exponential-e
APPLIED INNOVATION

Exponential-e Hybrid Cloud
Infrastructure as a Service

Health/HSCN Assured

www.exponential-e.com/public-sector

bsi. ISO 9001 Quality Management | ISO 14001 Environmental Management | ISO/IEC 20000-1 Information Technology Service Management | ISO/IEC 27001 Information Security Management | CSA STAR Cloud Security | ISO 22301 Business Continuity Management | ISO 50001 Energy Management

HSCN HEALTH & SOCIAL CARE NETWORK COMPLIANT

PCI DSS COMPLIANT

Crown Commercial Service Supplier

CYBER ESSENTIALS PLUS

INVESTORS IN PEOPLE | Accredited Until 2020

HM Government G-Cloud

FRAMEWORK RM 3804, FRAMEWORK RM 1045

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HSCN Assured for Health

The requirements for information access and sharing have changed. Underlying networking arrangements needed to support an affordable, agile and integrated health and social care sector need to change.

As Exponential-e are an accredited HSCN Stage 2 Compliant CN-SP provider of services, we offer HSCN assured digital technologies that will benefit both staff and patients alike. These benefits come from our ability to deliver multiple services over "assured unified platforms". By empowering different healthcare entities to securely aggregate their infrastructure requirements, the resulting outcome brings not only new found agility but also the ability to realise significant cost savings.

Overview of the Service

We provide Infrastructure as a Service via our carrier grade Ethernet network, allowing us to provide these services privately and as a seamless extension of our customer's network. Our IaaS infrastructure is hosted in UK based tier 3 Data Centres, and is highly accredited with 7 x ISO accreditations including 27001 and CSA Star.

We provide 24 x 7 x 365 infrastructure support, and customers can consume a multitude of managed services and professional services to enable low risk cloud adoption and enterprise support.

Furthermore, as a partner to Microsoft and Amazon we provide fully hybrid cloud services by enabling private connectivity to Azure and AWS over ExpressRoute and DirectConnect onto our VPLS network. This enables customers to consume a hybrid cloud portfolio across a performant, private network to provide a high quality experience to end users.

Key Product Features

Exponential-e IaaS is built on enterprise class server hardware, and supported by high performing all flash storage arrays. Combined with best practise VMware configuration and management, applications migrated to our IaaS platform benefit from significant performance enhancements. The service has been designed on the VMware vSphere platform with vCloud Director, which continues to set the standard for enterprise-class infrastructure and application performance, scalability and reliability. A robust, virtualised infrastructure deployed in multiple UK Data Centres, the platform serves as the underlying technology for all of our infrastructure, hardware, and application service offerings.

The Exponential-e IaaS enables pay-as-you-grow computing for both permanent and short-term requirements, and with a range of pricing models. Resources may be consumed on a Pay-As-You-Go basis, a Fixed billing basis or a Hybrid (minimum commit, PAYG above).

We manage the platform to the IaaS level providing customer access via the vCloud Director portal, customers can create vApps and VMs as required and provision additional resources on demand. The platform supports Microsoft Windows (2008 R2, 2012, 2012 R2, 2016) and Linux (RHEL, Ubuntu,

CentOS).   Customers can integrate authentication with their Active Directory and further secure via Multi-Factor Authentication if required.

VMs can be deployed from the public catalogue of pre-built images of the supported operating systems, or customers can build their own catalogues of VM images for their applications and workloads.

In addition to the standard Virtual Data Centre offering, we provide reservation VDC for workloads requiring CPU reservations. This is priced on a per MHz per month basis, and delivered from the vCloud Director portal. Exponential-e also provide dedicated cloud architecture for customers requiring isolation from other customers. This can be for such purposes as compliance, licensing isolation, and more stringent veto rights over maintenance periods. Further information available on request.

Working with Exponential-e

Customer Focused

Our customers are at the heart of everything that we do; from the solutions that we sell to offering a 24 x 7 x 365 UK based Service Desk as standard, we offer our customers only the very best.

Exponential-e employees aim to exceed expectations with innovation and service. They are open and transparent in their approach to ensure that our customers are kept updated at every step of the process.

From requesting a quote to your order being delivered, you can expect only the best service from our team who are underpinned by our excellent Client Relations department - in place to ensure your service from Exponential-e and relationship is the very best it can be.

Don't just take it from us - our 96% customer reference-ability backs up the fact that we lead with customer service excellence at the forefront of our business.

Highly Accredited British Company

Whilst the above qualifies our customer centricity, there is no better way to show the success and reliability of our company than through our accreditations. Our business is highly accredited, in fact more than any other British company, with a total of 7 ISOs and audited every six months by the BSI amongst other external auditors.

Exponential-e Has Unparalleled Capability

Security assurance

Our services are designed, built and optimised with clear alignment to the 14 CESG Cloud Security Principles that UK Public Sector organisations use when assessing cloud hosted solutions for information assurance compliance.

The Exponential-e cloud benefits from extensive independent validation via certifications ranging from international standards (for example, ISO9001, ISO27001, ISO20000) to UK public sector specific standards (for example, HSCN).

The Exponential-e Cloud Platforms are subject to regular, extensive IT Security Health Check (ITSHC) CHECK Tests by independent, CESG-approved assessors to ensure that our customers have confidence in the physical and technical security controls which have been implemented to protect their valuable data assets. Platforms are suitable for all data classified at OFFICIAL under the Government Security Classification Policy (GSCP)

All customer data is stored in Exponential-e's 2 secure UK data centres with SC-cleared UK staff.

Customer identifiable data does not leave the UK.

Connectivity

Our UK Data Centres have resilient connections to secure UK government networks such as HSCN Assured as well as large scale, DDoS protected, internet connectivity. We also offer the ability for customers to present their own connections (such as direct connectivity into your MPLS, or inexpensive point to point connections via leased lines) and the Secure Remote Access solution to allow security assured VPN access to the Elevated OFFICIAL platform.

Key Technical Features

Infrastructure

Exponential-e IaaS is built on enterprise class hardware based on N+1 principles to ensure no single points of failure exist. Multiple cloud nodes are available within the UK, connected via our 100Gb core VPLS network service, enabling customers to maximise availability by distributing VMs across multiple cloud nodes.

The service has been designed on the VMware vSphere platform, which continues to set the standard for enterprise-class infrastructure and application performance, scalability and reliability. A robust, virtualised infrastructure deployed in multiple UK Data Centres, the platform serves as the underlying technology for all of our infrastructure, hardware, and application service offerings.

The Exponential-e IaaS enables pay-as-you-grow computing for both permanent and short-term requirements, and with a range of pricing models. Resources may be consumed on a Pay-As-You-Go basis, a Fixed billing basis or a Hybrid of both.

The service can be complemented by combining with our other services, such as Cloud Backup and server replication.

IaaS Management

The Customer has the option of choosing one of the following model for VM management

Customer Managed – the Customer will be provided with a vCloud Director portal, enabling full management of virtual machines, and the ability to provision from catalogue images or customer provided operating systems.

Exponential-e Managed – Exponential-e will provide Operating System level, and application level managed services, whereby Exponential-e support teams will undertake ongoing management and monitoring of virtual machine state deployed on the IaaS platform.

IaaS Networking

The IaaS platform may be accessed in a variety of different ways:

- Internet (VPN)

- Point to point Layer 2 e-pipe

- Virtual Private LAN Service (VPLS) Layer 2

- Virtual Private LAN Service (VPLS) Layer 3

- Software Defined Data Centre Networks

The IaaS platform is built around enterprise-level network isolation both between customer environments, and within customer environments, backed up by our ISO 27001 certification. QoS polices can also be implemented, for example to provide RDS or Citrix prioritisation.

Firewalls

Exponential-e offer a number of firewall options to support our customer security requirements. The heart of the isolation mechanism is the Exponential-e high-availability Next Generation Fortinet firewall service, providing each customer with a dedicated VDOM (virtual domain). Each VDOM allows a fully configurable firewall rule base, IPSec and SSL VPN capabilities, UTM Features – per customer and with multiple trust zones.

For less complex environments, virtual firewall platforms can be implemented, but regardless of the solution deployed, all firewalls and routing solutions benefit from the Exponential-e 24x7 central monitoring and management, and change control in accordance with our ISO 27001 certification.

Physical Data Centres

Exponential-e's IaaS operates from three UK sovereign, highly resilient Tier 3 Data Centres including Ark Farnborough. Assured Security is guaranteed given Pan Government and PSN accreditation to IL2 and IL3 with proactive and protective monitoring in place. A tour of the facilities can be arranged and any further information required can be provided.

Service Levels

Exponential-e will use reasonable endeavours to ensure that the availability of the service purchased by the customer in a given calendar month equals the applicable Availability Commitment.

To define availability, Exponential-e monitors a number of service elements — some generic, some service specific — which collectively enable the customer to use or access the service. If the availability of the service is less than the associated Availability Commitment, the customer may request Service Credits for the service within 30 calendar days of the service being deemed unavailable. Service credits are measured in the table below, for more information on our SLAs, see the Exponential-e SLA definition document.

Availability

	Target Availability
Infrastructure as a Service	99.9%

Service Credits

	Measure	Service Credit*
Availability	Below Target	5%
	>0.1 Below Target	10%
	>0.2 Below Target	15%

* The service credit is applied as a percentage of the Monthly Charge for the Object Storage Service for the month concerned (whether based on the fixed Annual Charge, Pay As You Go Charges or, in the case of a Hybrid Billing Model, both).

What Billing Models are Supported?

Exponential-e believes the customer should have as much flexibility in consuming the service as possible. To that end, we therefore support the following billing and consumption models:

Fixed Billing

The Customer has a fixed level of resources for a fixed Annual Charge.

Pay As You Go

The Customer is charged for the actual resources used in accordance with the Rate Card and the applicable Service Definition and will be billed monthly in arrears. Actual usage levels will be recorded by Exponential-e.

Hybrid billing

The Customer has a minimum amount of resources that are contracted for subject to a fixed Annual Charge, yet retains the ability to use additional resources "on demand" in accordance with the Pay As You Go section above.

Trial Service

A trial of the Exponential-e IaaS services is available to customers for the purpose of evaluation and can be arranged by contacting Exponential-e. Trial periods are limited to 30 days and any data saved using the Service(s) during the trial period will be automatically deleted at the end of the trial period unless an order for full service is placed within the trial period. Any right or license provided to use the trial service shall be revoked at the end of the trial period. No Service Credits or Service Levels shall be applicable during the trial period. Should a customer place an order during the trial period, Exponential-e is able to on-board the data to the full service if required.

What are the Terms and Conditions?

Please refer to the associated Terms and Conditions document for full details.

Appendix

On-boarding and Off-boarding

On-boarding

Once an order is accepted, Exponential-e aims to provision a login and provide it to the customer for the IaaS Cloud Portal within 2 business days. The customer is then able to create and configure virtual machines with specific vCPU, vRAM and storage within the overall capacity limits as provisioned by Exponential-e's Cloud team.

Exponential-e shall use reasonable endeavours to ensure that the Customer may connect to the IaaS Cloud Portal over the Public Internet within the timescale stated above. However, where IaaS is also part of a solution that contains an order for a Connectivity Service, [or where access is provided by an alternative supplier,] access to the Virtual Machines located within the Virtual Data Centre shall also be dependent upon the lead times for the Connectivity Services.

For existing data and virtual machines, Exponential-e is able to offer on-boarding through a variety of technologies and techniques:

- Import from Open Virtualization Format (OVF) files

- Import from common hypervisor files (VMDK etc.)

- Online replication tools to take an image of the source virtual machine and incrementally update it until cut-over

- Application level replication (i.e. SQL mirroring, log shipping, backups etc.)

- Customised Exponential-e WAN circuits (layer 2 or layer 3 as appropriate) to facilitate the above options

- Internet or physical transfer of images

The on-boarding process will be managed by Exponential-e's dedicated Cloud Project Management team using PRINCE2 project management methodology.

Off-boarding

The customer may extract their application based data at any point during the contract term by self-service. At the end of the term and/or if the contract is terminated, the Service Migration provisions will apply. If customised data transportation, data extraction or full virtual machine export services are required these will be charged at the prevailing time and materials day rate listed in the pricing section below. In order to action these customised services, an off-boarding service request must be raised via the Exponential-e Network Operations Centre, for which Exponential-e's standard terms and conditions for professional services would apply.

Service Constraints

Planned and Emergency Works

Exponential-e will adhere to the following maintenance windows:

'Planned Maintenance' means any pre-planned maintenance of any of the infrastructure relating to the service. Planned Maintenance activity may result in periods of degradation or loss of availability depending on the nature of the activity required. In such cases, Exponential-e will aim to provide at least 14 days' notice via email of any planned works and shall aim to perform them between 00:00 and 06:00 GMT/BST.

'Emergency Maintenance': Exponential-e reserves the right to carry out emergency works at any time, without notice. Every effort shall be made to contact customers before the commencement of emergency maintenance.

Ordering and Invoicing

Billing for the service is monthly in arrears based on the consumption model chosen. Please refer to the Billing section earlier in this document for the consumption types.

Billing for the service is:

- Via Purchase Order

- At point of order for up-front fees

- Monthly in arrears for monthly fees

Payment can be made by direct bank transfer (BACS/CHAPS).

Service Lead Times

Exponential-e IaaS Service lead times are 5 Working Days*

* From order acceptance. Lead time is subject to confirmation if changes are made by the customer and/or further information comes to light which would have affected the initial design. Exponential-e shall use reasonable endeavours to ensure that the Customer may connect to the IaaS over the public internet within this Target Service Commencement Date. However, where the IaaS Service is also part of a solution involving Connectivity Services and/or VDC Services, access to the IaaS Service shall also be dependent upon the lead times for the Connectivity Services.

Termination

Terms

At the point of termination, all customer data, accounts and access will be permanently deleted, and will not be able to be subsequently recovered or restored.

Costs

There are no termination costs for this service. Customers are responsible for extracting their own data from the platform if required.

Exponential-e may make an additional charge for transferring data out of the service.

Data Restoration / Service Migration

Exponential-e utilises our Server Replication service for migrations to the cloud ensuring a server by server seamless migration to the cloud. Each server is assessed individually to ensure comparability with the cloud and then replicated to our cloud environment. Once the customer is happy that the server is ready we migrate this server into our IaaS platform. Our network ensures that when servers are migrated there is no need to change the IP address or DNS configurations ensuring that the process is seamless and minimises end user disruption. All of this is managed by our in house project delivery teams in close collaboration with the customer.

Further to the above in cases where the server is not compatible for migration we work with the customer to implement the application in the cloud and migrate the relevant data across. This in some cases is a good opportunity to upgrade to the latest version of the software and our in house solutions consultants can aid with the design and build of the new service.

We also support cold or big bang style migrations where the entire estate is moved over one weekend which usually entails capturing an image of the server in its current state and importing this into our IaaS platform.

Customer Responsibilities

Item	Responsible party
IAAS computing and storage infrastructure procurement	Exponential-e
IAAS Computing and storage infrastructure management	Exponential-e
IAAS Computing and storage infrastructure break/fix	Exponential-e
Provisioning IAAS	Exponential-e
Network access to Exponential-e Datacentre(s)	Customer (unless Exponential-e WAN circuits are in use)
Network access within Exponential-e Datacentre(s)	Exponential-e
Assigning Public IP addresses within IAAS	Exponential-e – if within Exponential-e range(s); Customer if within Customer range(s)

Configuring Virtual machines with IP addresses	Customer
Network provisioning within virtual Data Centre	Exponential-e
Internet provisioning from virtual Data Centre (if applicable)	Exponential-e
Firewall Configuration (Network Address Translation)	Exponential-e
Security Services	Exponential-e
Licensing	Customer
Virtual Machine provisioning	Customer (Provisioning is accessed via the IaaS Cloud Portal)
Virtual Machine reconfiguration (vCPU, vRAM etc)	Customer (Functionality is accessed via the IaaS Cloud Portal)
Virtual Machine operations (Start, Stop, Reboot, Delete)	Customer (Functionality is accessed via the IaaS Cloud Portal)
Backup scheduling	Customer
Backup storage management	Customer
Replication configuration	Exponential-e
IaaS Hardware monitoring 24 x 7	Exponential-e
Service management including Service Desk	Exponential-e
Change Management (IaaS infrastructure)	Exponential-e
Change Management – customer virtual machines	Customer

Management and support of Hypervisor	Exponential-e
Management and support of Virtual machine operating systems	Customer
Management of content contained within Virtual machines	Customer
Antivirus – protection against malware and removal – within Virtual machines	Customer
Patching Virtual machine operating systems	Customer

Financial Recompense Model

Refer to the 'Service levels' section earlier in this document.

Technical Information

Assured OFFICIAL (Lower Security Domain)

- Standard internet connectivity over common protocols (HTTP, HTTPS, SSH)

- HSCN — for access to the Health and Social Care community. You will need to complete the HSCN Information Governance Statement of Compliance process and be certified HSCN Consumer.

- PSN Assured service — you need to be a PSN Service Provider or an HMG customer that has PSN certification.

- CAS(T)-compliant connections (leased line, MPLS)

- Non-CAS(T)-compliant connections (leased line, MPLS) using additional CPA/PEPAS overlay encryption

- Site-to-site VPN using standards-based IPSEC solutions o Dedicated fibre connectivity within the Exponential-e Data Centre

Elevated OFFICIAL (Higher Security Domain)

- Preferred connectivity is over a Government Community Network such as N3 or PSN

- HSCN — for access to the Health and Social Care community. You will need to complete the HSCN Information Governance Statement of Compliance process and be certified HSCN Consumer.

- PSN Protected service — you need to be a PSN Service Provider or an HMG customer that has PSN certification

- Legacy networks such as PNN, via the PSN Protected service

- Exponential-e Secure Remote Access service   Private circuit solutions including:

  o CAS(T)-compliant connections (leased line, MPLS) using additional CPA/PEPAS overlay encryption

  o Non-CAS(T)-compliant connections (leased line, MPLS) using additional CPA/PEPAS overlay encryption

  o Dedicated bonded fibre connectivity within the Exponential-e Data Centre