ESG Lab Review

Simplifying Infrastructure Upgrades with VCE Converged Infrastructure Systems and VCE Vision Intelligent Operations Software

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Abstract

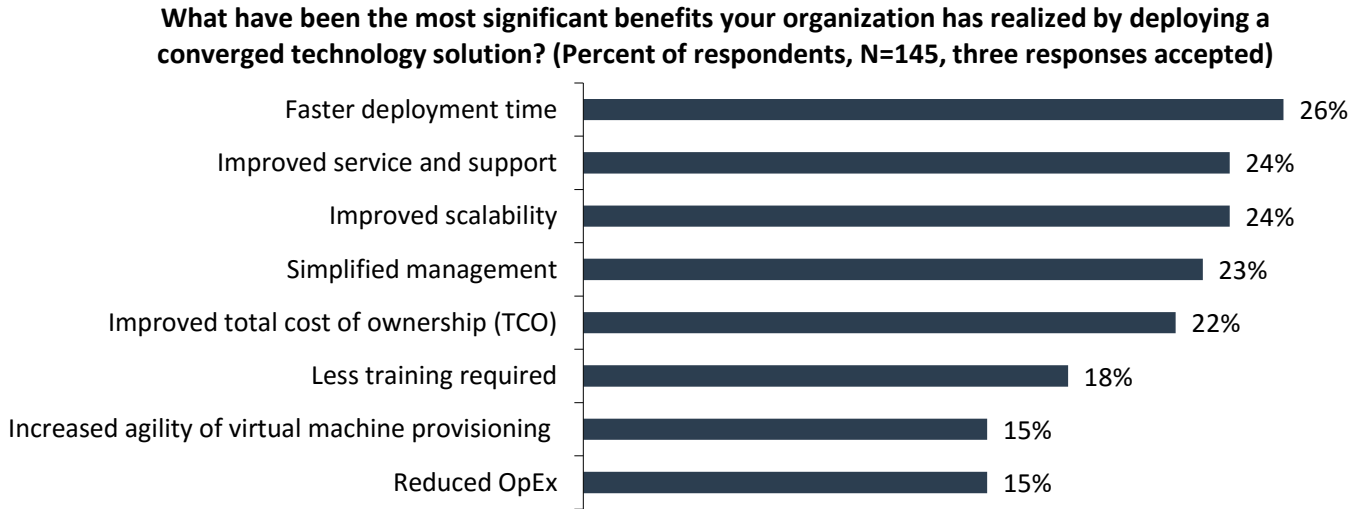
This ESG Lab Review documents the benefits of leveraging VCE Vision Intelligent Operations with VCE converged infrastructure systems and the VCE Release Certification Matrix (RCM) to simplify the process of upgrading a complete IT infrastructure. Both quantitative and qualitative evaluations of the time to upgrade four common infrastructure deployments were conducted: a traditional "do it yourself" (DIY) mixed-vendor infrastructure; a DIY reference architecture infrastructure; a VCE Vblock converged infrastructure system leveraging the VCE RCM; and a VCE Vblock System leveraging the VCE RCM and VCE Vision software. When leveraging the VCE RCM and VCE Vision software, ESG Lab measured and modeled a time savings of as much as 6x compared to DIY approaches. Further, the added benefits of Vision specifically, including the time to complete common steps in the upgrade process, such as auditing the infrastructure, researching new updates, downloading updates, and validating successful updates were nearly eliminated. Ultimately, this enables IT operations to enhance infrastructure stability and optimization more often with less effort and lower risk.

Background

The rapid adoption of converged infrastructure solutions has changed the IT infrastructure landscape. A converged solution takes servers, storage, network connectivity, and (in many cases) software and combines them into a single, tightly integrated solution. Organizations can now quickly and easily deploy a prebuilt and pretested infrastructure to satisfy their virtualization requirements. In fact, recent ESG research shows that nearly one in three organizations currently use a converged infrastructure solution, with an additional 56% of respondents planning to leverage one.[1]

The adoption and usage trends of converged solutions are not all that surprising. When compared to a traditional approach that leverages disparate hardware resources, the complexities of deploying and managing a virtualized infrastructure are plentiful. As shown in Figure 1, converged solutions deliver benefits that range from faster deployment times and improved services and support, to increased agility and cost reductions. This study illustrates the importance of operational efficiency related to these benefits that are realized by many organizations using a converged infrastructure.

Figure 1. Top Eight Benefits of Deploying a Converged Technology Solution



Source: Enterprise Strategy Group, 2016

[1] Source: ESG Research Report, *The Cloud Computing Spectrum, from Private to Hybrid*, March 2016. All ESG research references and charts in this Lab Review have been taken from this research report.

VCE Vision Intelligent Operations Software

VCE Vision Intelligent Operations is software that comes embedded in VCE converged and hyper-converged systems to provide health and life cycle management. The software delivers information that enables organizations to easily maintain a healthy and up-to-date environment that is fully optimized and secure. VCE Vision operates in three key areas:

Converged Health Management – Reports and visualizes the health of VCE converged and hyper-converged systems, including the current state of each component (compute, network, storage, and virtualization). The intelligence of the software, which visualizes system inventory and relationships, including workloads and their underlying infrastructure, enables faster root cause analysis as well as more proactive performance and capacity management.

Release Certification Matrix (RCM) Compliance Management – Simplifies the upgrade process of VCE converged and hyper-converged systems by automating and eliminating common steps of the infrastructure firmware and software upgrade process. VCE Vision software runs compliance assessments on the systems to identify where updates are needed, provides direct access to updates (i.e., new RCMs and patches) housed on VCE's customer support website, and downloads only the updates that are required.

Security Compliance Management – Maintains and automates the steps required to ensure that components' security is hardened and aligned to vendor and industry best practices. Security alerts, software patches, and knowledge-base articles are centrally located at VCE's support site, which help address specific component vulnerabilities. VCE Vision software assesses components' settings, reports when components fall out of security policy compliance, and provides guidance to reconfigure components, as well as patches and upgrades, to maintain a high security posture.

VCE Converged Infrastructure Systems and the Release Certification Matrix

VCE is EMC Corporation's Converged Platform Division, and its Vblock System is a well-known and extensively deployed converged infrastructure solution that combines best-of-breed technologies from industry-leading vendors. EMC offers a range of Vblock Systems that businesses can choose from to suit their workload needs. With Cisco compute and networking, EMC storage and data protection, and VMware virtualization and management, Vblock Systems are pre-integrated, pre-manufactured and pre-tested to make it simpler and quicker for organizations to deploy, manage, and sustain a complete IT platform.

Central to the design is the VCE Release Certification Matrix, the set of firmware releases for all infrastructure components, plus virtualization software releases. VCE continuously pre-tests all new releases to validate interoperability and delivers RCM updates to users on a consistent schedule. This combined regularity of pre-tested releases is designed to not only eliminate the burden and expense of user-conducted pre-testing, but to also eliminate the risk of outages due to release incompatibilities. VCE also applies its RCM methodology to its new generation of VCE VxRack hyper-converged infrastructure systems.

Simplicity, Speed, and Reliability of an IT Infrastructure Upgrade

ESG Lab validated the benefits of leveraging VCE Vision and the VCE RCM to efficiently upgrade an IT infrastructure. The entire upgrade process was analyzed. This included quantitative wall clock time measurements while going through the upgrade process and evaluating the qualitative benefits of a converged infrastructure backed by industry leading technology, guidance, and support.

Use Cases

First, ESG Lab identified four use cases or approaches that organizations currently take when deploying and managing their IT infrastructures.

1. *Do It Yourself (Worst)* – A traditional infrastructure consisting of siloed components sourced from different vendors with multiple IT administrators managing the resources. It is the user's responsibility to research and track the availability of ongoing release upgrades; to test and validate the interoperability of releases; to determine the order and process of upgrading each component; and to access each vendor's site to download new release updates.
2. *Do It Yourself (Best)* – An infrastructure based on a reference architecture that consists of siloed components with configuration guides to help simplify deployment and element managers to simplify management. This may be based on a reference architecture from a supplier of multi-vendor equipment or an organization that is electing to standardize on specific vendors and have developed their own reference architecture guide. In both cases, it is the user's responsibility to track the availability of ongoing release upgrades; to test and validate the interoperability of releases; to determine the order and process of upgrading each component; and to access each vendor's site to download new release updates.
3. *VCE Vblock System with RCM* – A prebuilt, pretested converged solution that is ready to deploy upon delivery to the data center floor and that requires minimal onsite configuration. On a scheduled basis, VCE provides users with new RCMs (pretested, pre-validated stacks of release upgrades). This eliminates the ongoing need for user pretesting, eliminates the need to access multiple vendors' sites to research and download new release updates, and minimizes the overall time it takes to research and plan the update process of an IT infrastructure. VCE also provides guidance on when and how to upgrade each component without interrupting workload processing.
4. *VCE Vblock System with RCM and VCE Vision Intelligent Operations* – Software intelligence, automation, and visualization that extends the benefits of a VCE Vblock System with RCM. VCE Vision Software audits the entire infrastructure to discover installed releases, generates RCM compliance reports to explain what is out of date, directly accesses and downloads RCM upgrades, and stages them onto the system.

Methodology

Next, ESG Lab identified a common process that should be followed for updating an IT infrastructure, regardless of organization or infrastructure size. The process consisted of six phases that answered a number of questions commonly asked before and after updating infrastructure components. ESG Lab calculated the time it takes to complete each of these phases across all four use cases. Of the six phases identified as part of the upgrade process, five could be reliably measured and modeled. The third phase, planning, proved difficult to model due to the typical unpredictability of IT personnel availability and their responsiveness.

1. Audit – Where do the components reside? What firmware levels are currently on them? What virtualization (hypervisor) releases are installed?
2. Research – Should the update be applied? How will it impact other components? Are intermediate revisions required? Are all prerequisites met?
3. Plan – In what order should the components be upgraded? Who will it impact? Do I need professional services?
4. Download and Stage – How big are the update file sizes? Where can they be downloaded from? Where should the updates be stored?
5. Update – How long will the component be unavailable? Will there be downtime and business interruption?
6. Validate – Were all components successfully updated as planned? Was the update successful?

Infrastructure Sizes and Component Count

The wall clock times were captured on a per component basis and then extrapolated based on three sizes of infrastructure (small, medium, and large). By measuring the time it takes to complete the entire process for each individual component, the collective time for each use cases' entire infrastructure could reliably be extrapolated. The components were divided into four categories: compute, network, storage, and virtualization. The compute components consisted of servers, interconnects, and I/O modules; networking consisted of SAN, LAN, and management switches; storage consisted of a single store array; and virtualization included the physical ESXi host, VMware vCenter, virtual NICs, virtual HBAs, and multipathing software. As an example of the component counts used by ESG Lab, for the server component, a small infrastructure was modeled as having eight servers, while the large infrastructure consisted of 64 servers.

Quantitative and Qualitative Analysis

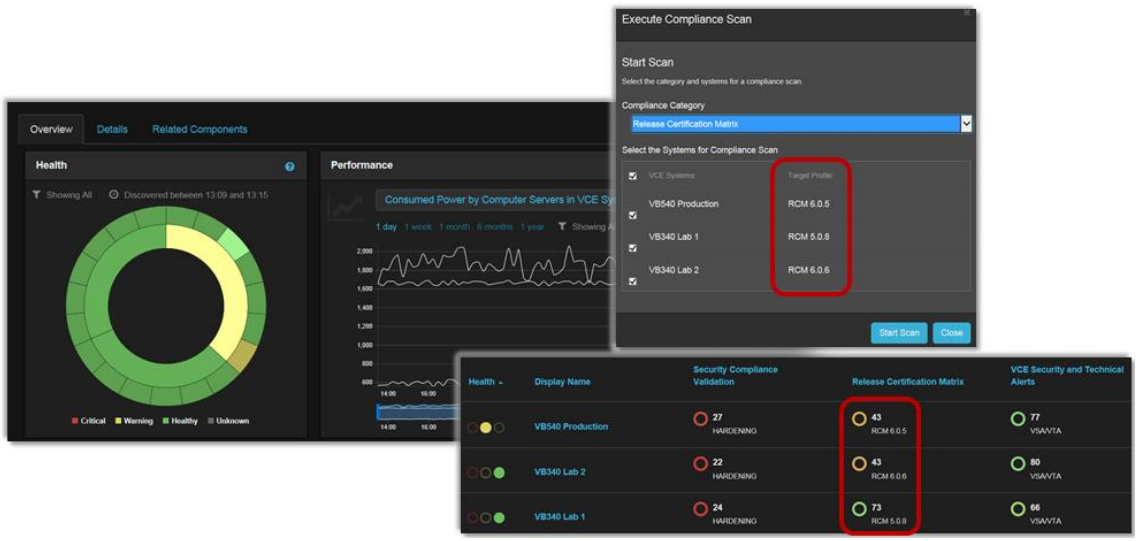
Each phase identified in the upgrade process consisted of sub-steps and assumptions depending on use case and infrastructure size, all of which were measured and modeled. The following is ESG Lab's analysis of those steps.

Phase 1: Audit

The audit phase consisted of three sub-steps. First, ESG Lab identified the physical component, which consisted of locating it in an environment and seeing what other components it was connected to. Next, the software and hardware components were identified, which entailed logging into the systems or element managers and finding important component information: model information, operating system, IP address, and current firmware releases and virtualization software releases. Finally, the time required to use a spreadsheet for tracking all information was measured.

For the *DIY Worst* scenario, ESG Lab assumed that hardware is distributed throughout a data center and comes from different vendors, requiring different logins for each component and manual tracking of information. The *DIY Best* scenario improved on this, assuming hardware is closer together and from the same vendor at a core component level (single-vendor compute, single-vendor storage, or single-vendor network components versus multi-vendor equipment within each domain), and element managers can be used to identify all of the components from the same vendor. This also makes tracking information much easier because the data can simply be exported, and by filtering out unimportant information, components can easily be found and flagged. A *VCE Vblock System with RCM* improves on the DIY scenarios by having all the hardware in a fully integrated stack with current and ongoing releases documented by the RCM. Element managers are leveraged to help identify all components, while the RCM helps organizations identify which components need upgrading. For a *VCE Vblock System with RCM and VCE Vision*, the audit process takes just seconds. Organizations can export customized component information for tracking, while compliance reports quickly identify what is out of date and needs to be updated based on the latest RCM.

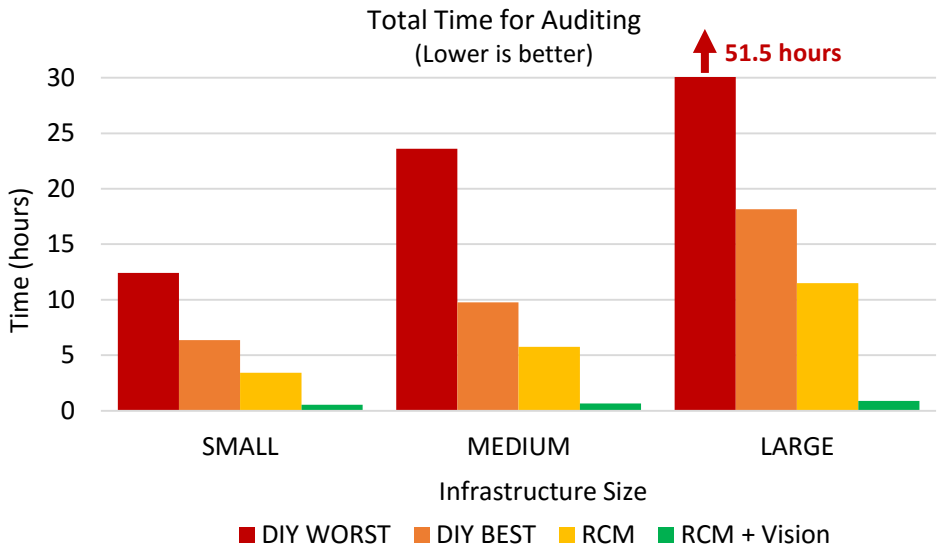
Figure 2. Auditing a Vblock System with VCE Vision Software



As shown in Figure 2, the main dashboard in VCE Vision displays system health, RCM policy compliance, and security policy compliance at a glance. To assess the entire VCE Vblock System and identify what needs to be upgraded, a compliance scan can be run based against a specific RCM version. The entire scan takes seconds to run and generates a detailed report. For Use Case 4, ESG Lab used the VCE Vision dashboard to select the latest version of the RCM issued by VCE to run against the VCE Vblock System. Upon completion, the dashboard indicated an RCM Compliance score. For example, a score of 100 would mean that all components are already up to date with the latest RCM. Scores lower than 100 indicate the extent of infrastructure components that need to be updated. This two step process is shown in Figure 3. In this example, three VCE Vblock Systems received scores of 43, 43, and 73 when run against different RCM versions, validating that updates were necessary and available.

ESG Lab captured the wall clock time for auditing all the components across each use case. As shown in Figure 3, the amount of time saved by leveraging *RMC and VCE Vision* software is clear. Regardless of infrastructure size, the auditing process with VCE Vision software takes minutes, as opposed to the other three use cases, which take anywhere from 6-22x longer for the small infrastructure, 8-35x longer for the medium infrastructure, and 13-20x longer for the large infrastructure. It should be noted that the *DIY Worst* use case extends well outside of the scale.

Figure 3. Time to Audit Comparison

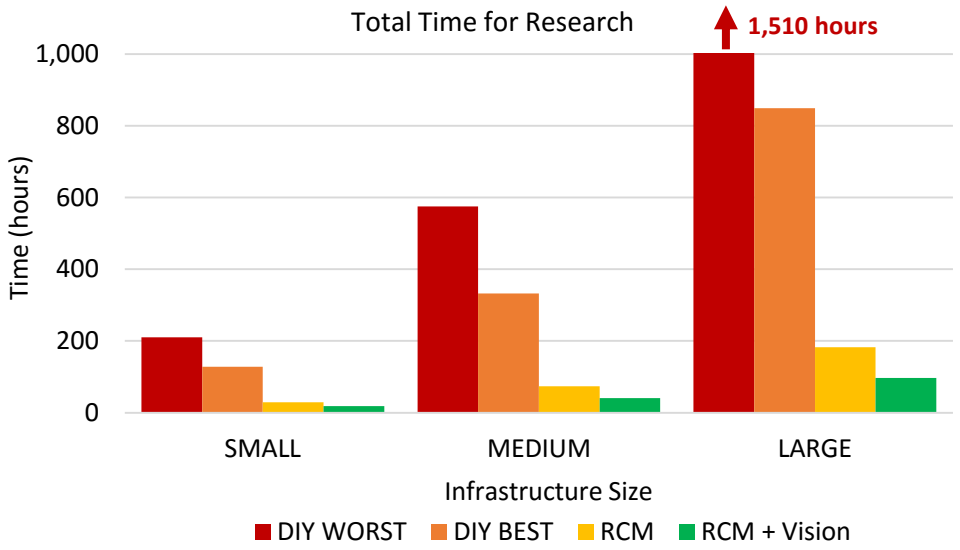


Source: Enterprise Strategy Group, 2016

Phase 2: Research

The next phase of the upgrade process that was modeled focused on research. It is assumed that from the previous step, IT administrators had already established that an update was available. The detailed steps of the research phase included verification that the update was available and applicable, which involved reading documentation to understand what changes were included in the update. Infrastructure compatibility and addressing non-intrusive (no restart required) prerequisites are also part of this phase, including searches to determine release compatibility across components. Due to the *DIY Worst* scenario not having a comprehensive (i.e., multi-vendor, cross-component) management platform, it was assumed that a higher percentage of prerequisites needed to be addressed. This percentage was gradually decreased at the *DIY Best* due to vendor element managers helping to serve as comprehensive management for single-vendor component (e.g., compute blades) deployments.

Figure 4. Time to Research Comparison



Source: Enterprise Strategy Group, 2016

For the *VCE Vblock System and RCM* and *RCM and VCE Vision*) scenarios, the percentage of prerequisites that needed to be addressed were at their lowest due to the converged nature of the platform making it easier to manage and maintain. A major benefit to leveraging the VCE Vblock System is that research is done by VCE throughout the life cycle of the infrastructure. VCE not only understands the documentation and verifies infrastructure compatibility, but it also tests the updates prior to issuing a new RCM to users. ESG Lab factored in a small portion of research time for the two VCE use cases to account for organizations running custom applications, which may not be accounted for by VCE during the testing and validation of the latest updates. As shown in Figure 4, this benefit of VCE taking the brunt of work results in a sizable reduction in user time spent researching the upgrade.

Phase 3: Plan

The Planning phase of the upgrade process is difficult to quantify due to the primary variable being unpredictable—personnel. Though size of organization, estimated number of IT administrators, and number of components are predictable, personnel on a per organization basis can fluctuate significantly. And that is before factoring in availability of that personnel, responsiveness to emails and meeting requests to discuss the upgrade process, and competency of the involved parties. In large organizations with 20 people involved in managing different areas of the infrastructure, it is rare to get everyone on the same page in a few days, never mind a few weeks. Therefore, there are some instances in which the planning phase can extend for months. In fact, before embracing VCE converged infrastructure upgrade processes, some organizations have spent so long on this phase of the upgrade process that two full upgrade cycles have been missed.

Why This Matters

As ESG research shows, some of the greatest benefits realized by organizations that leverage a converged infrastructure are management simplicity, greater reliability, and IT operations agility. ESG Lab findings indicate that VCE's approach to converged infrastructure upgrades delivers these three benefits, while accelerating the upgrade planning process and enabling organizations to take advantage of upgrades more often and with less impact on IT staff time commitment.

Without the combination of the VCE RCM and VCE Vision software's single-pane-of-glass management approach, the task of discovering an entire converged infrastructure's set of multi-vendor components, assessing the need for upgrades, and providing the releases for making upgrades, would be a long, expensive process. With customers running mixed workloads and mission-critical appliances on VCE Vblock Systems, long maintenance windows and downtime are not options. VCE's fault-tolerant, converged system architecture and system upgrade guide enables customers to eliminate downtime during the upgrade process. As long as resources are available (or reserved), VMs, data, and applications can automatically migrate to available resources while upgrades are being done on their related, redundant components. VCE's systems upgrade guide provides component-by-component upgrade instructions to minimize upgrade time and to avoid service disruptions during upgrades. For example, with the VCE Vblock System, RCM, and VCE Vision software, one VCE customer was able to reduce its data center planning and upgrade process from weeks with intermittent downtime, to days with zero downtime.

Phase 4: Download and Stage

Downloading and staging the upgrades is the next phase of the upgrade process, which includes navigating to vendor support sites, downloading the firmware packages, and properly staging them, whether it be to a central location or to the actual components in need of an upgrade.

With *DIY Worst* scenario consisting of a mix of vendors for each core component (i.e., a mix of vendors for all compute components) and no reference architecture, this would require visiting multiple vendor support websites for accessing new releases for core components. The release upgrades' download packages tend be larger because they are not customized to particular users or deployments, so they may include firmware for other components or technologies. Since the *DIY Best* scenario consists of a reference architecture of core components from the same vendor or fewer vendors (i.e., all compute components from the same vendor, all networking components from the same vendor, etc.), less vendor support sites need to be visited and minimal staging is required since the vendor element managers can upload firmware to managed components. With *VCE Vblock Systems with RCM*, a single customer support site for all components is available. Though each piece of firmware needs to be clicked on for download, all the download packages are appropriately sized, based on the VCE Vblock System hardware. The System also has a built-in Advanced Management Platform (AMP), which serves as a central repository for all the downloaded firmware and virtualization software releases. Once leveraged, administrators can simply navigate to the AMP for the applicable upgrade file. Lastly, the *VCE Vblock System with RCM and VCE Vision* use case gets all the benefits as the *VCE Vblock System and RCM* scenario, with a slight boost from pre-positioning. Pre-positioning, new in the latest VCE Vision software, allows IT administrators to download the new releases — and only the releases for components that require an upgrade — with a single click that also automatically stages it to the AMP.

ESG Lab leveraged the pre-positioning feature in the VCE Vision dashboard to select specific releases for upgrading components in a VCE Vblock System. As shown in Figure 5, RCM 6.0.5 was selected, and checkboxes were selected. In a single click, just the releases that were needed were downloaded, minimizing the time required to download each release and stage it to the proper location. Also shown in Figure 5 is the timing analysis of the download and staging process for a medium-sized infrastructure. It should be noted that the *DIY Worst* scenario is off the chart, with download and staging for *DIY Worst* in a medium-sized infrastructure being modeled at over 18.5 hours. *VCE Vblock System with RCM and Vision* took nearly half the time as the *VCE Vblock System with RCM* scenario and was nearly 2.5x faster than the *DIY Best* scenario.

Figure 5. Time Savings with Pre-positioning in VCE Vision Software

Source: Enterprise Strategy Group, 2016

Phase 5: Update

The fifth phase is updating the components. Due to the length of time infrastructure upgrades can take, this phase was not conducted by ESG Lab, but was still analyzed from a qualitative standpoint. With DIY approaches, there is some guidance from vendors about the length of time it will take to complete a component's upgrade, but this is rarely adequately associated with multiple components in the infrastructure. The differentiator for both VCE scenarios is the detailed guidance provided through VCE support documentation. This guidance tells the IT administrators not only the order in which the components should be updated, but also the estimated time for each component. With this information, IT administrators can better predict when upgrades will be finished, allowing them to be productive in completing other tasks rather than constantly checking on the upgrade. Further, VCE details when to complete reboots and what can be done simultaneously to save time.

Figure 6. Guidance on Upgrade Times

Estimating upgrade time

Plan your upgrade using the minimum time that it takes to upgrade the software on each component. The minimum time estimates do not include the time for preparation, configuration, VM migration, backup, and download.

Review the list of the components and determine the upgrade time for the components in the system. If a component is not in the system, do not estimate the upgrade time for that component. For cluster configurations, include the primary and the subordinate components.

Order	Component	Upgrade time	Notes
1.	EMC Ionix Unified Infrastructure Manager (UIM)	2 hours	After the EMC UIM upgrade starts, you can run the Cisco UCS Manager simultaneously.
2.	Cisco UCS Manager components: • Cisco UCS Manager • Cisco UCS Fabric Interconnects • Cisco UCS Series Fabric Extenders IOMs	2 hours	Do not reboot the Cisco UCS blade servers at this time. Reboot during the VMware ESXi host upgrades.
3.	EMC Recoverpoint	1 hour	Contact EMC Customer Support.
4.	EMC VPLEX	1-2 hours	Contact EMC Customer Support.
5.	EMC Isilon	2-3 hours	
6.	EMC Avamar and Data Domain (for RCM 3.5 and higher releases)	2-3 hours	
7.	EMC VNX or VNX2	1 hour	
8.	Cisco MDS 9100 switches	1 hour	
9.	Cisco Fabric Manager, EMC PowerPath Viewer or Cisco Data Center Network Manager (DCNM) for	1 hour	

Source: VCE Vblock System Upgrade Guide

A view of the order in which to update the VCE Vblock System components and the timing of each component update is shown in Figure 6. Note the advice in the right-hand column: Advice related to minimizing reboots and informing the IT administrator what can be completed simultaneously is provided. Further, VCE provides guidance about when and where to move workloads and data to redundant Vblock System components, enabling administrators to eliminate service interruptions during the upgrade process.

Phase 5.1: Support

Vendor support is an important aspect of the IT infrastructure. This is especially true when going through the upgrade process. Often, especially in the DIY approaches, something will go wrong, for example, due to a prerequisite not being addressed or an intermediate release revision being missed. And though certain components (hardware or software) may require vendor experts to complete the update, a number of other components do not. When something goes wrong, support must be contacted, a ticket must be created, and time is spent either waiting or fixing the issue.

For DIY scenarios, due to the mixed-vendor nature of the environments, potential support requests get spread out among various vendors and groups. This takes a lot of time. Some customers even experience delays due to vendor finger pointing, claiming the issue is not theirs but a different vendor's component in the stack. VCE customers experience a single point of support for the entire infrastructure. Because VCE pretests and validates all release upgrades, there are less support calls. For those issues that require support calls, having one point of contact for all multi-vendor components and their releases makes it much easier and faster to address any issues that may arise.

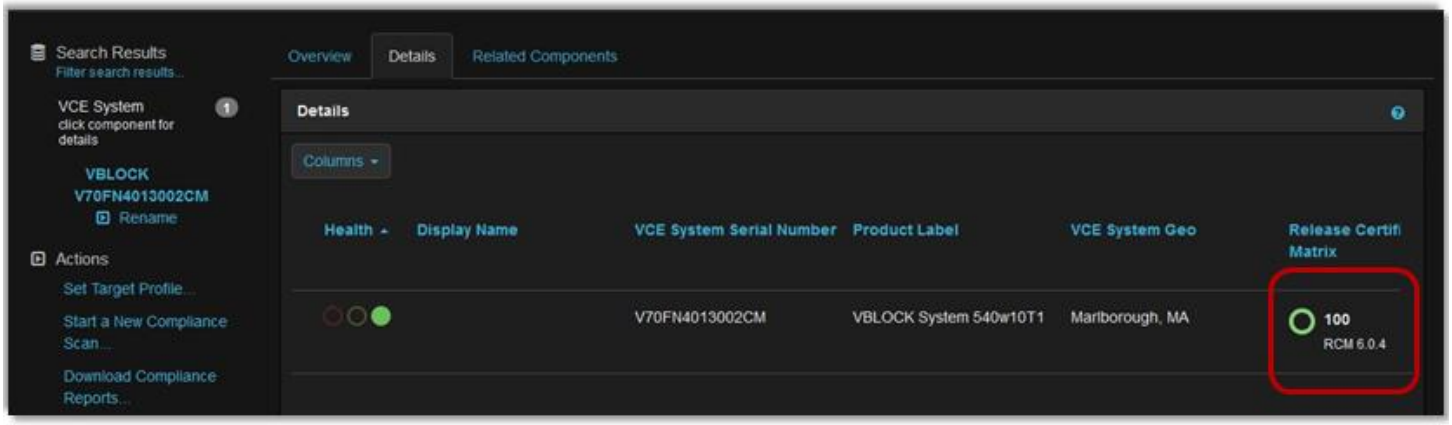
With VCE offering customers a one-stop-shop for support, it is clear that organizations gain peace of mind that issues will be addressed in a timely manner. Going a step further, VCE Professional Services can extend the existing value of VCE's support. Ranging from developing business cases, strategies, and roadmaps, to designing, implementing, operating, and maintaining/upgrading a VCE converged or hyper-converged system, VCE Professional Services applies a deep understanding of the technology, while providing customers with a customized experience. Specifically for the infrastructure upgrade process, VCE Professional Services can handle everything. This includes assessment, planning, and execution of software updates by aligning customer systems to the latest VCE RCM, freeing up IT resources and minimizing risk by thoroughly following a battle-tested upgrade path.

Phase 6: Validation

With dozens of components in a small system to hundreds of components in the very largest real-world infrastructure, it is crucial to verify and validate the success of an upgrade. Real-world user experience attests that even the most careful checklist procedures are prone to missing a component upgrade. The steps required to complete the validation phase are similar to those of the audit phase. Component firmware releases must be verified on all components, whether by logging into each component manually or leveraging an element manager. Also, information from each component must be tracked to reflect the recent firmware changes.

As wall clock benchmarking revealed, DIY scenarios with multiple vendors take more time. Vendor element managers help make it faster, but still function on a per component basis (i.e., one vendor element manager to manage all compute components). VCE Vision software simply runs a compliance report against the latest RCM and in seconds, the overall infrastructure score and component-by-component details are reported. This was impressive to ESG Lab. The speed at which this can be done yields added benefits in tracking "rogue IT." IT administrators can simply run compliance reports on past and current RCMs at any time to find what component have drifted from the expected RCM, ensuring the infrastructure stays current with pre-tested and compatible releases. As shown in Figure 7, ESG Lab witnessed this functionality working on a recently upgraded VCE Vblock System. A compliance report was run against the RCM version 6.0.4 and returned a score of 100.

Figure 7. Validating a Successful Upgrade with VCE Vision Software

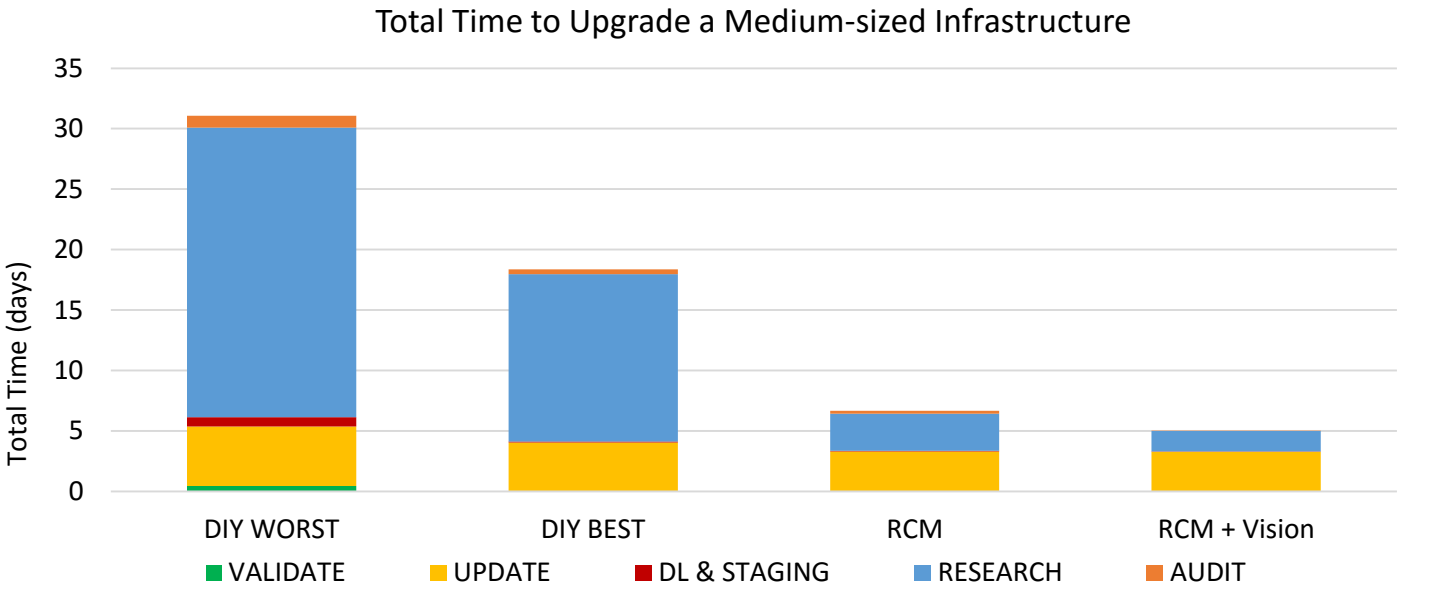


Source: Enterprise Strategy Group, 2016

Overall Upgrade Process Analysis

ESG Lab combined the timing for each of the modeled phases into a single chart that displays the advantage of leveraging a VCE Vblock System with the RCM and VCE Vision in regard to reducing the time it takes to complete an infrastructure upgrade. Figure 8 shows the modeled timings across each use case for a medium-sized infrastructure for all phases of the upgrade process (excluding the planning phase). Though the timing for each phase and overall timing can vary significantly depending on existing infrastructure processes and workflows, ESG Lab is confident that these results depict what IT organizations can expect across the four use cases.

Figure 8. Total Time to Upgrade a Medium-sized Infrastructure



Source: Enterprise Strategy Group, 2016

Why This Matters

The time penalty for managing and maintaining individual components from different vendors drags out the upgrade process to over 30 days of active work for the *DIY Worst* use case. For the *DIY Best* use case, when leveraging a reference architecture with centralized management for a core component (e.g., single-vendor compute blades), the upgrade process is improved upon, but a lot of time is still dedicated to researching new upgrades and their potential impact on the rest of the infrastructure.

By leveraging a *VCE Vblock System with RCM,* a lot of the guesswork is eliminated, yielding over a 3X reduction of time to complete a full infrastructure upgrade when compared to *DIY Best* and a 6x reduction versus *DIY worst*. Finally, adding *VCE Vision* software into the mix extends the benefits of leveraging a converged infrastructure with the RCM, by nearly eliminating the time needed to audit, download (stage), and validate. For example, the total amount of active time required by IT administrators to fully upgrade a medium-sized infrastructure was approximately modeled at an impressive five days, saving IT administrators time and organizations money. Outside of the upgrade process, VCE Vision also provides the time-saving value of regularly assessing release levels installed on the infrastructure to ensure that administrators have not inadvertently upgraded a device with an untested or otherwise inappropriate release. Auditing for a drift from release compliance policy has infrastructure stability, performance optimization, and security ramifications. VCE Vision software assess-and-report functionality makes regular and on-demand auditing a practical reality.

The Bigger Truth

The impact that converged solutions have had on traditional, siloed IT infrastructures is profound. Faster and easier deployments, improved service and support, higher levels of availability and reliability, and improved scalability are just some of the benefits surveyed organizations have already gained from deploying converged solutions. Infrastructure management also appears high on the list, with nearly one in four organizations that ESG has surveyed pointing to simplified management as an important benefit gained when leveraging converged solutions. As part of management, the upgrade process can traditionally be a headache for IT administrators. What needs to be upgraded? When should it be done? How long will it take? Whom and what will it impact? These are just some of the questions asked by IT administrators during the often-delayed IT infrastructure upgrade process.

VCE Vision Intelligent Operations provides health and lifecycle management for VCE converged and hyper-converged infrastructure solutions. This software delivers the visualization, automation, and intelligence of managing, maintaining, and supporting a next-generation IT infrastructure. The software's RCM compliance management ensures the stability and optimization of an IT infrastructure through regular firmware and software upgrades via an efficient, standardized process. In addition, the software's architecture-aware monitoring proactively prevents and discovers potential issues with the infrastructure related to existing workload health and capacity constraints. Finally, security compliance management helps to identify and remediate vulnerabilities in the system to maintain an actively secure data center.

ESG Lab validated the efficiency and timing benefits when conducting the upgrade process of a converged VCE Vblock System that leverages the RCM and VCE Vision Intelligent Operations. Auditing the infrastructure took just seconds with VCE Vision software providing a score to inform administrators what components require an update. Pre-upgrade research is virtually eliminated due to VCE testing newly released updates for compatibility and stability prior to being delivered to Vblock customers. Download and staging updates are more efficient through the newly released feature of pre-positioning, a click-to-download feature that delivers only the updates that are needed and pre-stages them on the VCE Vblock System. Guidance through VCE support documentation speeds up the actual update process by providing order and timing information, while validation of a successful update is completed in just seconds through automated compliance scanning. And organizations gain peace of mind that if something does go wrong, VCE Customer Support serves as a single point of contact to help.

By combining the intelligence, automation, and visualization delivered by VCE Vision software with the reliable, industry-proven hardware and software of VCE converged and hyper-converged infrastructure systems, organizations gain a management platform that works for them, saving IT personnel time and money. VCE systems with VCE Vision software help ensure that IT operations and the underlying infrastructure remain healthy, stable, optimized, and secure. If you're part of the many organizations worldwide planning to deploy a converged solution in the coming months, test drive a VCE converged solution from EMC with VCE Vision Intelligent Operations.