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THE CHALLENGES WITH A COLOCATION ROLL-OUT:

And how to simplify the deployment and maintenance of IT equipment at the colocation facility

Executive Summary

Colocation services offer many benefits to customers looking to migrate or expand their IT infrastructure. The advantages of scalability, continuity and security, drive much of the rationalization to the business when evaluating colocation as an option. While the facility and infrastructure advantages are compelling, many IT Organizations underestimate or overlook the operational nuances that will negatively affect business processes and operational expenses when a roll-out starts. The fact that the colocation facility is by definition remote, creates a unique set of challenges that need to be taken into account during the planning phase.

One downside to colocation is distance, time and cost required to travel to the facility, especially when critical equipment requires hands-on attention. The deployment of IT equipment will require numerous site visits and hours of on-site work – away from usual tools, supplies, and other team members.

- Colocation providers often have charges and restrictions that govern the movement of equipment and people in and out of the facility.

- Remote equipment creates new deployment challenges for the network and server teams since the installation, patching, and initial configuration of the operating systems needs to be done remotely, which requires the use of out-of-band tools.

- After the system is in production, challenges with monitoring and managing the remote infrastructure may lead to unexpected downtime, longer than usual repair times, and additional costs for site-visits and third-party remote hands.

This white paper introduces solutions to overcome some of these challenges by leveraging the products and services of Vertiv. We will look at the Vertiv SmartCabinet™ and how it can help minimize the time and costs of a roll-out and on-going operations.

LEARN HOW TO

- Minimize the time your staff spends at the colocation facility

- Minimize number of site visits

- Minimize costs with third-party smart-hands services

- Monitor the colocation environment and physical access to your IT equipment
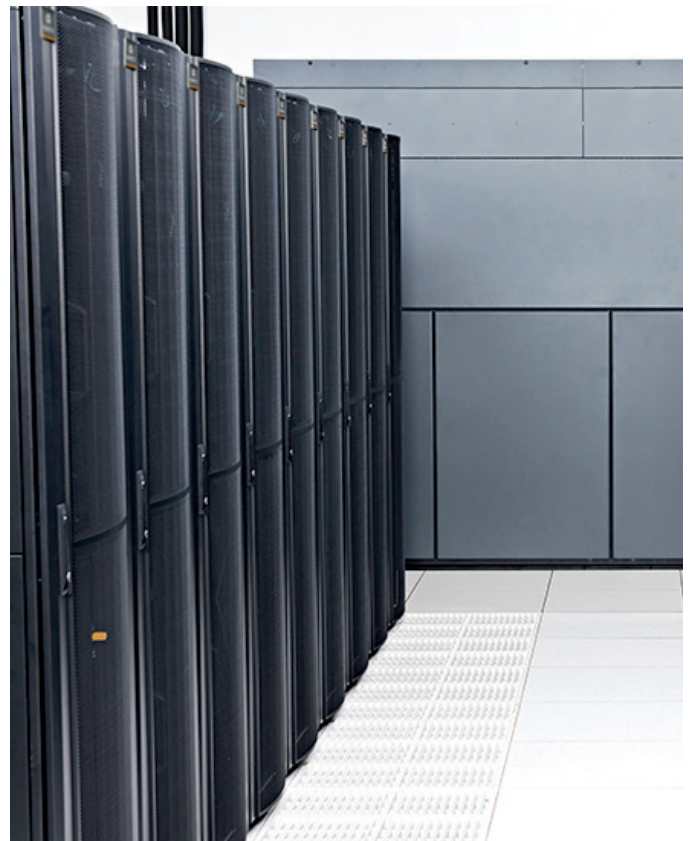
Activity Cycle

To discuss the challenges of a colocation roll-out, this white-paper will use the IT Activity Cycle described below.

There are at least 3 phases to any IT project: plan, deploy, and support. This framework is very simple and can be used to describe the IT operations framework of most organizations.

The **Planning Phase** is a complex phase in which high-level architecture, individual components, and project plans are defined. During the **Deployment Phase**, hardware and software are received, installed and put in products. The **Support Phase** is when the system is maintained, issues are addressed, and change requests are performed.

This white-paper will focus on the Deployment and Support phases of this framework.

Deployment Phase

The **Deployment Phase** starts with physically receiving all equipment for the installation. Equipment is mounted in racks and cables are run. The team in charge of the network will patch and configure the network equipment while the team in charge of the servers will install and patch operating systems. Finally, the Applications will be installed and tested before the system goes into production. The Deployment phase can be described by the diagram below.
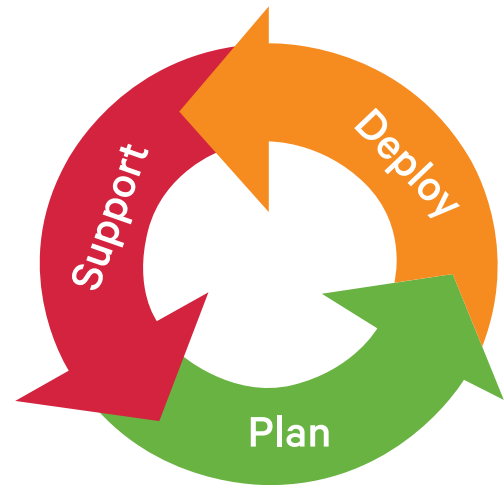
There is an extensive amount of manual labor involved in this phase – work that is critically important and yet quite tedious and time consuming. Errors in installing and configuring components into racks will be magnified later when resources have left the site.

Receive equipment → Rack & Stack → Install & Configure OS → Install/test Apps

Support Phase

During the **Support Phase**, the infrastructure is being monitored and support tickets are being resolved using a variety of tools that are available to the support team. The support phase can be described by the diagram below.

Administrators will resolve most of the tickets using the in-band tools available. First line support may escalate tickets to specialists who will be able to resolve more difficult issues. In-band tools include SSH for network equipment and Linux servers, RDP for Microsoft servers, and other vendor specific tools. All in-band tools require network connectivity. For issues where systems are not responding to in-band tools, out-of-band tools will be used to access the low-level hardware interface – serial ports, keyboard-video-mouse, and service processors. Out-of-band tools can usually resolve 80% of the tickets that reach this stage. When out-of-band tools are unable to resolve an issue, either because of a hardware failure or some other serious defect, a site visit is required.

OUT-OF-BAND ACCESS

Out-of-band tools allow access to low-level hardware interfaces of IT devices. The three types of out-of-band interfaces are RS232 serial ports, KVM (keyboard, video, mouse), and service processors (IPMI, and graphic console).

If an IT device is not responding to network commands, out-of-band tools are the only option before you need a site visit

TICKETS → **IN-BAND** → **OUT-OF-BAND** → **SITE VISIT**

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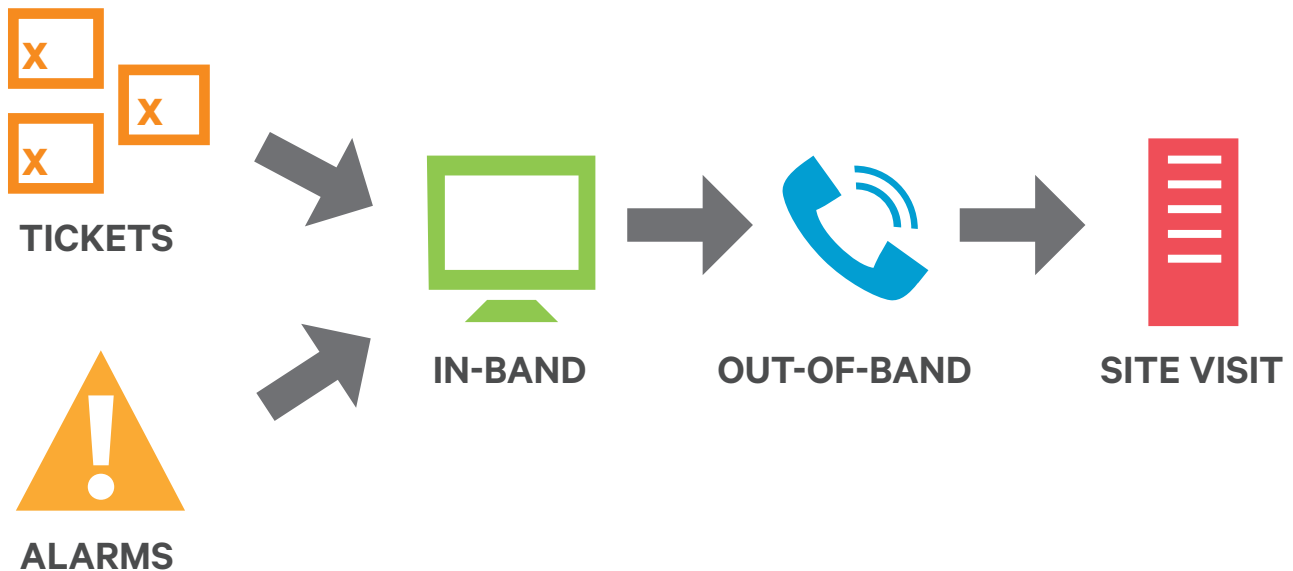
The Challenges with a Colocation Roll-out

With this framework in mind, let's look at some of the challenges organizations may face when moving to a colocation facility. Some may consider a colocation deployment as a simple change of address for the datacenter space. This oversimplification may however lead organizations to overlooking operational nuances that may negatively affect business processes and operational expenses. The fact that the colocation facility is, by definition, remote creates a unique set of challenges that need to be taken into account before any roll out.

Deployment Challenges

A colocation roll-out will require numerous site visits and days of on-site work. Time spent out-of-office inherently reduces employee productivity consuming valuable time travelling between locations. The lack of tools and supplies that are readily available at the corporate offices, and the fact that employee is physically separated from his team members, will decrease process efficiency.

Colocation facilities have many rules that need to be followed when receiving equipment, doing racking and stacking work, disposing of boxes, and moving equipment. Depending on the colocation, organizations may also incur additional costs to perform these tasks at the colocation facility. It will be necessary to invest the time to understand the rules and all hidden charges.

DEPLOYMENT CHALLENGES

- Your team will spend a great amount of time at the colocation site and every task will take longer

- Team coordination will be difficult

- There will be additional charges and fees

The move to a colocation facility also requires proficiency at remote infrastructure and application management – imaging and patching equipment is different when you don't have physical access to the device. The fact that all the equipment is remote creates new deployment challenges for the network and server teams since the installation, patching, and initial configuration of the operating systems needs to be done remotely, which requires the use of out-of-band tools or site visits.

Receive equipment → Rack & Stack → Install & Configure OS → Install/test Apps
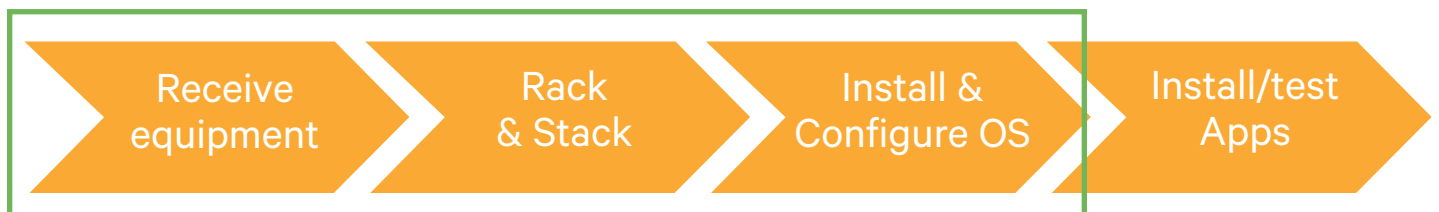
Support Challenges

During the support phase challenges include the fact that all equipment is remote and that in-band tools require reliable network connectivity between administrators and the colocation facility, which can be an issue in times of crisis (e.g. network down, natural disasters, DDoS attacks, etc.). Therefore, out-of-band tools become critical and need to be available to resolve issues that cannot be addressed via in-band tools. If the appropriate out-of-band tools are not available, the cost and the number of site-visits will increase dramatically.

Along with the out-of-band infrastructure, monitoring takes on a very important role as well. Monitoring the Colocation environment to make sure your equipment is being delivered the good power and cooling and that the Colocation environment will not lead to unexpected downtime. Additionally, monitoring physical access to the cage and to your racks becomes a necessity since now the physical security of the IT equipment is outsourced to the colocation provider. The importance of physical security to an overall electronic security framework cannot be over-stressed. Frameworks like CISSP, HIPPA, and CPI suggest that physical security be taken very seriously.   Organizations need to invest in tools that will control and monitor the physical access to IT equipment that is deployed in a colocation facility.
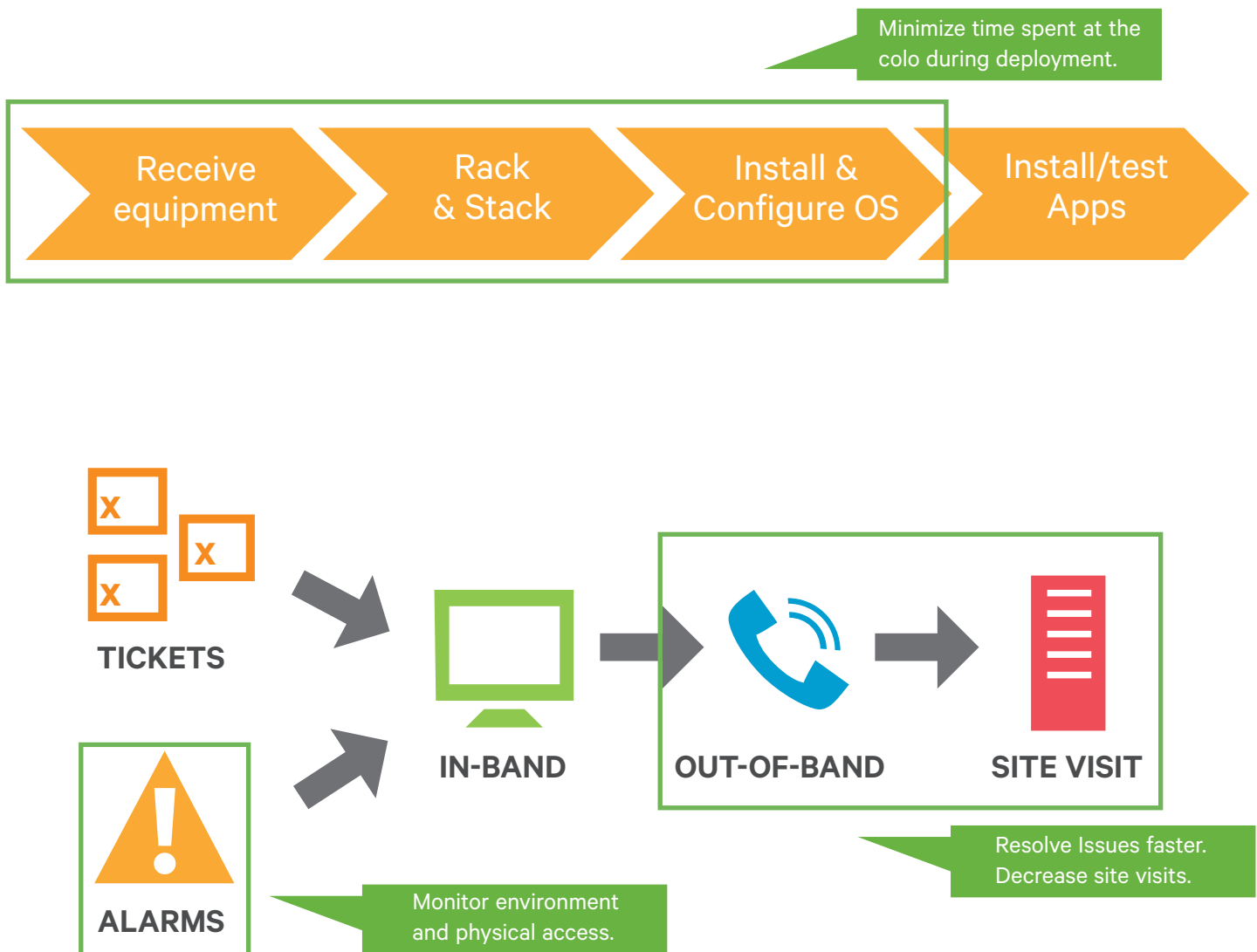
SUPPORT CHALLENGES

- You will need the right environmental monitoring

- You will need to control and log physical access to cage and racks

- You will need the right out-of-band system in place

TICKETS → **IN-BAND** → **OUT-OF-BAND** → **SITE VISIT**

ALARMS
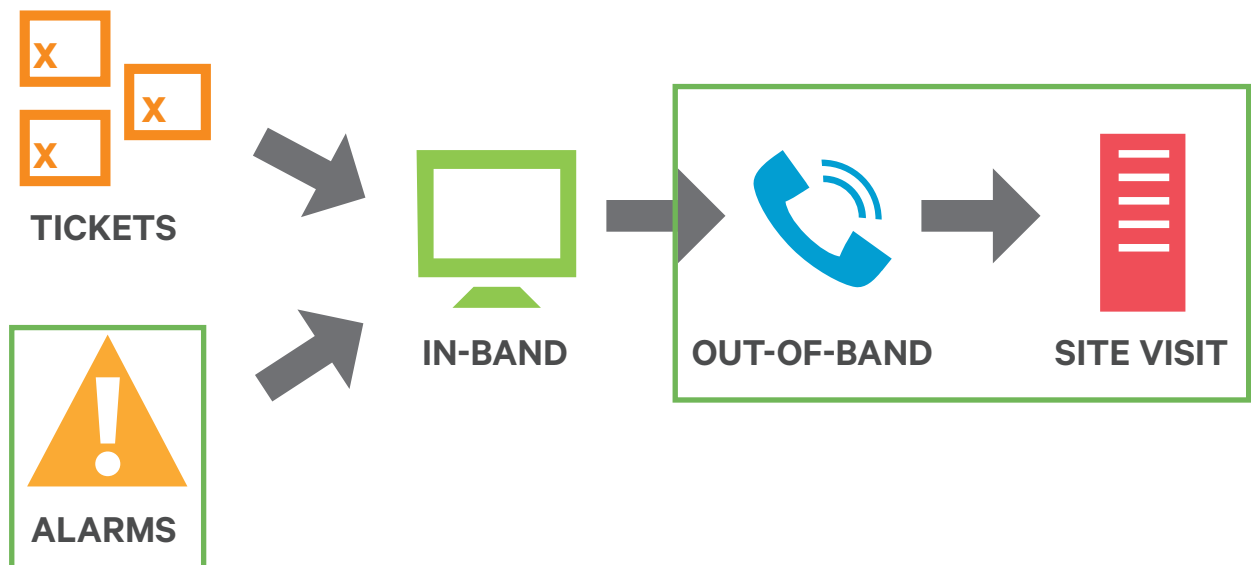
Simplifying your COLOCATION roll-out with Vertiv™

Vertiv solutions facilitate the Deployment and Support of your colocation project by minimizing the time you will spend at the colocation facility working on your equipment cabinets; by decreasing the time it takes to resolve issues remotely, which will minimize the number and money spent on site visits; and by monitoring the environment and the physical security at the colocation cage to alert you when something is wrong.

This value is delivered by Vertiv via its SmartCabinet™ platform and services. The SmartCabinet is a family of cabinets that are integrated at the factory per your specification. The SmartCabinet will deliver the time-savings you need during the deployment phase and will have all the capabilities necessary to remotely monitor and manage devices during your Support Phase.

Minimize time spent at the colo during deployment.

| Receive equipment | Rack & Stack | Install & Configure OS | Install/test Apps |

TICKETS

ALARMS

IN-BAND

OUT-OF-BAND

SITE VISIT

Monitor environment and physical access.

Resolve Issues faster. Decrease site visits.

SmartCabinet™

The SmartCabinet is a set of capabilities that helps you design the ideal cabinet solution for your colocation roll-out. Your cabinets are factory integrated and labelled, shipped to the colocation facility based on your schedule, and rolled directly from the truck to their precise location in your colocation cage. White Glove services can enhance the deployment experience.

SmartCabinet is a customization and integration service that allows customers to realize the most value from our capabilities and industry leadership. There are no pre-defined SKU's for the SmartCabinet. You work with our team of experts to create the configurations that will meet your cabinet requirements. Once finalized, your cabinet solution receives a unique part number that you will be able to order from your preferred reseller.

You have complete flexibility to design your cabinet – our goal is to minimize the time you will need to spend at the colocation facility. Our Integration capabilities are extensive, some of which are outlined in the table below.

CAPABILITY	OVERVIEW
Cabinets	Complete line of network and server racks with customization capabilities. All heights, depths, and widths. Made in USA with quick response time for custom requests
Rack PDU	Hundreds of rack PDU's configuration. Single/three phase. NEMA and IEC plugs. 20A, 30, 50A, and 60A. A variety of outlet counts
Sensors	Temperature, Humidity, smoke/water detectors, door switch
Locks	Mechanical and digital locks from 3 different vendors are supported – new vendors are validated upon request
Out-of-band	Out-of-band support for server, network, and storage equipment. Available 3G/4G connectivity for occasions when all else has failed
Labeling	All cabinets are labeled front, back, inside, and outside. Rack PDU's and PDU whips are labeled. All cables pre-installed at the factory are labeled
Cabinet sides	If floor plan is provided, redundant cabinet sides of adjacent cabinets will be removed to minimize cost of complete solution
Asset Tracking	Asset tracking technology from two different vendors can be installed at the factory – new vendors are validated upon request
Firmware Configuration	All active equipment can be configured for network access and SNMP monitoring at the factory
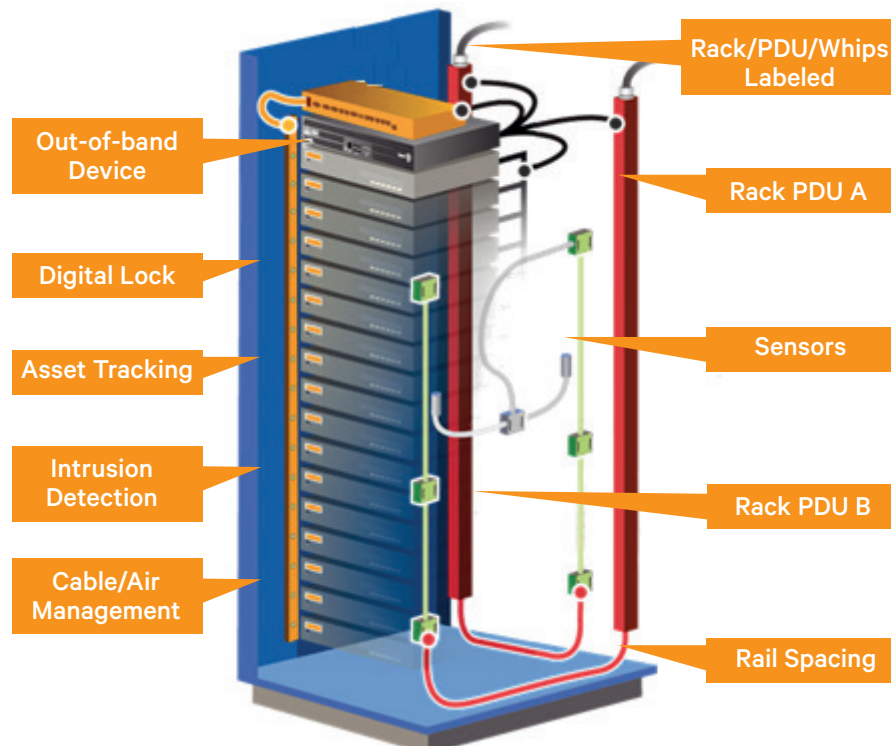
Conclusion

A colocation roll-out brings with it a set of challenges that need to be well understood and addressed before the deployment starts:

1. Deploying IT equipment at the colocation site will require many site visits and a significant investment in additional time spent away from the home office.

2. Server, storage, and network administrators will need to learn how to perform day-to-day tasks remotely.

3. Maintaining equipment that is deployed at the colocation will require proficiency at using remote management tools and a solid out-of-band strategy for times of crisis when the primary network connection may not be available.

All these challenges may lead to deployment delays, decrease productivity, excessive fees from colocation and third-party remote hands, unexpected downtime due to unforeseen conditions, and delays restoring services after a downtime event.

The SmartCabinet™ solution from Vertiv™ simplifies the deployment and the maintenance of IT equipment at the colocation by delivering a pre-integrated cabinet solution directly to the colocation based on your precise specification. The SmartCabinet will be IT-ready at the moment it is placed in your cage and will save days of on-site work.

The SmartCabinet can be equipped with all the non-IT devices that will make your colocation roll-out a success. Power, sensors, digital locks, asset tracking, labels, and whatever else you may need. These cabinets are fully customizable and we will do whatever it takes to deliver our value proposition.

SMARTCABINET™

- Minimize the time your staff spends at the colocation facility

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- Minimize costs with third-party smart-hands services

- Monitor the colocation environment and physical access to your IT equipment