

Towards the Cloud

Data Centre Transformation Strategies

EXECUTIVE BRIEF

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1. Executive Summary

Many of today's CIOs must see something broken in their IT departments. According to a new Forrester Research report, more than half of the 178 IT executives surveyed are hatching plans to upend the status quo and institute a new IT model within three years.

Looking at the last 50 years or so of industrial history, you can easily find examples of substantial change to how some things are done. Manufacturing, for example, used to be labour-intensive with a vertical orientation. Now we live in a world of automation and flexible supply chains. We are still making things, but we do it much more efficiently. Similar examples can be found in power generation, distribution, telecommunications and other industries. The interesting point is, in each case there's been one or more radical changes that have transformed the economics of how we do something.

The same process is now happening in the data centre. Cloud computing and "Datacenter 3.0" changes the economics of the data centre by using new architectures that integrate everything: the network, computing and storage platforms. The result is a shift from the data centre environment as we know it – where over 70% of your budget goes towards "keeping the lights on" – to one that delivers consolidation, virtualisation and automation.

Bain's IT practice chief, Rudy Puryear, poses a question that every CEO should ask their CIO right now: **"How do we maximise discretionary spending?"** Puryear speculates that in a typical company, approximately 80 to 90% of the IT budget is locked in to non-discretionary funding, i.e. "business as usual": running, operating, maintaining, supporting and adding minor enhancements to the existing environment. Conversely, just 10 to 20% is discretionary.

Changing the shift in spending so that 70-80% of the IT budget is on innovation requires fundamental change, and most of this change is in the Data Centre. Like any IT transformation, not everyone is ready to make this move today, and many organisations will take a staged approach. Whether you are looking at an evolutionary journey or a more rapid transformation as you "cross the chasm", we can help you plan and execute your Data Centre strategy.

2. Why the need for change?

"50% of Enterprise Class data centres will be technologically obsolete within 24 months"

Gartner Group (2009)

Your data centre assets become obsolete approximately every five years. This means the vast majority of IT investment is spent on upgrading various pieces of infrastructure and providing redundancy and recoverability. These activities alone consume approximately 60 to 80% of IT expenditures without necessarily giving you greater business value or creating innovation. More importantly, it prevents the IT function from being able to deliver the kind of innovation that meets user needs for faster, better services.

Another issue is that data centres globally are reaching their limits in terms of power, cooling and space. This is a significant constraint for most companies and – combined with the increasing operational and administrative overhead of managing growing numbers of servers – is driving a real need for change.

Storage demand growing 40-70% per year

Low Asset Utilisation ~15-25% (Servers/Storage)

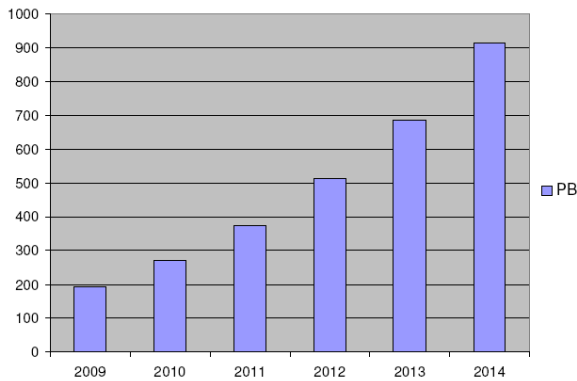
High power & cooling costs ~ 25-30% total DC opex

High operational mgt costs ~ 30% total DC opex

New Applications provisioning ~ 60 -180 days

2.1 Data Growth

Petabytes shipped in the Australian Marketplace - forecast



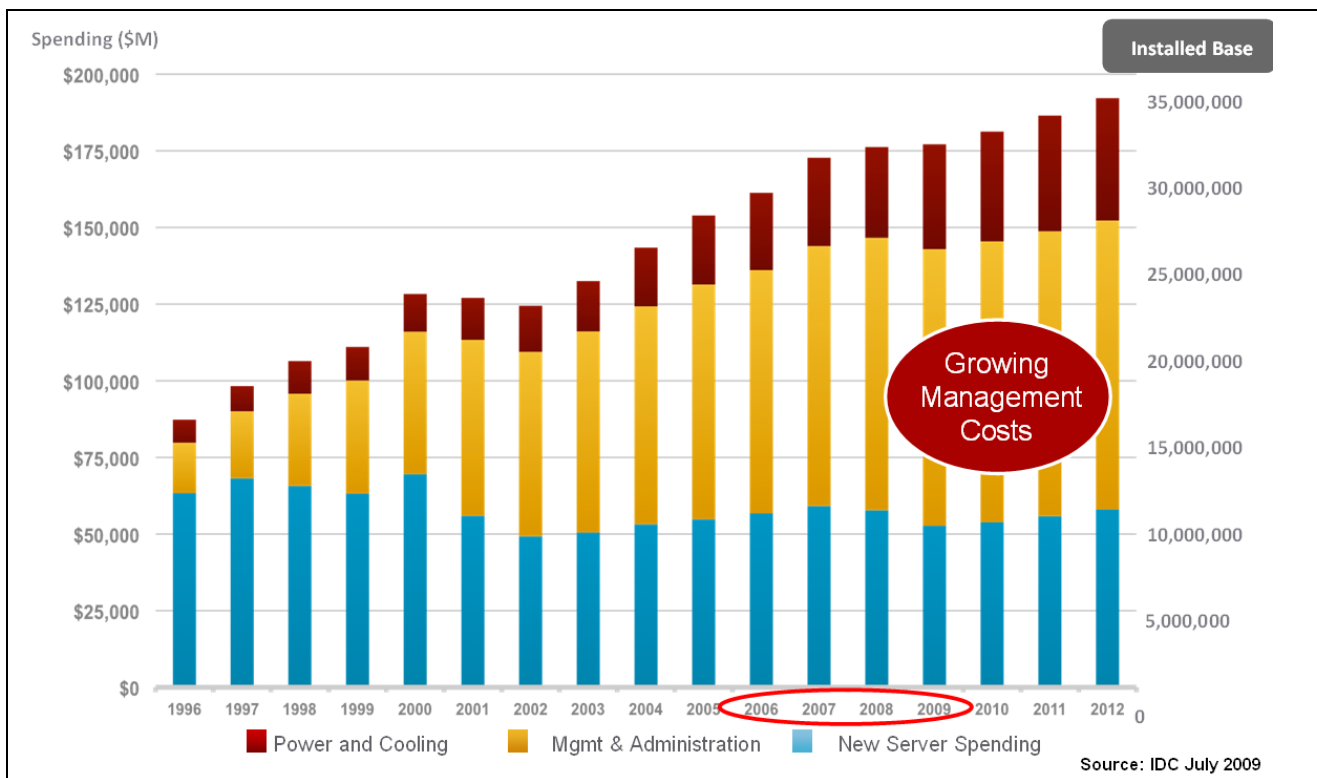
While spending across most IT segments was flat or slightly negative in 2009/10 (including server and networking), storage is the only enterprise technology that continued growing.

According to IDC's research and forecast data, the amount of storage shipped to the Australian marketplace will increase by over 240% between 2010 and 2014. By 2020, data objects will grow 67 times, while data will grow 44 times.

The challenge faced is how to manage this accelerating increase in data (44x), while the rate of IT staffing is projected to increase 1.4 times. Technology and improving operational efficiency will play a dominant role.

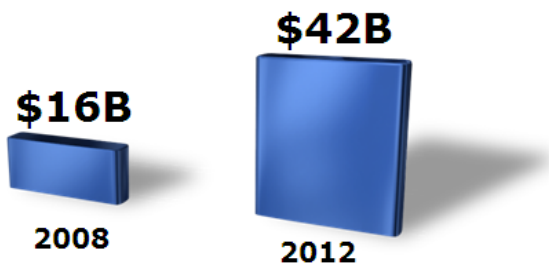
2.2 Management overhead

The need for better operational efficiency is also highlighted when looking at projected growth of server infrastructure spending. While costs of server hardware are flat, the costs of managing an increasing number of servers are increasing significantly.



3. Towards Cloud Computing

Total Spending on Cloud-Based Services

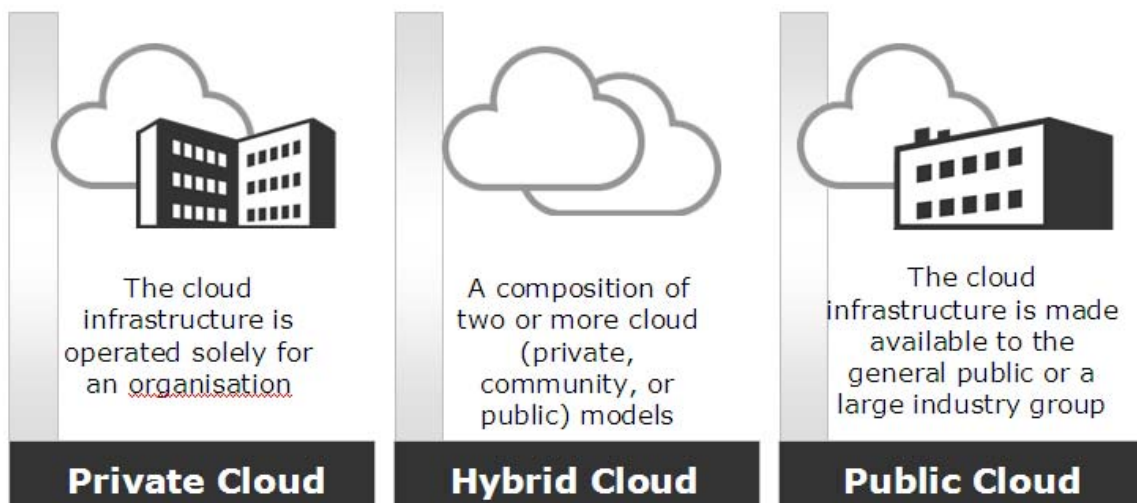


Cloud Services projected to grow at 5x the rate of current Enterprise IT spending

The shift towards cloud computing began with data centre virtualisation and the consolidation of server, storage, and network resources. The result was reduced redundancy, less equipment and freeing up of space, all achieved through measured planning of both architecture and process. According to John Chambers, Cisco's CEO: "Platform-based virtualisation with a unified fabric will drive the globalisation of IT resources - clients, servers, data centres, networks, and storage."

Cloud computing combines both external and internal cloud resources to meet the needs of an application system. That combination, which is totally under enterprise control, may change moment by moment, depending on user needs. Processes may run both internally and externally, using a central control point for workloads. With a unified management tool and a user-centric view, it allows IT to make the best decisions – in real time – about which resources to use.

Both "private" and "public" cloud computing are based on qualities such as self-service, pay-as-you-go charge-back, on-demand provisioning, and seemingly infinite scalability. The key is a **trusted architecture**. As a result, organisations can offer flexible computing without sacrificing security or control.



3.1 Defining the “cloud”

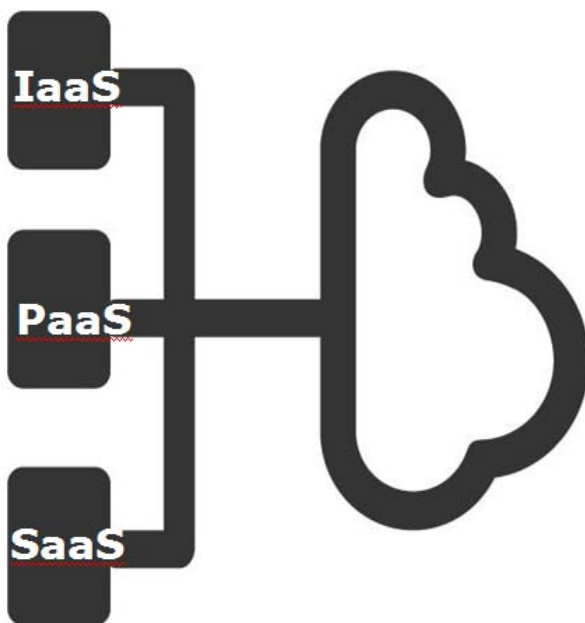
The [National Institute of Standards and Technology](#) or NIST defines various **cloud deployment** models:

“Cloud computing is still an evolving paradigm. Its definitions, use cases, underlying technologies, issues, risks, and benefits will be refined in a spirited debate by the public and private sectors.”

NIST (2009)

- **Private clouds** are operated solely for one organisation. They can be managed by the organisation itself or by a third party, and they can exist on-premises or off.
- **Public clouds** are open to the general public or a large industry group and are owned and managed by a cloud service provider.
- **Hybrid clouds** combine two or more clouds (private or public) that remain unique entities, but are bound together by technology that enables data and application portability.
- **Community clouds** have infrastructure that is shared by several organisations and supports a specific community. They can be managed by the organisations or a third party and can exist on-premises or off.

As well as cloud delivery model, different **service models** may be offered from the cloud:



- **Infrastructure as a Service (IaaS)** provides computing infrastructure resources, such as processing, storage, networks, and others. The user does not manage or control the infrastructure, but has control over operating systems, applications, and programming frameworks.
- **Platform as a Service (PaaS)** enables applications to be deployed onto the cloud infrastructure. The user does not manage or control the underlying infrastructure, but has control over the deployed applications.
- **Software as a Service (SaaS)** enables users to access applications running on a cloud infrastructure from various devices (generally through a web browser). The user does not manage or control the underlying cloud infrastructure or individual application capabilities other than limited user-specific settings.

3.2 Cloud Adoption trends

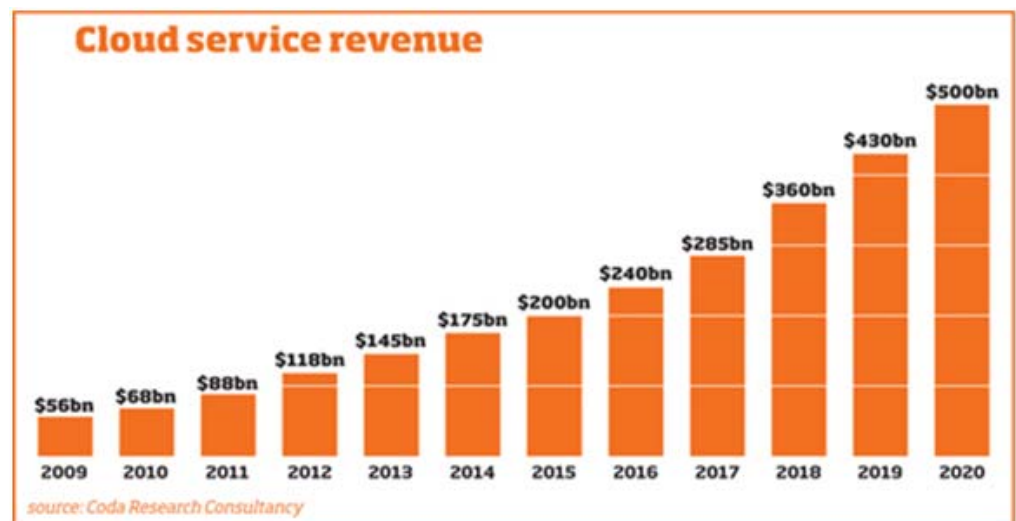
By 2020, more than one third of all digital information will either live or pass through the cloud.

IDC (2010)

In its June 2010 report on the state of cloud services, IDC predicted the revenue growth of cloud services from \$16 billion to \$55.5 billion, representing a compound annual growth rate (CAGR) of 27.4%. This rapid growth rate is over five times the projected rate of growth for traditional IT products (5%), further illustrating that **public IT cloud services are “crossing the chasm with modest revenue, but very fast growth.”**

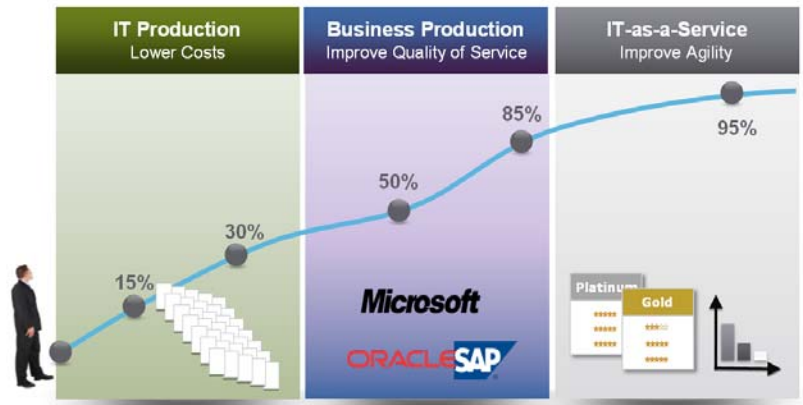
The IDC report also found:

- While spending on public IT cloud offerings in 2014 will reach 12% of the size of traditional IT product spending, it will be over 25% of the net-new growth in traditional IT products.
- Cloud applications dominated in 2009 (eg. Salesforce.com), but IDC forecasts that by 2014 a less skewed distribution of revenue will occur, with applications accounting for a little over one-third of market revenue and increased revenue shares in infrastructure and platform-as-a-service (PaaS) segments.
- Adoption growth will shift away from US dominance, with other regions/countries – notably Western Europe and Asia/Pacific – growing share rapidly.



3.3 The journey to the cloud

Typically, a company's journey to a private cloud environment involves three phases.



If phase 1 is simply the first step in a longer journey for your organisation, you will want to carve off resources to implement and validate key technologies and processes needed in phase 2.

Second, and almost equally important, phase 2 is about process change.

- **Phase 1: IT production.** Many organisations are already at this stage. The applications that IT owns are being virtualised, such as file and print servers, application development and test, as well as infrastructure management environments, but not including named business applications. This is generally considered low-risk and the goal is primarily to improve resource efficiency, eg. how many servers did we consolidate, how efficiently are we using storage, etc.
- **Phase 2: business production applications.** This includes the named applications and processes the company sees and depends on for day-to-day operations. This phase is more challenging and the stakes are much higher: service delivery, security, availability, recoverability, performance.

Phase 2 involves re-engineering the fundamental processes of how IT gets done. No advanced technology will do this automatically. When we're talking about significant process change, we're really talking about the organisational changes that support it. If you organise for success, the processes and technologies will follow.

Business users have to re-calibrate how to use the new capabilities enabled in Stage 3 to re-think their overall strategies and game plans.

- **Phase 3: delivering IT as a service.** This stage involves adopting an IaaS / PaaS / SaaS model for general use, as well as progressively consuming these services from external sources where it makes sense.

In phase 3, the role of good IT governance and the associated processes, becomes much more critical. When it's made far easier to consume IT, more IT will tend to be consumed. In some cases this is desirable (e.g. where it creates value for the business); in other cases it's a waste of valuable resources. Business users have to re-calibrate how to use the new capabilities enabled in phase 3 to re-think their overall strategies and game plans.

3.4 Benefits of the Cloud

Cloud computing offers benefits in virtually every aspect of IT, from business agility to operational efficiency.

Agility

Cloud accelerates your business by allowing you to transform ideas into marketable products and services with greater speed. Cloud can provide nearly limitless scalability and enable your business to grow without time and resource intensive IT build-outs. It enhances your agility, growth, and profitability with the ability to scale up (and down) as your business requires.

Simplification

Cloud transforms the economics of IT from capital-intensive to pay-as-you-go. Service level agreements guarantee the capabilities you need, when you need them. Costs are tiered and metered to accurately reflect your requirements and usage. Applications run more efficiently and sustainably with greater utilisation of the underlying infrastructure. It helps lower costs by using energy and resources more efficiently (capital and operational costs can be cut by over 50%).

Performance

Cloud brings powerful IT resources to everyone. Organisations of all sizes everywhere can access information technology resources that were previously out of reach. World-class applications and computing infrastructure become available to all without considerable up-front investment.

Reduced cost and Risk

Cloud can improve information management and reduce operating risks. Coupled with context-aware systems, cloud protects sensitive information through automated policy enforcement. It increases uptime and simplifies disaster recovery. With the ability to manage the infrastructure as a single system, cloud simplifies operations and management.

Agility: *increase infrastructure and hence business agility. Scale “on demand”.*

Simplification: *Less infrastructure to manage and support. Reduced space, cooling, cabling and power requirements.*

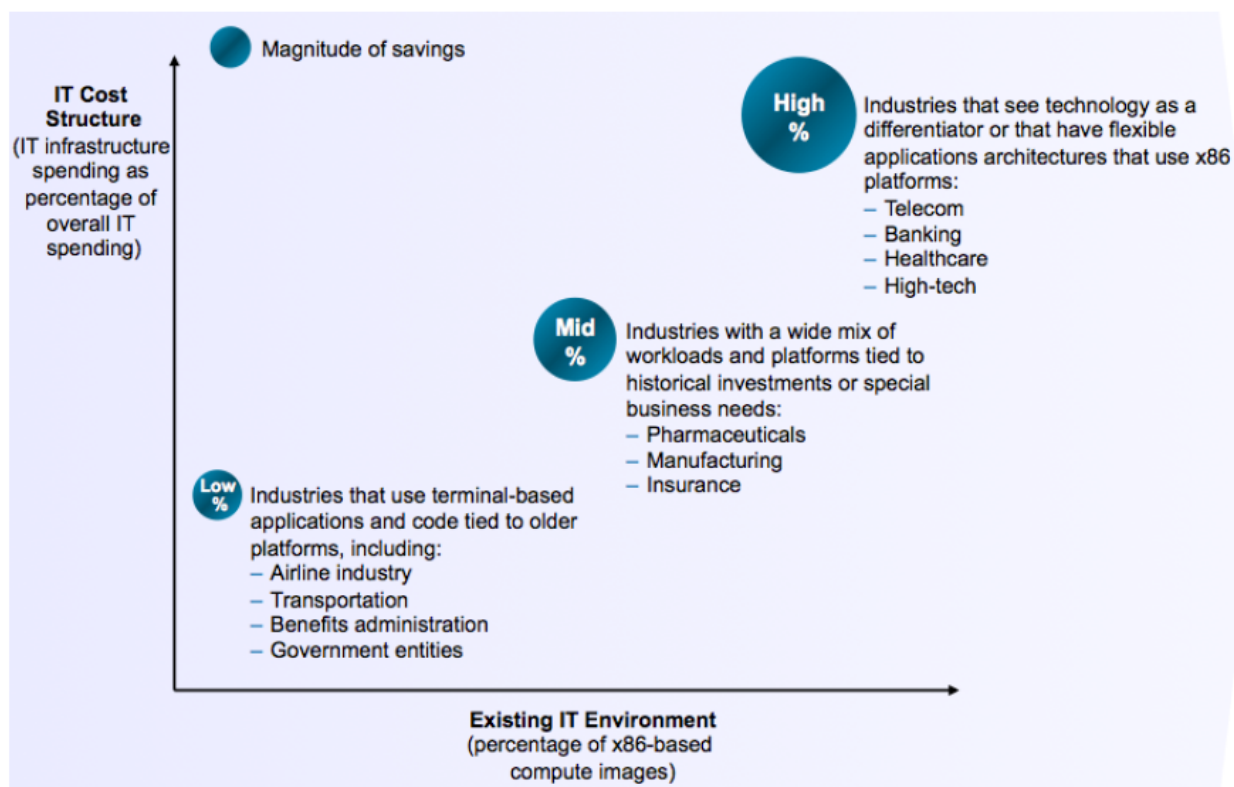
Performance: *Higher utilization and performance. More efficient management and automation.*

Reduced Cost and Risk: *Greater capital and operational expense savings.*

3.5 Is Cloud for You?

How much your organisation will benefit from implementing private cloud computing depends on your situation. The graph below shows two main factors that determine savings potential: the proportion of IT spending on infrastructure and the proportion of applications running on x86 platforms. The higher each proportion, the more your business can gain from private cloud computing.

Figure 1 Private Cloud Computing Savings Vary Across Industries



By offering different Data Centre delivery models and cloud consultancy services, we ensure the most appropriate “cloud” (on or off-premise) solution is designed for each customer based on the profile of your Data Centre applications and how you use technology to support your business.

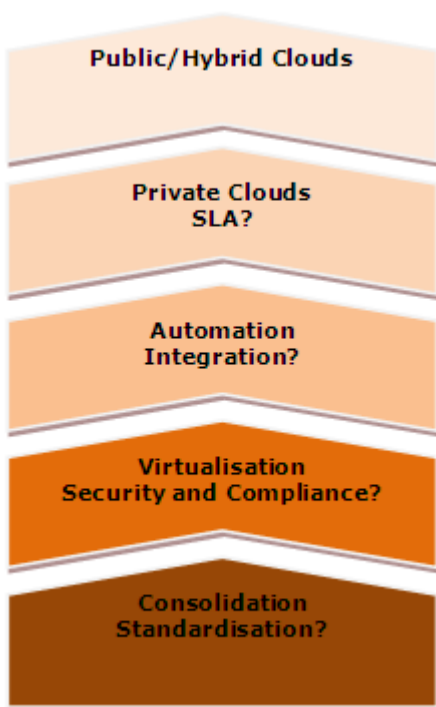
4. Technology Options

In essence, the decision about moving to a cloud-based Data Centre architecture is about **evolution versus transformation**. Each approach should be underpinned by an analysis of the four key factors: speed, risk, cost, and the potential impact on your organisation from the benefits realised.

There are essentially three approaches to the technology, referred to as Traditional, VCE and Vblock.

4.1 Traditional (bespoke) approach

This approach involves a number of sequential stages and involves interoperability testing of multiple vendor solutions. A typical progression is outlined below, and we have worked with many customers to develop a strategy based on this methodology.



Stage 1: Consolidate – you can achieve immediate Return on Investment by centralising resources, including servers and storage, and optimising the network using Wide Area Application Services (WAAS). Deploying Unified Fabric in the data centre significantly reduces complexity, cost and power requirements. Consolidation is critical because it gives back control of distributed resources to IT departments. It creates shared pools of standardised resources that can be rationalised and managed centrally.

Stage 2: Virtualise – at this stage, the data centre infrastructure has been transformed into a shared optimised resource with increased agility. This is achieved using VMware's vSphere, a cloud operating system designed to manage large collections of infrastructure, and Cisco's Nexus virtual network switches. Many IT departments are already using VMware to run multiple applications on a single physical server. According to analysts, the percentage of new servers running virtualisation as the primary boot option will approach 90% by 2012.

Stage 3: Unify and automate – the final stage unifies the infrastructure by integrating the compute, virtualisation and network platforms. This allows enterprises to move from managing underlying infrastructure to managing service levels based on what makes sense for the application user. The IT infrastructure undergoes a transformation. It becomes automated and critical IT processes are dynamic and controlled by trusted policies.

Key technology components of this architecture are Cisco's Unified Computing System (UCS) and EMC's Virtual Matrix Architecture. Unified Computing is a fully virtualised data centre composed of pools of computing, network, and storage resources. Services such as security and Layer 4 through 7 processing (for example, load balancing) are also fully virtualised and can be implemented whenever they are needed.

Linking disparate cloud computing infrastructures allows IT resources and capabilities, monitoring and management to be shared, much like power from a power grid. It also enables unified metering and billing, one-stop self-service provisioning, and the movement of application loads between clouds.

4.2 Opting for a VCE architecture

Choosing a Virtual Computing Environment (VCE) architecture significantly reduces risk and accelerates speed of deployment. At the same time, it allows the solution to be customised to meet your business and IT objectives. NetstarLogicalis leverages the VCE coalition to design data centres based on a reference architecture.

UBS conducts an annual, in-depth survey of 100 CIOs in larger firms and in a recent study they posed the following question about data centre transformation: *which company or alliance do you believe is best positioned to implement data centre transformation?*

"An astounding 48% of the responses said the VCE Alliance is best positioned to implement data centre transformation. By comparison, HP - representing a more traditional approach - came in at around 31%"

UBS CIO Survey (2010)

“Cloud computing requires the cooperation of multiple vendors to make the vision a reality and turn current virtualised environments into highly automated and dynamic data centres.”

ESG (Enterprise Strategy Group)

Almost half (48%) of the responses said VCE. In the US, it was even stronger: 57%. By comparison, HP – representing a more traditional approach – came in at around 31%.

The Virtual Computing Environment coalition is made up of VMware, Cisco and EMC. By combining their strengths, they are able to offer organisations of all sizes:

- an accelerated approach to data centre transformation,
- greater efficiencies,
- the promise of significant reductions in both capital and operating expenses.

As a result, organisations will no longer have to choose between best-of-breed technologies and end-to-end vendor accountability.

The Virtual Computing Environment coalition



What does VMware bring to the table?

VMware vSphere 4 - the industry's proven solution for data centre virtualisation. It transforms data centres into dramatically simplified cloud infrastructure. By doing this, it enables the next generation of flexible, reliable IT services. VMware also provides VMware View, bringing personalised virtual desktops to any device with all the benefits of centralised enterprise desktop management.

What does Cisco bring to the table? Unified Computing System (UCS) - this data centre platform accelerates delivery of new services through end-to-end provisioning and migration support. Cisco also brings Nexus 1000V - a software switch on a server that delivers services to virtual machines hosted on that server. It offers tight integration between server and network environments and helps ensure consistent, policy-based network capabilities to all servers in the data centre.

What does EMC bring to the table?

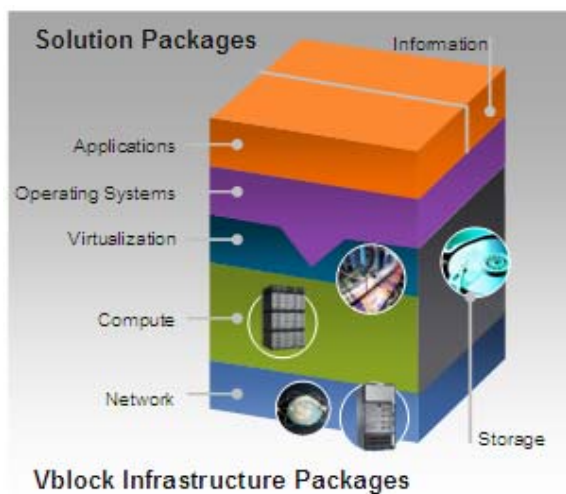
Intelligent storage, including EMC Symmetrix V-Max, high-end storage for the virtual data centre, EMC CLARiiON with virtualisation-aware software, and EMC Celerra multiprotocol networked storage. EMC also brings Ionix UIM for integrated element management and information security with RSA, the Security Division of EMC.

4.3 The Vblock approach



By leveraging the VCE coalition and Vblock, you can take a more aggressive approach to infrastructure integration and achieve a more immediate return on investment.

Vblock Infrastructure Packages are integrated IT offerings from the VCE coalition. They combine best-of-breed networking and management technologies with end-to-end vendor accountability – all pre-integrated into a whole new way of delivering IT. Rather than buying and assembling individual components, Vblock Infrastructure Packages are already validated, secure, de-risked and warranted. The roadmap includes a preconfigured infrastructure, which puts the benefits of private clouds within reach of small to medium-sized businesses. Vblock Infrastructure Packages enable customised solution packages to be created by the channel, partners, and ISVs.



Vblock Infrastructure Packages provide virtual blocks of functionality, with three different sizes and price-points. They completely virtualise your HW infrastructure (network, compute, storage, hypervisor, management), while you provide the existing O/S, application, database and data (back-up and restore) for current or new implementations.

The benefits of Vblock Infrastructure Packages include:

- A rapid deployment model
- Reduced total cost of ownership with integrated, tested, and validated solutions and reduced management and maintenance costs.
- A service level approach for predictable performance and reduced risk.
- Unified support to streamline and accelerate problem resolution.

The combination of the VCE coalition and Vblock accelerates your journey to pervasive virtualisation and private cloud computing while lowering risk and operating expenses.

What's in a Vblock?

- Architecture Details:
 - Enables incremental scaling with predictable performance, capability and facilities impact
 - Best of breed technologies
- **Compute:** Cisco UCS family
- **Network:** Cisco Nexus family, Cisco MDS 9000 series
- **Storage:** EMC Symmetrix V-Max or EMC Unified Storage (Celerra, CLARiiON)
- **Virtualisation:** VMware vSphere 4
- **Management:** Unified Infrastructure management framework

Anatomy of a Vblock

Vblock 2

3000 to 6000+ Virtual Machines

A high-end configuration that is completely extensible to meet the most demanding IT needs. Massive VMs in high density footprint.

- Completely extensible high-end configuration
- Designed for large-scale and green field virtualisation
- Cisco UCS, Nexus 1000v, Multilayer Directional Switches (MDS); EMC Symmetrix V-Max; VMware vSphere

Vblock 1

800 to 3000 Virtual Machines

A mid-sized configuration to deliver a broad range of IT capabilities to organisations of all sizes. Large VMS in a high density footprint.

- Mid-sized configuration
- Designed for consolidation and optimisation initiatives
- Cisco's UCS, Nexus 1000v, MDS; EMC CLARiiON CX-4.; VMware vSphere

Vblock 0

300 to 800 Virtual Machines

An entry-level configuration to meet the IT needs of small data centres. Also suited to a test/development platform.

- Brings benefits of private clouds to medium-sized businesses, small data centres
- Suitable for test/development
- Cisco UCS and Nexus 1000v; EMC Unified Storage; VMware vSphere

5. Consumption options

We believe it's important to offer choice in how we provide data centre solutions. While many customers prefer the traditional option of an in-house infrastructure, we are seeing increasing interest in a managed or hosted/cloud option.

As Chuck Hollis, EMC's CTO stated in his blog, *"You have a roster of 30 to 300 applications in an IT organisation and it is pretty clear which ones need to run in the data centre and which ones could run somewhere else or some combination"*.

There is a sophisticated economic discussion on the financial benefits of cloud computing on Cloudomics.com.

Fundamentally, *"a pay-per-use" solution obviously makes sense if the unit cost of cloud services is lower than dedicated, owned capacity. And, in many cases, clouds provide this cost advantage."*

The greater the peaks in usage, the more sense it makes to choose a cloud-based solution. An in-house data centre will need to be built with the capacity to handle peak loads, even if this is rarely required.

The classic challenges stand in the way of a full migration to cloud, including proving how to secure, manage, trust, govern, and fully exploit the benefits that cloud computing can offer.

NetstarLogicalis starts by working with you to develop both the business case and technical/operational strategy, including:

- Consolidating services to a private cloud
- Determining what services would fit a hosted or cloud strategy
- Building a business and ROI model for in-house versus managed versus cloud delivery.

"Wouldn't it be great for a partner to go to a prospective client and say, 'Here is what I can do for you: I will give you a choice - you can consume it the traditional way by buying a bunch of technology and putting it on the floor or I will give you a by-the-drink option to consume it dynamically and, by the way, I will let you change your mind anytime whether you want to do this as a service or traditional way.'

Customers need both."

Chuck Hollis, EMC

6. Enabling Technologies

A number of technologies have converged in the data centre to deliver the full benefits of cloud computing. Individually, they offer significant benefits around increased operational efficiency and reduced cost. Collectively, they enable the transformation that delivers a new level of business agility.

6.1 Network

An open, intelligent network platform brings the transparency and visibility needed for automation and dynamic provisioning across the data centre infrastructure. Cisco works with industry-leading partners to deliver a solution that integrates the compute/storage, virtualisation and network platforms. A seamless, integrated architecture simplifies setup, increases business metrics, and enables just-in-time resource provisioning.

Unified Fabric consolidates the multiple data centre networks, reducing cabling as well as the costs related to interfaces, rack space, upstream switches, and power and cooling.

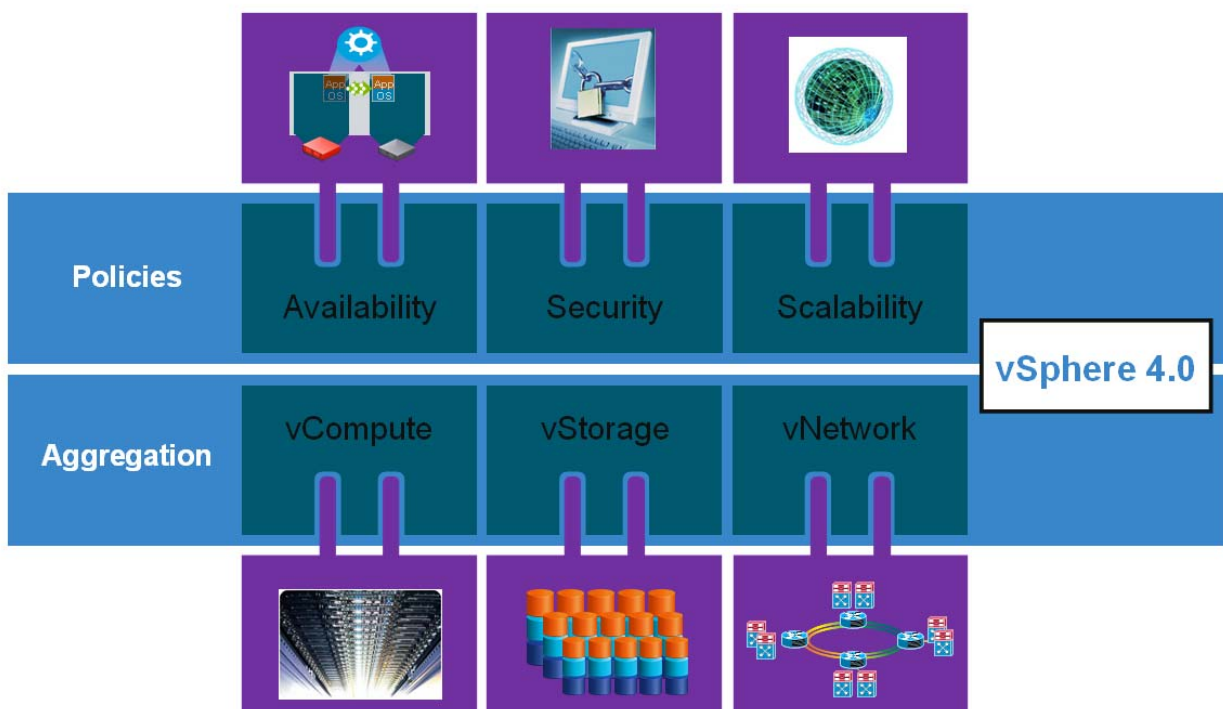


Cisco Nexus switches support the extensive bandwidth requirements that result from aggregating servers when you consolidate or virtualise your data center network. By helping to enable scalable server virtualisation, the switches also help reduce power and cooling costs, and support highly available data centre core and server access.

At the heart of the platform is a new, virtualised operating system, NX OS. As with server virtualisation, NX OS can turn a Nexus switch into multiple logical switches running totally different processes. For example, one logical switch could handle storage and be managed by storage specialists, while the other links servers and is run by a different staff.

6.2 Compute

VMware vSphere is a cloud operating system. This is a new category of software specifically designed to holistically manage large collections of infrastructure – CPUs, storage, networking – as a seamless, flexible and dynamic operating environment. Analogous to the operating system that manages the complexity of an individual machine, the cloud operating system manages the complexity of a data centre.



The cloud OS consists of infrastructure services that transform server, storage and network hardware into a shared resource, and built-in application services that are available to all applications that run on it. Equally important for an OS is the vibrant ecosystem that builds and complements it in providing plug and play services to users.

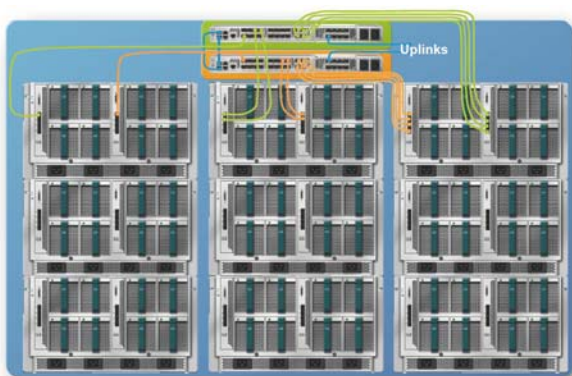
Categories of functionality provided by vSphere that abstract and aggregate server, storage and network hardware include:

- **vCompute:** virtualizes server resources and aggregates them into logical pools that can precisely be allocated to applications
- **vStorage:** abstracts storage resources from the complexity of underlying hardware systems to enable the most efficient utilization of storage capacity in virtualized environments
- **vNetwork:** enables optimal administration and management of networking in virtual environments (and supports distributed virtual switches such as the Cisco Nexus 1000V).

Cisco's Unified Computing System is a next-generation data centre platform that provides a new way of delivering computing resources:

- Unites computing, network, storage access, and virtualisation into a cohesive system designed to reduce cost and increase business agility.
- Integrates a low-latency, lossless 10 Gb Ethernet unified network fabric with enterprise-class, x86-architecture servers

Cisco's UCS is designed to reduce total cost of ownership (TCO) at the platform, site, and organisational levels and increase IT staff productivity and business agility. Whether the system has 1 server or 320 servers with thousands of virtual machines, all resources participate in a unified management domain.



Representing a completely new way of addressing server or "compute" requirements, UCS achieves greater efficiencies through a number of technology differentiators:

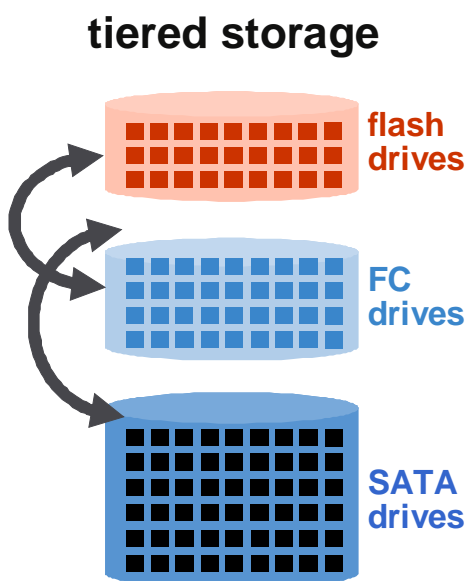
- Management software on a per-rack bases, rather than on each server (as with traditional server vendors)
- Hardware state abstraction through Service Profiles, which means physical servers become interchangeable hardware components
- Unified Fabric integrates a low-latency, lossless 10Gb Ethernet network fabric with enterprise-class, x86-architecture servers
- Virtualised Adaptors support both single OS and VM-based deployments
- Extended Memory Blades (up to 386GB per blade) gives a significant cost saving for memory bound applications

6.3 Storage

Unified Storage is a relatively new development in storage. Simply put, it means that a single device can support NAS, iSCSI and FC storage protocols simultaneously, consolidating file-based and block-based access. This is particularly popular in small-to-mid-sized deployments where you'd like to have some flexibility in how you attach servers to storage. Unified storage reduces hardware requirements (eliminating the need for separate storage platforms) and reduces management overhead.

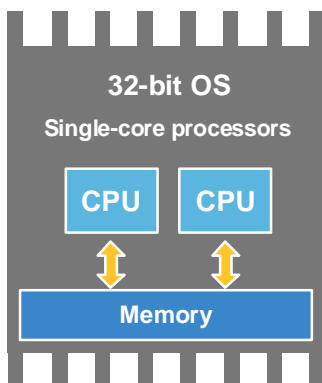
Other key innovations in storage that are driving efficiency include:

- **FAST (Fully Automated Storage Tiering)** enables dynamic, non-disruptive movement of data from one tier of storage (EFD, FC, SATA) to another. This automation of movement and placement of data based on changing needs ensures investment protection and scalability.



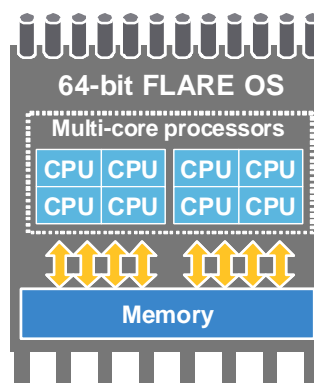
- **Flash** used as cache provides significantly faster performance than disk, at a much lower price than DRAM. Storage efficiency mechanisms can be grouped into four categories:
- **Block Data Compression Block** compresses inactive data to reclaim valuable storage capacity— data footprints can be reduced by up to 50%. A common use case would be compressing inactive data once EMC FAST software has moved that data to the most cost-effective storage tier.

Other Storage



- Architecture limits scale and performance
- Multiple arrays required

CLARiiON CX4



2.5x more processor power

2x more cache memory

2x more disk drives

7. Why VCE and NetstarLogicalis?

7.1 VCE

The Virtual Computing Environment (VCE) coalition, formed jointly by Cisco and EMC with VMware, represents an unprecedented level of collaboration in development, services, and partner enablement. The objective is to minimise risk for an organisation during its infrastructure virtualisation journey to private cloud implementation.

The VCE coalition offers comprehensive professional and technical support services to provide a smooth, unified, end-to-end customer and partner experience. The VCE coalition's professional services, jointly developed and delivered, will help customers understand how to maximise value and speed time to virtualisation and private cloud solutions. These offers include executive and architecture advisory services, strategy services, and design and implementation services.

“Solution providers bring tremendous value to virtualisation initiatives—applying their knowledge of server, software, storage, and networking technologies to act as a single source of information for the customer. They can help IT focus on key initiatives, from planning and design, to implementation, to leveraging virtualisation compatibilities with the customer’s current systems and infrastructure, to helping them work through the complexities of new deployments.”

ESG

7.2 NetstarLogicalis

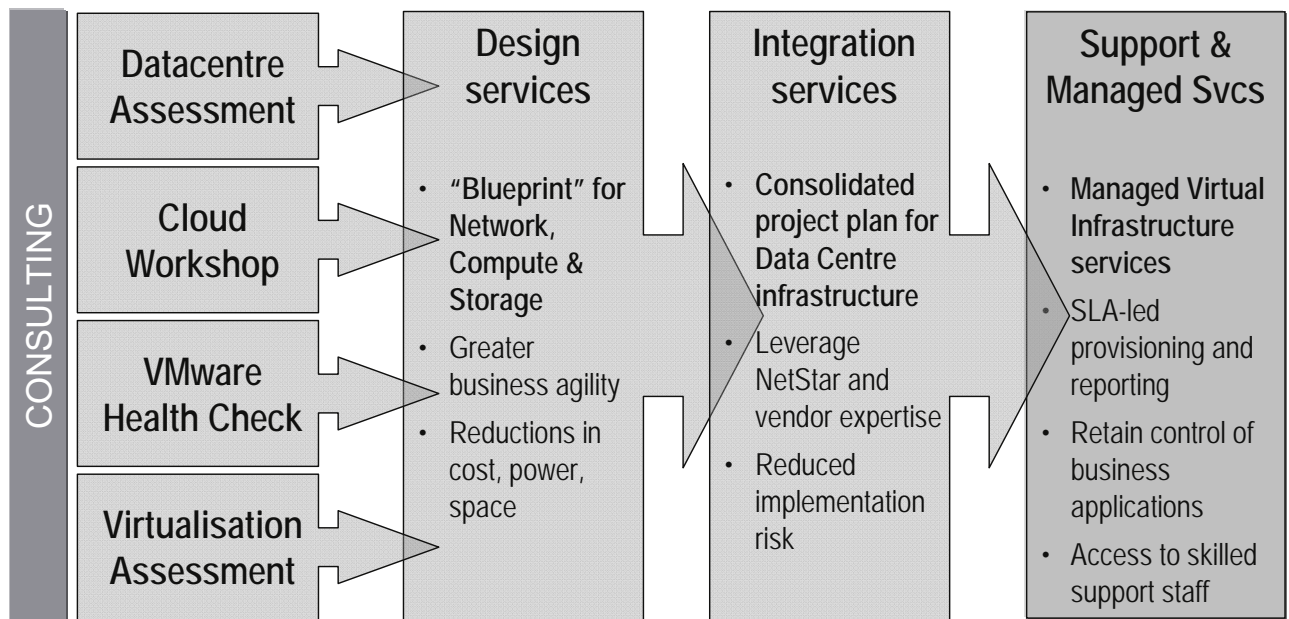
NetstarLogicalis takes a “life-cycle” approach when we provide solutions around data centre infrastructure, and work closely with customers from the design and planning stages through to implementation and support. **Our methodology is based on the belief that the network, compute and storage platforms are rapidly converging**, and customers need a holistic view and a consolidated architecture to address their data centre requirements.

As well as being a VCE Coalition partner, NetstarLogicalis was the first partner in Australia to be Vblock certified.

We can help you realise the full potential of a virtualised, automated, efficient, and effective data centre for your organisation. We understand that your IT environment must operate at peak performance to keep your business running optimally.

7.3 Data Centre Services

While we can and do engage with customers at different stages of their data centre deployments, our value is in partnering with you to design, build and support the most appropriate data centre strategy for your current and anticipated business requirements.



Consulting

Many data centres have become either obsolete or are currently operating inefficiently due to the extreme technological advances of computing equipment and an aging support infrastructure not designed for today's IT environment. We work with you to assess your current data centre performance and requirements, and identify the business and IT goals that need to be addressed. The outcome may be a complete data centre refresh or longer term upgrade strategy.

Our assessment services include:

- **Data Centre Assessment.** An objective review of your environment in terms of its ability to perform and support your mission-critical applications, Comprehensive reports includes comparisons to industry best-practice, current risk assessment rating and recommendations.

Successful deployments that continue to scale at peak efficiency are those that put optimisation ahead of virtualisation in the planning process. Careful consideration regarding how to optimise a virtualised deployment produces the greatest return on investment."

ESG



- **Cloud Computing Discovery Workshop.** Uncovers the real strategic, technical and financial possibilities of cloud computing in your own environment. We analyse the current infrastructure to determine the current state of server consolidation, virtualisation and optimisation levels and provide recommendations and "next-steps".
- **Virtualisation Assessment.** Analyses your server infrastructure and quantifies the CapEx and OpEx savings you will achieve through server virtualisation and consolidation. Delivers a detailed report in an easily understood format.
- **VMware Health Check.** Ensures that your virtual infrastructure follows best practices and employs the latest in virtualisation solutions with recommendations for getting the greatest ROI from your VMware environment.

Design

We can develop designs for all aspects of the data centre, from a "roadmap" that supports cloud computing strategy to detailed designs for upgrading specific components. Our designs reflect reference architectures, and are never undertaken in isolation of the "big picture" or overall data centre objectives. Areas we address in designing a data centre solution include:

- **Virtualisation.** Server consolidation and virtualisation (including VMware licensing and upgrades) and desktop virtualisation, as well as Cisco UCS.
- **Enterprise storage.** Scalable and resilient storage infrastructure to support a fully virtualised data centre.
- **Back-up / Recovery.** Next generation backup technology and management solutions, including disk, tape and data de-duplication optimised for a virtualized environment.
- **Networking.** Consolidation and virtualisation of the network layer, with Unified Fabric and application acceleration (WAAS).
- **Power & Cooling.** We always take into account the need to reduce energy usage and space/cooling requirements.



CASE STUDY: GPT

- Virtualised all business apps, including Sharepoint & SAP
- Reduced 203 servers to 25
- Implemented EMC CLARiiON SAN

“It was vital that we worked with a partner that we trusted to deliver on our VCE strategy. We chose NetstarLogicalis to work with my team on design and implementation. As you can imagine with a major SAP implementation running it was vital to us that our partners met their objectives and I’m happy to say that was certainly the case with NetstarLogicalis.”

Ross Miller, CIO

Integration

NetstarLogicalis has expertise and accreditation with VMware, Cisco and EMC across all data centre technologies. Just as important as our technology expertise is our holistic approach. Our engineers are cross-skilled in the compute, network and storage disciplines, so we are able to significantly reduce the risks of integrating and implementing new data centre technologies by understanding the impacts of changes made in the data centre.

Networking infrastructure is a major consideration due to the simple fact that more workloads are sharing the same I/O connections as 5, 10, and potentially 20+ virtual machines may be running on a single physical server. Before undertaking any server or storage virtualisation project, we assess the impact on the network and recommend any required upgrades.

Similarly, greater server density and network virtualisation also places more pressure on back-up windows and the ability to perform a recovery within an acceptable timeframe.

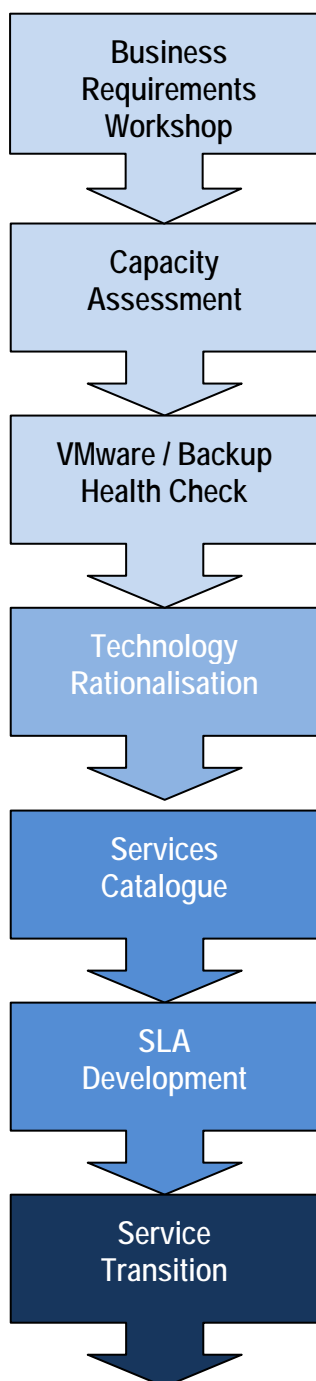
Our data centre project capabilities include:

- **Procurement.** Supply of hardware at competitive prices.
- **Staging.** We can stage or undertake interoperability testing where required at our premises, or by working with our vendor-partners for more complex designs (our use of validated designs greatly reduces interoperability issues.)
- **Implementation.** On-site implementation and integration services – including accreditation for Cisco UCS, Vblock, EMC storage and VMware.
- **Project management.** An experienced project manager ensures all aspects of delivery are coordinated and on-time and budget
- **NetGuard.** Our “NetGuard” service gives you the ability to purchase a “block” of hours at an agreed rate, and use these as required to access skilled data centre engineering resources.

Support and Management

We understand the importance of an uptime for any data centre. Our 24x7 Global Support Centre provide a single phone number for all support issues, including maintenance and remote monitoring and management.

- **Maintenance.** All our maintenance services are vendor-backed, ensuring the best spares coverage and access to vendor's help desks for escalation of any issues.
- **Management.** We have developed our own infrastructure monitoring application, nVisage, which is delivered via a Software-as-a-Service approach. This means we can provide visibility into all aspects of the data centre through a single application, and take full responsibility for resolving any issues.



Managed Services

As well as providing management of your data centre, we can also provide a managed service that takes responsibility for all operational aspects of your VMware or back-up environment. The process starts with assessing business requirements and the current infrastructure, before we develop a service catalogue backed by a Service Levels Agreement.

- **Managed Backup.** Outsourcing routine data backup and recovery processes allows your team to focus on core service delivery. We combine onsite and remote service delivery with 24x7 monitoring, and provide regular reporting on the backup process.
- **Managed Virtual Infrastructure.** A complete solution to virtualising server infrastructure: we manage your VMware environment for you based on measurable SLAs designed to ensure that individual services within the services catalogue are delivered according to your business requirements. The services catalogue is unique to your organisation and designed to deliver virtual infrastructure technologies and services in a way that is complementary to your culture and technical capabilities.

8. More info

There are many resources on the Web. A Google search yields just under 25 million results, which is a lot of reading. The “recommended reading” below are articles or blogs that have been recommended by VMware, Cisco and EMC as being particularly relevant to a business decision-maker considering a strategy to cloud computing.



Chuck's Blog

An EMC insider's perspective on information, technology and customer challenges.

<http://chucksblog.emc.com/>



Cloud: Powered by the Network

Cisco offers its thoughts on where it believes Cloud is going from a business perspective.

http://www.cisco.com/en/US/solutions/collateral/ns341/ns991/white_paper_c11-609220.pdf



Cloudonomics

“Mathematical Proof of the Inevitability of Cloud Computing” – Joe Weinman's Blog on How Cloud Computing Creates Value

<http://cloudonomics.wordpress.com/>



Forrester survey

The recession gave CIOs the opportunity to consider new models for IT. But what new models and what parts of IT are they considering?

<http://mis-asia.com/news/articles/apocalypse-52-per-cent-of-cios-plan-to-blow-up-it-groups>

See Forrester Web site for full report – USD\$499