Data Center Infrastructure Management (DCIM)

Trellis
Avocent, A Division of Emerson Network Power

- A leader in simplifying the complexity of IT management:
  - 85% of the Fortune 1000 rely on Avocent solutions
  - HP, IBM, Lenovo ... embed our solution

- Solutions and Services:
  - Data Center Infrastructure management solutions
  - Remote Management of servers and serial devices
  - Remote monitoring and control of power strips
  - Local Access and Control solutions
  - Secure KVM Switches

- Partner and Supplier to:
  - Apple, Acer, Dell, Fujitsu Siemens, HP, IBM, Intel, Lenovo, Microsoft, NEC, Novell
  - Certified and skilled partners worldwide
Today’s Agenda

1. The Problem
2. Why Emerson Network Power
3. Our Solution
4. Q & A
## Powerful Forces are Driving Change in Data Center Infrastructure

- Server virtualization
- Dynamically changing computer loads
- Increasing energy costs
- High-density equipment
- Energy efficiency targets
- Increased ROI hurdles
- Public and private cloud computing
- Increased SLA expectations
- Decreasing capital budgets
- Changes in technology
- Increasing demands for customer interaction

- **Complexity is growing**
- **Rate of Change is Increasing**
### Challenges Facing All CIOs

<table>
<thead>
<tr>
<th>Availability</th>
<th>Efficiency &amp; Cost</th>
<th>Agility</th>
<th>Compliance</th>
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</thead>
<tbody>
<tr>
<td>• Identify outages before they occur</td>
<td>• Centralize access to IT equipment</td>
<td>• Understand inventory of data center assets</td>
<td>• Control and log access to IT systems</td>
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<tr>
<td>• Identify interdependencies between facilities and IT infrastructure</td>
<td>• Minimize energy required to meet service levels</td>
<td>• Plan for future needs of IT services</td>
<td>• Control physical access to data center infrastructure</td>
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<td>• Automate impact analysis</td>
<td>• Identify inefficiencies in energy usage</td>
<td>• Model alternative deployment scenarios</td>
<td>• Meet energy efficiency standards</td>
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<td>• Identify gaps in redundancy</td>
<td>• Understand total cost of ownership of IT services</td>
<td>• Reduce number of vendors</td>
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<td>• Reduce human error</td>
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<td>• Reduce the number of management tools</td>
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**Most Critical**

**Critical**

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**Availability**
- Identify outages before they occur
- Identify interdependencies between facilities and IT infrastructure
- Automate impact analysis
- Identify gaps in redundancy
- Reduce human error

**Efficiency & Cost**
- Centralize access to IT equipment
- Minimize energy required to meet service levels
- Identify inefficiencies in energy usage
- Understand total cost of ownership of IT services

**Agility**
- Understand inventory of data center assets
- Plan for future needs of IT services
- Model alternative deployment scenarios
- Reduce number of vendors
- Reduce the number of management tools

**Compliance**
- Control and log access to IT systems
- Control physical access to data center infrastructure
- Meet energy efficiency standards

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**Avocent**

**Emerson Network Power**
The Emerson Global Data Center Showcased a Gap
“Traditional” Data Center Thinking Focuses On Functional Layers & Static Design

Business Service Layer
• Business Applications

IT Infrastructure Layer
• Virtualization, Compute, Storage, Network

Data Center Equipment Layer
• Equipment (Physical Space, Power, Cooling)

Static Design
Hold original design together

Plan | Design | Deploy | Operate | Maintain
A Gap Exists Between IT Infrastructure and Physical Infrastructure

Companies lack cohesive management strategy for data center infrastructure
“By 2014, DCIM tools and processes will become mainstream in data centers, growing from 1 percent penetration (in 2010) to 60 percent. To take advantage of the benefits as they evolve, I&O leaders should begin the DCIM evaluation process in 2010 and 2011.”

-- David Cappuccio, managing vice president and chief of research for the Infrastructure teams with Gartner, DCIM: Going Beyond IT problems
Today’s Agenda

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Data Center Breadth and Depth: Emerson Network Power is uniquely positioned to create a holistic DCIM Platform.
## Stages of Data Center Infrastructure Management

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<th>Monitor and Access</th>
<th>Analyze and Diagnose</th>
<th>Recommend and Automate</th>
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<tr>
<td><strong>What and where are assets in the data center?</strong></td>
<td><strong>How are my assets operating?</strong></td>
<td><strong>How do I extend the life of the data center?</strong></td>
<td><strong>How do I anticipate potential failures and automatically shift compute and physical load to eliminate downtime?</strong></td>
</tr>
<tr>
<td><strong>How are they interconnected?</strong></td>
<td><strong>Am I getting real-time notification of alarms and alerts?</strong></td>
<td><strong>How do I reduce mean time to repair (MTTR)?</strong></td>
<td><strong>How can I optimize efficiency across my data center?</strong></td>
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<tr>
<td><strong>Do we have space, cooling and power to meet future needs?</strong></td>
<td><strong>How do I get my server back up and running?</strong></td>
<td><strong>How do I synch infrastructure with virtualization automation?</strong></td>
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<td><strong>How can I efficiently commission decommission?</strong></td>
<td><strong>Can I populate my planning tools with actual performance data?</strong></td>
<td><strong>How are we doing against SLAs?</strong></td>
<td><strong>How do I populate my planning tools with actual performance data?</strong></td>
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### Improved Planning
- **Early Warning (Reactive)**
- **Reduced MTTR and Effort**
- **Availability at Optimal Performance (Proactive)**

### Different Entry Points Based On Customer Requirements

- **Data Capture and Planning**
- **Monitor and Access**
- **Analyze and Diagnose**
- **Recommend and Automate**
Emerson’s DCIM Software Solutions Today

Data Capture and Planning
- Aperture Suite
- Avocent Data Center Planner (formerly Avocent Mergepoint Infrastructure Explorer)
- Services

Monitor and Access
- Liebert Nform
- Liebert SiteScan
- Avocent DS View Services

Analyze and Diagnose
- Aperture Integrated Resource Manager Services

Recommend and Automate
- Emerson’s Future Solution

Customers Can Start With Emerson Today Knowing They Have a Path to the Future
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When asked how investment plans in 2009 have changed due to the recessionary climate, IT ops professionals rated "reducing facilities costs" as their top investment priority."

"Faced with the harsh realities of a difficult economic climate, data center managers need to focus on creating the most efficient operating environments in order to extend the life of existing data centers."

"In heterogeneous data centers, optimization is the key issue in the market. A holistic approach is required for sustainability."
**Dynamic Infrastructure Optimization**

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<th>Infrastructure</th>
<th>Optimization</th>
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<td>“..of or relating to physical force or energy”</td>
<td>“the underlying foundation or basic framework”</td>
<td>“an act, process, or methodology of making something (as a design, system, or decision) as fully perfect, functional, or effective as possible”</td>
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**Goal:** Smarter decisions
The Future Requires a New Platform Combining the Best of Emerson Technologies

Trellis

*dynamic infrastructure optimization platform*

The first holistic data center infrastructure management (DCIM) platform of hardware, software and services to bridge the critical gap between IT equipment and data center physical infrastructure.
Emerson’s DCIM Software Solutions with Trellis

The Trellis platform will be the most comprehensive DCIM solution in the market.

Data Capture and Planning
- Aperture Suite
- Avocent MergePoint
- Infrastructure Explorer
- Avocent Data Center Planner
- Services

Monitor and Access
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Analyze and Diagnose
- Aperture Integrated Resource Manager Services

Recommend and Automate
- Early Warning (Reactive)
- Reduced MTTR and Effort
- Availability at Optimal Performance (Proactive)

Emerson’s Future Solution

Improved Planning

Early Warning (Reactive)

Reduced MTTR and Effort

Availability at Optimal Performance (Proactive)
What Trellis Is: Bridging the Gap Between IT and Facilities

IT infrastructure:
Leverage firmware “hooks” in servers, storage, networking and telecom Equipment

Trellis Platform
Dynamic infrastructure optimization

Physical Infrastructure:
Leverage facilities product and monitoring technology for power, cooling, and environmental data

Integrated Data Collection and Consolidation
How Trellis Works: Hardware, Software and Services Working Together

Trellis Software Modules

Data Consumption

Inventory  Configuration  Operations  Change  Monitoring  Facilities  Access

Data Collection

Power  Cooling  IT Equipment  Battery Monitors  Meters  Sensors  Environmental Monitoring

Data Center Assessment, Design and Integration Services

Avocent

EMERSON
Network Power
Trellis: Providing a Scalable Foundation for Growth

• Integrates with existing Emerson Network Power DCIM solutions and well as other vendors’ solutions

• Provides the structure to grow your DCIM solutions “up and out”

• Existing Emerson Network Power DCIM solutions will migrate seamlessly into the Trellis platform, allowing current Avocent, Aperture and Liebert customers to keep moving forward from whichever point on the maturity model they began from
Trellis: One Source of Truth

- Integrated, real-time visualization, analysis and control across IT equipment and physical infrastructure
- Enables smarter decisions and greater capacity utilization
- Stakeholders can slice and view information from the most illuminating vantage, pulling information from a common repository – one source of truth
A World with Trellis Means...

- A single system to let you troubleshoot problems across the IT and facility infrastructure.
  - **VERSUS**: Going to multiple systems and correlating the information manually to determine what is causing the problem
- The ability to know what impact even simple changes will have to your infrastructure before you make them
  - **VERSUS**: Being able to make only an educated guess at the impact of changes
- Being able to use real-time information in a real-time manner
  - **VERSUS**: Using real-time information for only historical trending

Trellis enables **smarter decisions** and get further control over the data center infrastructure, which will lead to:
- Increased capacity utilization
- Improved efficiency
- Maximized availability
The Development of Trellis

- Emerson invested over $1.2 billion in the Avocent acquisition to strengthen our position in this space (2009) in addition to the investment to acquire Aperture, a leader in enterprise data center management software (2008).

- Realigned organization to create a business focused on Data Center Infrastructure Management (2010).
  - Cross-divisional development team pulls the best practices from all existing Emerson solutions.

- DCIM-focused business led by the former Emerson CIO.
  - Recently completed a global data center consolidation project.
  - Brings a deep, first-hand understanding of the challenges CIOs and data centers.

- Trellis requirements driven by Executive Advisory Board inputs.
  - Executive Advisory Board composed of Chief Information Officers and Vice Presidents of facilities or operations.

$1.2 Billion Investment in DCIM Shows Focus and Commitment.
Trellis Platform Timeline

- **FALL 2010**
  - Ramp Engineering Personnel
  - Form Development Partner Alliances

- **SPRING 2011**
  - Early Adopter Program

- **FALL 2011**
  - Announce Trellis Platform Globally (Oct)
  - Launch Trellis Architecture

- **SPRING 2012**
  - Trellis R1 Products Generally Available (December)

Existing Products and Expertise Allow for Rapid Delivery of Trellis to Market
Trellis Could Save Businesses More Than $10 Billion

- Data center managers typically reserve 20 percent or more of their power system capacity as a buffer against overload.
- Virtualization has added to the uncertainty—and increased the size of the buffer in some cases.
- According to Emerson calculations, if every U.S. data center could utilize 10 percent more of their capacity, the need to build more than 2 million square feet of new data center space could be eliminated each year.

U.S. businesses stand to save more than $10 billion through improved data center infrastructure management.
Data Center Infrastructure Management (DCIM)
Dynamic Infrastructure Optimization

Management of a Scalable Heterogeneous Environment
Holistic Data Center Infrastructure Management (DCIM) platform of hardware, software and services to bridge the critical gap between IT equipment and data center physical infrastructure

Data Capture and Planning
Avocent Data Center Planner Software

Monitoring and Access
Avocent DSView™3 Management & Power Manager Software

Diagnosis and Insight
Aperture Integrated Resource Manager

- Aperture Capacity Manager
- Aperture Configuration Manager
- Aperture Infrastructure Process Manager
- Aperture Integration Manager

Simply Manage Complexity
- Minimize risks associated with change
- Increase visibility for informed decision making
- Consolidate control over facilities and IT infrastructure

Optimize Infrastructure with Confidence
- Minimize infrastructure investments
- Improve efficiency without added risk
- Dynamically adapt data center infrastructures without increased cost
- Ensure availability of business-critical services
- Extend functional life of existing infrastructure

Dynamically Scale and Extend Across a Common Platform
- Integrates real-time information from disparate systems
- Transforms data into actionable and contextual information

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Questions??