Cloud IaaS - Powered by OpenStack

1. Service Details

1.1. *Core Services*

Service Overview

Memset's Cloud IaaS (Powered by OpenStack) is a ubiquitous open source cloud-computing platform for utility-billed public clouds. Memset's Cloud IaaS service is competitively priced, multi-site, simple to implement, rapidly scalable and feature rich, backed by industry-leading SLAs and UK-based, BPSS and SC cleared support teams.

Benefits
- Fully featured 14 day free trial accounts available
- All APIs fully Refstack/DefCore compliant to 2016.2
- Secured by design - from first architecture meetings to ongoing operations
- Highly competitive hourly billing rates, pay for what you use
- High availability architecture designed to provide resilient hosting
- Effective DR with snapshotting, failover networking and geographically redundant clusters
- Ideal for agile development environments and rapidly scaling infrastructure
- Open-source APIs and hourly billing model support complete data mobility
- Integrates with preferred orchestration systems such as Terraform, ManageIQ, etc.
- OpenStack cloud operates with full security accreditation

Features
- Elasticity: Memset cloud framework scales out with growing traffic and usage.
- Resource pooling: according to need and requirement
- Economies of scale – increase output or productivity with lesser resources
- Optimum utilisation of physical hardware enables reduction of infrastructure cost
- Entirely standardized, open-source and interoperable - Avoid vendor lock-in
- Self-service control panel and APIs – deploy exactly what you need
- Rapidly deployable – bring infrastructure live in seconds
- Can be completely API driven, Heat templates enable Infrastructure-as-Code

1.1.1. Compute

Memset's hourly-billed Cloud IaaS (Powered by OpenStack) is competitively priced and available immediately on demand. Rapidly deployable, secured by best practice hypervisor configuration, Memset's IaaS Cloud VMs are highly flexible, being fully virtualised so can run any appliance or image, and can have multiple NICs and storage volumes attached dynamically. Our advanced management tools make it easy to build, manage and control complex network topologies in a cost-effective, pay-as-you-use manner.

1.1.2. Storage

Our dynamic storage volumes are available in a range of flavours, from standard, low cost block storage to high performance bolt-on allocations. Storage is backed by open-source dedicated Software Defined Storage platform, Ceph. Providing all the benefits of high throughput storage networking and flash arrays without the prohibitive cost of traditional SAN. Ceph additionally triple replicates all data, providing multiply failure resilient storage for your critical data.

1.1.3. Networking & Security Groups

Cloud IaaS VMs are supplied by low latency, high bandwidth and highly resilient network services with 500Mbps per project included for free. Security groups and virtual routers provide flexible, rapidly deployable secure network topologies that can be designed via the simple to use Control Panel or programmatically via standard OpenStack APIs.

Cloud IaaS projects are additionally protected by the Memset Virtual Firewall platform, providing DDoS and QOS close to the network edge, keeping malicious denial-of-service traffic away from your hosting solution and the underlying infrastructure.

1.1.4. Additional Services

Control Panel

The Horizon control panel provides an easy place to buy and configure new resources, allowing customers to create complex, high performance networks of VMs, storage and network devices whilst applying powerful security control groups and firewall rules, all with a few clicks of a mouse.

Orchestration

The Heat orchestration engine enables full infrastructure-as-code and auto-scaling functionality. Burst and reduce capacity on a pay-as-you-use basis. Scale automatically according to the resource demand measured by OpenStack subsystems, or save, modify and redeploy complex, fully operational architectures automatically, via GUI or API calls.

1.2. *Secured by Design*

Memset's Cloud IaaS platform has been designed and architected to comply with the Cloud Security Principles and National Cyber Security Centre's (NCSC) Secure by Design ethos from first principles to be a highly secured, resilient platform. This includes:

- Ability to spread resources between geographically redundant clusters in different UK-based Memset data centres
- Live migration of VMs allowing System Administrators to avoid customer downtime from hypervisor patching
- Extensive use of 24x7 capacity and security monitoring on the back-end infrastructure to detect, prevent and contain security and performance issues
- Encryption-in-transit between all key internal services
- Cutting edge host and service hardening techniques to minimize the risk of compromise of the hosting infrastructure itself, and of any compromised customer VM impacting on any others
- Regular penetration tests by world-leading third party providers

Memset is committed to open-source security. Wherever we identify issues with the open source software we are using and can provide our own fixes, these are passed upstream to the application maintainers for consideration.

1.3. *Business Continuity & Disaster Recovery*

High Availability OpenStack Features

Geographic redundancy

Memset offers Cloud IaaS services from geographically redundant data centres, allowing customers to split critical data and workloads across sites. Redundant Internet links and network

connectivity and a multi-DC provider strategy reduce the risk from any one supplier-centric data centre or utilities failure.

Cross-site networking
We provide easy to implement, low-cost, high-performance networking between sites to help you replicate data and services between data centres with a minimum of effort.

Multi-provider strategy
Standard OpenStack APIs make mutli-provider strategies trivial, by utilising OpenStack's own Heat project, or any third party tool, for example Terraform, that interacts with the OpenStack APIs,. This allows customers to arrive at true 100% uptime solution even in the face of provider bankruptcy or major natural disaster.

Infrastructure Resilience
All underlying infrastructure for Cloud IaaS is based on high quality, resilient hardware and Services and data centre M&E underlying our OpenStack infrastructure are redundant, offering a highly resilient IaaS Cloud product.

Enterprise Resilience

Memset maintains an ISO 27001 managed Business Continuity and Disaster Recovery plan at a corporate level that seeks to ensure the maximum availability and integrity of the following aspects to all customers:

- **Service delivery** (defined as the delivery of network connectivity, data centre cooling clean power and the health of underlying hardware)
- **Support** (defined as the availability of Memset System Administrators and their ability to access customer systems)
- **Communications** (defined as the customer's ability to interact with Memset via secure ticket and the availability of our internal communications tools)

As the primary system administrator the customer is responsible for building on this foundation and ensuring that any solution specific business continuity requirements are defined and met. Memset can provide a range of services to assist with this including architecture consultancy, backups, load balanced failover and geographically diverse hosting facilities.

Memset recommends that, should the customer wish to host particularly critical applications or services with strict Recovery Time or Recovery Point Objectives (RTOs/RPOs) that they consider a distributed solution using at least two of our geographically dispersed sites. We believe that no level of single-site data centre resiliency or redundancy can match the assurance levels of geographic failover.

Memset's Solution Architects are available to assist in designing a solution that can meet or exceed your TRO and RPO requirements.

1.4. *OpenStack APIs*

All OpenStack modules are supported by their full open source APIs. Our APIs are pure unmodified OpenStack (DefCore compliant) APIs, ensuring the maximum level of interoperability with any other OpenStack provider and third party Cloud management and orchestration tools.

2. Service Management

2.1. *Uptime Guarantee*

We endeavour to provide the most reliable infrastructure as practical to customers. To customers in good financial standing with us we guarantee that the following aspects of our services are available 99.99% of the time in any given month, excluding scheduled or emergency maintenance.

2.2. *Onboarding & Offboarding*

As Memset's Cloud IaaS is a self-service environment, we do not provide onboarding or offboarding assistance to customers. Support documentation is available on the Memset knowledge base at http://www.memset.com/docs/other-memset-services/openstack/.

The following is a non-exhaustive list of data import methods that may be used as part of customer onboarding:

- Image import via HTTP URL
- Image upload as file (ISO, QCOW2, Raw)
- FTP, SCP, etc. data transfer to running VM
- RClone and similar services

Similarly, no formal assistance with customer offboarding is provided. The following is a non-exhaustive list of data export methods that may be used by the customer as part of their offboarding processes:

- Download snapshots of paused, stopped or running VMs in RAW image format
- Use HTTPS, FTP, etc to download customer data
- Rclone and similar services

Cloud IaaS (Powered by OpenStack) is an open-source, highly interoperable Cloud hosting solution designed with a zero-lock-in philosophy. VM images exported from the Memset Cloud IaaS will run on any other properly configured hypervisor.

3. About Memset

Memset is an established UK-based IaaS Cloud hosting SME with a focus on high security services and verticals. Our Cloud VPS platform is supported by Internet and PSN Protected connections. Both our Cloud VPS and Cloud IaaS (Powered by OpenStack) platforms support a range of cutting edge security services such as our intrusion detection systems, free vulnerability management product and unique Internet to PSN Gateway.

3.1. Security & Compliance

Memset maintains an integrated Compliance Management System comprising of security, quality and environmental management systems.

Memset's certificates, accreditations and related documentation can be accessed on this link: https://www.memset.com/about-us/iso-certificates/

3.1.1. Security

Memset operates a business and product-wide ISO 27001:2015 accredited Information Security Management System. Our PSN-connected infrastructure is accredited by the PSN Team for connection to the PSN Protected network. Memset also maintains PCI-DSS Merchant and Service Provider accreditation.

Our products are Secured by Design and subject to stringent internal security architecture and design reviews and processes, DevSecOps processes and external validation, accreditation and ITHC testing.

Memset performs both internal and third party ITHCs on an at least annual basis, and aggressively uses ITHCs of newly deployed infrastructure and products as a vital part of the product lifecycle.

Security and Compliance at Memset are managed by separate, dedicated teams in order to provide the required range of expertise and to ensure appropriate segregation of duties. The Head of Security and Head of Compliance respectively have permanent seats on our business management forum, the Operations Board, indicating our continued commitment to high quality, high security products and services.

3.1.2. Quality

Memset maintains an ISO 9001:2013 accredited Quality Management System, ensuring service delivery and availability is continually metricised and managed. This allows us to reliably, measurably hit our customer-facing SLAs and internally manage our product lifecycles and business processes.

3.1.3. Environmental Sustainability & CSR

Memset also maintains an ISO 14001 accredited Environmental Management Systems. This is complimented by our cutting edge next-generation data centre design and commitment to low-carbon, green services.

Where possible we take power from local renewable sources. Our main data centre in Surrey was selected for its proximity to a local two-megawatt solar farm.

Memset is an active supporter of local and national community efforts and charities. Recent beneficiaries have included Surrey Search and Rescue, the Surrey unit of Lowland Rescue who assist the emergency services with search for missing persons, water rescue and flood and fire response. Memset also provides free hosting services to over two hundred charities.

3.2. Interoperability & Open Source Commitment

Memset is an open-source first organisation and is an active member of numerous open-source communities. The vast majority of our customer products and internal systems, as well as core infrastructure are based on open-source technology. Since very early in the company's history, we have been committed to enabling interoperability with other Cloud providers and removing vendor lock-in barriers for customers. Memset has published a number of free tools to assist customers with data and VM portability and make use of open source Xen and KVM hypervisors, allowing customers to migrate appropriate VM images to and from our Cloud without technical barriers to progress.

3.3. Data Sovereignty

In the spirit of simplifying customers' data sovereignty issues, Memset is a wholly UK owned and based organisation, incorporated under UK law. All ownership, operations, hosting locations and support personnel are based in the UK, mainly from our South-East UK locations.

We do not host or transfer customer data outside of the UK, nor do we provide administrative access to Memset personnel based in any other country.