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White Paper:

# SimpliVity Hyperconverged Infrastructure:

A Perfect Fit for Remote and Branch Offices

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## Executive Summary

Remote offices and branch offices (ROBOs) play a critical role wherever establishing a local or regional physical presence helps businesses increase customer loyalty, expand into new areas of opportunity, or get products to market faster and more cost-effectively.

Physical environment, IT staffing and logistical constraints in distributed environments present unique operational and data protection challenges. At the same time, increasing business application and data management requirements in changing, distributed environments are putting even more pressure on IT organizations.

Typical approaches to ROBO IT include the use of Software-as-a-Service (SaaS) or IT-as-a-Service (ITaaS), centralized management from the data center, and distributed on-premises ROBO management. This white paper examines the strengths and weaknesses of these approaches and the different types of infrastructure businesses are considering to optimize their ROBOs.

While virtualization and early converged infrastructure have helped reduce the IT footprint and costs of space, power and cooling in ROBOs, they don't go far enough. Now, hyperconverged infrastructure is enabling virtualization of the infrastructure and introducing significant benefits for ROBOs.

SimpliVity's hyperconverged infrastructure offers distinct advantages over conventional infrastructure choices:

- Better application performance in terms of speed, availability and reliability.

- Faster, more reliable data protection to mitigate risk of downtime and data loss.

- Greater WAN efficiency and effectiveness.

- Simplified global management across ROBO environments from a central location eliminates the need for local IT staff.

- Sustainable IT service delivery with lower TCO.

- Flexibility to expand or contract IT resources on demand.

These capabilities are essential to ROBOs, delivering the best return on the investment—whether the goal is to increase customer loyalty, expand in to new markets, or get products to market faster.

## Investing in ROBOs            Business Growth

Failing to invest in ROBOs can limit business growth.

## Introduction

Changing business imperatives means the enterprise is continually adjusting–moving, consolidating and expanding– its physical footprint. Strategic initiatives to increase customer loyalty, expand into new areas of opportunity or get products to market faster and more cost-effectively may require the establishment of a local or regional physical presence through remote and branch offices (ROBOs).

A recent in-depth survey conducted by Enterprise Strategy Group (ESG) of 347 senior IT professionals responsible for remote IT operations and/or strategy revealed that 53% of companies operate at least 100 ROBOs worldwide.[1]

ROBOs may be manufacturing plants, warehouses, health care clinics, insurance offices, call centers, R&D campuses, construction locations, retail storefronts, and more. The applications used at ROBOs are equally varied, mapping to the type of personnel and customers served at each site.

### 53%
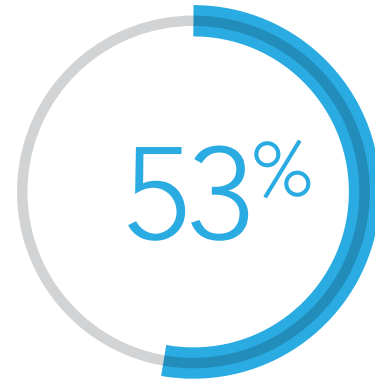
A recent in-depth survey (conducted by ESG) of 347 senior IT professionals responsible for remote IT operations and/or strategy revealed 53% of companies operate at least 100 ROBOs worldwide

"Remote site IT woes, such as the lack of readily available IT staff, painfully impact businesses in numerous ways, according to the IDG Research survey. Those include decreased end-user satisfaction (cited by 61% of poll respondents), lost productivity (56%), and increased network and management costs (52%)."[2]

ROBOs can range from a local office with two to three sales representatives, a printer and a server, to regional bank branches with dozens of employees each, operating six days a week and running several applications on-premises. Depending on the ROBO location, resources such as real estate and utilities may be constrained. ROBOs of a global company may have different language and compliance mandates that impact everything from application support to data management and protection requirements. These challenges do not confront only large enterprises. In a survey of 500 technology professionals in North America and Europe by Actual Tech Media, smaller companies (100 to 499 employees) listed improved ROBO operations as their top IT priority over the next 12 to 18 months, as did 37% of mid-sized organizations (500-4999 employees).[3]

It makes sense, given the goals for which they are established, that the business productivity of "front-line" employees at ROBOs should be on par with those working in centralized sites—supported by IT services, and afforded high levels of performance and reliability.

For businesses where this is not the case, it may be time to rethink ROBO IT strategies.

[1] ESG Research Report, *Remote Office/Branch Office Technology Trends*, May 2015.
[2] Long-distance IT: Driving Efficiency in Remote Offices, IDG Research, 2014.
[3] ActualTech Media, *2015 State of Hyperconverged Infrastructure Market*, May 2015.

## Typical Approaches to ROBO IT

To meet service level agreements at the ROBO, IT organizations make choices about where specific applications run and how they are managed:

- **Centralized IT.** In this approach, skilled IT staff at a centralized location delivers services to ROBOs over a WAN. The infrastructure used to run applications may be located at a centralized corporate location or in the cloud through Software-as-a-Service (SaaS) or IT-as-a-Service (ITaaS).

- **Distributed IT.** Infrastructure is distributed across ROBOs with local delivery of services—typically by just a few (if any) IT professionals.

Each approach offers its own benefits—and costs.

### Centralized Management of ROBOs

For the next five years, according to ESG survey respondents, most business applications used by ROBOs will continue to be deployed and maintained centrally by trained professionals at headquarter data centers with ROBO access via a WAN.

The benefit of this approach is that it eliminates the cost of skilled IT and/or staff on site at ROBOs—and reduces the risk to business continuity since IT professionals are managing hardware, software and ensuring service delivery and data protection.

There are two primary drawbacks to centralized management of ROBOs:

**Application Performance.** Latency problems with business-critical and customer-facing applications can occur during high-volume WAN periods or run less efficiently when maintenance updates are delayed. Availability and reliability may be jeopardized by intermittent network outages—especially in more remote and rural areas in emerging markets.

Having invested in ROBOs to achieve specific goals in getting closer to customers or getting product out faster, businesses do not want to see low satisfaction rates among ROBO-based employees/users as a result of poor application performance due to increasing volumes of application data, the WAN's speed, latency, and reliability. So, they continue to purchase, implement, upgrade and expand IT technology to support ROBOs, including WAN optimization appliances and more bandwidth to improve applications, backup, and maintenance performance.

**Global Management across ROBO Environments.** With limited or non-existent skilled on-site resources, the burden of ROBO management falls to centralized IT. Visibility across ROBOs with a multitude of different products is fragmented. Delays in deployment of new applications can limit revenue-generating opportunities at the ROBO–and put the organization at a competitive disadvantage.

Businesses incur the travel costs to send centralized IT staff to the ROBO to address issues (along with the attendant "opportunity cost" of their not being on hand for corporate projects).

### Centralized Management Via SaaS or ITaaS

The obvious appeal of having ROBOs access applications, data and infrastructure in the cloud is the reduction in footprint and attendant real estate, and support costs involved.

However, use of SaaS or ITaaS carries the same network and connectivity challenges, and can introduce a new set of challenges in managing ROBOs since centralized IT has relinquished IT infrastructure—and the control of data—to a third party.

However, penetration of SaaS at ROBOs is low—in fact, respondents in the ESG survey report that five years from now, only about a quarter of companies will be using SaaS—and, even then, will typically focus on collaboration/file sharing (28%), marketing automation (26%) and Internet/email marketing (25%).

Cloud-based ITaaS solutions can be effective in some instances, but network bandwidth and performance constraints are critical. With any outsourced, cloud-based option there are issues of operational control and visibility.

## "IDC believes a small number of existing ROBO workloads could be farmed out to a public or private cloud, but the majority will continue to run locally for the previously discussed reasons of availability, security, and performance."[1]

Perhaps most importantly, data compliance, whether regulatory or based on internal policy requirements, may affect where data can be stored and exported. Examples include the Payment Card Industry Data Security Standard (PCI DSS), the Health Insurance Portability and Accountability Act (HIPAA), the Patriot Act, and, in the European Union, the pending General Data Protection Regulation (GDPR).

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[1] Chen, Gary, "*The Value of Virtualizing Remote and Branch Offices,*" IDC, August 2014.

# "Although the trend toward cloud systems is real, we do not believe it yet represents a significant portion of the IT budget for most organizations." [2]

## Distributed On-Premises ROBO Management

The ESG survey reports that 44% of respondents state that applications with higher performance requirements, such as accounting and financial applications, will remain local. Presumably, this would also be true of specialized applications like manufacturing control and retail point-of-sale systems.
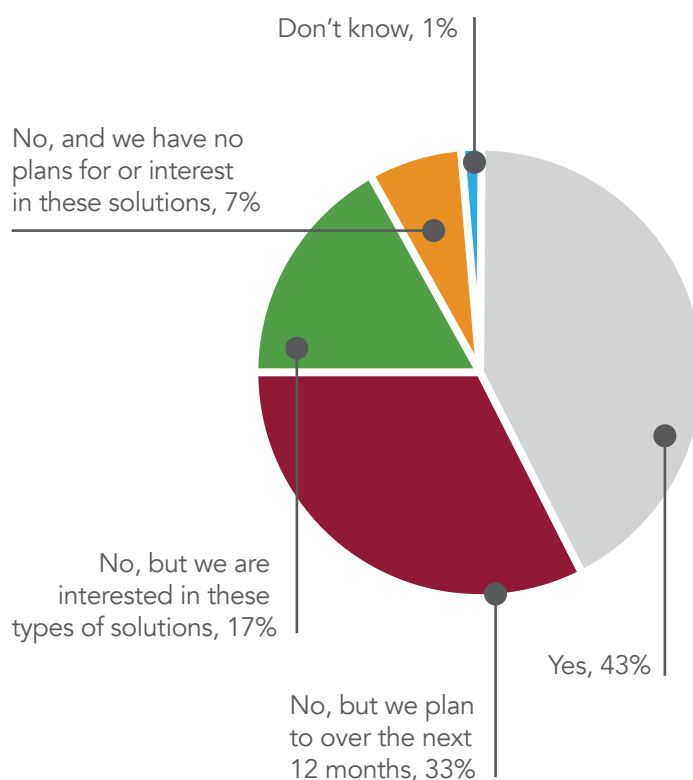
The benefit of delivering high performance from locally-managed applications is offset by a number of challenges:

**Data Protection.** The same ESG study showed that 56% of companies leverage remote backup as the primary means for backing up ROBO data. Successful backup completion and the ability to meet Recovery Point Objectives (RPOs) and Recovery Time Objectives (RTOs) are dependent on the speed of the WAN and volume of data being transferred. On-premises backup solutions introduce increased risk and cost when they require on-site attention by non-technical or headquarters staff, or run past their windows and impact production application performance. These problems present a risk to business continuity at ROBOs, which frequently lack a defined disaster recovery plan.

**WAN Efficiency.** ROBOs in many locations suffer from a lack of available WAN infrastructure and experience slow file transfer speed. Controlling costs of network bandwidth (and any optimization hardware to augment it) is challenging given the ever-growing volumes of data passing over the WAN.

**Total Cost of Ownership (TCO).** The addition of new componentized systems requires more physical space and specialized staffing—which, if unavailable, puts constraints on scalability. Uncoordinated buying cycles can mean that potential savings are missed.

ROBOs have neither the staff nor expertise on-site for supporting increasingly-complex IT systems. According to the ESG survey, only one in five ROBOs has on-site staff.



Don't know, 1%

No, and we have no plans for or interest in these solutions, 7%

No, but we are interested in these types of solutions, 17%

No, but we plan to over the next 12 months, 33%

Yes, 43%

Does your organization currently use any type of integrated computing platform(s) at any of its ROBO locations? (Percent of respondents, N=347)

*Source: ESG Research Report, Remote Office/Branch Office Technology Trends, May 2015.*

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[2] *"IT Spending & Staffing Benchmarks, 2014/2015,"* Computer Economics, 2014.

# "The days of having expensive IT staff at each branch are long gone. 'If you're lucky you have one pretty capable person.' Everything else must be handled remotely."

–Jim Rapoza, senior research analyst at Aberdeen Group

Even a "lean" ROBO infrastructure will require support and increasing bandwidth: "if only" print and file servers, Active Directory Servers, and one or two CPUs and internal direct-attached disks. Even with such a basic infrastructure there are questions of bandwidth and investing in WAN optimization: a 4 GB Microsoft Windows Server virtual machine could take up to six hours to transfer on a dedicated T1 link, even with no other traffic.[3]

The remote IT staffing problem is exacerbated by an almost "perfect storm" of changing trends in business applications – and their use. Multi-component, micro services architectures with open source and cloud-based constituents are putting new demands on infrastructure and making efficient application support more complex. Newer agile and DevOps development models are accelerating upgrade and release cycles. The sheer number and diversity of available applications, whose end use expectations are now shaped by consumer-oriented, web applications, challenges even larger, well-staffed IT organizations.

Going forward, when it comes to controlling the real cost of better integrating and managing remote sites, the single most important decision a business can make is the type of infrastructure in which they invest.

## Infrastructure Choices Today

More than half (59%) of organizations in the ESG survey average at least 11 physical servers at each ROBO location they support—but 52% currently have deployed virtualization to consolidate servers—and another 39% report implementation plans.

Virtualization does not solve many of the most important ROBO challenges, however. In some ways, virtualization in ROBOs can aggravate problems with performance, maintenance and costs. For example, virtualization does not address storage: in fact, it enables increasing volume of data and can complicate the mapping of applications to diverse storage systems.

Enter the idea of "converged" infrastructure where components are integrated, reducing the physical footprint and attendant space, power and cooling requirements. Converged infrastructure has been deployed at ROBOs by 43% of respondents in the ESG survey, while an additional 50% have plans for or interest in these types of solutions.

IT teams in some businesses with a distributed ROBO model are making the necessary investments of time and staff to integrate best-of-breed components themselves—or buy components like pre-integrated storage and servers.

Others are moving directly to hyperconverged infrastructure. Hyperconverged infrastructure provides a single unified software infrastructure stack and single shared resource pool on x86 hardware. Hyperconverged infrastructure scales by adding x86 building blocks (in the central data center and/or across remote locations), with all system-wide resources and workloads managed centrally.

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[3] Cisco, *Extending the Data Center: Lean IT for Remote and Branch Offices,* 2014.

## SimpliVity Hyperconverged Infrastructure

SimpliVity hyperconverged infrastructure represents a quantum leap beyond early forms of convergence and hyperconvergence, changing the infrastructure paradigm on three dimensions: data efficiency, global unified management, and built-in data protection.

All IT components are combined in a single shared pool of commodity x86 resources—not just servers and storage, but the entire legacy stack, combining all IT infrastructure and services "below the hypervisor," such as backup and WAN acceleration. This enables a scalable, modular building block approach that not only controls up front capital investment but also reduces OpEx, including maintenance, power and cooling, bandwidth, and labor.

For distributed environments, multiple hyperconverged infrastructure building blocks within and across data centers combine to form a federation, resulting in a massively-scalable, shared resource pool and enabling efficient data movement and enterprise-class system availability. All resources and workloads contained in the collective federation are managed centrally.

**Data Efficiency.** The data efficiency mechanism for the shared resource pool should not only eliminate redundancy to optimize capacity, but also eliminate unnecessary writes to hard disk drives (HDDs) and reduce input/output operations per second (IOPs), improving performance. In a distributed hyperconverged infrastructure environment, data deduplication, compression and optimization run globally, across federated nodes in multiple locations. Powered by SimpliVity's OmniStack Accelerator Card, these global operations—across production and backup data—contribute to a guaranteed reduction of storage capacity requirements of 90% across the infrastructure. These processes occur inline, in real time, the first time data is written and data remains in an optimized state until deleted. Deduplication is especially important in today's post-virtualization environments where IOPS requirements have increased tenfold. Inline deduplication eliminates IOs before they ever happen.

**Global Unified Management.** Hyperconvergence uses a VM as the unit of data management, obviating the need to manage at the discrete component level, such as LUNs or shares on storage. Policies are established at the virtual machine level. This VM-centric approach leverages in-place management tools like VMware vCenter, VMware vRealize Automation, or Cisco UCS Director, enabling one-click operations at the VM level, including backup, restore, and data migration. A single administrator can manage systems globally from a single pane of glass. In addition, the ability to rapidly provision new infrastructure without local IT resources and deploy new workloads introduces operational efficiency and responsiveness.

**Built-in Data Protection.** In a data-efficient hyperconverged infrastructure, data protection operates natively at the VM level. This integration enables fast, reliable backup and recovery (manually or automatically by policy) with RTOs and RPOs measured in minutes without any third-party hardware or software. Synchronous replication provides high availability (HA) locally, and off-site replication supports disaster recovery.

## SimpliVity Hyperconverged Infrastructure: A Perfect Fit for ROBOs

SimpliVity's Unified Protected ROBO hyperconverged infrastructure solution takes the "remote" out of "remote office" IT. It offers the best of both worlds: the enterprise-class resiliency and unified management that today's ROBOs require, with the cloud economics that businesses demand.

OmniStack and its Data Virtualization Platform power SimpliVity's hyperconverged infrastructure. The Data Virtualization Platform offers unique data efficiency, built-in data protection and global unified management that make it an ideal fit for ROBO-based IT infrastructure. It enables organizations to deploy on-premises ROBO IT to ensure the application performance desired, while eliminating the typical pain points, including the need for local IT staff, of managing IT infrastructure and data at the edge. At the same time, it provides a threefold TCO saving when compared to legacy infrastructure.

**Threefold reduction in TCO and increased efficiency.** SimpliVity hyperconverged infrastructure eliminates the need for ROBO-based IT resources to manage the infrastructure, reduces storage requirements by 90%, and reduces power, cooling and space requirements.

**Improved, consistent application performance.** SimpliVity hyperconverged infrastructure deduplicates, compresses and optimizes all data inline, at inception, once and forever, globally. This not only eliminates redundant writes to disk, improving application performance, but the processing is offloaded to the OmniStack Accelerator Card, freeing up x86 resources for business applications.

**Faster, more reliable data protection to reduce risk.** OmniStack's built-in data protection eliminates the need for specialized backup and recovery technology—at the ROBO and/or within the central data center. All ROBO data is automatically protected according to VM-centric policies that include local, remote or cloud-based copies.

**Improved WAN utilization.** OmniStack's data efficiency capabilities reduce network bandwidth requirements, improving bandwidth utilization and obviating the need for purpose-built WAN optimization appliances.

**Greater staff productivity.** With OmniStack's Global Unified Management, data center-based administrators centrally manage all hyperconverged infrastructure resources, policies, and VMs across the distributed enterprise from a single interface.

**Sustainable growth.** SimpliVity addresses evolving business requirements by providing a single, scalable pool of shared x86 resources that scales by adding SimpliVity hyperconverged infrastructure building blocks.

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### All the Ships at Sea: An Extreme ROBO Use Case

The fourth largest Oil and Gas Company in the world with a presence in 29 countries was faced with a major problem: their legacy infrastructure could no longer service all their mission-critical applications.

Challenges:

- HP Servers, NetApp storage in two over-filled racks onboard ships
- Legacy equipment consuming resources at premium
- VSAT connectivity between ships and central data center saturated and unreliable
- No remote backup for ships 200 miles offshore

SimpliVity Solution and Benefits:

- Hyperconverged infrastructure simplified IT and reduced space, power and cooling requirements
- Tier-1 applications running on SimpliVity
- Data efficiency capabilities solved bandwidth issues
- Built-in data protection introduced a tenfold improvement in Recovery Time Objectives
- Global Unified Management enabled centralized control from one interface

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As a proof-point of the platform maturity and capabilities, SimpliVity offers the industry's most complete assurance: the SimpliVity HyperGuarantee.[4]

- **HyperEfficient.** If you use SimpliVity hyperconverged infrastructure and its built-in VM-centric backup capability as outlined, you will save 90% capacity, across storage and backup combined, relative to comparable traditional solutions.

- **HyperProtected.** If you use SimpliVity's hyperconverged infrastructure and its built-in backup capability, it will take less than one minute, on average, to complete a local backup or local restore of a 1TB VM.

- **HyperSimple.** Using SimpliVity's user interface, which is fully integrated with VMware vCenter, you only need three clicks to back up, restore, move, or clone a VM—all from a single console.

- **HyperManageable.** Using SimpliVity's user interface in a central location, in less than one minute on average, you will be able to create or update backup policies for 1000s of VMs across dozens of sites.

- **HyperAvailable.** You will be able to add or replace SimpliVity OmniStack systems:

  - Without any downtime for local or remote sites;

  - Without any disruption to local or remote SimpliVity backups;

  - Without any reconfiguration of SimpliVity backup policies for local or remote sites;

  - Without the need to re-enter any IP addresses in remote sites.

| ROBO Requirements | SimpliVity Unified Protected ROBO Solution | ROBO Benefits |
|---|---|---|
| Lower TCO and increased efficiency | SimpliVity hyperconverged infrastructure eliminates the need to purchase multiple discrete components and the IT resources to run them; reduces requirements for storage (by 90%), as well as power, cooling and data center floor space. | Introduces significant CapEx and OpEx savings. |
| Deliver improved, consistent application performance | Deduplication identifies redundant data segments, writing only unique data and eliminating subsequent writes to HDD—effectively deduplicating IO. | Improves service delivery by ensuring business-critical applications get the resources required. |
| Mitigate risk of downtime and data loss at ROBO locations | Built-in data protection eliminates the need for backup and recovery hardware and software in the central data center and at the ROBO, and enables automated VM-centric backup and VM- and file-level recovery. | Improves RPOs and RTOs, while reducing costs. |
| Maximize the efficiency and effectiveness of existing WAN | Accelerated data efficiency improves bandwidth utilization and eliminates the need for specialized WAN optimization appliances. | Improves return on WAN investment and delivers more reliable data transfer between sites. |
| Extend and simplify global management of all ROBO environments | Global Unified Management enables centralized administration of all IT resources and VMs from a single, familiar interface. | Eliminates the need for ROBO-based IT staff and increases IT productivity. |
| Enable sustainable growth | Provides a single, scalable pool of shared x86 resources that can be easily expanded to extend capacity and performance. | Introduces agility to capture new business opportunities. |

[4] Certain terms and restrictions apply.

## Summary

Businesses invest in establishing and maintaining ROBOs to achieve strategic goals, such as increasing customer loyalty, expanding into new markets, and getting products to market faster or more cost-effectively. To get the best return on that investment, businesses need to choose the infrastructure that keeps employees highly productive with access to applications, while ensuring business continuity, centralizing management, and controlling costs today and as ROBOs grow in number and size.

SimpliVity's hyperconverged infrastructure offers distinct advantages over more conventional infrastructure choices by delivering next-generation IT infrastructure that delivers improved application performance; faster and more reliable data protection; greater WAN efficiency and effectiveness; global management across ROBO environments from a central console; and ease of scale to meet growth demands—all while dramatically reducing costs.

### For more information, visit:
www.simplivity.com

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