Cloud Services

Introduction

adi Digital have developed a resilient, secure, flexible, high availability Software as a Service (SaaS) 'cloud platform'. This Platform provides a simple to use, cost effective and convenient 'cloud service' to smaller businesses. This baseline Platform consists of three key elements:

1. a 'load balanced' web 'front end'

2. a configurable and customisable Application Server computing platform

3. a 'high availability' SQL Server Database with an integrated reporting and analytics engine. The platform has a 99.99% availability SLA

Our SaaS 'virtual' private cloud platform is deployed, monitored and managed on remote, scalable servers in high availability ISO IEC 27001: 2005 accredited UK data centres, by an expert team and accessed via the network using a standard web browser.

Our SaaS platform has the following benefits:

• Low total costs (TCO) – pay only for what you need

• Flexible and configurable components within a standard architecture

• Rapid deployment as no local installation is necessary

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- No/Low capital outlay

- Service Level Agreement (SLA), guaranteed availability etc.

- Available everywhere at any time

Our development team is supporting a number of clients across a range of sectors through our SAAS applications, our data centres have multiple layers of operational and physical security to ensure the integrity and safety of your data; Section 6 details the 'base build'.

Each customer implementation is designed and sized to their specific needs and as each new customer application is loaded onto the platform. The additional computing resources (CPU cores, memory, Hard Disk etc.) and associated network elements such as Firewall and Load Balancers are installed as required. Hence each customer application is costed on the basis of 'only what they need'. Together, they are designed to provide customers with a fully functionally public cloud based infrastructure to meet their application requirements. In addition, the service offers an optional 'Backup as a Service' application which customers can use to back-up their cloud data.

Whist the customer remains responsible for managing their own data and associated applications, the underlying infrastructure on which it runs is now part of a managed service, removing the layers of complexity normally associated with designing and provisioning Cloud services.

Resilient Architecture

The adi Digital Cloud Platform is built on a Dual Site resilient architecture – see Figure 1 below. The key features are:

- Dual physical site – located in different parts of the UK with no common support infrastructure i.e. a local issue (e.g. major power failure, environmental disaster, wide-scale incident etc.) on one site will not affect the second. The platform has a 99.99% availability SLA

- Each site is a is a resilient high availability Data Centre with

    o Full ISO27001 - security standard for data centres

    o PCI ISO27001 - security standard for the credit card industry

    o Service Organisation Control - SOC 1 and SOC 2 Audit reporting.

- The architecture has load-balanced web servers with HA Proxy management

- Each site has a mirrored set of Application and SQL servers

- Full inter-site data replication with automatic fail-over

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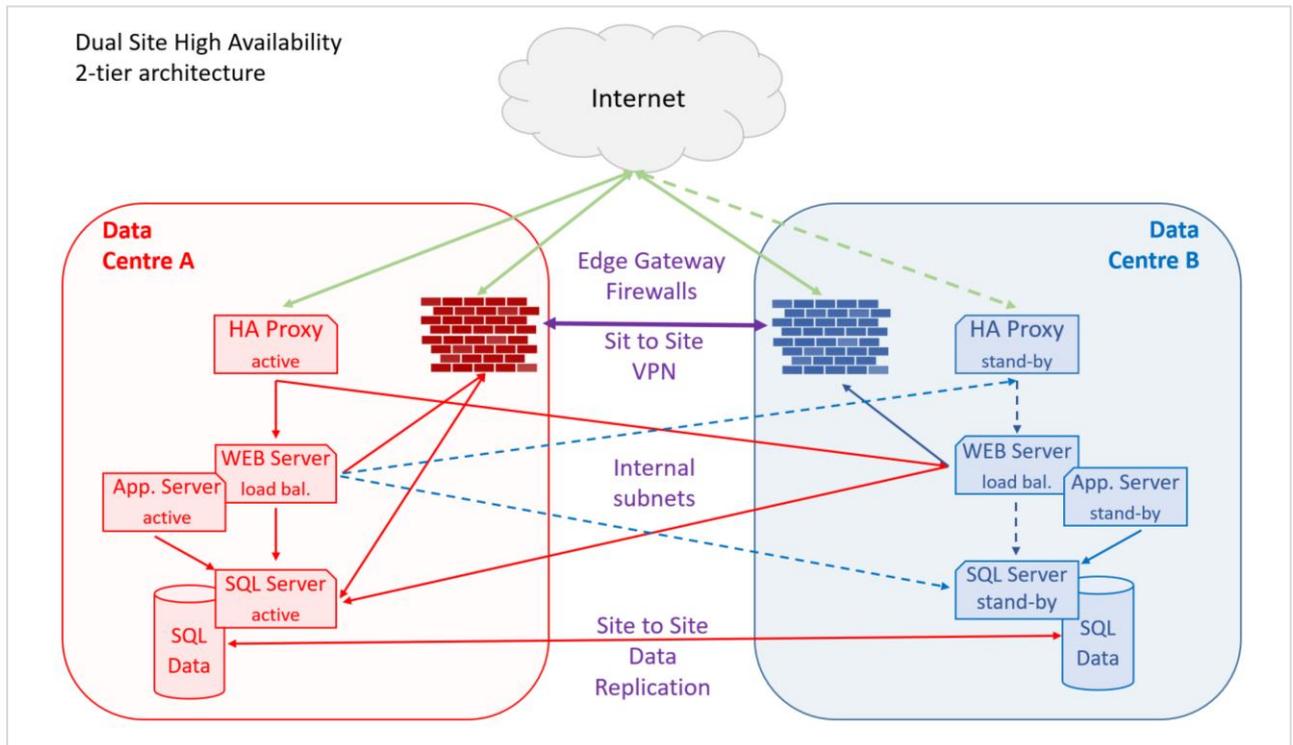Digital
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Figure 1 - adi Digital Cloud Platform Architecture

Core Technology Options

Each 'Private Cloud' implementation is built from a number of core technologies, including

- Compute options (virtual servers)
- Storage options
- Networking options
- Reporting Options
- Migration and Integration options
- Back-up options

Application Server - Compute Options

The adi Platform servers are virtual machines, which are built including an operating system

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chosen by the customer. The cost of the server includes the OS which will be pre-installed and ready to go. The current list of available operating systems include: -

- Windows Server 2008, 2008 R2, 2012 and 2012 R2
- SUSE Linux Enterprise Server 12
- Red Hat Enterprise Linux 7.2
- Ubuntu Server 14.04 LTS

Note 1:   The adi platform can provide any OS environment supported by the VMWare ESXi hypervisor - almost all modern applications can be run within a virtualized environment

Note 2:   This is a fully managed service, adi Digital are responsible for maintaining the OS and/or providing any updates or patches to the O/S.

Each virtual servers can be specified with different processing power (CPU), memory and IO capability to meets its specific application needs, and unless specifically arranged otherwise; all virtual machines will be deployed using 64 bit architecture.

The servers are proactively monitored and are configured to automatically alarm if predefined thresholds are met.

Each server has a specific number of processors and amount of memory allocated; if the customer's requirements change, the server can simply be upgraded or replaced by a more suitable alternative with a minimum amount of downtime. The platform has been designed to easily scale. You can either:

- Use a metered environment, allowing you to burst up and use as much resource as you wish, with a usage based bill.
- Or you can instantly add resource to upgrade an environment at any time.

Our standard application servers include:

- Microsoft SQL Server
- LAMP (Linux Apache, MySQL, Apache, PHP)
- Support for Active Directory and IIS

Almost all modern applications can be run within a virtualized environment, other applications can be considered on a case by case basis.

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Storage Options

All servers will have local storage, all storage is sold based on IO Performance guarantees – these are high performance Solid State Drives storage devices. The underlying storage platform is fully redundant including multiple storage controllers and RAID sets. The size increments are 1GB.

The adi will work with the customer to define the most suitable file systems across the deployed volumes. These are block storage devices with each storage device linked to a single server.

Each storage device is automatically replicated in order to protect it from component failure.

Data Encryption is specified on an application basis, but typically we use source-based AES-256 encryption. If the application requires other forms of encryption or data security, this can be discussed at the design stage.

Networking

The adi Platform has been built with a Load Balancing 'front end' that automatically distributes incoming internet application traffic across multiple servers as defined by the user requirements?

Each customer's server environment will operate as a Virtual Private Cloud (VPC) which is a logically isolated section of the cloud. The platform can provides specific IP ranges, the creation of subnets, and configuration of customer/application specific routing tables and network gateways?

> For example: A customer can have a public-facing subnet for their webservers with access to the Internet, and place their backend systems such as databases or application servers in a private-facing subnet with no direct connection to the internet for inbound access, outbound is still possible for general internet access.

> The Servers in a private subnet access the Internet without exposing their private IP address by routing their traffic through a Network Address Translation (NAT) gateway in a public subnet?

> In addition, customers can choose to include a Virtual Private Network (VPN) connection between the adi Platform and their own facilities.

The platform can support a Managed Firewall with a configuration based on a defined rule set providing an individual Firewall policy that is based on Port, Protocol and Source IP address rules.

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The firewall appliances can apply rules based on CIDR addresses or specific key word groups E.g. internal, external, any. We can allow or deny specific protocols and ports/port ranges.

The Firewall rule set can support the following:

Applied to:	One or more of the customer's servers
Source:	• Customer server (as entered in portal) • Customer subnet (as entered in portal) • Anywhere (0.0.0.0/0) • Free text (IP address or IP range)
Type:	• DNS (UDP) • LDAP • Custom TCP Rule • RDP • HTTPS • NFS • Redshift • Oracle-RDS • POP3 • IMAPS • SSH • SMTP • DNS (TCP) • MYSQL/Aurora • User Defined
Protocol	• TCP • UDP • Auto-filled based on the Type selection
Port Range	• Auto-filled based on the Type selection • User Defined

Customers can choose to include a Virtual Private Network (VPN) connection between the adi Platform and their own facilities using standard IPsec tunnelling, as long as standard IPsec configurations are available on the remote end point we can support IPsec VPN tunnels.

Reporting

The adi Platform has been built with configurable SQL report generator. The report generator can provide a wide range of sophisticated customer configurable reports based on and the data held on the system including KPI, Performance, graphical and tabular reports.

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Where more demanding reports are required, we can employ more complex tools such as business objects and other analytical programmes.

Migration and Integration options

Often 'cloud platforms' are developed form existing 'on premises' applications and data sets. Adi will work with each customer to manage the migration of the application and its associated data to the cloud platform.

Equally, where the cloud platform has to integrate to legacy systems and data sets, adi will develop the necessary operational interfaces.

Back-up options

The adi Platform currently uses Commvault, an agent based solution which supports a wide range of server/application back-up options including:

- Windows and Linux environments
- Source-based encryption and source-based global de-duplication Application-consistent backups of Windows Server tools
- Support for Active Directory, DFS, Exchange, SharePoint, SQL
- VSS (Volume Shadow Copy Service) integration enables application consistent backup and recovery with file-level granularity
- WAN-optimised protocols enable efficient and secure in-cloud and cross-cloud communication
- Incremental backup, globally de-duplicated and compressed
- Automatic resumption of interrupted backups

The Platform standard retention is 14 days, but we do offer a range of custom back up schedules, this is configured on an individual basis when the overall solution is designed to suit specific operational/application requirements.

Operational Dashboard

The Platform uses VMware vCloud director to allow users to monitor their virtual data centre resources. The platform is proactively monitored and can be configured to automatically alarm if predefined server or application thresholds are exceeded.

adi Digital can develop bespoke reports to detail operational performance and resource utilisation.

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Building a Private Cloud

adi Digital have made the 'build process' very easy

Step 1: Contact adi Digital and tell us what you need, in terms of:

- Server/Application resource

- Memory allocation – by Application

- Storage and retention requirements

- Networking

- Migration and Integration requirements

- Performance – availability, response time etc.

Step 2: adi Digital will respond with:

- One-off build and monthly recurring Platform cost

- Price for any Migration and Integration work

- Confirm performance standard – availability, response time etc.

- A high level implementation plan

Step 3: Once the commercials are agreed, adi will issue a detailed implementation plan.

adi Digital's virtual Private Cloud proved a flexible and cost effective 'cloud service' to small/medium businesses, something that larger organisations have enjoyed for some time.

adi Digital's virtual Private Cloud is designed to offer the kind of scalability, security and commercial flexibility that modern businesses need to support their applications, services and customers. Our Virtual Private Cloud hosting resources can be easily scaled up and down, add or remove CPU, RAM and storage capacity to shape your cloud platform around your businesses changing requirements.

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