



Executive Summary

Managed services allow businesses to offload day-to-day network management tasks to service providers and thus free up internal talent to focus their core expertise on making the fundamental changes needed to accelerate businesses' processes and innovation to gain a competitive edge. The current architecture implemented to deliver managed services to large enterprises, however, is blocking service providers from offering managed services to smaller businesses (SMB). The current architecture employs purpose-built hardware on the customer's premise, which makes it more expensive, less flexible, and involves high-touch sales processes followed by a lengthy installation interval. SMBs have different requirements because of their smaller size and dynamically changing business needs, which make it hard for service providers to profitably offer them managed services at price points and flexibility that is attractive to them.

The Cisco's virtualized managed services solutions for providers is based on its Evolved Services Platform (ESP), which provides a unique opportunity for providers to offer automated and flexible managed services. Cisco's solution leverages Software Defined Networking, Network Functions Virtualization, open APIs, and advanced multivendor network service orchestration capabilities running on cloud data center technology. It supports self-service web portals and cloud service delivery technology that allow customers to easily order and configure services, reducing service provider customer acquisition, installation, and support expenses. Specifically, operation costs of customer premise equipment is reduced because complex functions are implemented in the cloud.

ACG compared the total cost of ownership of the present mode of operations with the virtual managed service solution for two managed services offerings: 1) Cloud VPN service, and 2) Security service. It found that operation expenses (opex) were about 78 percent less for virtual managed service for both offers and that return on investment (ROI) for both virtual managed services offerings was more than 200 percent over a five-year planning period. The three largest sources of reduced opex are elimination of most truck rolls, many onsite maintenance and installation activities, and minimization of the costs to support onsite software.

KEY FINDINGS

Virtual managed services enabled by the Cisco Evolved Services Platform reduce the cost to deliver managed services as compared to the present mode of operations. This produces:

- 78% lower opex compared to the present mode of operations
- Investment in a virtual managed service offering can yield more than 200% ROI
- Less than 2% of the more than one million US SMBs use managed services. Enabling service providers to offer virtual managed services allows them to tap into this large market opportunity

Introduction

A cloud-based managed service architecture using Cisco Evolved Services Platform (ESP) holds the potential to greatly expand the market opportunity for managed networking and communications services. Although the worldwide managed networking and communications services market is large and growing (\$44 billion in 2014 and \$62 billion in 2018, 9 percent CAGR)¹ its potential is being impeded by use of expensive custom hardware and customer premise equipment (CPE), and slow and costly high-touch sales and service delivery processes. These limitations are felt most severely at small businesses where, for example, 0.7 percent of small office home office (SOHO) and 1.9 percent of small and medium businesses (SMB) use managed security services as compared to 32.8 percent of enterprises². Virtual managed services can help service providers realize the full potential of managed services by reducing capital expenses (capex) and operation expenses (opex) and accelerating sales and service delivery.

Businesses recognize the benefits of moving to a cloud-centric business model that will allow them to create a broad ecosystem of customers, partners, and suppliers that can accelerate their business processes and innovation and give them a competitive edge³. But day-to-day network management issues are robbing them of the time they need to initiate such a fundamental change in their businesses. Managed network services can free up the time needed to plan and implement a transition to a cloud-centric business.

Businesses can choose from a broad and deep portfolio of managed services including:

1. Managed Network Services
 - a. Managed Network Monitoring and Maintenance
 - b. Managed MPLS VPN
 - c. Managed Ethernet Access
 - d. Managed WLAN/WWAN
 - e. Managed Router and Switch
2. Managed Mobility Services
 - a. Managed Mobile Value Added Services
 - b. Managed Mobile Security
 - c. Managed Tablets, Smartphones and Mobiles (BYOD Management)
3. Managed Security Services
 - a. Managed Infrastructure Content Security (Antivirus, Software Patches, and Others)
 - b. Managed Internet Security
 - c. Managed Video Surveillance/Managed Wi-Fi Security
 - d. Managed Firewall and Managed VPN Security
 - e. Managed IDS/IPS
4. Managed Communications

¹ Managed Services Market, Global Advancements, Market Forecasts & Analysis (2013–2018), Markets and Markets, www.marketsandmarkets.com.

² SOHO, SMB: Source is Cisco market data and US census.

³ “Managed Network Services: The TCO Payoff”, ACG Research <http://acgcc.com/managed-network-services-the-tco-payoff/>.

- a. Managed Unified Communications
- b. Managed Email Communications
- c. Managed VOIP Communications

Despite the attractiveness of managed service offerings service providers have been unable to effectively sell to smaller businesses. This is a direct result of network architectures used today to implement managed services.

Introducing new services takes months or years and requires significant investment in network equipment, operations support system, and systems integration. This makes it difficult to move quickly to address market needs and transitions. It increases the cost and risk of trialing new services and, consequently, retards service innovation. High costs and long implementation intervals also make it difficult to customize services to meet the specific needs of vertical markets.

Existing managed network services typically require high-touch sales, because they are complex to order and configure. Customers cannot simply go to web portals to order and configure services themselves. This limits the growth of services, and the cost of high-touch sales processes makes it unprofitable for service providers to sell to smaller businesses.

Virtual Managed Services Solutions through Cisco Evolved Services Platform

The Evolved Services Platform provides automated, optimized, and personalized services using Software Defined Networking (SDN), Network Functions Virtualization (NFV), open APIs, and advanced multivendor network service orchestration capabilities to create a flexible and modular services platform running on cloud data center technology. Figure 1 shows the elements of the virtual managed service solution using ESP.

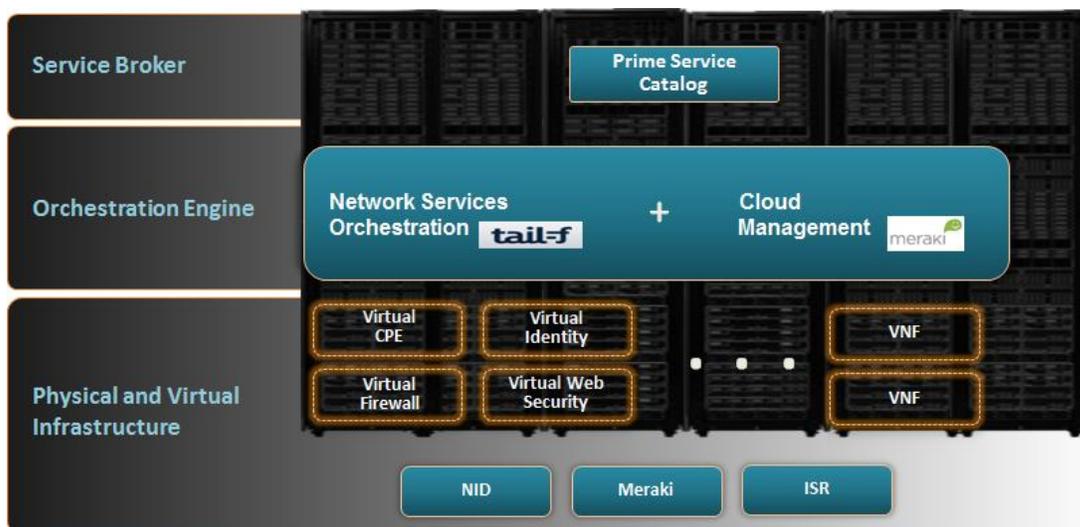


Figure 1 – Virtual Managed Services Using Cisco ESP

The ESP elements include:

- Service Broker: Cisco Prime Service Catalog is an automated, flexible, catalog-oriented service delivery solution. It accelerates the discovery, assembly, launch, and orchestration of new

services across multiple domains. It is offered as a single package and includes Cisco Prime Active Catalog as well as order management and service inventory capabilities.

- **Orchestration Engine:** An automated provisioning and service chaining system that links multivendor physical and virtual network functions to enable elastic scaling of personalized services that are programmed via open APIs and interfaces. The managed services solution performs several orchestration functions:
 - **Cisco Network Services Orchestration:** The Cisco Tail-F solution decouples network services from specific network components while automatically configuring the network according to the service specifications.
 - **Cloud Management from Cisco Meraki:** Cisco Meraki provides a cloud-managed architecture with appliances that self-provision by automatically pulling policies and configuration settings from the cloud.
- **Physical and virtual infrastructure that consist of elements:**
 - **Evolved Programmable Network:** A programmable and virtualized network combined with a cloud data center environment that hosts virtual network functions. More than 40 VNFs from Cisco and partners are supported by ESP plus many more third-party VNFs. The two service offerings analyzed in the next section illustrate the application of virtual CPE, firewall, identity, and web security functions.
 - **CPE:** ESP supports both physical CPE (NID, Integrated Services Router-ISR, and Meraki) and virtual CPE (CSR 1000v).

Cisco's virtual managed services solution allows rapid introduction of new services and can leverage the intercloud for swift deployment and service white labeling or on the service provider's own cloud infrastructure. With Cisco ESP, the service provider enables businesses to easily order and provision services via a self-service web portal. This allows businesses to directly order services without a complex and lengthy interaction with the service provider's direct sales team. ESP also allows managed services to move from device-centric and labor-intensive business models to cloud-centric and automated business models. This reduces the capex and opex of the underlying service offerings and makes the business case more attractive to both service providers and their business customers.

Cisco ESP not only opens up new market opportunities in the SMB segment, it also creates other new opportunities by going upstream into larger enterprises and making service providers' cloud solutions attractive alternatives to enterprises' internal IT infrastructures. The ESP enabled services can be rolled out quickly and more easily tailored to specific vertical markets. Their attractiveness is enhanced by flexible pricing options, self-service user portals, and broad analytics capabilities. ESP allows service providers the opportunity to move sideways beyond their own footprints. This is unique to the cloud model because cloud infrastructure can be obtained almost anywhere, and it allows the service provider to extend its footprint, which is extremely important to enterprise customers' purchasing decisions.

Virtual Managed Services Business Outcomes for Providers

Total cost of ownership (TCO) comparisons of virtual solutions with the present mode of operations (PMO) and return on investment (ROI) analyses are made for two managed services offerings:

1. **Cloud VPN:** An overlay tunnel-based IP VPN is provided together with network address translation (NAT) and firewall policies. IPSec/SSL remote access includes remote end-host security posture verification.

2. Security: Includes functions of the first offering plus identity services for BYOD service authorization and enhanced web security.

Study Assumptions

Each service offering is analyzed for a representative service provider that is developing business for midmarket businesses. Figure 2 shows the cumulative number of midmarket subscribers to managed services⁴.

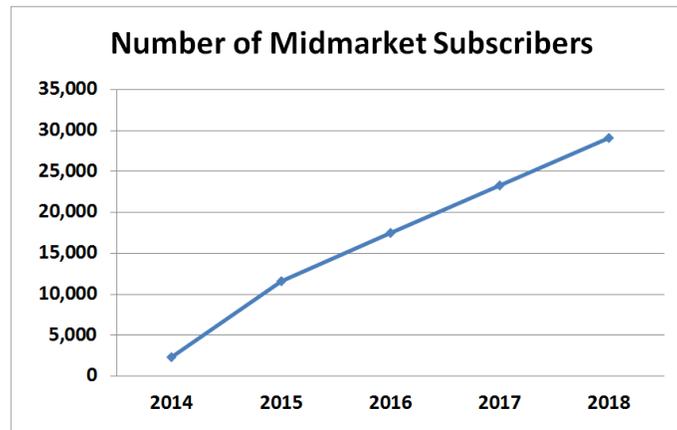


Figure 2 – Number of Midmarket Managed Services Subscribers

The number of subscribers represents a small percentage of the addressable market. The average midmarket business has 500 employees spread across 10 sites. Seventy percent of these sites are small; the rest are of medium size.

Managed service pricing assumptions are:

- Cloud VPN service ranges between \$102 and \$158 per month per site
- Security services between \$195 and \$250 per month per site

The same pricing assumptions are used for both solution alternatives.

Present Mode of Operations

The PMO employs a CPE router at each site. The network functions are provided as software hosted on each CPE router. Primary cost elements are the capex for the router and software licenses, sales expense, the cost of per site truck rolls and associated installation labor, support expense per site, and vendors' fees for software support and upgrades.

PMO data assumptions include:

- CPE router average selling price is \$4,500
- Truck roll and installation expense per site is \$500
- Sales expense per business is \$2,000
- Support expense per site is \$500 per year
- Vendor fee for software support and upgrades is 12 percent of capex per year

⁴ The study assumes identical account penetration for both use cases.

Virtual Managed Services through ESP

The virtual managed services solution employs the architecture shown in Figure 1. Principle cost elements include the capex for data center infrastructure, VNF and orchestration software licenses, and the Meraki MX security appliances; and opex associated with the data center infrastructure (power and labor) and software support and upgrade fees. Opex also includes modest sales expenses.

Service Offering 1: Cloud VPN

The IP VPN functions and firewall functions are provided on the CPE router at each subscriber’s site for the PMO solution. The virtual managed service solution uses virtual CPE and virtual firewall VNFs hosted on the Evolved Programmable Network and Cisco Meraki security appliances located at each subscriber’s site.

Figure 3 compares the total cost of ownership for the PMO and virtual managed service alternatives.

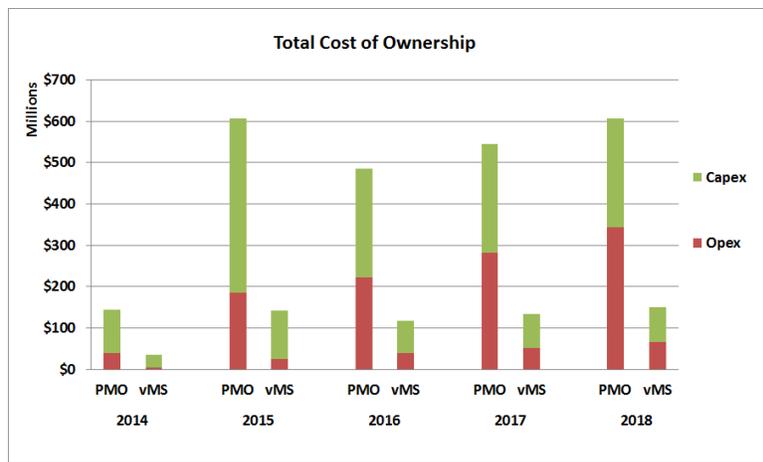


Figure 3 – Total Cost of Ownership, Service Offering 1

The virtual managed service solution has 76 percent lower TCO than the PMO. Its capex is 70 percent lower, and opex is 82 percent lower for the virtual managed service solution. Capex is lower because of the virtual solution’s use of highly efficient cloud data center infrastructure for hosting network functions as compared to the PMO’s distribution of network functions at each subscriber’s site.

Figure 4 compares the opex for each solution.

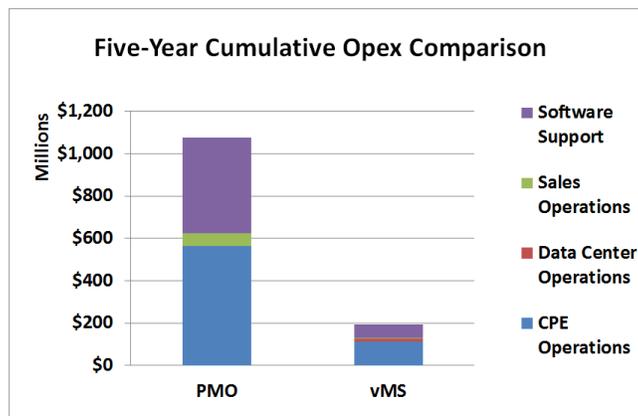


Figure 4 – Opex Comparison, Service Offering 1

CPE operations expense is the largest expense item for both solutions. This is the labor expense and cost of truck rolls associated with maintaining the hardware on the customer’s premise. CPE expense is less for the virtual solution because the Meraki devices are cloud managed and plug and play. They, therefore, require fewer maintenance hours per device and most truck rolls are eliminated. Software support is the second largest expense item. This is the fee charged by the vendor for software support and upgrades. The virtual solution minimizes the software requirement and the need for upgrades and support by pooling all software in the data center compared to the PMO where software is replicated across nearly 300,000 subscriber sites. The data center expense category includes the costs to service and maintain VNFs, servers, and data center switching equipment. These expenses also are minimized by the pooling of all resources in a cloud data center compared to distributing them across nearly 300,000 sites.

ROI Analysis

A ROI analysis is performed by comparing cumulative Cloud VPN managed service revenue to cumulative TCO. Monthly recurring charges for each subscribing business include per site charges for basic and advanced services, per business for firewall and IP VPN service, and per remote access seat for remote access service.

Figure 5 shows cumulative revenue, TCO, and net cash flow.

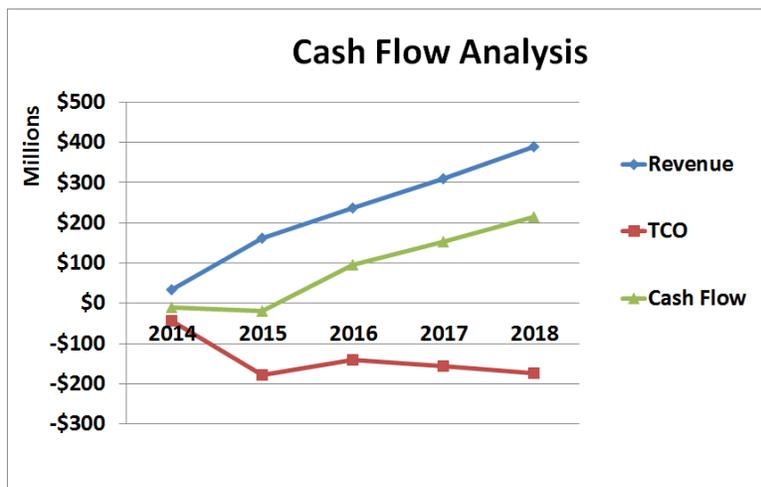


Figure 5 – Cash Flow Analysis, Use Case 1 IP VPN and Firewall

The chart shows that cash flow turns positive at the beginning of the third year. The net present value of discounted cash flow is \$286 million, assuming a 10 percent discount rate. The ROI of the virtual IP VPN and firewall solution is 214 percent over five years.

Service Offering 2: Security

This service offering adds identity services for BYOD and enhanced web security services to the first service offering. The number of subscribing businesses, number of employees per site, and sites per business are identical to the assumptions used in the first use case.

Identity services include service authorization (authentication, authorization, and accounting) and enforce usage policies. Web security services provide malware protection, application visibility and control, acceptable use policy controls, reporting, and secure mobility.

The PMO and virtual managed services solution architectures are the same as for Use Case 1 except that two additional network functions are added: identity and web security services.

The virtual managed service solution has 65 percent lower TCO than the PMO. Its capex is 55 percent lower, and opex is 78 percent lower for the virtual managed service solution.

Figure 6 shows the five-year results for revenue, TCO, and cash flow.

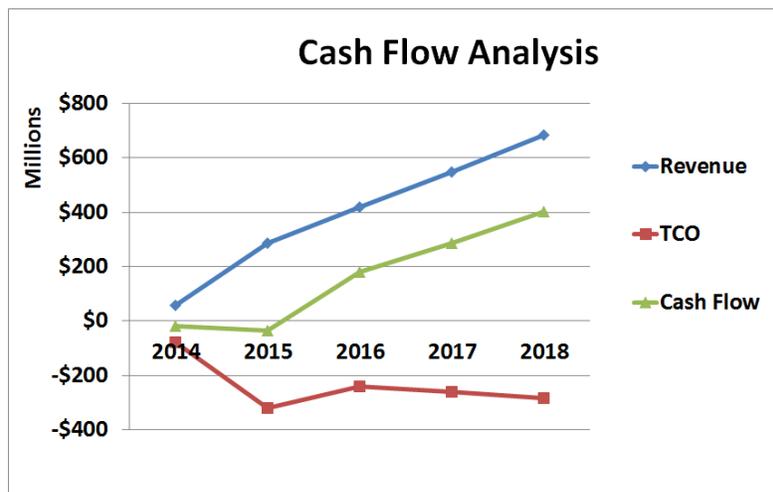


Figure 6 – Cash Flow Analysis, Use Case 2 Security

The net present value of discounted cash flow is \$534 million, assuming a 10 percent discount rate. The ROI of the virtual IP VPN and firewall solution is 220 percent over five years. This is nearly double the net present value of the first use case. More cash flow is generated because this enhanced security bundle generates nearly twice the revenue of the smaller service bundle of Use Case 1.

Conclusion

There is a large market expansion opportunity for service providers to sell managed services to smaller businesses. SMBs recognize the value of offloading day-to-day network management issues to a service provider so that they can free up their own time to plan and implement a transition to new cloud-centric business models. However, today's managed services delivery architectures are tailored to large enterprises that require slow and costly high-touch sales and service delivery processes. This drives up service providers' costs and limits their flexibility, which in turn makes it unprofitable for service providers to sell managed services to smaller businesses.

Cisco Evolved Services Platform provides automated, optimized, and personalized services via orchestrating virtualized network functions running on cloud data center technology. It allows fast introduction of new services and reduces the TCO of managed services sales and service delivery processes. Virtual managed services provided via ESP reduce costs and increase operational efficiency to the point where service providers can now profitably sell to smaller businesses.

TCO and ROI analyses were performed for two service offerings:

1. Cloud VPN: An overlay tunnel-based IP VPN is provided together with NAT and firewall policies. IPSec/SSL remote access includes remote end-host security posture verification.
2. Security: Includes functions of the first use case plus identity services for BYOD service authorization and enhanced web security.

The analyses found that opex was reduced by approximately 78 percent as compared to the present mode of operations, and ROI of about 200 percent was achieved for both service offerings.