

Local Management: A Timely Answer to Distributed Network Operations Demands

Executive Summary

The pressure has never been greater for IT teams to improve infrastructure reliability and resilience so that applications and services can meet the performance expectations of the business. At the same time, this must be done without significantly increasing operational expense. One compelling management technology, local management, offers the opportunity to control expense, reduce risk, and improve response time when problems do occur using a combination of direct, real-time, infrastructure monitoring combined with automated mitigation capabilities. This ENTERPRISE MANAGEMENT ASSOCIATES® (EMA™) brief examines the essential opportunities and requirements for local management and examines solutions of this type offered by Uplogix.

Why “Local Management” Should Be In Your Vocabulary

As the entire world of IT infrastructure goes through successive rounds of virtualization, a lot of time and attention is being paid to how the vast array of virtual components are created, co-exist, and interoperate. But behind all of that virtualization technology lays a physical infrastructure that is increasingly expected to perform in a flawless manner. As a result, IT pros can little afford to drop their guard against anything less than 100% availability when it comes to any aspect of physical compute or connectivity assets.

One emerging and promising method for addressing this need is to employ a technique known as local management. Essentially, local management is, as it sounds, monitoring and control that is delivered via systems or processes that are locally adjacent to infrastructure elements and charged with constantly assuring that those elements are operating as expected and available at all times. In the past, this would have been accomplished via human operators, either in the data center or at remote/branch facilities. Real options exist today for addressing this need using automated local management products and technologies that seek to provide the equivalent of a “virtual technician” on site.

There are compelling reasons to use automated approaches for local management. Management tools are far more proficient at monitoring information technology elements closely with no loss of attention. This means that issues can be recognized almost immediately, rather than waiting for an end user, customer, or partner to suffer impairment and call the help desk, significantly improving service levels. Further, if the root cause is one that is well known and the course of corrective action well understood, a local management system can invoke mitigation steps autonomously, speeding resolution and eliminating potentially expensive site visits

Further, local management is directly relevant to the broader business objective of reducing operational risk. By putting direct/active management technology in position to protect critical infrastructure elements, particularly when those elements are widely distributed geographically, less risk is assumed when changes are made. For instance, if a software patch is made to a network device that provides essential connectivity to a group of servers or end users, and something goes wrong in the patch process,

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the local management system can automatically restore the network device to its last known good configuration, thereby returning the network device (and network connectivity) to full functionality. This means that security and feature upgrades that are essential to ongoing protection and optimization of the IT infrastructure can be undertaken en masse without requiring personnel on-site to “babysit” the process, again greatly reducing costs. Local management also creates new opportunities to maintain and enforce your business, technical and security policies regardless of the state of your network.

Local management is not a brand new concept. The technologies behind it have existed for years, starting as simple remote Keyboard/Video/Mouse (KVM) access, but have been greatly expanded to include intelligent automation and advanced monitoring and control features. The early evolution of such systems has been driven by the need to extend comprehensive IT reach in support of geographically diverse organizations.

For example, as natural resources exploration and development companies have increased the amount of IT infrastructure and applications at/for remote mining and drilling sites, reliable connectivity became increasingly critical to the business. Local management solutions allowed these organizations to remove cost and risk from these far-flung deployments, ultimately improving operational resilience.

Extreme industries aside, the fundamentals behind local management are making the approach increasingly relevant to mainstream IT operations. Cost pressures for reducing staff (or at least limiting growth) and escalating expectations for ubiquitous application availability and performance raise the demand for instant response to any network disruption or service degradation. The network must not simply be up – it must be performing optimally at all times. Even seemingly unrelated trends such as virtualization and cloud make efficient and reliable networks more critical than ever, due to centralization and the consequent increased reliance on non-stop network connectivity between worker locations and remote or hosted datacenters.

Local management allows organizations to remove cost and risk from distributed technology deployments, improving operational resilience.

Essential Requirements for Local Management

In order to realize the benefits of a local management approach, there are a number of standard functional capabilities that must be present. Following is a listing of the major features that should be considered as essential requirements when investigating or evaluating local management solutions.

- **Direct/Continuous Local Monitoring:** The backbone of any local management solution is direct connections to the devices under management. In most cases, this means a management device that can be deployed adjacent to equipment that is to be monitored and protected, and connected to the local management appliance by means of direct network-independent links such as serial/console interfaces.
- **Multi-vendor Support:** In some cases, devices to be put under local management system will all be sourced from a single infrastructure vendor, but those cases are rare. As a result, it is essential that the local management system be able to support heterogeneous, mixed infrastructure deployments.
- **Automation:** The simplest forms of local management involve providing remote access to equipment, but the real value to be realized from these systems is when local management can take automated actions consistent with IT policies and procedures in response to issues. Some of these actions may be as simple as resetting an interface, or as complex as restoring a prior configuration.
- **Local Failsafe/Recovery:** Perhaps the most valuable aspect of a local management deployment is the risk reduction opportunity provided by on-site rollback and recovery. Fielded deployments have proven this approach effective as a primary strategy for taking risk out of remote field upgrades of IT infrastructure software and firmware.

- **Secure Out-of-Band Access:** Since many local management systems will be deployed in geographically distant locations, there must be a means to reach the system even when primary network connectivity is lost. This means that systems must provide an alternative connectivity method, such as mobile/cellular links. Further, such out-of-band access must be rigorously hardened and secured, so that no security risks are introduced via such secondary means of control and contact.
- **Administrative Security and Logging:** The deployment of local managers creates an opportunity to enhance network security by applying enforceable role based administrative access, so that network administrators don't require root access to network devices to perform management tasks. In addition, by its nature, a local management system is able to maintain out-of-band connectivity with AAA systems and continue auditing administrative interactions even when the network is down.
- **Centralized Administration:** For large organizations that have a need to deploy local management to dozens or hundreds of remote sites, a central platform capable of executing batch management processes for administration of remote local management devices is essential for optimal administrative efficiency as well as practical operational effectiveness.

The Uplogix Answer for Local Management

With thousands of systems deployed since Uplogix first brought its Uplogix Local Management solution to market, the product architecture and feature set have had more than sufficient field time to be considered a mature solution. Uplogix products have gone through several generations of refinement and enhancement, and thus represent the most advanced local management solution available today.

At the highest level, the bulk of the value within the solution is delivered via the Uplogix Local Managers (LMs), which are deployed on location with managed devices. Uplogix LMs run Uplogix' Local Management Software (LMS). Uplogix offers HW/SW packages that include LMS and a device with local storage, processing and connectivity via multiple console ports and direct Ethernet connections. Options include compact Uplogix Local Management devices with as few as four console ports for connecting to managed devices in remote or branch locations as well as larger expandable Local Management devices that are more commonly deployed in Data Centers. Uplogix also offers all of its local management functionality as software for installation on a Cisco UCS Express Router (2900 and 3900 series). Further, infrastructure managers can create Local Managers using Uplogix Virtual LMS on their own servers, connected to a console server, if they already have console servers in place.

LMs are complemented by the Uplogix Control Center, which provides centralized administration as well as real-time monitoring capabilities. The system as a whole is designed to operate as an independent and autonomic solution, but can also be integrated into other existing management systems, such as those offered by IBM, CA, or Solarwinds, to play a part in broader management architectures.

The Uplogix solution was specifically designed for local management and as a result is deeply and richly featured to meet the requirements outlined above.

- During deployment, each Uplogix LM is connected directly to devices in its immediate vicinity. This core functionality has been built in a vendor-independent manner so that multi-vendor environments can be readily accommodated.

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- The solution is often used to connect to a mix of technology elements, usually starting with networking, but also including servers, power supplies, environmental controls, and in many cases intelligent devices and M2M endpoints.
- The Uplogix LM directly monitors key health and activity indicators across each connected element in true real-time, so any outage is immediately recognized.
- Since the LMs can capture configurations (while also logging all changes made to configurations), they can perform automated corrective actions, such as the Surgical Rollback™ feature for undoing changes that cause errors or failures, without requiring manual intervention.
- The Uplogix LMs integrate with TACACS and Radius and provide role-based administrative access to managed devices. The Uplogix LM also does a detailed audit of administrative interactions logging both inputs and device responses.
- The Uplogix LMs also offer out-of-band back-up link connectivity, so that in the case of a loss of primary network linkage, operators can still access the LM to determine the state of the site and any attached/managed equipment. This also makes it desirable, in many managed settings, to pre-deploy local managers during networking equipment rollouts.

EMA Perspective

EMA firmly advocates applying automated management products and technologies wherever possible, as a means for improving IT operational efficiency and reducing risks to operations continuity while accommodating increasing growth and complexity. While automation can be applied to many aspects of IT management, advanced/intelligent local management is an excellent example of the opportunity for organizations to reduce direct costs while improving resiliency. This is especially urgent due to the widening human resources gap, driven by ever-present pressures to limit operational expenses, in the face of substantial increases in complexity within the IT infrastructure. The steady transition to virtualized and cloud-based application and service architectures further aggravates these challenges.

With many years of sustained technology development and field-proven deployments, Uplogix offers local management solutions that are truly state-of-the-art. To the extent that the Uplogix solution meets or exceeds all of the essential local management requirements described above, it is unique in the management tools industry. The company has matured its remote automation and control features and as a result offers industrial-grade, enterprise-class local management solutions that are quick to deploy and quick to deliver value.

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About EMA

Founded in 1996, Enterprise Management Associates (EMA) is a leading industry analyst firm that provides deep insight across the full spectrum of IT and data management technologies. EMA analysts leverage a unique combination of practical experience, insight into industry best practices, and in-depth knowledge of current and planned vendor solutions to help its clients achieve their goals. Learn more about EMA research, analysis, and consulting services for enterprise line of business users, IT professionals and IT vendors at www.enterprisemanagement.com or blogs.enterprisemanagement.com. You can also follow EMA on [Twitter](#) or [Facebook](#). 2548.110112