Every cloud has a silver lining
Achieving balance between public and private
# Table of contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Executive summary</td>
<td>3</td>
</tr>
<tr>
<td>What do you need from the cloud?</td>
<td>4</td>
</tr>
<tr>
<td>Top three benefits of cloud computing</td>
<td>6</td>
</tr>
<tr>
<td>What private on-premises cloud offers</td>
<td>7</td>
</tr>
<tr>
<td>Challenges and solutions</td>
<td>8</td>
</tr>
<tr>
<td>Hyperconverged infrastructures</td>
<td>10</td>
</tr>
<tr>
<td>Hyperconverged infrastructure with orchestration</td>
<td>11</td>
</tr>
<tr>
<td>Cloud orchestration</td>
<td>12</td>
</tr>
<tr>
<td>How a hyperconverged appliance affects private cloud deployments</td>
<td>13</td>
</tr>
<tr>
<td>The Cloud Infrastructure Alliance</td>
<td>14</td>
</tr>
<tr>
<td>The experts behind Cloud Infrastructure Alliance</td>
<td>15</td>
</tr>
<tr>
<td>Service catalogue</td>
<td>16</td>
</tr>
<tr>
<td>Conclusion</td>
<td>17</td>
</tr>
<tr>
<td>Talk to us</td>
<td>18</td>
</tr>
<tr>
<td>Disclaimer</td>
<td>19</td>
</tr>
</tbody>
</table>
As a variety of technological revolutions overlap, converge and complement, the rules around digital transformation change, making businesses keener than ever to adopt technology that can propel them into a competitive and successful future.

We’re seeing a landscape that’s data driven, a dawn of smarter analytics coming from artificial intelligence and a global movement harnessing the capabilities of the cloud. It’s an incredible amount to make sense of and navigate a path through. And as always, time is of the essence.

By 2020, a huge 83% of enterprise workloads are expected to operate on the cloud. And we already know that there’s proven leverage already being experienced from this technology; however, it all depends on the business you’re in and the data you possess.

There’s no right or wrong answer when it comes to where you put your workloads, data or applications, and while public cloud represents a kind of ‘end-game’, it can be particularly problematic, especially where compliance is concerned.

As a result, on-prem and cloud data centres won’t be leaving the business model anytime soon, but instead will co-exist with public cloud. Public and private may share common features, but there are benefits and downsides to both deployments, depending on what you need.

What that means for providers like you, whatever stage of transformation you and your clients are at and wherever you are with cloud, is that it’s more important than ever to fully understand the options available, so you have the choice and flexibility to leverage the exact components you need, avoid creating additional pain points and accelerate towards those all-important benefits.

In this ePaper we’ll look at the different cloud deployments, the challenges and benefits, hyperconverged appliances and cloud orchestration, and introduce an offering from four cutting-edge tech companies that together form the Cloud Infrastructure Alliance, a team designed to help you in four core areas:

1. **Orchestration**
2. **Network and security**
3. **Server compute and storage**
4. **Provisioning of services and workload management**

It is our aim to show you that, by being able to leverage, adapt or reshape any or all parts of their offering, you and your clients can benefit from the precise flexibility required for your journey to digital transformation, without having to change everything – just the parts you need.
Service providers have different needs when it comes to the cloud. For example, some of those might come from restrictions in a current setup, where a public cloud offers accelerated services, while others look for cloud capabilities that provide governed security, to safeguard what they do with reassurance.

When we look at the percentage of traditional companies using a private cloud versus a public one, the figures are 40% private and 60% public. What’s even more interesting, is that when you look at the more regulated businesses, it’s the opposite; with 60% using a private cloud setup and 40% using a public cloud for their needs, making it clear that businesses are leaning on either deployment for specific reasons. However, neither model can handle all the requirements of every business. What’s needed is a hybrid model.

CIOs and business owners are frustrated with complexity and lack of flexibility of legacy siloed computing but by using IBM to migrate their applications and/or services to a dedicated on-premises environment, they can take advantage of flexibility and agility they need to help accelerate development of their services to recognise business benefits sooner and retain or attract new customers. In a nutshell, a great solution for both ISVs and CSPs.
What’s more, IBM can manage the on-premise environment and make it highly available. And as the Cloud Infrastructure Alliance is based on x86, it’s therefore the path of lowest risk for migration of existing x86 legacy services.

There are three cloud deployment models to choose from, each suited to particular needs:

- **Core characteristics**
  - Broad network access
  - Rapid elasticity
  - Measured service
  - On-demand self-service
  - Resource pooling
  - Multi-tenancy

- **Service categories**
  - Infrastructure as a Service (IaaS)
    - Servers storage network
  - Platform as a Service (PaaS)
    - OS & application stack
    - Servers storage network
  - Software as a Service (SaaS)
    - Packaged software
    - OS & application stack
    - Servers storage network

- **Core characteristics**

These models mean businesses no longer need to invest in on-premise infrastructure and management to support their needs, and instead have access to exactly the right setup for their requirements through what is essentially internet-based computing. In other words, a set of shared resources, applications, server compute and storage, networking, development and deployment services, available at any time and from anywhere.
Top three benefits of cloud computing

Long term migrating to cloud can lead to saving money and increased business success; lower operational costs with increased service availability.

Less or flexible costs

The costs of cloud computing are much more flexible than that traditional capital expenditure. There are no huge costs of hardware in cloud computing. You just pay as you operate it and enjoy the model based on your subscription/consumption plan.

24x7 availability

Most of the cloud providers are truly reliable in offering their services, with most of them maintaining an uptime of 99.9%. The connection is ‘always on’. Workers can get onto the applications needed basically from anywhere with an internet connection. Some of the applications even function off-line.

Flexibility in capacity

Pay for what you use. The ability to instantly, increase of capacity for higher online demand during a seasonal sales campaign. Immediately and quickly added to avoid of lose sales and crashing servers. When those sales are done, the capacity can also be decreased for the reduction of costs.
Private on-premise cloud is a sub-set of the private cloud offering, enabling businesses complete control over mission-critical data and applications, where the following are of the highest importance:

1. **Regulation and compliance**
2. **Security**
3. **Ultimate visibility**
4. **Accessibility and reliability**
5. **Latency**
6. **Trust**

Both deployments have specific uses and bring their own advantages but choosing which one is right for business isn’t as straightforward, particularly when you need elements from both. There are big challenges. But they are, after all, just challenges, and don’t represent impossibility. Let’s take a close look at the challenges, and their solutions.
Challenges and solutions

Cloud computing, whichever path you take, is not a simple, straightforward initiative, but the challenges can be overcome with planning and the right solution(s).

Security
This is probably the biggest issue:
• Will my data be secure?
• Who will have access to it?
• Where will it be stored?

The solution:
Advances in technology and the software defined data centre have resulted in software-based solutions now available with the capability to create and deploy global security standard(s) across multiple interconnected clouds (private and public).

Financial cost
Immediate cost of migration, rearchitecting the infrastructure and rewriting the applications for cloud.

The solution:
Investing in people and the tools to migrate. Focus on planning and preparation, taking a phased incremental approach with the flexibility and agility to scale up and down if necessary.

Standardisation of interaction among workloads on cloud
With a dynamic mix of workloads operating across architectures for different reasons, the relationships between components must be correctly established and maintained for successful performance.

The solution:
Software products are available to provide server virtualisation and cloud orchestration to manage multiple workloads across several cloud solutions.
Reliability and availability
Outages can have a serious impact on workloads so, having a highly available and reliable service is essential; both for keeping client satisfaction levels up where you want them and for preventing any loss of revenue.

The solution:
Do some homework and opt for platforms (providers) with a track record of the highest reliability and availability ratings combined with sensible SLAs.

Hyperconverged platforms are the least complicated and most cost-efficient way to achieve next-gen infrastructure without disrupting your business.

Integration and Migration
These can be or become very complex issues; integration of legacy to the cloud environment and the migration of the workload from legacy to cloud.

The solution:
Cloud service providers or systems integrators can be used to resource the gap providing the skills, processes and resources to execute the lift and shift with a safe pair of experienced hands.

Challenge of fear
The fear of the unknown and mistrust in new technologies that may have not been tested enough.

The solution:
Cloud appliances that are secure, open technology cloud appliances, pre-integrated, pre-tested, optimised configurations for availability and business agility.

Cloud computing challenges are complex but not insurmountable provided you do the preparation and evaluation. You do not need to do this on your own and working with a partner may enable you to lower the hurdle to reap the benefits.
Hyperconverged infrastructure (HCI) is a software-defined IT infrastructure that virtualises all the elements of conventional ‘hardware-defined’ systems. HCI includes, at a minimum, virtualised computing (a hypervisor), a virtualised SAN (software-defined storage) and virtualised networking (software-defined networking). HCI typically runs on commercial off-the-shelf (COTS) servers. HCI is favoured for cloud computing.

With the performance improvements over the past few years with Intel x86 processors, we have seen a rapid movement to software-defined storage, networks, data centres and ‘software-defined’ everything else. Add to this the cloud factor and this dramatically changed the way we now design, specify and buy and use computer platforms.

Although a hyperconverged infrastructure can deliver the same kind of on-demand scalability as the cloud, the ability to source IT without having to invest in on-premise infrastructure and management makes it highly likely that cloud computing is here to stay.
Hyperconverged infrastructure with orchestration

From

Computer virtualization

To

Compute, storage, network virtualization + management

Scaling
Orchestration describes automated arrangement, coordination, and management of complex computer systems, and services. Cloud orchestration is the use of programming technology to manage the interconnections and interactions among workloads on public and private cloud infrastructure. It connects automated tasks into a cohesive workflow to accomplish a goal, with permissions oversight and policy enforcement.

In most situations, cloud orchestration is the process to manage these multiple workloads, in an automated fashion, across several cloud solutions, with the goal being to synthesise this into a single workflow.
How a hyperconverged appliance affects private cloud deployments

Simplifying data centre management, HCI continues to grow in popularity these integrated systems have a positive effect on private cloud performance and administration.

A hyperconverged appliance offers a low-risk option for building a cloud computing infrastructure. These pre-integrated systems include a commercial, off-the-shelf server and multiple drives as well as requisite software that allows those drives to be shared across a compute cluster.

For any company with limited hardware expertise or IT staff, hyper-converged infrastructure can offer simplicity and speed. Still, many private cloud deployments are in their early days, so a pilot investment in a hyperconverged appliances is a good way to get your feet wet with the technology. Small appliances, with just 12 drives being the standard for a 2U server, fits the requirements for many private clouds, since this box size will hold a dual CPU x86.

You don’t need a lot of CPU power to drive a networked storage appliance, so the other cores are available for virtual machines to run applications.

From a performance perspective, hyperconverged infrastructure effectively matches system. In hyperconverged infrastructure systems, networks are also virtualised.

HCI, coupled with good orchestration software, simplifies private cloud storage allocation.

Hyperconverged appliances will take over the IT infrastructure market. This seems likely, hyperconverged infrastructure is another big step in the commoditisation of IT platforms.

As the vendor base expands, we can expect competitive pricing and a wide variety of alternatives, including hyperconverged appliance for big data analytics.
The Cloud Infrastructure Alliance

You get five pre-configured flexible hyperconverged cloud appliances, that can scale from 25VM to 5000+ to enable rapid agile deployment your business needs:

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open technology platforms</td>
<td>from market leaders, without a technology lock-in</td>
</tr>
<tr>
<td>Pre-integrated systems</td>
<td>for MINIMAL deployment but MAXIMUM operational assurance</td>
</tr>
<tr>
<td>Pre-tested systems</td>
<td>for reduced risk</td>
</tr>
<tr>
<td>Optimised configurations</td>
<td>to precisely suit workload/environment type</td>
</tr>
</tbody>
</table>
The experts behind Cloud Infrastructure Alliance

Cloud Infrastructure Alliance consists of four technology companies, who have formed a partnership to deliver the ultimate in on-premise hybrid cloud solutions:

- **VMware** – Orchestration
- **Juniper** – Network and security
- **Lenovo** – Server compute and storage
- **IBM** – Provisioning of services and workload management
The following table is designed to give you an idea of the timescales required to configure services for a variety of use cases. With IBM behind the provisioning of those services and the workload management.

<table>
<thead>
<tr>
<th>Use Case</th>
<th>VMWare Products</th>
<th>JUNIPER SERVICES</th>
<th>LENOVO SERVICES</th>
<th>IBM services and workload management</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: Converged Infrastructure</td>
<td>vCenter vSphere Required 1 Days</td>
<td>Required 1 Days</td>
<td>Required 1 Days</td>
<td>Total Required 3 Days</td>
</tr>
<tr>
<td>2: HCI* / vSAN (Hyper converged infrastructure)</td>
<td>vCenter vSphere vSAN Required 5 Days</td>
<td>Required 1 Days</td>
<td>Required 1 Days</td>
<td>Total Required 7 Days</td>
</tr>
<tr>
<td>3: Multi Site</td>
<td>vCenter vSphere vSAN Required 2 x 5 = 10 Days</td>
<td>Required 2 Days</td>
<td>Required 2 Days</td>
<td>Total Required 14 Days</td>
</tr>
<tr>
<td>4: Multi Site with Security</td>
<td>vCenter vSphere vSAN NSX Required 2 x 10 = 20 Days</td>
<td>Required 2 Days</td>
<td>Required 2 Days</td>
<td>Total Required 24 Days</td>
</tr>
<tr>
<td>5: Single Site Multi Cluster</td>
<td>vCenter VCF Required 5-10 Days</td>
<td>Required 3 Days</td>
<td>Required 2 Days</td>
<td>Total Required 15 Days</td>
</tr>
</tbody>
</table>
Conclusion

Businesses need the cloud to enjoy modern business acceleration and agility, while at the same time staying secure, reducing cost and delivering consistent customer service, globally. We already know that the cloud is a proven mode of transformation but, for some businesses, the challenges involved with getting there are greater, or just not viable.

At present, 40% of businesses are using private cloud while 60% are on public. And in more regulated industries like finance and insurance, it’s the opposite, clearly demonstrating the need for tighter control and that public cloud isn’t – yet – the full answer. Of course, both approaches are perfectly acceptable routes to take, depending on your business model, but it’s not about a simple choice between one or the other. It’s about being able to leverage a configuration that can align with the needs of a business and bring together the best of both worlds.

The key takeaway is businesses can take what they need from either public cloud or private, or combination of. The best solution for most will be a hybrid model – an on-premises cloud designed to take care of the more critical information. By pooling together a variety of specific technologies, the Cloud Infrastructure Alliance can offer you just that – a fully on-premise hybrid cloud solution. Whether you decide to leverage their entire offering or simply parts of it, it’s your choice. You have the added flexibility of a catalogue of services and solutions as and when you need them, without pressure and without any lock-in.

And no matter where you are in your transformation journey, the Cloud Infrastructure Alliance can accommodate your needs to help you and your clients enable better business outcomes by taking that journey with you.
When you’re ready to transform your technology to achieve better business results, speak to the professionals at IBM.

<table>
<thead>
<tr>
<th>Country</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria • Germany • Switzerland</td>
<td>+49 89 3803 7074 or +49 711 2295 4597</td>
</tr>
<tr>
<td>Belgium • Luxembourg • Netherlands</td>
<td>+31 20 369 0624</td>
</tr>
<tr>
<td>Denmark • Finland</td>
<td>+45 6991 2632</td>
</tr>
<tr>
<td>France</td>
<td>+33 179 97 38 14</td>
</tr>
<tr>
<td>Greece • Portugal • Spain</td>
<td>+34 91 200 3956</td>
</tr>
<tr>
<td>Italy</td>
<td>+39 02 8736 8943</td>
</tr>
<tr>
<td>Ireland • UK</td>
<td>+44 20 3318 0057</td>
</tr>
<tr>
<td>Norway • Sweden</td>
<td>+46 8446 83855</td>
</tr>
<tr>
<td>Poland • Russia</td>
<td>+74 99 918 4390 or +48 22 128 4975</td>
</tr>
</tbody>
</table>

Email an expert
Disclaimer

© Copyright IBM Corporation 2019
IBM Corporation
New Orchard Road
Armonk, NY 10504
Produced in the UK

March 2019

IBM, the IBM logo and ibm.com, are trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the Web at “Copyright and trademark information” at www.ibm.com/legal/copytrade.shtml

The content in this document is current as of the initial date of publication and may be changed by IBM at any time. Not all offerings are available in every country in which IBM operates. The performance data and client examples cited are presented for illustrative purposes only. Actual performance results may vary depending on specific configurations and operating conditions.

THE INFORMATION IN THIS DOCUMENT IS PROVIDED “AS IS” WITHOUT ANY WARRANTY, EXPRESS OR IMPLIED, INCLUDING WITHOUT ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND ANY WARRANTY OR CONDITION OF NON-INFRINGEMENT. IBM products are warranted according to the terms and conditions of the agreements under which they are provided.

The Business Partner or client is responsible for ensuring compliance with laws and regulations applicable to it. IBM does not provide legal advice or represent or warrant that its services or products will ensure that the Business Partner or client is in compliance with any law or regulation.

Statements regarding IBM’s future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only.