

DATA CENTERS

A holistic view of the data center and the opportunities to enhance its infrastructure to meet current and future demands



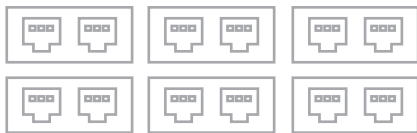
Chapter 8
Automated infrastructure
management

Automated infrastructure management

The data center connectivity challenge

In today's fast-evolving data centers, expanding the fiber-optic infrastructure is vital for providing the bandwidth and speed needed to transmit large amounts of data to and from multiple sources. As switches with 40G and 100G ports become commonplace, data center infrastructure becomes more complex—and it is becoming increasingly clear that traditional, manual methods for managing fiber connectivity may not be sufficient.

Demand for fast data transmission and efficient network performance has been fueled by requirements to support virtualization, convergence and cloud computing, as well as high-bandwidth applications like streaming video. But, while supporting more bandwidth is important, there are additional trends impacting data center fiber infrastructure management:



Higher port density

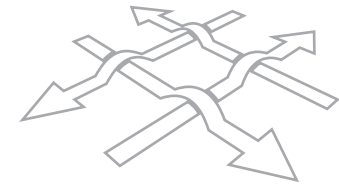
Space is at a premium in the data center, which has led to higher densities of fiber ports on equipment and fiber shelves.

With increased density comes the increased risk of making or removing the wrong connection—potentially causing widespread disruption in network services.



Increased complexity of cabling topology

Point-to-multipoint connections have become commonplace with the advent of 40G and 100G technology—making manual record-keeping nearly impossible.



Increased complexity of network architecture

The move to heavily-meshed leaf-spine network architecture has greatly increased the number of connections along with a need for the consistent and accurate deployment of connectivity pattern/mesh for orderly network expansions in the data center.

Taking AIM at data center downtime

In its simplest terms, automated infrastructure management (AIM) is an integrated hardware and software platform that manages the entire physical layer. It fully documents the cabling infrastructure, including connected equipment, to provide a complete view of where devices are located and how they are connected.

By capturing information about every physical connection in the network and relaying it to higher-level network management systems, the AIM system provides an accurate, real-time view of the physical network connectivity and can issue alarms when an unplanned or unauthorized change occurs. AIM streamlines the provisioning and monitoring of data center connectivity; produces up-to-date reports on the status and capacity of the network infrastructure; and ultimately can reduce data center downtime and mean time to repair through real-time, precision notification of connectivity outages.

AIM systems also improve other aspects of data center operations, including:



Capacity management

AIM provides an accurate view of available panel, switch and server ports, which helps address network capacity challenges by eliminating dormant ports—resulting in more efficient planning and reduced CapEx.



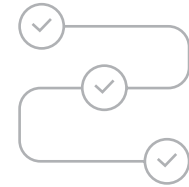
Troubleshooting

The precise location of a connectivity problem is documented so the technician doesn't have to spend time verifying manual documentation or hunting for the location of a problem.



Security

AIM can raise alerts when a port is disconnected or connected in an unauthorized location—for example, if someone has moved a server without following approved change management processes.



Automated workflow

AIM reduces time-intensive manual processes by generating electronic work orders and enabling guided administration of connectivity changes. This helps minimize human errors and unplanned network downtime.



Choosing an AIM system that exceeds the standard



The IT industry has recognized the important role intelligent infrastructure solutions can play in data center management and has established standards for automated infrastructure management (AIM) capabilities and functions.

In early 2017, the ISO/IEC WG3 SC25 group is expected to publish the ISO/IEC 18598 Standard for Automated Infrastructure Management Systems—Requirements, Data Exchange and Application.

To meet the key requirements of ISO/IEC 18598, an AIM solution must:



Automatically detect and monitor connectivity



Automatically detect, document and monitor the presence of network devices



Automatically update records when any monitored connections are modified



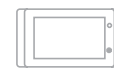
Document connectivity between non-AIM enabled ports and other equipment



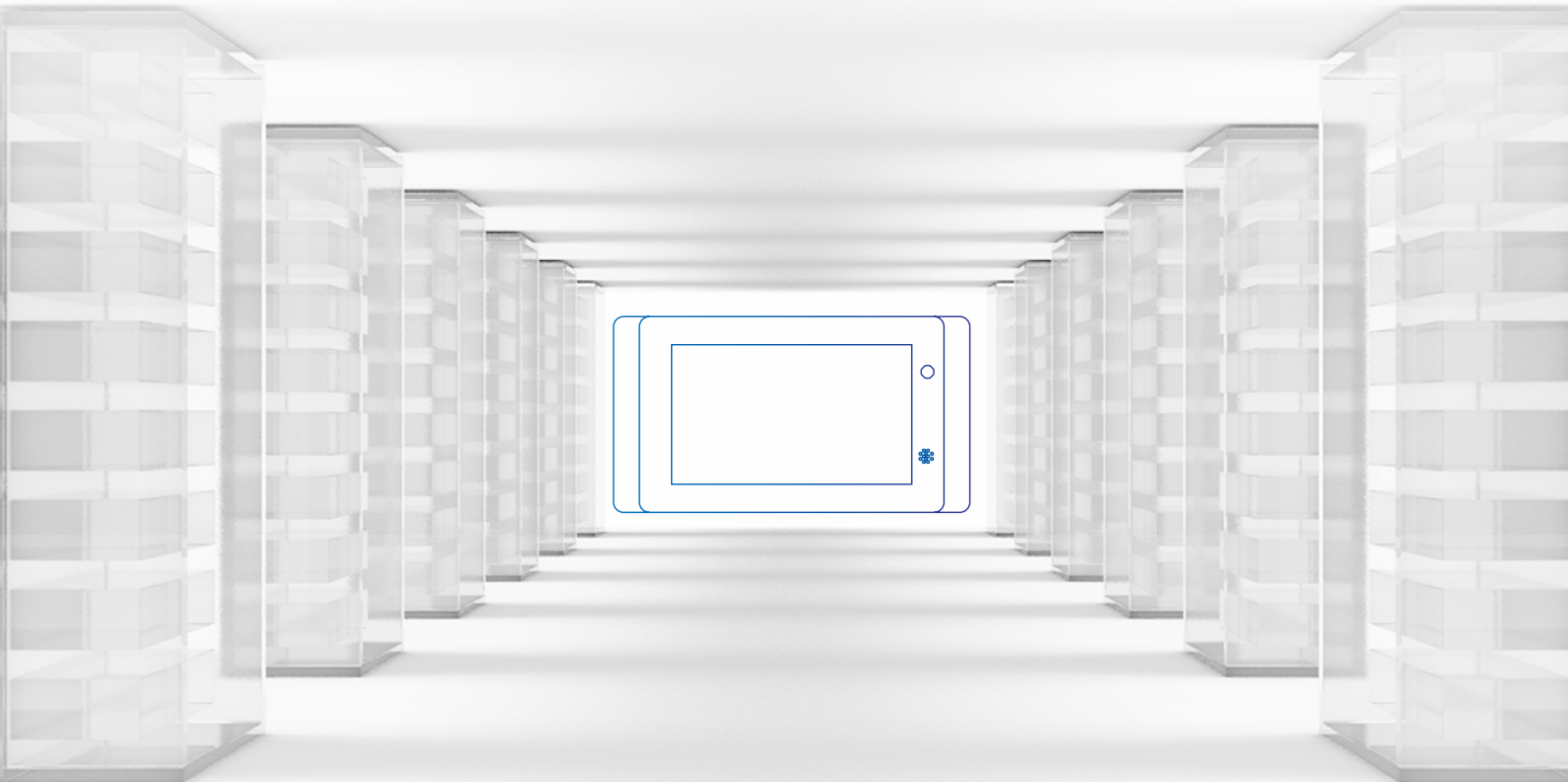
Identify and track the physical location of end devices connected to the network



Generate a graphic representation of end-to-end connectivity (circuit trace)



Generate electronic work orders and automatically monitor the accuracy of implementation of work order tasks



The emergence of AIM standards is making intelligent connectivity a mission-critical technology for data centers. Since cabling infrastructure migration often requires replacement of fiber-optic modules, now is the time to upgrade to an AIM-driven intelligent connectivity system.



Standards:

ISO/IEC AIM Document
(18598/DIS draft)



Brochure:

imVision®
automated infrastructure
management



Video:

Managing critical
data center fiber
connectivity with imVision

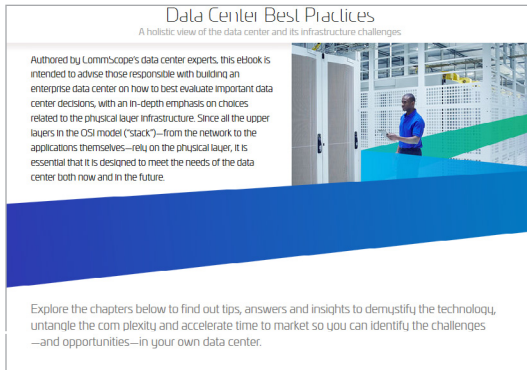


Video:

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