

Buyer's Guide



# The Evolving Role of Converged Infrastructure in Modern IT

Where does CI fit in a world of hybrid cloud?



in association with



# About this Guide

Amid all the hype and noise around HCI and cloud-type architectures, with all their layers of abstraction and virtualization, one thing shines through: traditional disaggregated network/server/storage combinations in their modern guise of Converged Infrastructure, or CI, remain the most efficient and cost-effective option for many roles and workloads.

There is a host of reasons why this is the case, and in this paper we will explore and discuss some of the most significant ones. They include the consequences of abstraction and virtualization, the questions of cost and efficiency, the shapes and patterns of your workload mix, sustainability, and the issues of manageability and visibility, which in many ways link all those others together.

## Why this conversation, and why now?

The concept of converged infrastructure (CI) has been around for nearly two decades, which is a long time in the fast-moving world of enterprise IT. In that time we've also seen significant advances in software-defined infrastructure and related services. These range from highly abstracted and virtualized options such as hyper-converged infrastructure (HCI), through open-source platforms leveraging commodity hardware, to the dizzying range of highly innovative services that have emerged in the public cloud.

Against this background, you'd be forgiven for wondering about the relevance of a 15-20 year old concept as you continue to invest in your own infrastructure, and this is the question we will be tackling in this guide.

To put it another way, is there still a case for a model that combines and pre-integrates storage, compute, networking and management software into a single solution in a way that still gives you complete control over the configuration and tuning of individual elements in the stack?

If you ask the question like that, we think the short answer is "yes". In fact, in many scenarios CI is really the only option that makes sense from a performance, tuning, management, control and commercial perspective. Read on to learn more.

## The Buyer's Guide Series

Like all Freeform Dynamics Buyer's Guides, this document, which was commissioned by Fujitsu but authored independently, is not intended to be an exhaustive treatment of the topic. Our aim is to provide a concise overview of the essentials in this area, firstly to help orientate those involved in planning and decision-making, and secondly to make sure business cases and solution selection criteria focus on the things that really matter.

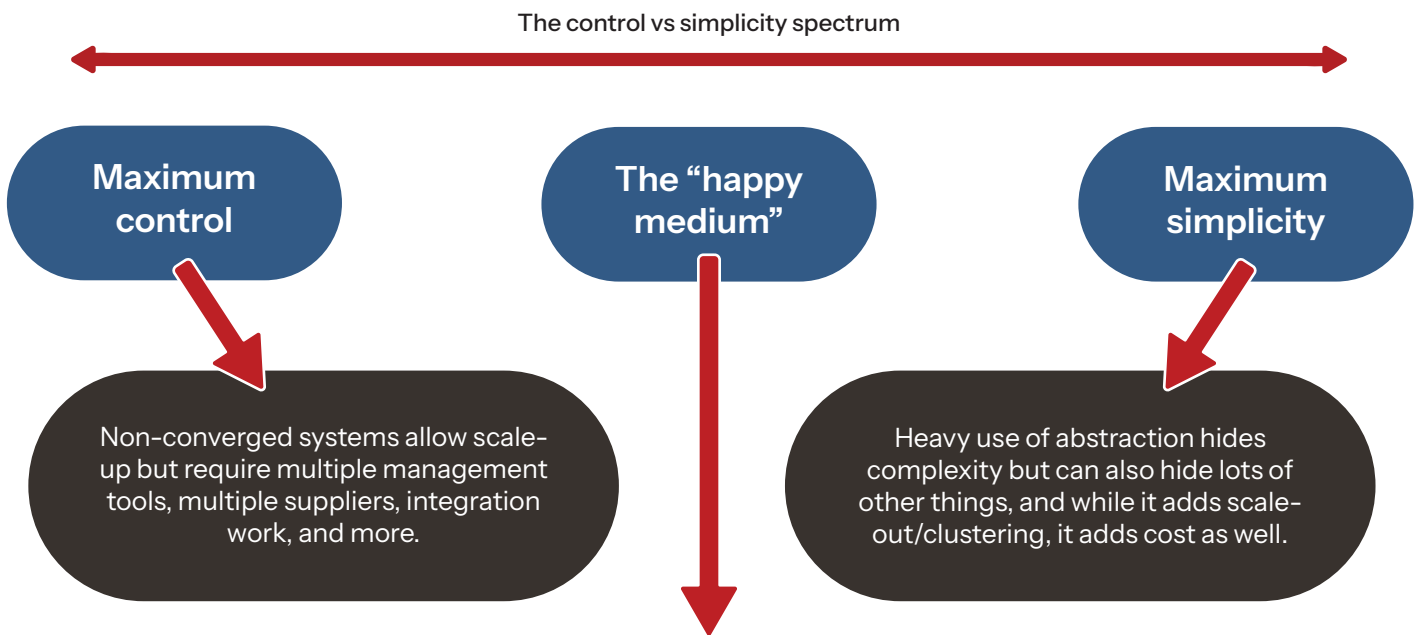
For more Buyer's Guides on other topics please, visit [www.freeformdynamics.com](http://www.freeformdynamics.com).

# Making complexity simpler to consume

Much of modern IT involves finding the right balance of simplicity versus control. Greater control typically brings complexity, so we risk losing simplicity, while simplicity too often comes at the expense of granular control. This can make it a considerable challenge to determine the best way to provide the underlying physical resources for modern software-defined IT solutions.

Each of the available options for providing those resources has its advantages, and some use cases do indeed sit at one or other end of the control-simplicity spectrum. In many cases, though, what we need is a “happy medium” that offers both enough control and enough simplicity, without focusing on one or the other.

This is where CI can fit. As well as providing the performance and latency advantages of on-site hardware, CI systems can scale components independently and more fluidly, without the need to add another complete ‘block of everything’ whenever you need ‘more of something’. This is especially advantageous when you want to optimize for your specific workload mix.



For many applications we really need a middle ground

- The control, scalability - both up and down - and tuneability of hardware
- Unified management and support, pre-integration and lower cost
- Full support for virtualization, containers, etc, where needed
- The ability to upgrade or update components independently
- Don't virtualize everything to the lowest common denominator
- Don't pay for bundled content that isn't needed

# The patterns and shapes of modern infrastructure

Once we go beyond general-purpose computing, the modern IT world becomes considerably more complex. Workloads, and indeed whole businesses, can have very different performance profiles. Some may be compute-heavy while others will be storage-constrained, say - and it can be hard to keep things running smoothly. This is where converged infrastructure can help, by providing the flexibility, manageability, cost-effectiveness and performance to optimize the underlying hardware to better match workload needs.

And while fashions can change, often frequently and dramatically, the fundamental patterns/shapes of IT change much less often. Which patterns or shapes might indicate that CI is - or remains - a strong option?

## 1 Storage-heavy applications

Workloads with small to moderate CPU requirements but very large storage demands benefit from the ability to scale storage independently of compute and networking.

## 2 CPU-intensive workloads

Processor-intensive workloads with low storage demands can benefit from the ability to scale compute both up and out, without also having to scale up everything else.

## 3 Low-latency workloads

Achieving low latency means allowing as little as possible to get in the way, and that can include the overheads and delays inherent in virtualization and abstraction.

## 4 High I/O performance

High storage or networking I/O performance often requires direct access to advanced controller capabilities, which can be harder to achieve in heavily-virtualized settings.

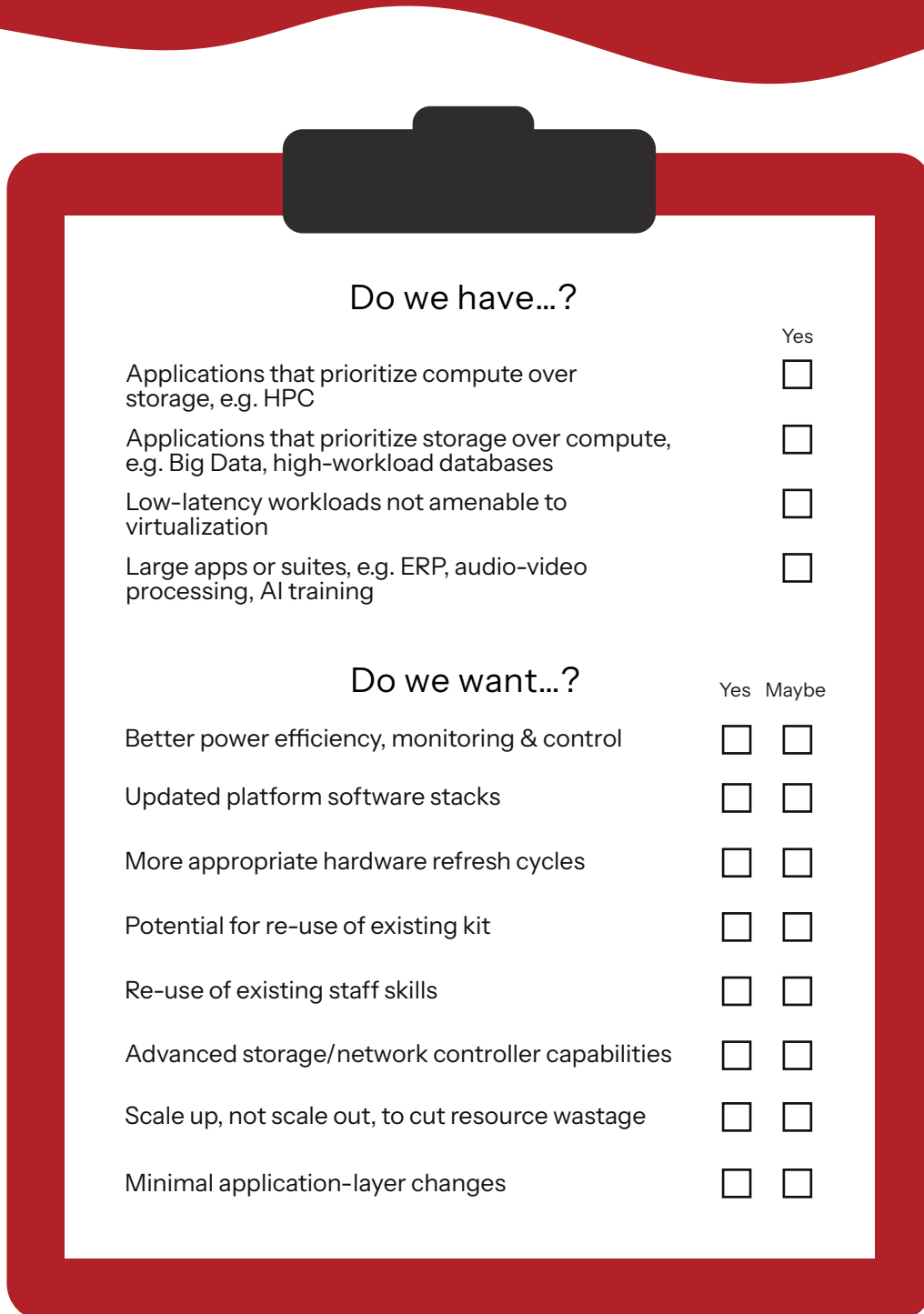
## 5 Need to scale up, not out

While some applications can take advantage of scale-out, where we add (or cluster) more units, others require scale-up, where we expand the individual elements or units.

# Use cases and indicators for Converged Infrastructure

The ability to scale storage and compute resources independently is a key feature of CI, especially if you use very large storage pools or require very low latency. Acquiring modern CI will incur costs, of course, but so will routine updates and maintenance if you opt to continue running older CI or non-converged systems. So ensure you take all factors into account, including power consumption, space and management costs, and the simplicity (or otherwise) of future updates and enhancements.

Running through the following checklist may help. If you tick at least one of the upper list and more than, say, four of the lower, then CI - whether new or updated - should be high on your list of options.



**Do we have...?**

Applications that prioritize compute over storage, e.g. HPC	<input type="checkbox"/>	Yes
Applications that prioritize storage over compute, e.g. Big Data, high-workload databases	<input type="checkbox"/>	
Low-latency workloads not amenable to virtualization	<input type="checkbox"/>	
Large apps or suites, e.g. ERP, audio-video processing, AI training	<input type="checkbox"/>	

**Do we want...?**

	Yes	Maybe
Better power efficiency, monitoring & control	<input type="checkbox"/>	<input type="checkbox"/>
Updated platform software stacks	<input type="checkbox"/>	<input type="checkbox"/>
More appropriate hardware refresh cycles	<input type="checkbox"/>	<input type="checkbox"/>
Potential for re-use of existing kit	<input type="checkbox"/>	<input type="checkbox"/>
Re-use of existing staff skills	<input type="checkbox"/>	<input type="checkbox"/>
Advanced storage/network controller capabilities	<input type="checkbox"/>	<input type="checkbox"/>
Scale up, not scale out, to cut resource wastage	<input type="checkbox"/>	<input type="checkbox"/>
Minimal application-layer changes	<input type="checkbox"/>	<input type="checkbox"/>

## Freeform Dynamics

Freeform Dynamics is an IT industry analyst firm. Through our research and insights, we help busy IT and business professionals get up to speed on the latest technology developments and make better-informed investment decisions.

For more information, visit [www.freeformdynamics.com](http://www.freeformdynamics.com)

## Fujitsu

At Fujitsu, we're passionate about using technology to create a more inclusive, sustainable and trusted future. It drives everything we do. Throughout our history, we've supported businesses and society through delivering robust and reliable IT systems.

Find out more about our business, our history, our philosophy and the countries we operate in. Please visit [www.fujitsu.com](http://www.fujitsu.com).

## Terms of Use

This document is Copyright 2023 Freeform Dynamics Ltd. It may be freely duplicated and distributed in its entirety on an individual one to one basis, either electronically or in hard copy form. It may not, however, be disassembled or modified in any way as part of the duplication process. Hosting of the entire report for download and/or mass distribution by any means is prohibited unless express permission is obtained from Freeform Dynamics or Fujitsu. The contents contained herein are provided for your general information and use only, and neither Freeform Dynamics nor any third party provide any warranty or guarantee as to its suitability for any particular purpose.