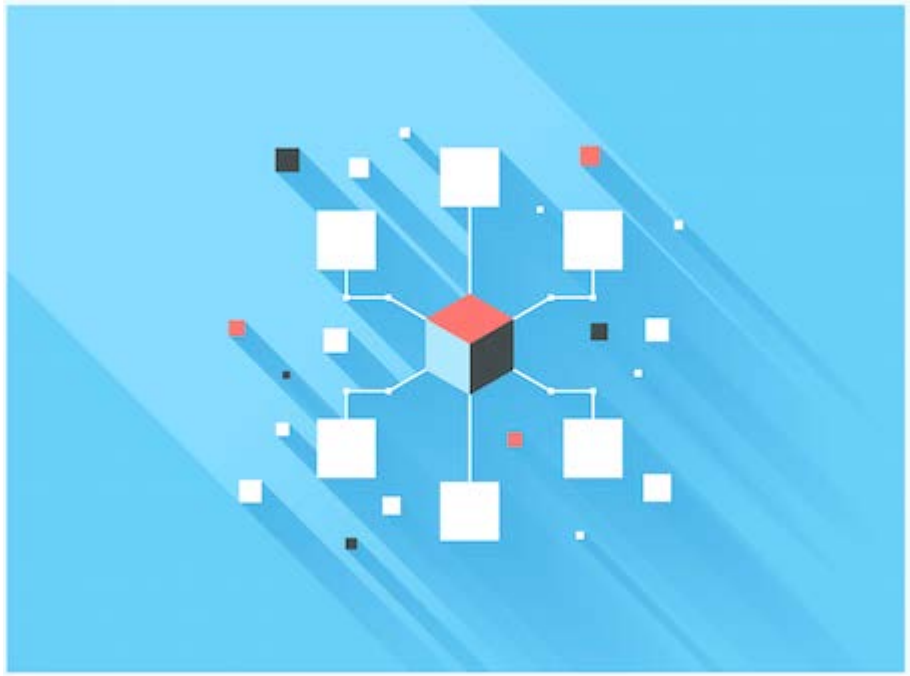

Simplifying the Datacenter with Hyper-Convergence

Bob O'Donnell, Founder and Chief Analyst

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Pivot

Agenda

- Hyper-Converged Infrastructure (HCI) Definition
- The Current IT Landscape
- Benefits of HCI
- Real-World Challenges
- Using HCI
- Performance
- Conclusions

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Hyper-Converged Infrastructure: A Definition

"Hyper-converged infrastructure (HCI), aka software-defined data center (SDDC), is a combination of traditional data center components, such as servers, storage and networking, into a single software-controlled appliance device. These devices incorporate industry-standard hardware and can be controlled by a single software interface, but offer the ability to easily expand by connecting additional appliances over traditional network connections."

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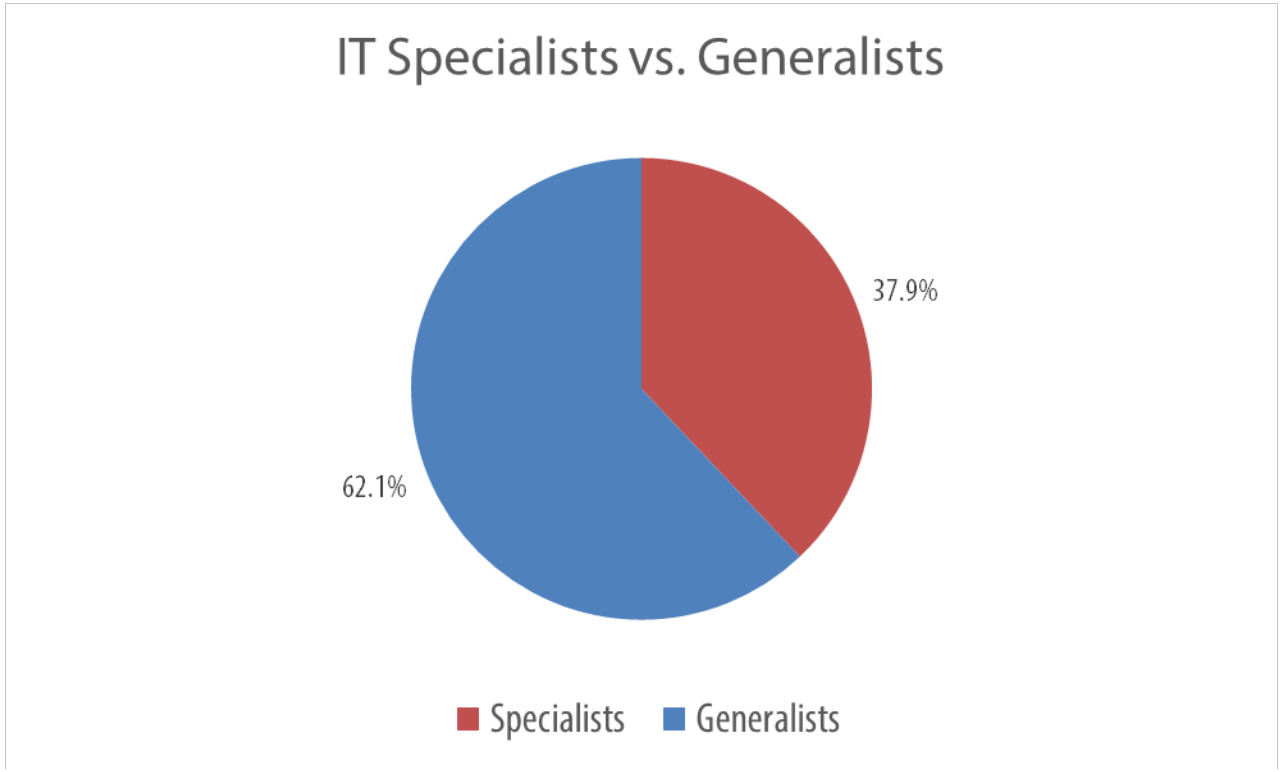
The IT Landscape



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40% of employees have a specialized focus, such as compute, storage or networking

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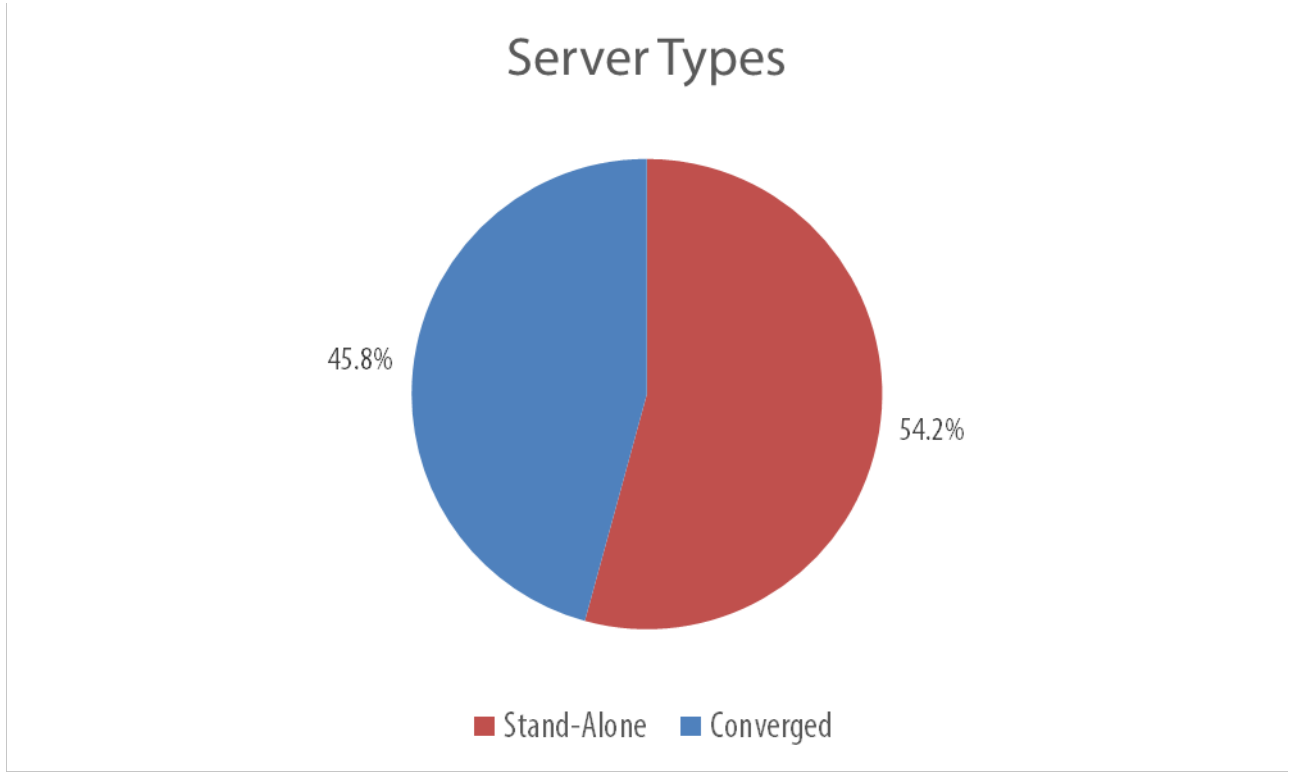
Converged Servers Making an Impact



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Over 45% of organizations are already starting to deploy converged servers

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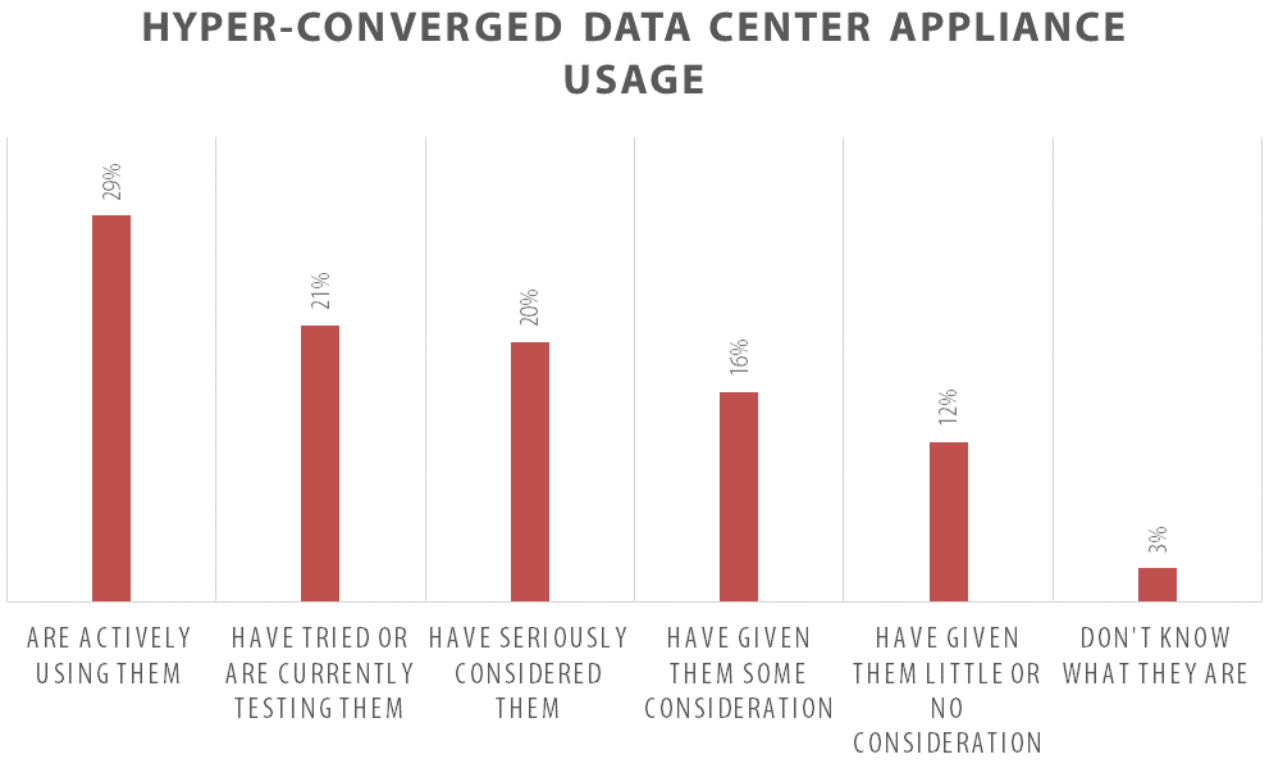
Hyper-Converged Usage Growing



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The number of companies actively using hyper-converged appliances is lower, but there is strong interest in deploying the technology

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HCI: Buzzword or Reality?

- Enables a modernization of both data center architectures and organizations
- Plays a key role in server consolidation efforts
- Dramatically simplifies IT architectures and reduces power and cooling costs

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Data Center Challenges

- Increasingly powerful and sophisticated applications are placing larger demands on storage
- Data backup and disaster recovery plans are becoming increasingly important
- IT organizations in cloud-based businesses, in particular, often face severe and rapid needs to scale their infrastructure very quickly
- A large percentage of IT personnel have specialized skill sets, making them both expensive and inflexible

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How Can Hyper-Converged Infrastructure Help?

- Reduce complexity and costs in the data center
  - Reduce the need for expensive, specialized staff
  - Reduce the time required to deploy many applications
- Bring a modern approach to optimizing storage resources
  - Some HCI appliances use just a tiny fraction of available storage
- Fast, easy scale-out
  - Leverage the kind of web-scale technologies used by Google, Amazon and Facebook
  - Plug and play

Most analysts believe
50% or more
of the data center
will be HCI within 5 years

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Where Does HCI Fit Into Your Organization?

- Traditional desktop virtualization (VDI)
- Test and development environments
- Pure storage replacement
  - Scalar Erasure Coding deployed by Pivot3 can make HCI a very cost-effective alternative
- Pilots and Proof-of-Concept (POC) Tests
  - Best way to test out HCI by experimenting with non-critical workloads
  - With Pivot3, as few as 3 appliances can be used to create a very cost-effective, yet robust POC environment
- Disaster Recovery
  - The robust and efficient nature of storage-focused HCI solutions, such as those offered by Pivot3, are very well-suited to this key application

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Scenarios for Introducing Hyper-Converged Infrastructure

- Practical business issues
  - Storage space constraints
  - Need to leverage blades and all-flash arrays
  - Desire to consolidate server and storage
  - Reduced IT budgets
  - New business initiatives
- Specialized vertical market situations
  - Financial markets and engineering that require blades plus graphics
  - Health Care applications making heavy use of VDI for mobile medical stations
  - Video recording and other big data and IOT applications

Are all Hyper-Converged Infrastructures the Same?

- Not surprisingly, no
- Key differences include:
  - Performance
    - Number of VDI sessions supported
    - CPU overhead
    - IOPs performance
  - Storage
    - Efficiency of storage
    - Replication vs. erasure coding (copies vs. codes)
    - Available storage capacity
    - Levels of fault tolerance
- Some HCI vendors publish performance numbers and some don’t….

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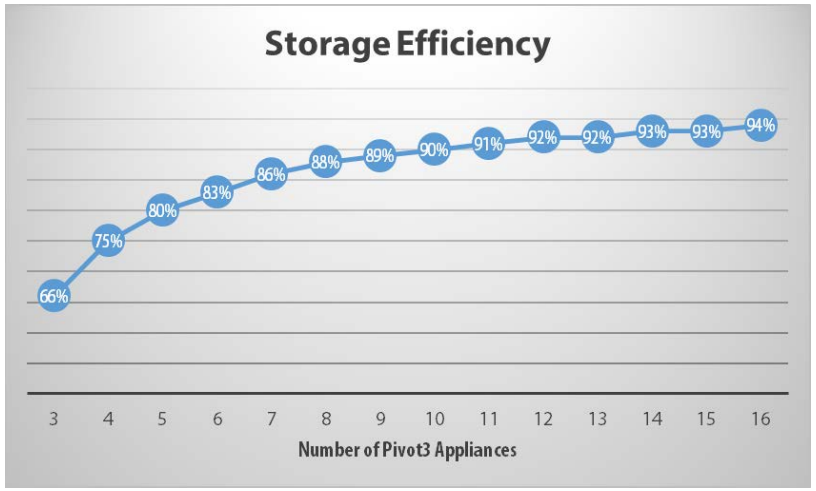
Performance and Efficiency Benefits of Scalar Erasure Coding



- When using 10 appliances, 90% of all space can be used to store data versus just 50% for replication-based solutions
- Even catastrophic failures across multiple drives will not result in loss of data
- Scalar Erasure Coding plans for failures, so the whole concept of MTBF numbers for drives becomes meaningless

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Conclusion

- Hyper-Converged Infrastructure offers compelling benefits for IT organizations
  - Empower Line of Business (LOB) leaders to create cost-effective solutions to their immediate needs
  - Free IT experts to concentrate on key business objectives
- Allows companies to think differently about IT
  - Eliminate silos within IT and simplify the IT organization
  - Simplify the data center and lower TCO

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