapid monetization, network elasticity and rapid time to market.

Amdocs provides advanced solutions for virtualization:

- The industry’s first virtualized control plane that can be deployed within industry-standard hypervisor environments
- Pre-packaged PCRF virtual appliance that can be quickly configured to develop innovative services for monetization
- Small, medium and large configurations of the PCRF, HSS, SDB and DRA can be used for pay as you grow models and highly targeted customization for regions, divisions and lines of business
- Support for fully virtualized, bare metal deployments and hybrid implementations to maintain continuity with existing business
- Multiple deployment options independent of a virtualized data plane for implementation in the cloud or automated systems
- Easy expansion, operations and in-service upgrades
- Extensive interoperability with network elements and multi-network support
- Contributing member of ETSI and alignment with the ETSI architecture and standards

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