

Hitting the target

Mark Acton of RiT Tech examines the evolution of automated infrastructure management (AIM) in the internet of things (IoT) era

▶ The dependency on IT infrastructure, networks and data centres is growing for organisations of all sizes. They constantly seek to increase output while maintaining stability and reliability, with every second of downtime translating directly to financial loss. Maintaining IT and network infrastructure, however, is becoming increasingly difficult, as networks become more complex and data centres become larger and more geographically distributed. This poses a significant burden on IT budgets and is becoming extremely difficult, if not impossible, to manage and maintain manually.

MANAGEMENT DECISION

As changes happen in a data centre or across a network environment, the connectivity and network infrastructure is the most time consuming, and potentially risky aspect to keep up-to-date and accurately document. As a result, many environments are dependent upon messy, poorly documented and often redundant cables in cabinets, under the floor and in overhead cable trays.

Manual network maintenance is labour intensive and error prone – most downtime starts from errors in the physical network or inaccurate documentation, which can be overlooked in large projects and frequently results

in unnecessary downtime and operational inefficiencies. This, in turn, has direct cost impact on revenues and



project timescales.

There needs to be an intelligent approach to managing and controlling connectivity and network infrastructure, with the use of applications and tools specifically designed to address these challenges. In addition, company processes must be better integrated by being aligned and encapsulated within these tools in order to keep the services being provided in sync with the physical infrastructure.

SOLUTION PROVIDER

As an answer to all the above challenges AIM brings real time visibility, monitoring and control of all network physical layer components and identifies points of failure before they escalate. AIM also automates work processes, eliminates manual errors and helps with provisioning new equipment – enabling full utilisation of all IT assets down to the last port.

This is particularly important in the increasingly distributed and remote world of edge and IoT.

It is important to know that an AIM system is a combination of hardware and software designed to help better manage the network. This combination allows for the most efficient and effective use of physical infrastructure, which is centrally controlled by

an intelligent software system. With an increasingly distributed architecture, there is a rising demand within data centres, edge sites and office spaces for managing – accurately and rapidly – patching between switches and devices. An AIM solution should have the capability to represent both cross-connect and interconnect topologies.

Every IoT or IP enabled device located in a building needs to be mapped with an AIM system identifying and tracking any patching changes made to the network, managing alerts, offering simple dashboards and reporting – regardless of vendor or connection methodology. The AIM system should also be able to manage the connectivity in any combination – between switch and panel, between panel and server, server and storage etc.

SETTING THE STANDARD

ISO/IEC 18598 (ANSI/TIA 5048) specifies requirements and recommendations for AIM systems. It states that ‘...an AIM system shall include the following two functional elements:

- Hardware that automatically detects the insertion or removal of cords.
- Software that collects and stores the resulting connection information, relates the connection information to cabling connectivity information, relates the cabling connectivity information to information from other sources and makes the connection information accessible to either an authorised user or to other systems.

The software used for AIM systems shall include either application program interfaces (APIs) or data exchange formats



to allow data from the AIM system to be shared with other systems used by the organisation. This is an important aspect for enhancing and automating the management and operational functions in the building and data centres.'

BUILDING BLOCKS

This standard neatly defines the three basic building blocks of an AIM system:

ASSET MANAGEMENT

AIM systems should be capable of tracking device history for networked and devices including details such as:

- When device was first connected to the network
- If and when it was removed from the network
- If and when it was moved from one physical location to another
- How long it has been active or inactive

CAPACITY MANAGEMENT

Accurate port capacity information for patch panels and network distribution equipment are required to enhance the capacity planning. As a minimum:

- Total rack space and occupied rack space
- Total number of AIM-enabled panel/closure ports and AIM-enabled/closure with a detected connection
- Total number of non-AIM enabled panel/closure ports and the number of non-AIM enabled panel/closure ports with a manually documented connection
- Total number of switch ports and their assigned service
- The number of switch ports with a detected connection
- Hierarchical relationship between uplink/downlink ports

CHANGE MANAGEMENT

Automated tracking of connectivity changes to support moves, adds and changes (MACs) of IT and network assets, such as the commissioning and decommissioning of servers, patching records etc.

- Real time tracking of authorised and unauthorised patching activities
- Generation of MAC work orders
- Providing means for retrieval of work orders at racks with AIM equipment
- Automated tracking of work order completion
- Scheduled work order history

BEST EFFECT

This offers best in class solution benefits including:

- More robust infrastructure. Increased service availability based on improved knowledge, understanding and use of available resources
- Better accuracy, visibility and control. This results in improved productivity and flexibility, with more effective use of available resources and capacity
- Improved network and infrastructure management. Greater integration and intelligence for the network manager
- Allows network and infrastructure to proactively detect and alert administrators to potential problems. The transparency of systems allows for faster services with fewer manual processes and opportunity for error
- Prevents downtime. Enables supervision and control of physical infrastructure in

'With an increasingly distributed and dynamic environment, there is a rising demand for visibility within data centres and offices for managing – and managing – and rapidly – between switch devices.'

real time, which increases uptime, labour efficiency and asset utilisation

- Extra network security. Guards the network from unauthorised connects, disconnects, moves and changes, which adds an extra layer of security to mission critical communications networks
- Ability to effectively manage increasingly distributed edge and IoT deployments remotely with confidence.
- Greater integration of process. Improved

information flow allows for improved process integration and more effective communication and cooperation between different infrastructure teams

MANAGING THE COST BASE

A best in class AIM solution allows companies to make significant operational efficiency gains, whilst also avoiding unnecessary costs.

The more complex the environment, the bigger the opportunity for cost and efficiency gains.

Operational efficiency:

- Offers greater site knowledge and configuration management database (CMDB) accuracy
- Reduces network downtime
- Improves network output
- Reduces maintenance time
- Allows greater process integration
- Eliminates errors

Cost savings:

- Reduces downtime
- Reduces power consumption
- Lowers management and technician

overhead

- Optimises infrastructure utilisation
- More effective capacity planning ■



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