exponential-e
APPLIED INNOVATION

WHITE PAPER

SD-CLOUD:

Your Cloud is only as good as your Network.

And your business is only as good as your Cloud.

The evolution of Exponential-e's market leading Cloud solutions continues with our smart, fully automated SD-Cloud solution. This white paper outlines why implementing it matters for your organisation.

June 2017

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In this White Paper - Executive Summary Executive Summary

Britain operates in a digital economy. Throughout the country, disruptive technology is entwined in the day- to-day operation of thousands of businesses. It is used to drive productivity, improve the quality of products and services, reduce costs, improve customer relationships and experiences and most importantly, out-pace the competition.

Despite the appetite to implement such technologies, many organisations lack access to state-of-the-art, agile infrastructure, that is vital in running it. This means they face a hindrance in implementing such technologies from the get-go and in turn, digital transformation never quite gets off the ground.

But this is changing.

This white paper outlines the benefits and capabilities of Exponential-e's leading-edge Software-Defined Cloud (SD-Cloud) infrastructure. Exponential-e believes that in modern business the Cloud is central to on-going success. It also believes that any Cloud solution worth its salt is only as good as the Network that underpins it - a philosophy launched by the firm in 2013.

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The advent of SD-Cloud is the next phase in the evolution of Exponential-e's modern, digital Network based Cloud offering. The accumulation of three years R&D and based on the company's wholly owned VPLS Layer 2 Network, this architecture has been designed to enable and automate the digital applications and innovations that businesses need, in order to compete in a disruptive world.

Introduction

Technology has become the lifeblood of the British economy. Hundreds of thousands of organisations rely on it in one form or another to carry out the daily processes that generate profits. As a result, ongoing digital transformation - and the role Cloud technology plays in such a shift - has become a major goal for businesses looking to secure new growth opportunities.

The modern CTO has more Cloud-based technologies available to them than ever before, from software applications and DevOps platforms to highly-adaptable and smart, 'elastic compute and storage' solutions. Today's businesses also have hundreds of business-critical applications that run simultaneously over their Networks. Such solutions are increasingly outsourced to Cloud providers, such as Exponential-e, allowing businesses to focus on delivering their core products and solutions.

However, as the reliance on technology continues to grow, Cloud solutions, how they operate, and how they connect are reaching a critical point.

In the early adoption phase of Cloud computing, between 2011 and 2016, most organisations connected to each Cloud space in a traditional hub-and-spoke type Network configuration. This approach created an environment where each Cloud-connect was isolated from the other. While this approach did the job, it had some major pitfalls-specifically the lack of transparency, versatility and flexibility required across all of a company's Cloud connections and digital assets.

The main reason for this is that most of the 50-year-old MPLS Networks that are used to run Cloud technologies have been, and continue to be 'sweated' by service providers. It's important to remember that this is infrastructure originally designed to carry voice telephony. While they have worked well in the legacy environments of data centre-branch architectures, they aren't fit-for-purpose in today's fast-moving multi-Cloud and software-as-as-service (SaaS) driven business environments.

This is where Exponential-e's SD-Cloud changes the game completely

Exponential-e has always prided ourselves on bringing truly innovative solutions to market, long before any of our competitors. We have led the way in the development of British Cloud solutions. In 2013, we launched the mantra that 'Your Cloud is only as good as your Network'. It's something that we hold close to everything we do, for every client, every day of the year.

SD-Cloud is the latest instalment in a growing line of state-of-the-art Cloud solutions.

Built on our modern, true layer 2 VPLS Network architecture, it applies software definition all the way from a user's device to the datacentre, travelling over whatever private, public, or hybrid Cloud arrangements an organisation has in place.

It provides IT managers with a single control device, which can be used to combine all their Clouds and services into one homogenous system - in effect, a federated Cloud. This allows for boundary-less automation across public and private Cloud, data centres and the corporate WAN, enabling administrators to control the service levels of critical applications in exactly the way the business demands.

In practice, this means organisations can:

- **Optimise their applications' performance**, thanks to intelligent and application-aware routing that identifies traffic data and steers it according to quality of service (QoS) over their chosen access method. Policy-driven automation, simplified deployment and interoperability eases Network and Cloud administration.
- **Scale and adjust their Networks on demand.** Organisations can use back-up capacity in an active-active mode and increase or decrease resources allocated to each application at the touch of a button and not at the end of a six-month provisioning process.
- **Frictionless transition to the Cloud.** Thanks to our true layer 2 VPLS Network, customers using our SD-Cloud solution are able to seamlessly transfer data from existing servers to our Cloud, as and when they wish. Its ground-breaking automation capabilities enable this to be done, with no IP address changes. It also enables certain clusters of data to be moved at a single time, removing the risks associated with a 'big bang' approach, when all data is migrated at once.
- **Deploy multiple access technologies** to ensure optimal, cost-effective and scalable connectivity wherever it is required.
- **Centrally assign, manage, secure and control all Network traffic.** Using a Cloud management portal that enables central, plug-and-play controls allows organisations to set up new services, branches and Networks in hours, not days.
- **Remove barriers** for seamless and secure hybrid connectivity to a number of critical services including Cloud, WAN, SaaS among others. With an underlying, homogenous VPLS Network, organisations can also enhance existing connectivity.

SD-Cloud is the state-of-the-art, integrated Cloud-Network service delivery platform businesses need. Its flexibility and versatility provides them with a truly agile Cloud infrastructure that can handle the most modern of applications.

Its leading-edge architecture delivers much needed transparency across platforms, geographies, security, compliance and drag-and-drop functionality. It ports simplicity at light-speed with terabit bandwidth capabilities. Because of the intelligent, autonomous nature of SD-Cloud and its integration with SD-WAN, it means that it can dynamically optimise connectivity of Cloud applications, regardless of whether they are IaaS, SaaS or any other type of branch location.

SD-Cloud is the agile and frictionless tech-space environment thousands of organisations have been looking for to help them keep pace and evolve in today's digital economy.

The Network and the Cloud

One of the biggest changes to the corporate Network over the past decade has been the arrival and widespread acceptance of Cloud-enabled technologies.

The growth in Cloud deployments is intimately connected to the growth in data volumes, velocity and variety from which businesses increasingly derive their value and competitive positioning. However, talking about the Cloud as a single entity is misleading.

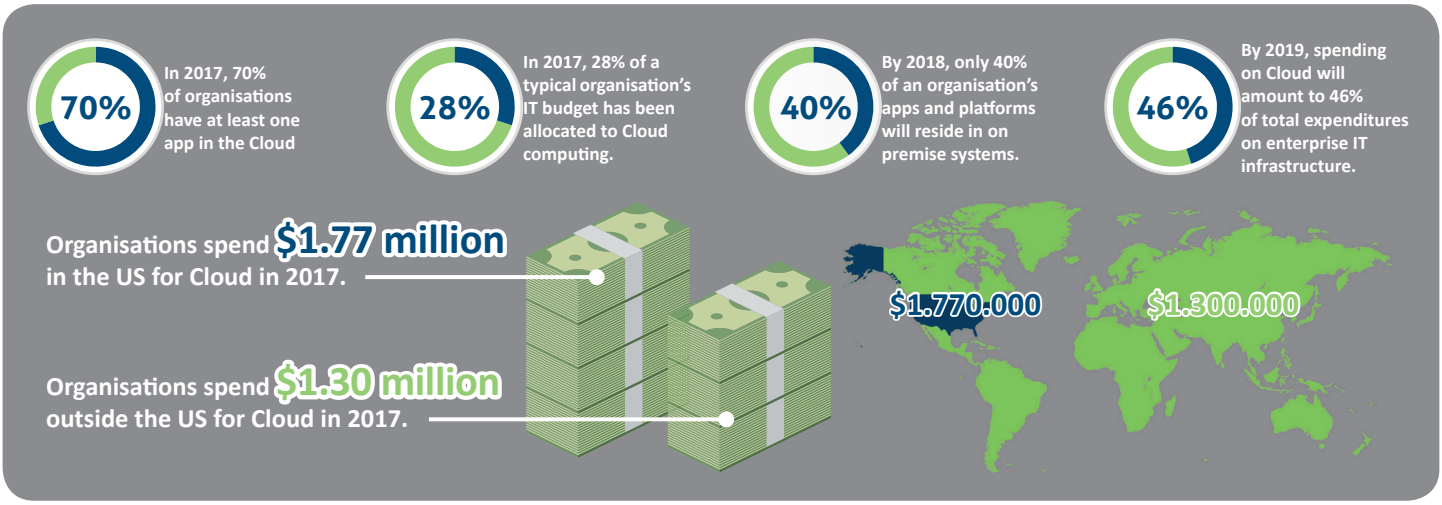
Most organisations rely on several Clouds at the same time: 62% are using private Cloud; 60% are using public Cloud; and 26% are using hybrid Clouds . According to RightScale's 2017 State of the Cloud Report, Cloud users on average run applications in four Clouds and are experimenting with a further four.

Common business services like Google Docs, Microsoft Office 365 or Dropbox are made available on a Cloud basis. Popular enterprise applications are increasingly delivered via software-as-a-service (SaaS) models. Private and shared data centres are another form of Cloud - as, of course, are those run by Amazon Web Services and Microsoft Azure, the dominant players in the public Cloud space.

It is also not helpful to think of the Cloud as an ephemeral thing floating free in space. Storing applications, content, and computational power on an external server, and accessing it through a wired or wireless connection, means the Cloud is an intrinsic part of the WAN. And in its multiple forms and services it has become equally complex.

Cloud has become so central to business success, and so intertwined with the Network that we can draw two clear conclusions:

1. Your business is only as good as your Cloud
2. Your Cloud is only as good as your Network



Same goals - different technology

The underlying IT infrastructure may have changed, but the core principle remains the same: seamlessly connecting users to the tools (applications) and sources of value (content) they need in order to create a high-performace organisation.

But complexity means that aligning the IT infrastructure with business goals has never been harder. In many ways, IT has become a victim of its own success: internal and external users expect instant access and instant gratification. There's no room for latency, jitter, or loss of service. Waiting for a slow connection, or registering multiple times is unacceptable.

IT managers now need a number of disparate tools to manage various applications, in various locations, with various access policies and requirements.

Responsiveness is key: they need to be able to manage remote and mobile working, BYOD and access policies, security, compliance and audit issues, for example, without months of pre-planning. And they need to ensure absolutely no loss of performance, while keeping control of a declining IT and infrastructure budget - often in situations where basic maintenance is absorbing significantly more than its fair share of company money.

From hardware to software

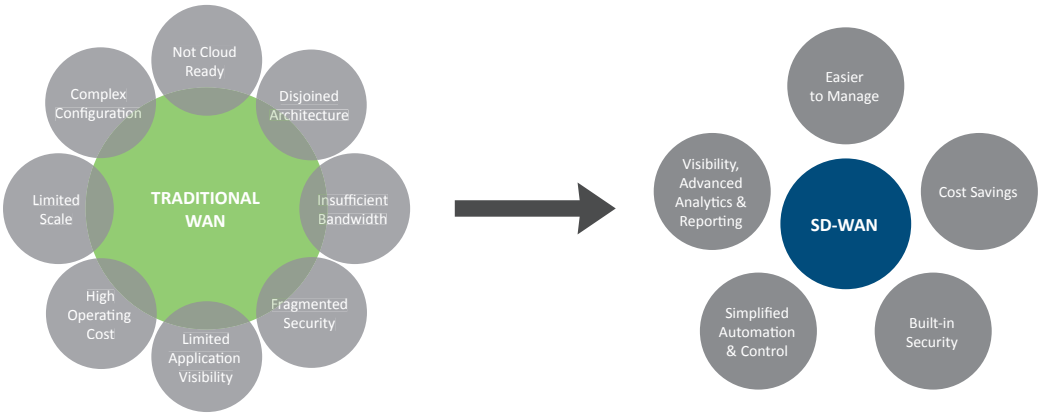
Addressing these problems is not just a matter of more hardware that has to be faster and much better than what has existed before. It's also about software - and with it a degree of virtualisation. Enter the software-defined Network (SDN).

In a Software-Defined-Network, the control of data traffic is managed by programmable software and is no longer dependent on forwarding hardware such as routers and switches in the Network's nodes. Administrators can use a central control platform to regulate the transfer of data and to deliver services to wherever they are needed in the Network, regardless of the specific devices, server or other hardware components.

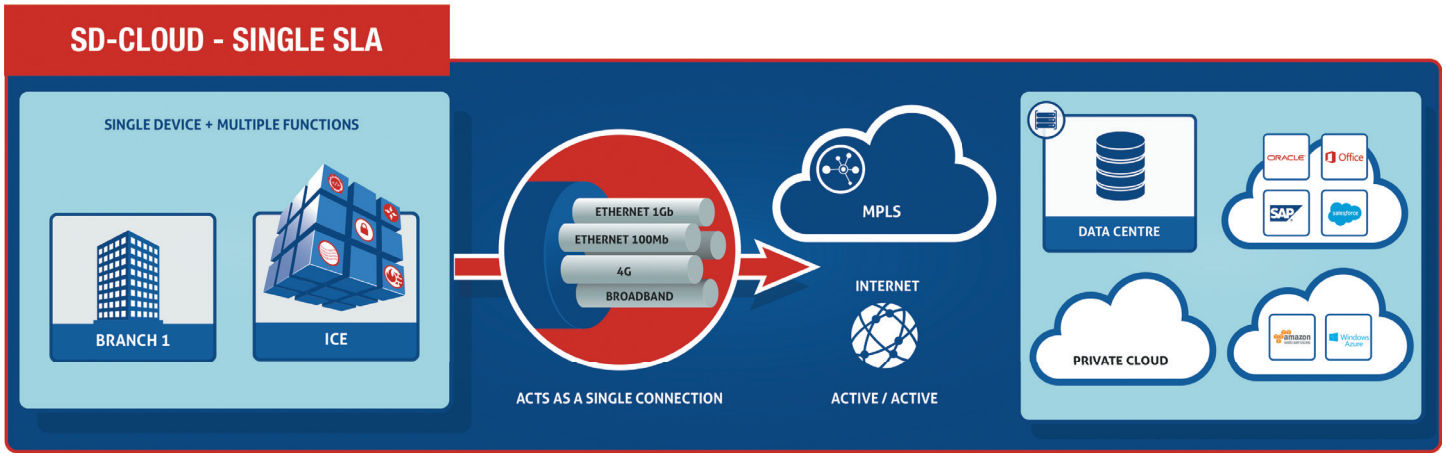
According to Gartner, SD-WAN has four key characteristics:

1. It supports multiple connections types: i.e. MPLS, internet, and LTE (4G).
2. It performs dynamic path selection to allow for load-sharing across the WAN connection.
3. It is easy to set up as home WiFi, with a simple interface for managing the WAN, and zero-touch provisioning at individual sites.
4. It supports VPNs and other third-party services, such as WAN optimisation controllers, firewalls, and web gateways.

Whereas SDN was originally for internal data centres at a campus or an organisation's main headquarters, SD-WAN applies the same, software-defined concepts to the WAN. This allows organisations to centrally design, assign and manage application-aware policies and to secure and control all Network traffic across all sites. It creates an end-to-end solution that simplifies the way in which WAN connectivity, Network functions and applications are purchased, provisioned and managed.



Software-defined Cloud (SD-CLOUD) is the next logical extension of this concept. It applies software definition all the way from the user's device to the datacentre and whatever private, public, or hybrid Cloud arrangements the organisation has in place.



With SD-CLOUD, a single control device enables organisations to combine all their Clouds and services into one homogenous system - in effect, a federated Cloud. This allows for boundary-less automation across public and private Cloud, data centres and the corporate WAN, enabling administrators to control the service levels of critical applications in exactly the way the business demands. It also allows data to flow in accordance with pre-set and programmable policies, while ensuring available bandwidth is optimised at every stage to create a more cost-effective solution.

The Exponential-e SD-Cloud at a glance

A secured, Cloud-enabled and application-optimised WAN that offers:

- Boundary-less automation across public and private Cloud, data centres and the corporate WANs.
- End-to-end security thanks to an intelligent Network that integrates with security policies for apps and virtual machines.
- Easy-to-use portal enabling instantaneous Network changes across multiple platforms.
- End-to-end orchestration and automation.
- Optimal routing capability and streamlined management processes.
- Seamless performance management.

Example use cases

There are plenty of scenarios in which SD-Cloud can help IT managers, CFOs and COOs, and even CEOs. For example:

1: Adopting Software-as-a-Service

The organisation has decided to implement Salesforce and Splunk, both SaaS-based applications, instead of its in-house CRM system. In this case the IT team has to manage these new services, to ensure the relevant data is prioritised and scalable according to both location and day-to-day business needs. This means:

- Additional internet bandwidth is required.
- Changes to Network routing configurations.
- New Network management tools are needed.
- Staff must be trained to manage the new topology.

However, with SD-Cloud making it possible to implement instant changes, the IT team are better able to deliver on these new business objectives, while saving time and money. SD-Cloud makes it possible to use all available bandwidth to run new and existing services, ensure all business-critical applications are prioritised over the Network and into the public and private Cloud, and ensure that end users have the best possible experience. As an added bonus, improved analytics and reporting helps IT managers demonstrate the value of the IT team. The result is improved - and provable - efficiency within IT and the wider business.

2. Managing IT budgets in a changing landscape

The company needs to reduce its operational and IT budget while increasing performance and employing its assets more efficiently. However:

- Adding Internet of Things capability to the organisation has forced a year-on-year increase in bandwidth
- IT Staff Costs have increased thanks to multiple complex Network management platforms.
- Business departments are blaming system performance for the lack of productivity.

The organisation therefore needs reliable, cost-effective tools that can increase profitability by reducing expenditure and improving productivity.

In this case, SD-Cloud can help maximise the output from current infrastructure, and so reduce the need to invest in additional services. By simplifying IT management, the organisation can also improve its business investment planning. At the same time, analytics and data-driven insights from in-depth IT reporting enable the business to identify and rectify productivity slumps and profitability sinks.

For this organisation, the result is reduced operational overheads, better business continuity, savings to both OpEx and CapEx, improved lead-to-cash - and greater business agility now and in the future.

3: Responding to rapid changes in the market

The board has decided that it needs to move the business ahead of its competitors with new services and products, but without overstretching its finances or risking its underlying services. Unfortunately, this is proving to be a significant challenge because:

- Internal systems and infrastructure that the organisation depends on are clunky and out of date.
- IT teams are unable to serve internal users, causing productivity bottlenecks and lost revenues.
- Staff morale is low due to the lack of perceived investment in the company's future.

In this case, deploying SD-Cloud would allow the firm to use innovative new applications and get rid of redundant infrastructure that drains both CapEx and OpEx. As a result, IT returns to being an enabler instead of a hurdle - which is proven by detailed analytics and reports that will also help drive the business forward. With a better IT experience, staff morale improves along with productivity. The business also benefits from improved business continuity and greater agility to respond to changing customer demand.

In a world where data is increasingly king and Network complexities show no signs of slowing down, it has never been more important to have a smart Cloud solution that can automate these modern processes, from beginning to end.

SD-Cloud is a revolutionary offering for a very modern world. It's a tool that can cover all aspects of business processes, saving time and ultimately ensure effectiveness across all business processes.

Why Exponential-e?

When Exponential-e was founded, we set out to build the best privately-owned Network in the UK. Today, 14 years and millions of pounds of investment later, we believe we own it.

Our privately-owned, VPLS Network sits at the core of everything that we do. It is the sole reason why we have a track record of rolling out the most innovative Cloud and Network solutions in the UK, before our competitors have even thought of them.

Because it is a true Layer 2 and a wholly owned Network it is also more flexible and scalable than the MPLS Networks that many British businesses are made to run Cloud and business solutions over.

As Network and Cloud pioneers, we are able to provide far more than WAN optimisation for the Cloud. Exponential-e provides both the overlay and the underlay, so our customers get a comprehensive service that integrates SD-WAN, SD-CLOUD, and security over a single, homogenous VPLS Network.

Our SD-Cloud offering comes with the control portal and devices, as well as the management, support, monitoring and QoS our customers need. That means we can offer our customers SLAs that cover the entire user-to-application journey, and should the worst happen, we can also provide business continuity and disaster recovery much faster.

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ABOUT EXPONENTIAL-E

Innovation is at the core of Exponential-e, and has been since our inception in 2002. We wholly own our superfast Network, and our fusion of complementary technologies - a carrier-class Network and Cloud infrastructure - means we can deliver enterprise applications at wire speed for a superior end-user experience. We deliver scalable, dynamic and bespoke solutions. Renowned for our responsiveness, coupled with our customer centric approach, and a UK based 24 / 7 x 365 service desk, means we offer unrivalled expertise.