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Guide to Streamlining Hardware Procurements and Network Management for Large-Scale Edge Solutions

Introduction

The adoption of edge computing is growing across nearly every industry, with many IT infrastructure and operations leaders recognizing the need to reduce latency and enable real time processing at the edge. In fact, [Gartner](#) predicts that by 2025, 75% of enterprise-generated data will be created and processed outside a traditional centralized data center or the cloud.

The recent rise in AI adoption is also accelerating the demand for optimized and efficient edge computing solutions. For example, edge devices can collect data to power AI and machine learning applications that drive efficiency, reduce safety and security risks, and help organizations deliver more value to customers. Organizations in industries such as transportation, utilities, manufacturing, retail, and healthcare that are able to [operationalize edge AI](#) will gain a significant advantage over their competitors.

However, many organizations face significant challenges when procuring thousands of hardware components for large-scale edge initiatives, and then managing this multi-site distributed edge infrastructure. Overcoming these barriers requires effective hardware procurement and network management strategies.

In this guide we'll cover the challenges with large-scale edge initiatives, and ways to overcome them by streamlining hardware procurement and simplifying network management. We'll also discuss how AHEAD's services and software solutions can reduce edge project timelines from years to just months.



The Challenges with Large-Scale Edge

Although there are many advantages to implementing edge solutions, there are still challenges when it comes to procuring and managing thousands of edge devices across numerous deployment sites.

Here are some of the obstacles organizations face when operationalizing edge initiatives:

Slow rollouts

Getting hardware prepared and shipped to hundreds (or even thousands) of deployment sites around the world can be slow and costly without supply chain and logistics expertise. Then these devices need to be mounted, configured, and more before they can be operationalized.

Lack of visibility

Tracking massive edge fleets across many different deployment sites is difficult. Poor visibility into hardware inventories, asset lifecycles, and multi-site infrastructure can make edge management challenging. Many edge initiatives also lack the transparency necessary for compliance with government regulations.

Hardware quality control issues

Ensuring consistency for thousands of components throughout their lifecycle is crucial to prevent issues and scale to meet overall edge system requirements. Many devices need to have a useful life of at least 3 to 5 years to achieve a positive ROI, and need to be easily replaced to keep the edge solution operating effectively.

Ongoing site management

Handling the provisioning, configuration, software updates, and more for large edge systems can be complicated and expensive, especially if organizations rely on manual field visits. Edge deployment sites are frequently unmanned, widely geographically distributed, and too numerous for hands-on IT configuration and updates.

Streamlining Hardware Procurement

Procuring hardware is essential to launching a new edge solution, but it's also an ongoing process as existing edge devices need to be replaced or upgraded. This means it's crucial to implement a streamlined procurement process to accelerate rollouts, prevent quality issues, and meet compliance requirements and global regulations.

Tracking the full bill of materials (BOM) ensures consistency and standardization for edge devices and components throughout their entire lifecycle. Configurable BOMs and detailed manufacturing instructions for each hardware asset can minimize defects and streamline lifecycle management. BOMs are also helpful for extending the useful life of hardware assets and adhering to government regulations.

Adopting change control workflows provides a fully traceable revision history and prevents unapproved changes to software and firmware versions. Revision control makes it easier to manage updates and modifications across the entire edge fleet, ensuring consistency and reliability.



Streamlining Hardware Procurement

Leveraging integration and kitting expedites rollout of new hardware. Edge devices can be kitted with cables, power supplies, and other necessary accessories for quicker installation at deployment sites. This turnkey approach reduces deployment times and minimizes expertise required to set up hardware in the field.

Partnering with a logistics expert streamlines fulfillment and delivery of edge devices to deployment sites. Organizations with global footprints can rely on a logistics partner to handle country certifications and export requirements. A logistics expert can also help deliver edge devices to remote deployment locations that might be difficult for organizations without an established supply chain network to handle on their own.





Simplifying Network Management

Along with procuring and deploying edge devices, an effective edge solution should include strategies for site and network management. This requires in-depth visibility into individual components and contracts, a comprehensive view of all deployment locations, and remote access to the software running across the entire edge fleet.

Ensuring hardware asset traceability at the component level across deployment sites to gain deep visibility into the hardware lifecycle from procurement to decommissioning. It's also crucial to track hardware inventories to ensure edge devices reach their destination. This traceability helps organizations proactively manage individual devices within large-scale edge systems.

Implementing contract management processes for maintenance contracts, licenses and warranties to stay ahead of renewals and cancellations. Effective contract management ensures that all edge devices are covered under appropriate support agreements, reducing downtime and unexpected costs.

Leveraging orchestration software for remote configuration and provisioning. Edge orchestration tools enable centralized management of devices, allowing for zero-touch remote software and firmware updates, device configurations, and performance monitoring. This reduces the need for on-site visits and ensures the edge system is up-to-date and secure.

Adopting site management processes to plan rollouts, scaling to prevent service disruptions, and proactively retire assets at different deployment sites and data centers. Site management ensures that edge deployments are scalable and maintain high availability, even as the edge network grows and evolves.

Procuring Hardware and Managing Edge Networks with AHEAD

Implementing large-scale edge solutions can be challenging for many organizations, but it doesn't have to be. The right hardware and logistics partner — along with modern asset management and orchestration software — is a great way to overcome the barriers to edge adoption.

AHEAD is a leading provider of enterprise technology solutions that can help you procure, deploy, orchestrate, and manage large-scale edge systems. Our [Edge Advantage program](#) dramatically reduces deployment time, quality control problems, and asset traceability headaches for multi-site edge systems. This has been a game-changer for retailers and other businesses with numerous locations and large geographical footprints.

Our in-house engineering team uses our portfolio of customizable building blocks to quickly deliver edge solutions that meet the requirements of many different use cases from small to large. These proven reference architectures have been tested and meet basic certifications, reducing the time to deployment and lowering the cost for large-scale edge systems.

In addition, the Edge Advantage program includes advanced integration and global logistics services that leverage AHEAD-owned manufacturing facilities and decades of experience in these areas. Our in-house team of global logistics specialists have the ability to prepare shipments and related documents to 185+ countries, to weather any obstacles, and intervene if interruptions arise along the way.

Along with full-service hardware engineering, manufacturing, and global logistics, we provide our exclusive [AHEAD Hatch IT Lifecycle Management platform](#) to clients. Hatch can help you track your hardware assets from procurement and manufacturing through to deployment and support. Hatch also provides consolidated data at the site level for your infrastructure and can easily integrate with ServiceNow and other leading enterprise platforms to share data in real time.

Hatch can manage thousands of devices and components, including their firmware levels, BIOS, software image revisions, harvested hardware data, warranties and service contracts, and more. Real time data with Hatch streamlines order processing, inventory management, logistics, and asset management. This accelerates every aspect of planning, executing, and supporting your large-scale edge projects.



Ready to jumpstart a new edge computing initiative?

[Contact AHEAD](#) to learn more about our Edge Advantage program and Hatch IT Lifecycle Management platform.

AHEAD

AHEAD builds and manages digital platforms that power the most successful organizations in the world. Our consultative approach, unmatched engineering, and innovative solutions combine to accelerate the impact of technology for every client we serve.

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