

Unified Infrastructure Monitoring, Access and Control

Streamline Infrastructure Management with a Single, Multi-Purpose Appliance—the Avocent® Universal Management Gateway



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Table of Contents

3	Executive Summary
4	Introduction
4	Terminology
4	<i>Figure 1: Data center managers are forced to use multiple tools in order to manage data center assets</i>
5	The Avocent® Universal Management Gateway - A Unified Solution for Infrastructure Management
5	Access and Control
5	<i>Figure 2: The Avocent Universal Management Gateway appliance eliminates the need to maintain multiple tools</i>
6	<i>Table 1: Solving Business Needs with the Avocent Universal Management Gateway appliance</i>
6	Monitoring
6	Enterprise-Class Appliance
6	How the Avocent Universal Management Gateway Appliance Enhances Data Center Operations
6	Value Proposition for the Avocent Universal Management Gateway Appliance
7	Solving Business Needs with the Avocent Universal Management Gateway Appliance
7	<i>Figure 3: The Avocent Universal Management Gateway appliance consolidates space, power, network ports and functionality in a single appliance</i>
8	Conclusion

Executive Summary

The Business Issue

As customers demand higher availability, greater performance and more cost efficiency, data center operators have responded by increasing the density and complexity of their physical infrastructure. For IT and facilities organizations, the challenge is how to effectively manage this complex environment. Typically, they are forced to use multiple tools to keep tabs on devices consuming unnecessary space and power while requiring extensive manual effort to maintain infrastructure devices—all of which add up to higher costs, wasted capacity and inefficient operations.

The Solution

Capitalizing on its deep infrastructure management expertise, Emerson Network Power offers a unified, scalable solution to solve the problems of managing today's complex, heterogeneous and geographically dispersed data centers. The solution is both hardware and software architected together to deliver unified management of the data center's IT and facilities infrastructure. The elements of the solution are:

- Avocent® Universal Management Gateway appliance – the real-time data collection engine for monitoring all assets in the data center as well as the access and control interface to the rack assets
- Avocent DSView™ management software – the centralized management software for remote access and control
- The *Trellis*™ platform applications – software modules that facilitate real-time communications with the entire infrastructure to reveal the relationships and dependencies between devices and provide meaningful, real-time insight into the data center's true performance

The Benefits

Emerson Network Power offers IT and facilities organizations a unique opportunity to transform their approach to data center infrastructure management (DCIM), enabling them to:

- Substantially reduce costs by eliminating up to 75 percent of the rack space needed for multiple management tools
- Decrease power usage as much as 30 percent with far fewer devices
- Increase deployment flexibility and efficiency with auto-sensing capabilities and device discovery
- Gain infrastructure management flexibility and unprecedented insight into the data center now and in the future

“The fundamental pressures driving IT have not changed for many years. Pressures on raw operational efficiency continue, with increased emphasis on both labor costs and power reduction.”

– “Market Overview: Data Center Infrastructure Management Solutions” Richard Fichera, Forrester Research, 4/12

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Introduction

Data center managers are caught in the middle when it comes to providing service to their customers. While customers—whether internal or external—demand top-level performance and absolute availability, they also want service at the lowest possible cost and without any compromise to availability. IT and facilities teams are tasked with squeezing more out of existing assets and delaying capital expenses as long as possible while at the same time delivering top-grade service around the clock.

Satisfying these competing pressures is no easy task given the complexity and rapid pace of change. Data centers are now global with equipment spread around the world. Tech refreshes are coming faster and faster. Adoption of virtualization, blade technology and cloud computing have dramatically increased complexity with multiple, heterogeneous servers, power units, cooling equipment and so forth, all needing to be managed on a unique cycle.

Thriving in this challenging environment is made especially difficult by the lack of a holistic way to manage the modern data center. While technology has marched forward to maximize the power and performance of equipment, the tools used to effectively manage these have not. Typically, data center managers must use multiple tools in order to monitor, access and control infrastructure devices, leading to high administration costs, asset sprawl, wasted capacity and more downtime (seen in Figure 1).

Terminology

ACCESS: Ability to establish and view a remote connection from a client console to any data center device.

CONTROL: Ability to interact with a data center device in real time to take action, flip switches, drive the cursor, power on/off, cycle state, issue commands, throttle fans, etc.

MONITORING: Collecting and retaining historical, physical infrastructure status and alerts for trending, reporting, analysis and planning purposes.

ELEMENT LIBRARY: An element library is a database of information that contains communication protocols, data points to be monitored (unique for each device) and control commands. These components are necessary to monitor devices.

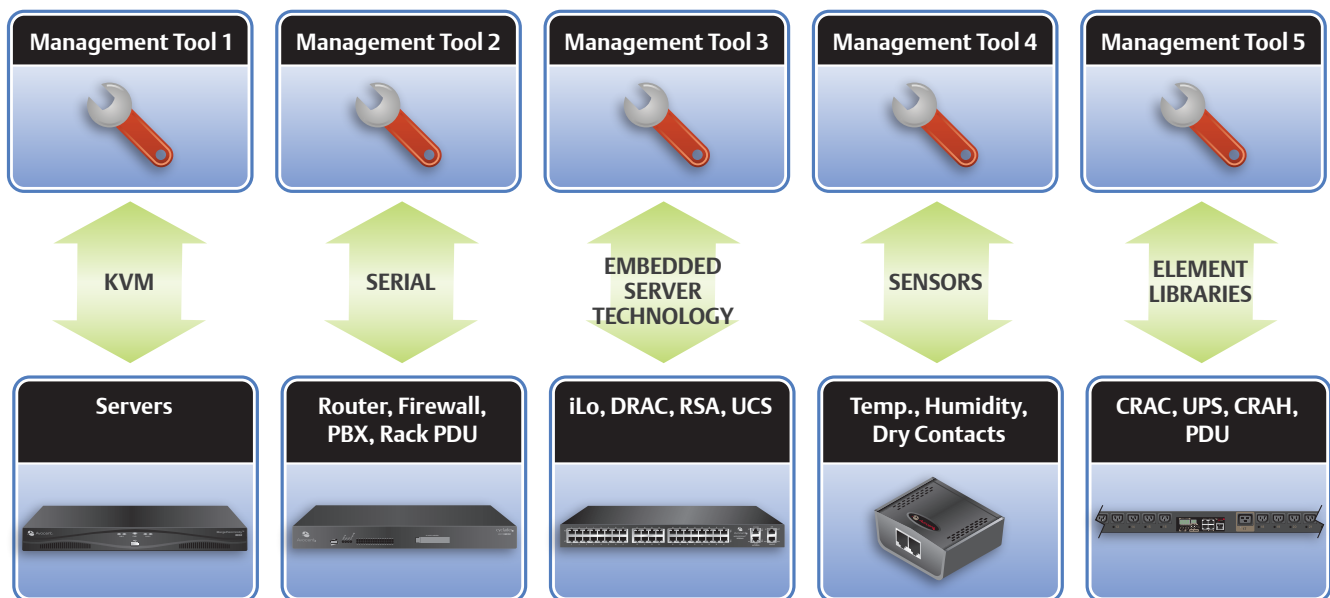


Figure 1: Data center managers are forced to use multiple tools in order to manage data center assets.

The Avocent® Universal Management Gateway - A Unified Solution for Infrastructure Management

Emerson Network Power has leveraged its recognized expertise in infrastructure management technologies to deliver a single solution that eliminates the need for multiple, fragmented tools. The Avocent Universal Management Gateway appliance consolidates management of IT and facilities equipment, making it possible—and easy—to securely execute a unified approach (see Figure 2).

Infrastructure management technologies can be classified into two different categories: 1) access and control and 2) monitoring. Today, IT infrastructure is managed with access and control technologies such as KVM, serial console and embedded server technology. Facilities infrastructure is managed through the real-time data collection and monitoring of those physical assets. Because the Avocent Universal Management Gateway appliance integrates access, control and monitoring in a single chassis, data centers no longer need multiple infrastructure management tools.

Access and Control

When used in combination with the Avocent DSView™ management software, the Avocent Universal Management Gateway appliance provides remote access and control to any device that can be

managed by the appliance's consolidated functions. The appliance provides secure, out-of-band access to connected devices, regardless of the operational state of the device's networking or operating system, while browser-based sessions provide appropriate tools for triage. The result is a single solution that simplifies access and control of devices no matter where they are located and regardless of the technology. When used for access and control, the appliance provides distinct capabilities including:

- Auto-Sensing and Device Discovery – The appliance has the ability to automatically sense and connect to new devices directly connected to a physical port on the appliance, thus eliminating the time-consuming task of manually reconfiguring infrastructure changes. The appliance has 40 ports and can automatically detect if the port is connected for KVM, serial or service processor management. Device discovery occurs over the network and the appliance can automatically discover, identify and connect up to 1,024 embedded service processor targets.
- Heterogeneous Server Support – Using Avocent access and control technologies, a single console management tool can be used to manage servers, regardless of vendor or operating system, and embedded service processors, regardless of technology.

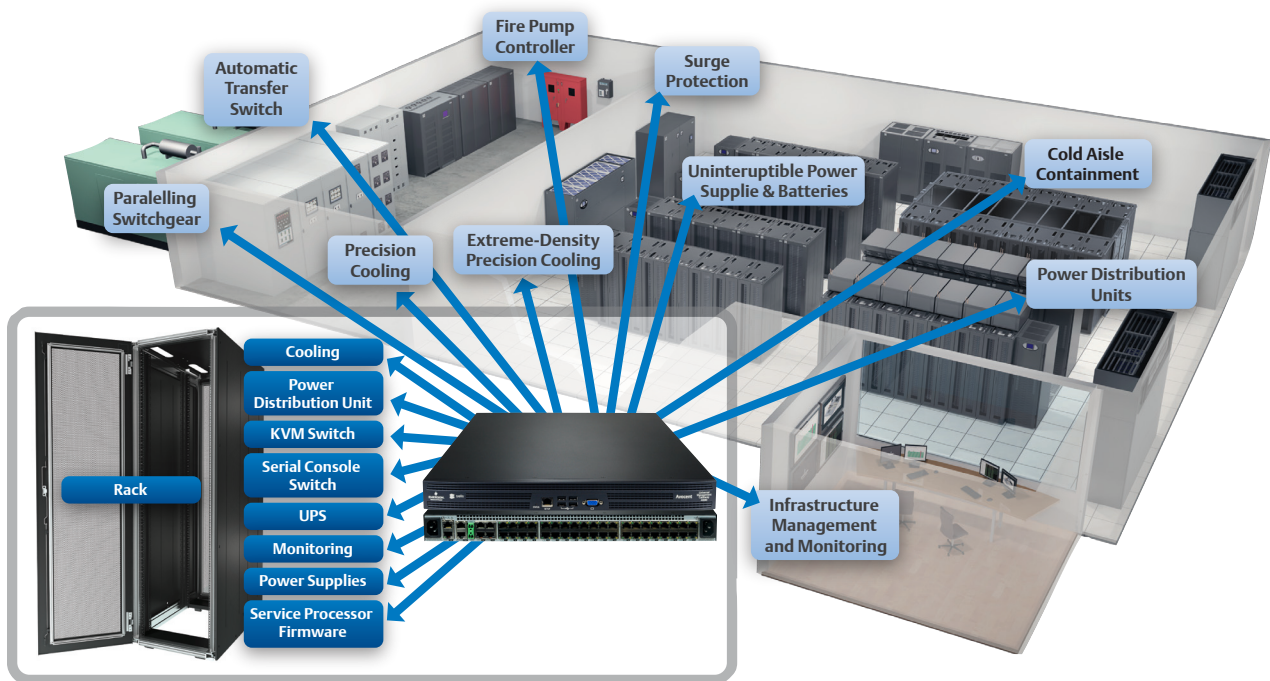


Figure 2: The Avocent® Universal Management Gateway appliance eliminates the need to maintain multiple tools to manage complex data centers. With this intelligent appliance, IT and facilities staff can efficiently monitor, access and control every infrastructure device.

Value Proposition for the Avocent® Universal Management Gateway Appliance

- **Reduce and recover capital expenses** – Data centers can eliminate the need to purchase and maintain multiple tools for monitoring the infrastructure with this unified, multi-purpose appliance. Data centers can save as much as 75 percent of rack space.
- **Support green initiatives and dramatically cut power consumption** – With fewer devices, power usage can decrease as much as 30 percent.
- **Reduce operating expenses** – Time and costs for managing, maintaining, securing and training users is significantly lower with fewer devices and an intuitive user interface that eliminates multiple management consoles.
- **Enhance deployment flexibility and efficiency** – Auto-sensing enables rack reconfiguration with virtually no manual intervention, allowing devices to be monitored dynamically as they are connected.
- **Improve disaster recovery at lower cost** – Secure, remote access removes the need to maintain staff at remote disaster recovery locations or spend money on expensive travel while decreasing mean time to repair.
- **Future-proof infrastructure investments** – The built-in flexibility and heterogeneous vendor support provide the perfect solution for managing current and future infrastructure assets, such as enabling convenient transition from legacy KVM into embedded access technologies, ensuring the data center will not outgrow the Avocent Universal Management Gateway appliance.

Monitoring

When used in combination with the *Trellis*[™] software modules, the Avocent® Universal Management Gateway appliance efficiently discovers, collects and stores data from devices. The *Trellis* software modules tap into the element library data stored on the appliance to enable the user to easily perform trending, reporting and analysis.

- **Real-Time Data Collection** – For businesses operating high-density environments, speed is critical. The appliance collects data points from distributed environments and heterogeneous equipment (IT and facilities) in real time, leveraging unique element libraries which define communication protocols and data translation for each of the various assets. Continuous streams of data points are collected and aggregated in seconds by connecting natively to the device (versus integrating with other monitoring solutions) to gather historical data or poll equipment (minutes, hours or days).
- **Complex Event Processing** – Using a set of unique techniques and tools, the data collected by the appliance is filtered so that only relevant information is provided to a specific user. This processing helps the user to understand and control event-driven information systems.

Enterprise-Class Appliance

Placed strategically in data center racks, the appliance communicates natively with the devices on the same subnet so that it uses significantly less bandwidth to gather and transmit data, enabling efficient scaling to manage rapid growth in devices and data collection. Regardless of the application, the appliance is truly a world-class enterprise appliance.

- **Built-In Redundancy** – The appliance offers dual power supplies, dual gigabit network cards and RAID 1 storage. Because each appliance maintains its own redundant data store and networking, data will continue to be captured during network outages or maintenance, ensuring the integrity of data collection at all times.
- **Ease of Setup** – The appliance includes a web-based user interface that has been carefully designed for quick setup and configuration.

How the Avocent Universal Management Gateway Appliance Enhances Data Center Operations

The Avocent Universal Management Gateway appliance delivers value across the whole data center organization, because it can provide benefits to each function in the data center (Table 1).

Each functional group within the data center will need to determine the factor that is most important to them when measuring the value of the Avocent Universal Management Gateway appliance. Whether it is hardware complexity, rack space, power usage or network port utilization, the appliance has a solution (see Figure 3).

Role	Business Need	Avocent® Universal Management Gateway
System and Lab Administrators	Manage the servers: <ul style="list-style-type: none"> • Perform maintenance and emergency recovery situations for all servers regardless of vendor, age or location • Control power states for remote servers • Prevent small issues from becoming major outages through consistent and centralized alerts 	<ul style="list-style-type: none"> • Provides a single method for accessing embedded server technology, KVM over IP and serial devices and the only consolidated access and control appliance available today • Can automatically instruct a server to power down either through the embedded service processor or through an intelligent PDU • Monitors and logs traffic for user-defined strings, automatically triggering traps and email alerts for alarm conditions
Network Administrators	Manage the network: <ul style="list-style-type: none"> • Perform daily maintenance and emergency recovery for routers • Manage data logs from routers and other equipment to prevent small issues from becoming major outages 	<ul style="list-style-type: none"> • Using the same server management tool, provides a remote, secure connection to routers and other console interfaces for immediate access and repair • Can continuously log all serial traffic to local text log files or to Syslog as well as detect strings of serial data that signify alarming or dangerous event conditions and can send alerts to support staff
Facilities Managers	<ul style="list-style-type: none"> • Optimize data center infrastructure for IT requirements • Track and report the health of all facility-critical infrastructure devices 	<ul style="list-style-type: none"> • Monitors daily power consumption for all data center devices • Monitors power states for facility devices

Table 1: Solving Business Needs with the Avocent Universal Management Gateway appliance

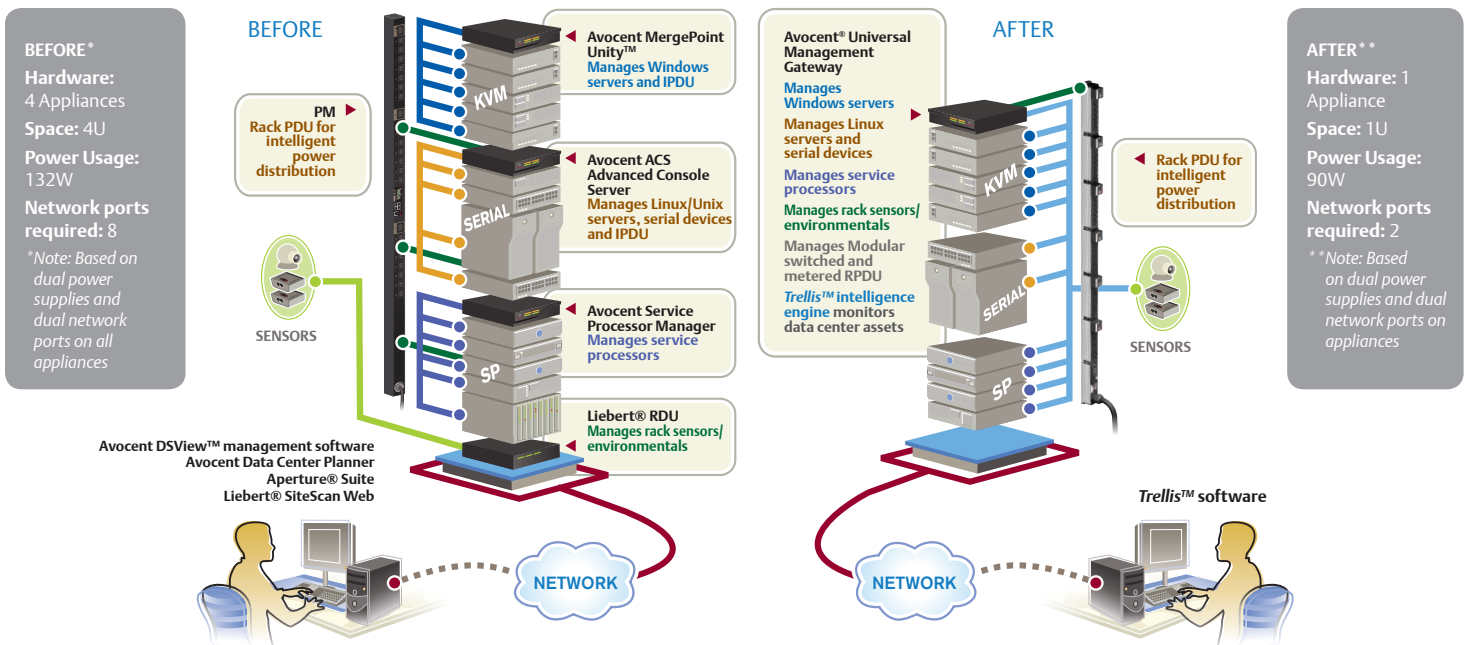


Figure 3: The Avocent Universal Management Gateway appliance consolidates space, power, network ports and functionality in a single appliance.

Conclusion

The Avocent® Universal Management Gateway appliance substantially reduces complexity and increases efficiency with a single solution for monitoring, access and control. Data center managers no longer need to be burdened with a cumbersome and costly array of tools to manage their infrastructure. As data centers evolve and become more dense and complex, DCIM has emerged as a discipline for centrally managing critical infrastructure. The goal is to gain complete and accurate information that allows IT and facilities organizations to manage the data center as an ecosystem of interconnected parts.

Emerson Network Power continues to solve customer problems and deliver solutions. For IT and facilities organizations, the Avocent Universal Management Gateway appliance offers an effective solution for optimizing operations to achieve new levels of performance and availability, drive down costs and energy usage and gain a secure, long-term solution that effectively supports on-going growth and change.

About Emerson Network Power

Emerson Network Power, a business of Emerson (NYSE:EMR), is the global leader in enabling Business-Critical Continuity™ from grid to chip for telecommunication networks, data centers, healthcare and industrial facilities. Emerson Network Power provides innovative solutions and expertise in areas including AC and DC power and precision cooling systems, embedded computing and power, integrated racks and enclosures, power switching and controls, monitoring and connectivity. All solutions are supported globally by local Emerson Network Power service technicians. Aperture® and Avocent® solutions from Emerson Network Power simplify data center infrastructure management by maximizing computing capacity and lowering costs while enabling the data center to operate at peak performance. For more information, visit www.Aperture.com, www.Avocent.com or www.EmersonNetworkPower.com.

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