Value-Added Co-location with Opengear Infrastructure Management Appliances

Vendor-neutral out-of-band management is a low impact, inexpensive means for co-location providers to extend and differentiate their tiered service offerings and generate recurring revenue.

Value-Added Co-location with Opengear Infrastructure Management Appliances

Table of Contents

Table of Figures

EXECUTIVE SUMMARY

Co-location centers (colos) offer an array of services that include rental of data center facilities, network connectivity, and real-time monitoring and support by specialist staff. Tiered services offer customers varying degrees of control over and responsibility for co-located infrastructure, from hosted-only to fully managed.

Co-location has many benefits in today's business environment, making it a popular choice for customers wanting to reduce operating expenditure by leveraging economies of scale, increase physical security, availability and network performance, and allow their staff to focus on delivering value, rather than the logistics and means of delivery.

This has created a highly competitive market, in which colo providers must meet the challenge of growing customer demands for service delivery, in the most cost-effective manner possible. It has also created the opportunity for providers to differentiate themselves with unique, value-added services.

This whitepaper discusses how to use Infrastructure Management appliances to cost-effectively expand traditional co-location services, allowing providers to achieve the highest possible profit margin and extend their service offerings, including:

- Offering customers virtual remote hands, including out-of-band and lights-out management, and remote power control over hosted infrastructure.

- Using a vendor-neutral management solution to reduce management complexity in a mixed vendor environment.

- How an open infrastructure management platform integrates into your branded remote management portal or control panel, to deliver exceptional customer experience.

- Extending IT monitoring services to the facilities layer, including environmental sensors and physical security systems.

- Deep infrastructure monitoring to proactively detect problems before they escalate into outages.

- Leveraging next-generation automation technologies to guarantee the narrowest possible SLA response and recovery times and reduce human error and staff expenses.

INTRODUCTION

There are many benefits to crafting your value-added service offering using a specialized Infra-structure Management appliance from Opengear. These are the five key attributes of Opengear's solution and how they benefit colo service providers:

Comprehensive – Consolidated management of the widest range of data center infrastructure, including:

- Rack mount, blade chassis servers and service processors
- Storage and SAN
- Network routers, switches, load balancers and UTM
- Telecommunications systems, carrier Ethernet and fiber
- Power distribution and backup power infrastructure

Efficient – A single high-density appliance manages several full racks from a single RU, with simple cabling and installation with no disruptive impact on operating infrastructure. The appli-ance uses an optimized solid-state system with power draw of less than 30 watts. This makes it the most efficient management solution available, allowing you to conserve resources & quickly realize ROI.

Vendor-neutral – With power monitoring and control for power infrastructure from over 100 vendors. This is key in the heterogeneous environment of a colo, where customers' infrastruc-ture is highly diverse and often includes legacy systems.

Smart – An integrated smart software stack is built-in to each appliance, enabling secure remote access and control over SSH or enterprise-grade VPN, distributed monitoring with inte-gration into your existing NMS such as Nagios or Solarwinds Orion, advanced fault detection and automatic remediation actions, and notification with smart escalation logic to minimize the cost and incidence of false alarms.

Open – Built around a fully customizable open management system using open standards and open tools which means your value-added solutions can design-in extensibility from the start, free from concerns of vendor lock-in.

VIRTUAL REMOTE HANDS

Using an Opengear Infrastructure Management appliance to offer virtual remote hands as a subscription service generates recurring revenues and streamlines your service offering, to increase your profit margin.

The customer has entrusted you with their most critical assets, and to maintain control, may from time to time to send their staff on site, or contract colo staff as remote hands to perform maintenance and troubleshooting tasks.

The virtual remote presence and control capabilities of an Infrastructure Management appliance drastically reduces the time and labor costs associated with physical site visit, and eliminates the process overheads of raising a trouble ticket, scheduling resources and validating the fix, required to service traditional remote hands requests.

A virtual remote hands service empowers your customers to perform tasks like:

- Bare metal and systems provisioning
- Restore network connectivity after a switch misconfiguration
- Cisco IOS recovery from ROMmon
- Hard power cycle to recover a locked server or device

Virtual remote hands offer your customers the peace of mind of maintaining total autonomy over their infrastructure, securely, from anywhere in the world.
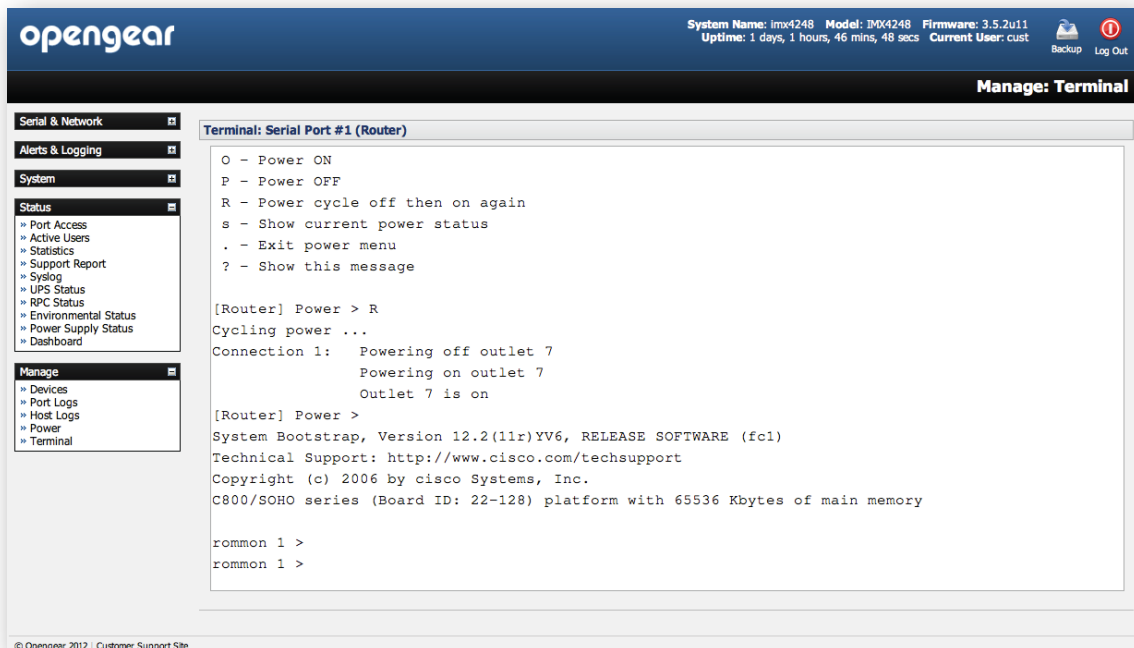

Fig. 1

OUT-OF-BAND MANAGEMENT

The serial out-of-band management console is the common denominator across all enterprise-grade ICT equipment, and remains the cornerstone of rock-solid infrastructure management and continuous control, even when the network is down. The out-of-band management console exposes a powerful CLI interface for monitoring and control of the managed infrastructure.

Opengear Infrastructure Management appliances wire directly into each out-of-band management console. Using an Opengear Infrastructure Management appliance, out-of-band management consoles are served securely over the network to authorized colo staff, or served directly to the customer.

This concentrates and consolidates the management path for all critical infrastructure, and provides orthogonal, secure access regardless whether the managed infrastructure is accessible through its primary network connection (in-band), and regardless of infrastructure type – be it storage, server or switch.

The Opengear Infrastructure Management appliance is a single point for authenticating and authorizing management sessions, integrating with external authentication servers to provide granular control over monitoring and management rights and privileges, for a given user connecting to a given piece of infrastructure.

Complete management session transcripts are logged in plaintext and stored locally or automatically transferred off-box, providing an audit trail for regulatory and security compliance and SLA reporting. Continuous console monitoring enables notifications when malicious or anomalous patterns are detected.

Out-of-band console management is uniquely leveraged by Opengear's powerful automation framework, including auto-remediation when infrastructure is otherwise inaccessible. The benefits of automation to colo providers are discussed at length later in this document.

SERVER LIGHTS-OUT MANAGEMENT

Whatever your customer's preferred server vendor, Opengear integrates seamlessly with lights-out management solutions from major vendors like Intel, HP, Sun, IBM and Dell for BIOS-level remote control of servers.

Lights-out management capabilities, embedded inside modern server platforms, provide high quality remote virtual KVM that overcomes the quality and performance limitations of legacy bolt-on KVM-over-IP solutions.

Unlike legacy KVM-over-IP, integrated lights-out offers IPMI power control for remote server power cycling and hardware health monitoring, served over the network via a secondary management network port, using standard protocols like IPMI. Therefore it is critical that this sensitive remote monitoring and control interface be isolated onto a secure management LAN, separate from the production network, with all accesses logged and accounted.

Using an Opengear Infrastructure Management appliance with a dedicated management LAN switch is a simple and secure way to consolidate the management of lights-out management interfaces of many makes, models and versions.

VENDOR-NEUTRAL INFRASTRUCTURE MANAGEMENT

Unlike many enterprise data centers, colos host a highly diverse range of infrastructure – including server, storage, network, backup power and power distribution infrastructure from many vendors, and of many generations including legacy systems.

No matter what your customer wants to install in your facility, co-location providers need to be able to say, *"yes, we can manage that"*.

Fig. 2

In addition to vendor-neutral out-of-band and lights-out management of server, storage and network infrastructure, Opengear Infrastructure Management appliances uniquely offer vendor-neutral power monitoring and control – built on the popular open Network UPS Tools, Power-man, and ipmitools projects.

Built into each appliance is the ability to monitor and control UPS and PDU equipment from over 100 vendors over Ethernet, USB and serial management interfaces. Contrast this with the out-of-band infrastructure management appliances from power vendors with a vested interest to lock-in preferential or exclusive support for power infrastructure from their own stable.

Opengear's user-friendly interface allows you to enjoy the interoperability and flexibility of open software, without the configuration and maintenance overheads. Opengear Infrastructure Management appliances are a truly vendor-neutral management solution, as can only be achieved by building on open tools and open standards.

OPEN STANDARDS

Opengear Infrastructure Management appliances are powered by an open Linux platform that is not artificially locked down or encumbered. On-box scripting, root-level control and an open firmware development kit means Opengear appliances can be adapted and tailored to quickly changing requirements. Opengear is a trustworthy choice to underpin your service delivery systems.

Empower your customers with out-of-band control of their infrastructure from your web-based customer control panel or branded management portal. Out-of-band console services are offered using standard protocol such as SSH and AJAX HTTPS, and support for a range of remote authentication, authorization and accounting (AAA) systems, such as LDAP & Active Directory, Kerberos, TACACS+ and RADIUS, ensure painless and seamless integration into your value-added web app.

Remote power cycling of managed infrastructure via inline hotkey inside the console management session, gives your customers virtual remote hands for absolute control over their infrastructure, and delivers best-in-class remote management and exception customer experience – all from your own customer control panel.

ADVANCED MONITORING

Monitoring is a key component in any colo service offering. As well as being fully capable as a self-contained monitoring, logging and notification system, Opengear's open platform integrates with and enhances your existing NMS, to deliver benefits for your Network Operations Center (NOC) team and customers alike.

Opengear Infrastructure Management appliances extend the reach of popular monitoring systems such as Nagios, Solarwinds Orion, Zenoss and Zabbix to out-of-band management connections.

This enables deep infrastructure monitoring. Console warnings or errors appearing instantly in your NMS dashboard. to give you the jump on diagnosing and remediating problems with man-aged infrastructure, even when they've dropped off the network. Tight integration enables out-of-band management sessions to be launched from the NMS dashboard itself, to further reduce downtime.

Monitoring out-of-band management traffic means all management sessions are logged and accounted, whether they are via lights-out management or serial management console, with support for detecting malicious patterns and unauthorized infrastructure configuration changes.

Opengear Infrastructure Management appliances bridge the gap between the physical facilities layers and your monitoring dashboard, with support for monitoring environmental and power sensors, such as temperature, humidity, airflow and power load. This gives your data center manager both the ongoing metrics required for power capacity planning and the ability to pre-empt problems caused by hotspots and cooling system faults.

Pluggable physical sensors, including rack cabinet open and smoke alarm, are continuously monitored and logged, for ultimate customer peace-of-mind and physical audit-trail security.
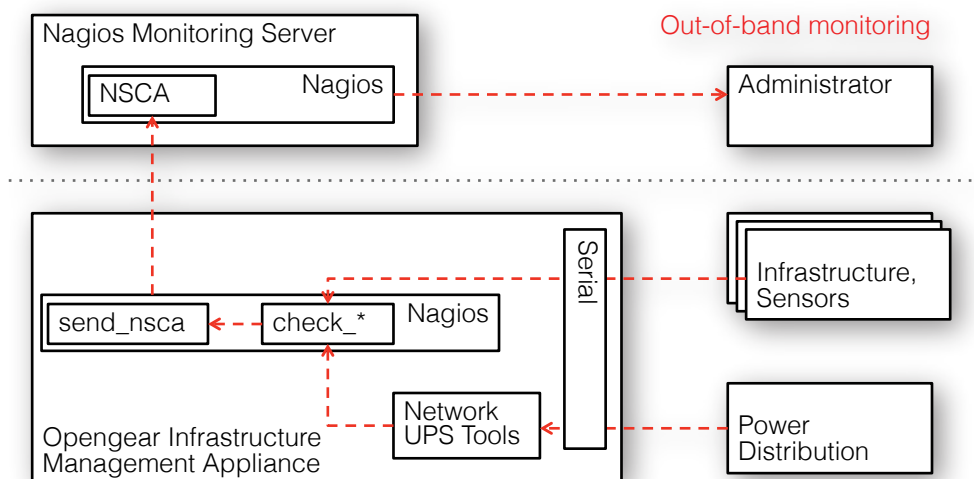

Fig. 3

AUTOMATED REMOTE MANAGEMENT & SUPPORT

Opengear's Automated Remote Management and Support (ARMS) is a next-generation Run Book Automation (RBA) technology, designed to proactively solve problems, heal infrastructure and reduce downtime.

Opengear Infrastructure Management appliances monitor, manage, access and control managed infrastructure through out-of-band management channels, allowing colo service providers and customers to design policies for automatic remediation of issues that have rendered infrastructure otherwise inaccessible or unresponsive.

ARMS is built-in to all Opengear Infrastructure Management appliances as a standard feature, key benefits include:

- Minimize costs and increase profits by reducing the actual number of colo staff required to perform managed services for your customers.
- Automatically generate alarms, alerts and notifications when events trigger established thresholds.
- Offer the narrowest possible SLA response times with continuous infrastructure status monitoring and automatic operator notification.
- Develop self-healing solutions using powerful diagnosis and remediation scripts for common problems, to minimize mean-time-to-recover and increase customer satisfaction and retention.
- Trap console warnings to increase infrastructure lifespan and proactively identify problems before they become outages.
- Correlate data and physical security events for real-time breach alerts and response.
- Automatically raise trouble tickets and notify staff, with smart issue escalation to reduce the cost and incidence of false alarms.
- Automate routine maintenance tasks, to reduce the likelihood and cost of human error.

ARMS monitors and collects data from physical sensors, the network, servers, power systems and other managed infrastructure located around the data center. When an alert condition is raised, the Opengear Infrastructure Management appliance automatically triggers a series of run-book actions, to programmatically diagnose and resolve the incident in real time – without the need for human intervention.

The issue can be automatically remediated in the time that traditional management tools take to find the problem (and often before customers even notice there was a problem) making it a powerful framework for colo providers to offer services that meet and exceed customer requirements.

Alert Condition → Trigger Action → Remediation

EXTEND YOUR SERVICE OFFERINGS WITH OPENGEAR

Opengear Infrastructure Management appliances provide a flexible platform to enhance your value-added service offering, easily tailored to suit your and your customers' needs.

Outright resale – Resell Opengear Infrastructure Management appliances for outright purchase by your customer, or rent-to-buy contract. Opengear's Managed Service Provider partner program gives you the training, collateral and discount structure to make this a highly attractive option for colos that prefer the simplicity of this model – and for customers that want complete control and responsibility for infrastructure management.

Subscription service – Offer Opengear Infrastructure Management on a per-management port subscription. A single management appliance services many customers, managing tens or hundreds of pieces of infrastructure. Enterprise-grade security features, such as encrypted management sessions, and advanced user and group permissions including AAA server integration, make this a safe and effective model. Take advantage of the economies of scale and low per-port capital commitment of a high density Infrastructure Management appliance to quickly realize ROI and generate recurring revenues.

Branded service – Build on this subscription service with branded management and remote control, by integrating Opengear Infrastructure Management appliances into your web-based management control panel. Opengear's open platform enables swift & seamless integration, extending powerful out-of-band management, power control and virtual remote hands services directly to your customers – while differentiating your service by leveraging your own branding and operating within your own control panel system.

Fully managed service – Harness the benefits of Opengear Infrastructure Management appliances in your own, fully-managed services. Tame management complexity and reduce expenses with consolidated management across all co-located infrastructure. No matter what your customers' requirements, your service platform is future proofed with the widest range of support for vendors and equipment. Deliver premium services with minimal response times and mean-time-to-recover, and comprehensive logging and reports to ensure SLAs are met. The Opengear Infrastructure Management appliance is a one-off investment with no ongoing or per-managed device licensing, to enable best-in-class services without eroding your revenue.

	Recurring Revenue	Minimal Capex	Customer Control	Service Value Add
Resell		●	●	
Subscription	●		○	○
Fully Managed	●			●

Fig. 4

ABOUT OPENGEAR

Opengear designs and manufactures secure next generation console servers and remote infra-structure management (RIM) gateways for secure remote access and control of network, stor-age, server and telecommunications equipment, power backup and distribution infrastructure, and environmental monitoring devices.

Opengear delivers solutions that secure, simplify and automate remote monitoring and manage-ment tasks, while providing tangible cost savings benefits and a high ROI. Opengear's extensive support for automation technologies and true out-of-band management, ensures that our customers are virtually there – maintaining control over their managed infrastructure even when their network is down – resulting in rapid problem resolution and drastic reduction of expensive site visits and physical intervention.

Opengear's open standards-based platforms give systems, network and security administrators, operators and managers the most flexible, powerful, extensible and secure remote infrastructure management solutions available on the market today.

USA Head Office
630 West 9560 South Suite A
Sandy, UT 84070
+1 888 346 6853 (Sales)
+1 801 282 1387 (Support)
+1 801 606 2798 (Fax)
sales@opengear.com

Australian Office
Benson House Suite 44
2 Benson Street
Toowong QLD 4066
+61 7 3871 1800 (Sales & Admin)
+61 7 3720 8289 (Fax)
sales@opengear.com.au

UK Office
Herschel House
58 Herschel Street
Slough, SL1 1PG, UK
+44 776 6866159
sales@opengear.org.uk