The Network Edge as a Managed Business Service

While the communications space has evolved with the emergence of web scale companies, the network edge has proved to be elusive. Web scale companies created and dominate the cloud (compute, storage and application), but the network edge has remained the exclusive domain of large network operators. Now, even that exclusivity is being challenged with new technology and architectures.

For traditional communication service providers, the challenge will be to preserve value in the network edge and access. To this end, Ruckus Networks provides a robust solution that will allow communication and managed service providers (CSP/MSP) to operate the edge as a robust, feature-rich business service.

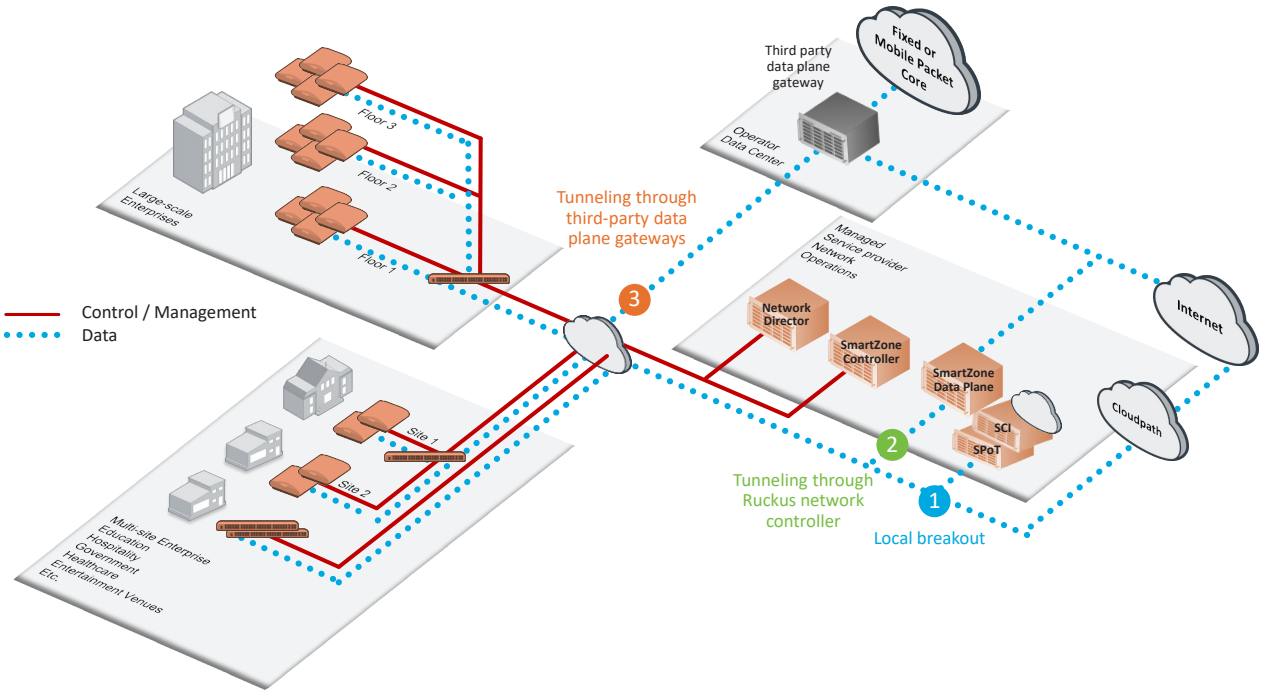
In a 2016 study in Heavy Reading, "Making Sense of The Evolving Business Services Market," Alan Breznick found that secure WAN networking was consistently the top service across a number of key verticals—retail, government, finance, education, health care, entertainment, hospitality, etc. Additionally, his study found that of the service provider respondents, the top six services and features requested included "Basic Services," "Enhanced Services," "IT Services," and "Outsourced Infrastructure and Infrastructure Management."

The fuzzy 'Edge'

Identifying the "network edge" can be as challenging as placing a fence around a corporate network. For our purposes, we will define the network edge as up to and including Wi-Fi access points and wired distribution switches. That would define a network edge managed business service as a bundled service of WAN access as well as on-premises service distribution.

Whether the WAN connectivity is MPLS, Metro Ethernet, broadband, LTE or something else, we defer to the service providers to choose. Rather, we are expanding and enhancing the service providers' value proposition by allowing them to offer the types of enhanced and value-added services identified in Mr. Breznick's study.

The Ruckus network managed network edge architecture



Scalable, secure, reliable

The challenge with moving the point of service demarcation from the curb or the side of the building into the building is that it places additional requirements on the operator. These requirements have historically been ones that operators were unwilling to assume and did not need to due to lack of competition, but times have changed. Now, if a managed network edge service is to be offered, it must address three key challenges:

1. It must be scalable without a linear scaling of human resources.
2. It must be secure both in its operation and its management.
3. It must be reliable from a user experience as well as an operational perspective.

The solution for delivering a managed network edge as a business service breaks down into three major components:

- Operations and management
- Enhanced services
- Wireless and wired technology

Operations and management

As a managed service provider, there are three objectives you will want to strive for. First, a single system that can be shared among multiple users and organizations—a multi-tenant, multi-tier platform. Second, the ability for unique users to manage their own infrastructure, control policies, and separate and manage traffic within their domain. Finally, it must provide for automated provisioning and inventory management capabilities of all edge network ports within a user's domain.

Controller based orchestration

Core to the solution for a managed edge network is our Ruckus SmartZone Controller. The Ruckus SmartZone Controller provides centralized network and control plane management for Ruckus wired switches and wireless access points (APs). In large deployments, a controller architecture will be critical for overall network management.

The Ruckus SmartZone Controller offers several unique advantages. First, it supports multi-tiered tenancy. Our sophisticated zone and domain segmentation gives service providers the flexibility to supply non-hosting partners with

their own domains, to run different SmartZoneOS versions in different zones as well as countless other options. An administrative hierarchy makes it easy for admins to create and reuse profiles, and a customizable, contextually rich administrative dashboard provides easy-to-use, easy-to-understand performance insight. Our containerization method minimizes security and performance degradation risk. The Ruckus SmartZone Controller can support up to 30,000 Wi-Fi access points and 6,000 switches in a clustered configuration.

Advanced inventory control and management

With Ruckus Network Director, you can easily provision all of the switches in your logical domain, making it easy to scale your management. Ruckus Network Director addresses the challenge of inventory control and management and allows for APs to be inventoried and pre-provisioned at a primary depot prior to installation in the field. This allows them to be assigned to the correct SmartZone cluster when installed.

In addition, as the network changes, Ruckus Network Director supports the automated bulk movement of access points from one Ruckus SmartZoneOS cluster to another cluster and can identify stranded Ruckus access points within the domain and catalog them for inventory management and rehoming to ensure manageability of the Wi-Fi network.

Traffic visibility

Since many of the opportunities for business services are in environments that include a mix of enterprise and guest traffic, the ability to keep traffic separate and be able to tunnel traffic appropriately is an often-missed requirement. Ruckus SmartZone Data Plane allows you to do just that. With Ruckus SmartZone Data Plane, it is possible to groom both wired and Wi-Fi traffic so that enterprise traffic and guest traffic are kept separate.

In addition, unlike other architectures, Ruckus supports both a local breakout of traffic or a centralized breakout. Using a local breakout reduces the WAN bandwidth requirements as well as latency and delay imposed by centralized breakout approaches. Of course, if user preference is for a centralized breakout, Ruckus supports that architecture as well.

Proactive, automated anomaly detection and mediation

In today's digital economy, data is the new currency. Ruckus SmartCell Insight (SCI) collects data from controllers, APs, clients and applications. Ruckus SCI uses this insight to detect and proactively address anomalous network behavior through machine learning and predictive analytics. In addition, Ruckus SCI provides reporting, dashboard visibility, and API support for integration to any existing data lake or data analytics platform.

Enhanced services

The ability to offer an array of enhanced services that provide value to the customer is critical to the success of a managed service offering. To that end, Ruckus has developed unique service capabilities that can be added to tailor capabilities to a market.

Security

Ruckus Cloudpath is a platform that delivers secure wired and wireless network access for IT-owned devices, BYOD and guest users. It streamlines getting devices on the network and secures every connection with powerful encryption. Ruckus Cloudpath is AP and switch agnostic allowing operators to blanket an entire domain or enterprise with industry-leading security.

Ruckus Cloudpath provides granular policy control over access and virtually eliminates helpdesk tickets.

Location analytics

For managed network edge services in retail locations, Ruckus Smart Positioning Technology (SPoT) provides advanced location analytics. Traditional brick-and-mortar stores use traditional location analytics such as door counters and cameras, but these are not able to segment and target customers as effectively as their on-line counterparts. With Ruckus Smart Positioning technology location services, retailers, stadiums and transportation hubs can enhance the way they interact with customers based on precise location.

Ruckus SPoT generates operational significant data that helps businesses build an in-depth understanding of their venues and improve overall efficiency. Deployed on top of Ruckus SmartZone, Ruckus SPoT does not require any additional hardware and has unlimited scalability in the cloud.

Internet of things

The Ruckus IoT Suite streamlines the fragmented ecosystem of standards, devices and services users face when trying to deploy IoT solutions. Our IoT access network consolidates multiple physical-layer networks into a single converged network. This common network simplifies IoT endpoint onboarding, establishes uniform security protocols, and converges IoT endpoint management and policy-setting.

The Ruckus IoT Suite simplifies the creation of IoT access networks through the reuse of LAN and WLAN infrastructure, thus shortening deployment duration and reducing the cost to support multiple IoT solutions.

Best-of-breed wireless and wired technology

To build a successful and profitable managed network edge business service offering requires proven, carrier-grade technology. The technology must be purpose built for running LAN/WLAN networks and support the applications, devices, bandwidth and manageability requirements of today's evolving enterprises.

Great wi-fi

Education, hospitality, enterprise and manufacturing are changing. They are being occupied by new devices, doing new things. They are attaching to cloud services, providing real-time insight and taking actions that impact the bottom line. Ensuring that everything in the environment is connected and those things yet unplanned can connect is a challenge for IT managers. Ruckus helps future-proof your domain with industry-leading technology.

BeamFlex Adaptive Antenna Technology

Traditional wireless antennas are either "omnidirectional" (radiating signals in all directions) or "directional" (radiating signals in one direction). Ruckus BeamFlex Adaptive Antenna Technology takes a machine learning, adaptive approach. BeamFlex technology enables the antenna system within the Ruckus AP to continually sense, learn and optimize for the environment. This results in:

- Increased performance and range
- Crystal clear video and voice communications
- Maximized power efficiency

SmartCast

There is no shorter path to user frustration and complaints than service delivery issues with time-sensitive applications, clipped or dropped calls, buffering video. Everyone has experienced poor Wi-Fi. SmartCast is an intelligent quality-of-service engine designed specifically for 802.11 network delivery of time-sensitive applications. Our patented technology leverages a unique set of capabilities including packet inspection, automated traffic classification, and advanced queuing techniques and scheduling to ensure that each client on the network receives a superior Wi-Fi experience.

ChannelFly

Most modern WLAN products can change a client's channel when the one it is using gets clogged with interference or too many devices. But there is no point in switching channels unless you know the new channel will provide more capacity, and most channel management strategies don't do a very good job of predicting availability. ChannelFly technology was developed specifically for carrier Wi-Fi deployments. ChannelFly technology assesses all available channels to measure real-world capacity improvements that each one could provide and reassigns clients based on the ability to provide a better user experience.

IoT Access Network

The challenge with supporting today's Internet of Things (IoT) is the array of connectivity techniques used—Bluetooth, Bluetooth Low Energy (BLE), Zigbee, LoRa, zWave and more. Building out unique or overlay networks just to support a protocol is inefficient. Ruckus APs support both Wi-Fi and non-Wi-Fi endpoints over a converged, multi-standard, physical network. This allows organizations to quickly realize the benefits of IoT while leveraging the same device onboarding, security and management infrastructure of their existing wired and wireless networks.

Flexible, scalable wired solutions

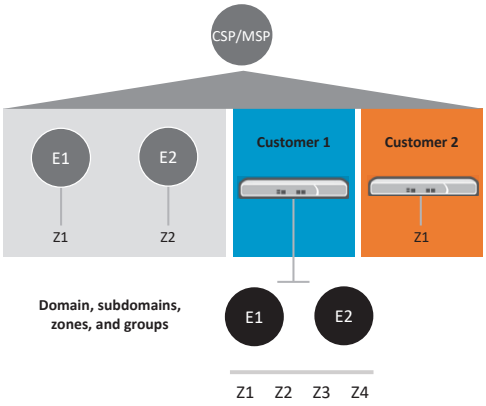
Because some things still require a hard connection, a managed network edge service must include the ability to support wired devices. A converged wired/wireless solution means that management, control and operations are optimized for a blended service delivery domain.

Ruckus ICX Switches

Enhanced for Mixed Wired/Wireless Environments
The Ruckus ICX family is part of a unified network management architecture that supports a unified security and policy management scheme.

Innovative Architecture
Our innovative architecture provides the benefits of a chassis architecture with the flexibility of a stackable architecture. This allows you to buy and deploy only what you need, when you need it. Our stackable architecture provides automated load balancing as well as a single point of management across a fabric deployment and as part of Ruckus SmartZone.

Power, Performance and Lowest TCO
The Ruckus ICX family of switches are upgradable from 1G to 100G. They support power over Ethernet (PoE), up to 90W, sufficient to supply most attached devices. Our scale-out network architectures, optimized power consumption and common platform architecture ensure a lower total cost of ownership (TCO) relative to our largest competitors.



Conclusion

As organizations undergo a digital transformation, new opportunities are opening for managed service providers. With a robust portfolio, managed service operators have opportunities in an array of markets from higher education, public venues, smart cities, government, enterprise, hospitality, and multi-dwelling units.

With the ability to support multi-tenancy, wired and wireless access domains and enhanced services, all over a carrier-grade technology, Ruckus is providing a new level of capability to managed service operators.

CommScope pushes the boundaries of communications technology with game-changing ideas and ground-breaking discoveries that spark profound human achievement. We collaborate with our customers and partners to design, create and build the world's most advanced networks. It is our passion and commitment to identify the next opportunity and realize a better tomorrow. Discover more at commscope.com

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