

CONFIDENTIAL

INFRASTRUCTURE AS A SERVICE SERVICE DEFINITION DOCUMENT

G-Cloud Edition – August 2016
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redcentric
business technology. managed.

A STATEMENT FROM OUR CEO

Supporting you and your organisation's IT business outcomes is the sole aim of Redcentric's G-Cloud Service.

All of the team at Redcentric have worked hard to develop a service that is designed to meet the most exacting requirements while helping you achieve business objectives, such as releasing staff to concentrate on core business operations, driving down your operating costs and delivering more for less. Since the inception of G-Cloud, the team at Redcentric have worked with our public sector clients to tailor our services, ensuring we can support you in achieving these objectives.

From the first iteration of G-Cloud we have invested heavily in staff and resources, to reduce the time it takes us to deliver services to you, make your procurement process as painless as possible, and ensure the engagement doesn't impact heavily on you or your team.

The clients we currently work with trust us to deliver consistently high-quality services, because that's what we have delivered for them over the long-term. Our culture is one of long-term partnership to navigate through the challenges of the ever-changing technology landscape – the journey from old to new.

I hope while reading through this document we are able to answer all your questions, however if any clarification is needed please do not hesitate to contact a member of the Redcentric team and we will do what we can to answer your queries.

Kindest regards

A handwritten signature in black ink, consisting of a stylized, cursive 'F' followed by a long, horizontal stroke that tapers to the right.

Fraser Fisher

INTRODUCTION

G-CLOUD GUIDANCE

WHAT IS G-CLOUD?

The G-Cloud Framework Agreement allows all public sector organisations to purchase Cloud services from a wide range of approved suppliers, including many small and medium-sized enterprises (SMEs). The Framework Agreement complies with the Official Journal of the European Union (OJEU), removing the need for OJEU to be issued and thereby accelerating and simplifying the procurement process.

WHAT IS THE DIGITAL MARKETPLACE?

The Digital Marketplace is an online catalogue of ICT services available for purchase, developed within the G-Cloud strategy.

It lists the services, their main features and pricing; it also offers advanced search criteria designed to narrow down the most relevant options; and it sets out supplier terms and conditions.

WHEN SHOULD G-CLOUD AND THE DIGITAL MARKETPLACE BE USED?

If a buyer has a project whose requirements can be fully met by commoditised Cloud services, then the Digital Marketplace should be seen as the default procurement mechanism. It helps avoid tie-ins to long contracts and those custom-built solutions which can take a long time to develop and are expensive to manage, change and upgrade.

The rapid deployment nature of Cloud services should appeal to those who need solutions up and running quickly and the essential up-scaling/down-scaling and off/on capability within Cloud will appeal to those needing a trial or proof of concept, or where a project may flex or shrink over a period of time. That Cloud principle is there again – you only pay for what you need, making it a cost-effective option for even the most agile organisation.

WHAT ARE THE ADVANTAGES OF USING G-CLOUD AND THE DIGITAL MARKETPLACE?

Buying through G-Cloud and the Digital Marketplace has many advantages, the most obvious being that it is quicker and easier to choose a service provider, removing as it does the laborious process of issuing OJEU while still ensuring compliance with procurement regulations.

The readily available list of approved suppliers, the commoditised nature of the services and the transparent pricing also combine to strip cost out of the process as well as make the deliverables cheaper; and by opening Digital Marketplace up to many more companies, especially SMEs, there is a consequential uplift in choice, innovation and competitiveness. By harnessing the fundamental pay as you use principle of Cloud computing, buyers are guaranteed to only pay for what they actually need, eliminating the waste associated with over provisioning.

WHAT ELSE DO I NEED TO KNOW?

It is important to appreciate that what characterises services in the Digital Marketplace is that they have been designed – and priced – as a standard commodity. Under procurement regulations, G-Cloud suppliers cannot modify their Digital Marketplace services to meet specific requirements; bespoke rework has cost implications and risks undermining the good value inherent within commoditised ICT. For Digital Marketplace to work, you need to be sure from the outset that the functionality you need is indeed available ‘out of the box’.

G-CLOUD SERVICE OVERVIEW

Redcentric's Infrastructure as a Service (IaaS) enables customers to consume virtual server, storage and network infrastructure through a simple unified platform. The service:

- Allows IT to react faster and support business agility through faster delivery of IT solutions
- Delivers expert infrastructure support from Redcentric's server, storage and network teams
- Allows IT increase business value by focusing on the applications providing services to the business
- Allows IT to manage costs, whilst replacing capital with operational expenditure
- Can be deployed from shared or customer dedicated platforms

Redcentric's IaaS allows customers to gracefully migrate from traditional physical infrastructure into the cloud without requiring complete re-architecture or rebuild of applications. It is suited to customers that need to supplement on-premise infrastructure capacity or meet short term project requirements, and is already used by Redcentric's customers to deliver tier 1 applications.

The service provides the assurance of UK hosted and managed infrastructure delivered from Redcentric's ISO27001 accredited data centres. The underlying platforms are managed to a published service level availability by Redcentric covering; performance, capacity, patching, installation and upgrades.

INFRASTRUCTURE AS A SERVICE – SERVICE DEFINITION

IaaS uses enterprise-class platforms deployed in Redcentric's data centres and managed end to end by Redcentric, whether deployed on shared or customer dedicated hardware. The platforms provide a controlled environment for customers to provision server infrastructure through a self-service interface. The service provides a number of strategic advantages over traditional physical deployments:

- Simple unified approach to provisioning and managing server, storage and network resource
- Rapid provisioning of infrastructure allowing IT to react quickly to new requirements
- Consistent, standardised and repeatable deployment of infrastructure allowing IT to focus on the application layer upwards, that delivers real business value
- Delivered in either a public (shared hardware) or private (dedicated hardware) cloud platform

IAAS PLATFORMS & INFRASTRUCTURE LOCATION

IaaS can be delivered from shared and dedicated hardware platforms. IaaS is provided from Redcentric managed data centres in the UK and all associated data is stored in the UK only.

Shared hardware platforms host multiple customers, with each customer segregated into their own management, server and network environment through logical partitioning. Dedicated hardware platforms host a single customer that can also be logically partitioned to separate different operating environments, business units or programmes within the customer.

G-CLOUD SERVICE OVERVIEW

VIRTUAL SERVER SPECIFICATION

IaaS provides virtual servers with the following specifications as detailed in the table below.

| Component | Shared IaaS | Dedicated IaaS |
|--|--|--|
| CPU | 1 to 8 CPU to each virtual server. | 1 to platform limit to each virtual server, not exceeding 128 CPUs. The platform limit is dependent upon the underlying physical host CPUs deployed, with contemporary host servers ranging from 6 to 72 CPU physical cores. |
| RAM | 1 to 128GB in 1GB increments to each virtual server. | 1 to platform limit to each virtual server, not exceeding 4TB. The platform limit is dependent upon the underlying physical host RAM deployed, with contemporary host servers ranging from 64GB to 6TB. |
| The platform limit is dependent upon the underlying physical host RAM deployed, with contemporary host servers ranging from 64GB to 6TB. | Assumption in FSS global program is that the customer provides the detailed design. In the case of a hardware sales architecture or solution, the platform design usually needs confirming to ensure the BOM is fit for purpose. If Oracle provides, recommend the Advanced Customer Services Knowledge Workshop for Systems. | ASK Workshop |
| Storage | Each virtual server will consume storage to accommodate the operating system, application and data files. Storage can be allocated from a tier as defined below. <ul style="list-style-type: none"> • Archive – Suited for data archival • Standard – Suited to workloads where capacity is the main requirement. Provides up to 0.25 IOPS per allocated GB and an average response time of 30-50ms, based on 70/30 read/write split and 8KB transaction • Performance – Suited to workloads where a mix of capacity and transactional performance is required. Provides up to 1 IOPS per allocated GB and an average response time of 20-30ms, based on 70/30 read/write split and 8KB transaction size • High performance – Suited to workloads where transactional performance is the main requirement. Provides up to 2 IOPS per allocated GB and an average response time of 10-15ms, based on 70/30 read/write split and 8KB transaction size Virtual servers deployed from Redcentric templates will have a single operating system disk by default. The operating system disk size will vary depending upon the template used. Additional disks can be assigned to the virtual server via the self-service interface | Each virtual server will consume storage to accommodate the operating system, application and data files. Storage for dedicated IaaS, can be provided in tiers as per shared IaaS, or in blocks of capacity and performance such as 36TB and 90,000 IOPS. |

G-CLOUD SERVICE OVERVIEW

| Component | Shared IaaS | Dedicated IaaS |
|------------------|---|---|
| Network | 1 to 2 network connections per virtual server. | 1 to 10 network connections per virtual server. |
| Operating System | <p>A number of Redcentric provide operating system templates are provided, including:</p> <ul style="list-style-type: none"> • Windows Server 2008R2 standard and enterprise • Windows Server 2012 standard • Red Hat Enterprise Linux 6 and 7 • CentOS 6 and 7 | Redcentric will provide virtual server templates based on the operating systems, applications and tooling required. |

REPORTING

A real-time view of machines provisioned, regardless of whether they are switched on or off, along with allocated storage is available via the self-service interface.

OPTIONAL SERVICES

HOSTED PHYSICAL SERVERS

Redcentric can provide hosted physical servers using contemporary server components, deployed in Redcentric's data centres. Hosted physical servers are an option alongside virtual servers, to meet specific performance or vendor license requirements. The physical servers can be built with the following options specific to each chassis:

- CPU – 2, 4 or 8 socket server chassis utilising Intel or AMD processors
- RAM – 4GB to 6TB memory
- Storage – On board storage with RAID or external storage
- Network – 1Gbps or 10Gbps connectivity
- Add-on cards – Flash based cache modules and/or graphics off-load cards

MANAGED SERVER SERVICE

Redcentric's Managed Server Service (MSS) can provide management of the customer's servers hosted on IaaS or hosted physical servers. MSS includes:

- Server operating system deployment
- Server monitoring
- Server operating system patching
- Anti-virus deployment and management
- Server availability management

SUPPORTED PLATFORMS

MSS supports the following operating system versions when deployed on Redcentric IaaS or hosted physical servers:

- Microsoft Windows Server 2008 R2 Standard or Enterprise edition
- Microsoft Windows Server 2012 Standard edition
- Red Hat Enterprise Linux 6 and 7
- CentOS 6 and 7

SERVER DEPLOYMENT

Redcentric will deploy the server operating system on behalf of the customer, when provisioning a new managed server.

MONITORING

Redcentric will connect the managed server to a Redcentric server management network using a dedicated network interface. Redcentric will monitor the server using SNMP and for Windows servers will additionally install a software agent within operating system.

G-CLOUD SERVICE OVERVIEW

Redcentric will monitor the managed server for:

| Metric | Windows Server | Linux Server |
|--------------|--|---------------|
| Processor | Alert if processor exceeds a threshold over a set time period | Not monitored |
| Memory | Alert if memory exceeds a threshold over a set time period | Not monitored |
| Disk | Alert if disk usage exceeds a threshold over a set time period | |
| Availability | Alert if the server does not respond to polling requests | |

Alerts generated by monitoring will automatically raise an incident within Redcentric's service desk. Redcentric will investigate the alert and corresponding fault, as detailed in the Remedial Action paragraph below.

OPERATING SYSTEM PATCHING

Redcentric will apply patches to the managed server operating system. The process for applying patches will follow:

- Redcentric identify patches for each managed server based on the difference of available and applied patches
- Redcentric provide a list of identified patches to the customer for approval
- customer reviews and approves patches to be applied
- customer provides maintenance window to apply patches
- Redcentric apply patches, reboot managed servers and check all services set to automatic
- Redcentric updates the customer on patching progress

Redcentric apply patches, quarterly as a minimum, subject to the agreed priority with the customer and available maintenance windows.

ANTI-VIRUS

Redcentric will install, monitor and manage anti-virus software on each managed server. The anti-virus software used is provided by Sophos and is configured with the following functions:

- On access scanner: Scan executable, known vulnerable and file with no extensions on all drives
- Tamper control: Stop unauthorised configuration changes to the anti-virus software (Windows Server only)
- Device control: Block unauthorised external storage devices and wireless connection and short range access (Windows Server only)
- Auto update: Check for update virus and malware definitions every 15 minutes

SERVER PROTECTION

MSS must be taken with some form of server protection service, be it backup or snapshots.

G-CLOUD SERVICE OVERVIEW

SERVER ACCESS

Redcentric allows the following access to the managed server.

| Access method | Description |
|----------------|--|
| Console access | The managed server console can be accessed by a RDP session to a Windows server, or a SSH session to a Linux server. |

REMEDIAL ACTIONS

Redcentric will perform remedial actions on the managed server where a fault is identified through monitoring. The objective of the remedial actions is to re-instate the managed server to a working state that includes:

- Managed server responding to monitoring agent
- Managed server monitored counters all below the alert trigger thresholds
- Managed server disks not full
- All automatic servers are running

To return the managed server to a working state, Redcentric will perform the following remedial actions:

- Notify the customer upon detecting a fault with the managed server
- Investigate the fault and identify what steps are required. This could include:
 - Remove temporary files
 - Expand disk space
 - Restart the managed server
 - Restore the managed server from a previous protection point
- Coordinate remedial actions with the customer, specifically where it is identified that a customer application is at fault
- If necessary a rebuild to the managed server may be required

SOFTWARE LICENSING

MSS includes software licences to provide anti-virus and server monitoring.

SERVER ACCOUNTS

Each managed server will be created with local user and group accounts by default.

The managed server can be deployed within an existing customer domain if available for Windows Servers.

Redcentric can create, configure and monitor a new domain for the managed servers as part of the service activation. This work will be performed as a chargeable service.

MANAGED BACKUP SERVICE

Redcentric's Managed Backup Service (MBS) can provide offsite backup of customer data to an alternate Redcentric data centre, to protect against data loss from corruption or failure of the primary environment. MSB includes:

- Agent software to be installed on the customer's servers to process backup and restore data
- Vault hosted in an alternate Redcentric data to store customer backup data
- Web portal to provide a self-service portal for the customer to operate the service

G-CLOUD SERVICE OVERVIEW

HOW MBS WORKS

- MBS relies on three components: the director, agent and web portal:
- The director, which is hosted and managed by Redcentric, controls a vault for data storage. The director maintains the integrity of the vault and control access to the vault
- The web portal, which is hosted and managed by Redcentric, is to be used by the customer to manage backup tasks and data restores
- The agent is installed onto customer servers to be protected. The agent communicates with the director to backup or restore server data and with web portal for task management
- The agent will respond to its backup task, configured on the web portal, and send the server's data directly to director for storage in the vault
- Should a restore be required, the customer will connect to the web portal to initiate the restore process

AGENT PLUGINS AND SUPPORT PLATFORMS

The agent is a lightweight application running on the server to be protected. The agent executes backups on the server based on parameters configured via the web portal. When a backup task is due for execution, the agent reads the backup task parameters and executes the backup accordingly.

The parameters that define a backup are referred to as a task. One or more backup tasks may be created to implement the backup necessary to protect a server. Each time a backup is executed a log file is created and a catalogue is created. The log file is an audit trail for the backup and displays the start time, connection information, statistics and summary information regarding the backup. The catalogue is an index for all the files that are contained in the backup. The catalogue contains file attribute information, dates, full directory information, and sizes. The catalogue information is used to search for files, as well as browse, and initiate restores. At the director, the data for each backup is contained in its own safeset.

The agent executes restores in a similar manner to backups. A restore definition file is created containing the parameters necessary to complete a restore of all or a subset of files in a specific backup. The agent makes a connection to the director. The director locates the safeset (based on the catalogue), finds the requested file(s), and the agent receives the file data from the server.

The agent supports the following customer operating systems and applications:

- Microsoft Windows Server
- Solaris
- Linux
- Microsoft Exchange Server
- Microsoft SQL Server
- VMware vSphere

The agent can be deployed to support the following customer operating systems and applications, although these will not be directly support by Redcentric:

- IBM AIX
- HP UX
- Oracle Database on Microsoft Windows Server
- Microsoft Hyper-V

Redcentric endeavour to provide agents that support the above operating systems and applications in-line with each vendor's support and end of life cycles. A full list of supported versions and service levels can be found here: www.redcentric.co.uk/downloads

BACKUP SOURCE TYPES

There are multiple source types that can be selected for backup. The options are:

- Local drive
- UNC backup
- Microsoft Exchange Server
- Microsoft SQL Server
- Oracle Database
- Virtual Machine on VMware vSphere
- Virtual Machine on Hyper-V

G-CLOUD SERVICE OVERVIEW

ENCRYPTION, DELTA PROCESSING AND STORAGE

Customer backup data is encrypted in transit and at rest by default. The customer will enter an encryption pass-phrase as part of the backup task configuration. The encryption pass-phrase is required for each restore.

Loss of the encryption pass-phrase means that data from the backup task cannot be restored.

For the avoidance of doubt, Redcentric have no visibility of the encryption pass-phrase and retention of the encryption pass-phrase is the responsibility of customer.

The first time a backup task runs the agent will compress and encrypt the backup data before transmission to the director. This process is referred to as a seed backup and will typically store 50% of source data volume. The seed backup generates the first safeset for the backup task.

Subsequent backups will utilise delta processing to detect changes since the last backup. The backup data changes will be compressed and encrypted before transmission to the director.

Each backup completion generates a new safeset. For a particular backup task, the backup data stored will consist of the seed safeset and multiple delta safesets.

The director manages the lifecycle of backup data in line with backup policies, by expiring, optimising and deleting safesets in the vault. All backup data will be stored as safesets in the vault.

BACKUP SCHEDULES

MBS has an extensive calendar based scheduler for automatically executing backup sets. Schedules can be defined to execute backups daily, weekly, monthly, or on a more defined frequency, such as the last day of the month.

Multiple schedules can be defined, and multiple backup sets can be associated with a schedule. Where multiple backup sets are associated to a schedule, the customer's system administrator can define the number of concurrent backup sets to be executed and the priority in which they should be executed.

SOFTWARE LICENSING

Redcentric can assist the customer with license enablement and fulfilment as required by specific vendors, such as Microsoft, Citrix and Red Hat.

For environments where the customer is using Microsoft software, the customer cannot bring their Microsoft licences onto Redcentric hosted services, such as shared IaaS, except where:

- The server hardware is physically dedicated to the customer
- Microsoft licence mobility applies
- The customer has an existing service provider licence agreement with Microsoft

The customer must notify Redcentric of any Microsoft software that it intends to operate on the service, to allow Redcentric to identify the correct licensing method. For licence mobility use cases, Redcentric will work with the customer to work through the process. For all cases where the customer cannot bring their licences, Redcentric will provide licences as a separate monthly charge.

Redcentric will provide a Microsoft Windows Server licence for all customer servers deployed via IaaS.

Microsoft licence mobility allows the customer to host their licences with an approved Microsoft licence mobility partner, such as Redcentric and is limited to the six server products listed below. Licence mobility requires the customer to have valid software assurance for duration of the product being hosted with Redcentric. The six eligible Microsoft server products are:

- Microsoft SQL Server database server
- Microsoft Exchange server
- Microsoft SharePoint server
- Microsoft Lync server
- Microsoft System Center server
- Microsoft Dynamics CRM business software

Software assurance is included with some Microsoft volume licensing programs, such as an enterprise agreement and can be purchased as an add-on to other programs.

G-CLOUD SERVICE OVERVIEW

STORAGE REPLICATION AND SNAPSHOT SERVICE

Redcentric can provide storage replication and snapshot services, which can be utilised for dedicated IaaS and hosted physical servers to:

- Perform storage snapshots and retain within the data centre for operational data recovery
- Perform storage snapshots and replicate these snapshots to a second Redcentric data centre for operational data recovery and as part of a disaster recovery process

DISASTER RECOVERY SERVICE

Redcentric can provide a disaster recovery service (DRaaS) for customer virtual servers hosted on shared and dedicated IaaS. DRaaS allows the customer to:

- Recover from primary virtual server failure to a second data centre
- Recover from application failure
- Recover from site outages
- Perform disaster recovery tests for operational and compliance purposes
- Prioritise servers into different recovery point tiers
- Prioritise server into different recovery groups

DRaaS utilises replication and automation to provide a consistent and repeatable service, independent of the scale of the customer's primary environment. DRaaS must be consumed in combination with Redcentric's storage replication and snapshot service.

PROTECTED SERVERS

The customer can include all, or a subset, of their servers hosted on Redcentric IaaS to be covered by DRaaS.

IaaS RESOURCE

DRaaS will maintain each protected server's virtual hardware configuration, including:

- Number of virtual CPUs
- GB RAM
- GB storage
- Number of network interfaces
- Network configuration (IP addresses, subnet mask, gateway, static routes, domain name, etc.)

NETWORK

DRaaS recovers the protected servers onto pre-defined networks within the recovery environment, such as DMZ, production, management and so on.

Redcentric work with customer during on-boarding to define and implement supporting network services to enable access to the customer's protected servers on recovery.

RECOVERY TIME AND POINT OBJECTIVES

DRaaS provides several server recovery tiers to allow the customer to prioritise service recovery. The priorities can be mixed across protected servers and will be agreed and set during customer on-boarding.

The following table defines the default recovery point and time objectives applicable to shared IaaS.

| Priority | Recovery Point Objective | Recovery Time Objective |
|----------|--------------------------|-------------------------|
| 1 | 30 minutes | 4 hours |
| 2 | 2 hours | 8 hours |
| 3 | 24 hours | 24 hours |

Dedicated IaaS provides flexibility to set different recovery point and time objectives for each priority tier but will not offer lower than 30 minutes and 4 hours respectively.

G-CLOUD SERVICE OVERVIEW

RECOVERY INVOCATION

Redcentric will provide a self-service interface to allow the customer to invoke test and full disaster recovery.

NETWORK CONNECTIVITY SERVICES

Redcentric can provide network connectivity services:

- N3
- PSN
- Internet

MANAGED DATABASE SERVICES

Redcentric can provide managed of Microsoft SQL server and Oracle databases hosted on shared IaaS, dedicated IaaS and hosted physical servers.

Please see alternative G-Cloud offering.

MANAGED DESKTOP SERVICES

Redcentric can provide hosted desktops to support access to customer services hosted on shared IaaS, dedicated IaaS and hosted physical servers.

Please see alternative G-Cloud offering.

INFORMATION ASSURANCE

Redcentric has delivered secure hosting solutions to the Public Sector for a number of projects

The below list details the Accreditations and Standard Redcentric complies with our is certified to:

| | |
|---|---|
| Authorised to process HM Government protectively marked data | ✓ |
| Actively engaged within the HSCN & PSN programs | ✓ |
| An NHS Health & Social Care compliant commercial third party | ✓ |
| An NHS Health & Social Care accredited N3 Service Provider | ✓ |
| Accredited to connect and supply services over the JANET academic network | ✓ |
| Adhere to PCI/DSS payment card standards | ✓ |
| Accredited to the ISO9001 quality management standard | ✓ |
| Accredited to the ISO27001 security management standard | ✓ |
| Compliant with the ISO31000 standard for risk management | ✓ |
| Compliant with Cabinet Offices Security Policy Framework, Information Assurance standards 1,2,4,5,6 & 7 | ✓ |
| and the Management of Risk framework | ✓ |
| IGT | ✓ |
| Authorised to process and store Person Identifiable Data (PID) | ✓ |

INFORMATION ASSURANCE

In addition to the above Redcentric also has in place the following CESG, Cabinet Office and Other Government Standards

CESG, CABINET OFFICE AND OTHER GOVERNMENT STANDARDS

| Document | Title Author |
|--|----------------|
| HMG Security Policy Framework | Cabinet Office |
| HMG Information Assurance Standard Nos.1&2 – Information Risk Management | CESG |
| HMG Information Assurance Standard Nos.1&2 – Supplement: Technical Risk Assessment & Risk Treatment | CESG |
| Technical Threat Brief No 1 - Assessment of Technical Threat | CESG |
| HMG Information Assurance Standard No.4 – Management of Cryptographic Systems | CESG |
| HMG Information Assurance Standard No.5 – Secure Sanitisation | CESG |
| Good Practice Guide No.7 - Protection from Malicious Code | CESG |
| HMG information Assurance Standard No.7 -Authentication of Internal Users of ICT Systems Handling Government Information | CESG |
| Good Practice Guide No.8 – Protecting External Connections to the Internet | CESG |
| Good Practice Guide No.13 – Protective Monitoring for HMG ICT Systems | CESG |
| Good Practice Guide No.14 - UK Requirements for TEMPEST Countermeasures | CESG |
| Good Practice Guide No.32 – Audit Handbook for CESG Assured Service (Telecoms) | CESG |
| Good Practice Guide No.47 – Information Risk Management (including Accreditation & RMADS) | CESG |
| Security Procedures – Telecommunications Systems & Services | CESG |
| BS ISO/IEC 27001:2005 – Information technology. Security techniques. Information security management systems – Requirements. | ISO |
| BS ISO/IEC 27002:2005 Information technology. Security techniques. Code of practice for information security management. | ISO |

INFORMATION ASSURANCE

Redcentric can confirm we also meet the requirements of the following industry laws and guidelines:

INDUSTRY COMPLIANCE REGISTER

Unauthorised Disclosure of Official Information:

- Official Secrets Act 1911
- Official Secrets Act 1989

Official Disclosure:

- Public Records Acts 1958 and 1967 Data Protection Act 1998
- Freedom of Information Act 2000
- Human Rights Act 1998

Communication and Information Systems

- Computer Misuse Act 1980
- Copyright (Computer Programs) Regulations
- Civil Evidence Act 1968 and the Police Criminal Evidence Act Wireless Telegraphy Act 1949
- The Communications Act 2003
- Regulation of Investigatory Powers Act (RIPA) 2000
- The Telecommunications (Lawful Business Practise) (Interception of Communications) Regulations 2000

Miscellaneous:

- Copyright Designs and Patents Act 1988
- Health and Safety at Work Act 2998

ON-BOARDING PROCESSES / SCOPE

SERVICE ACTIVATION

Redcentric will provide professional services to assist the customer with the service activation. This will encompass, but is not limited to, project management, network design, server design, IaaS platform build.

Redcentric will enable logon to the self-service interface for specified customer contact as part of the service activation. By default this will include the identified contact on the service agreement, but can include additional contacts identified during service activation. The self-service interface provides a single interface to create, manage and remove infrastructure hosted within the service. The self-service interface for shared IaaS platforms is accessible by the Internet. The self-service interface for dedicated IaaS can be restricted to specific networks, such as the N3, Internet and private VPN.

Redcentric will setup network resources as part of the service activation. This will include identification of IP addresses, default gateways, firewall configuration, etc.

Upon service activation, the customer will be able to build their infrastructure within the self-service interface. The customer will be able to build a new server using a Redcentric provided template. Additionally the customer can engage with Redcentric Professional Services to:

- Migrate physical server infrastructure
- Import or create a new server build template specific to the customer's needs
- Import a server image from the customer's hypervisor platform

SERVICE ON-BOARDING PROCESS

The service is inclusive of Redcentric's standard service delivery implementation process covering design, supply, implementation and transition into support. The delivery components are detailed as follows:

- **Generate high level design**
Provides a high level view of the required service, highlighting MoSCoW analysis and areas requiring further investigation
- **Generate low level design**
Provides a detailed design to be mutually agreed by both parties that will form the base level of the service to be implemented and delivered
- **Generate a detailed migration plan**
Define application and service groups to be migrated with an understanding of interdependencies, migration methods and responsibilities
- **Install and configure the compute, storage and network infrastructure**
Based on the final design Redcentric will carry out the installation of all server, storage and infrastructure in line with network equipment installation in both the Reading and Harrogate data centres. On completion this will allow the migration of applications from the existing customer environments to commence. Includes executing and witnessing test plans as agreed with the customer during the low level design
- **Migrate application/service groups in line with the customer's change management procedures**
Upon completion of the installation of all key server, storage and networking equipment and in line with the agreed migration plan and adhering to the customer's change management procedures Redcentric will assist the customer in migrating services. The implementation of the proposed service will be managed by a team of delivery engineers and project managers.

ON-BOARDING PROCESSES / SCOPE

Redcentric will assign a dedicated project manager as a single point of contact for the delivery of all services to the customer, who will engage with the relevant customer staff at the earliest possible stage, to ensure full project lifecycle management. In addition, there will be a minimum of 2 (PRINCE2 qualified) project support staff assigned to assist the project manager throughout the delivery, ensuring continuity of service. In addition, the service delivery department operates a clearly defined escalation hierarchy to ensure the prompt resolution of any concerns or queries.

The Redcentric project manager will:

- Contribute to project initiation documentation as and when desired
- Agree and adopt a well-defined communication strategy and communication plan with customer at the earliest opportunity
- Liaise with customer to ensure that a project kick-off meeting is held at the earliest opportunity, between all resources involved, to discuss and agree roles and responsibilities, deliverables, timeframe, migration strategy and testing procedures
- Hold regular planning meetings/calls (as defined by the customer) throughout the lifecycle, where the previous stage of work is reviewed and the next stage of work examined in detail
- Issue regular project updates (frequency determined in agreement with the customer), in addition to regular checkpoint and highlight reports as required by the customer
- Ensure the customer approval and signoff of migration plans and any associated documentation
- Hold a full project "lessons learned" review when all services have been delivered/migrated and fully document these, to be issued to both parties with the aim of continual improvement.

IAAS ACCEPTANCE CRITERIA

The following are the Acceptance Criteria applicable to IaaS:

- Verify that the primary Customer contact can access the IaaS self-service portal

The Customer will need to nominate (pre-installation) and make available an appropriately qualified representative to work the Redcentric representative during the service delivery. The nominated Customer representative accept delivery of IaaS as a fully commissioned service sign-off document and return this to Redcentric. The installation will be carried out between 09:00 – 17:30, Monday – Friday, except where agreed with the Customer.

OFF-BOARDING PROCESSES / SCOPE

Redcentric will work with the customer to provide an orderly transition off the IaaS service. Redcentric will assist the customer to generate an exit plan that details:

- The transition of the IaaS service to a replacement supplier with the minimum of disruption
- Provide an estimate of Redcentric transition assistance required
- Provide an estimate of the Redcentric personnel that may be required to provide transition assistance to the customer to execute the exit plan
- Provide a list of backups and storage on which customer data is hosted and needs to be migrated to the customer or a replacement supplier.

TRANSITION ASSISTANCE

The transition assistance shall include any one or more of the following:

- Providing expertise and assistance to the customer to execute the exit plan
- Providing technical advice to the customer or replacement supplier to facilitate provision of the replacement service
- Decommissioning of hardware and other infrastructure
- Providing data clearing/cleansing services

Redcentric will be entitled to charge the customer for time and material spent by Redcentric and its sub-contractors to execute the exit plan.

OUT OF SCOPE FEATURES

The following elements are out of the scope of the IaaS service:

- **Customer software application licenses agreements**
IaaS does not include licences for customer applications by default. Redcentric can provide subscription licence services for Microsoft, Citrix and Red Hat products
- **Customer application, design, installation and support**
The customer shall be responsible for design, installation and support of the software applications operating on the IaaS service
- Management of the customer's server operating system, unless the optional managed server service is provided
- Backup of the customer's data, unless the optional managed backup service or storage replication and snapshot service is provided
- Disaster recovery of the customer's virtual servers, unless the optional disaster recovery service is provided

DETAILS OF THE LEVEL OF BACKUP/RESTORE AND DISASTER RECOVERY THAT WILL BE PROVIDED;

The standard shared and dedicated IaaS services are provided with:

- High availability features within a single data centre to protect against component failure, allowing the service to survive a host, switch, storage controller or disk failure
- Data is stored in a Redcentric UK data centre

IaaS can be enhanced to with offsite backup and disaster recovery, where data is copied to a second Redcentric UK data centre. The combination of backup and disaster recovery provides both geographic and technology separation.

PROFESSIONAL SERVICES

If your service has the option of professional services (Design, Build, Consult etc) then you need to describe all these options here and make sure all costs are covered in the SFIA rate card for your service if the costs are different from our standard day rate costs.

Redcentric provide inclusive professional services within the delivery of IaaS, covering:

- Presales consultation for Redcentric services
- Completion of all supporting documentation (Schematics and schedules)
- Provision of services as per the supporting documentation

Redcentric provide additional chargeable professional services to cover:

- Creation of customer specific server templates
- Conversion and import of customer servers into the service
- Excess engineer time (incurred through additional onsite works required, customer delays or lack of site readiness)
- Specialist disaster recovery / business continuity planning and implementation
- Business and technical strategy planning
- Out of business hours installations
- Failed appointments
- Follow up technical consultations such as redesign workshops
- Specialist post implementation design work – for example full migration planning, documentation and implementation

CONNECTIVITY

Robust connectivity between an individual end user and the cloud services that user needs to access is essential. Consequently Redcentric designed, built and continues to operate its UK-wide core network, retaining full control. The network was built to deliver the highly available, stable connectivity required for users to access business critical applications. To maximise resilience, multiple carriers provide the core connectivity and routing and switching devices are used from market leaders Cisco Systems.

The Redcentric highly resilient, high capacity core has connections to the following 3rd party networks to provide multiple options for users wishing to access cloud services, applications and data:

- Geographically resilient connectivity to multiple tier-1 Internet transit providers and Internet exchanges
- Geographically resilient connectivity directly into the inner core of the NHS N3 Healthcare network
- Geographically resilient connectivity into the JANET education network
- Geographically resilient connectivity into the Public telephone network
- Geographically resilient connectivity into several major carrier's broadband and Ethernet access networks

Dependent upon specific requirements, customers can therefore access Redcentric centralised cloud services via the internet, via an existing Janet or N3 connection or via a direct, private circuit using one of the technologies listed below:

- 100Mbps and 1Gbps Ethernet fibre access
- Copper Ethernet access (EFM) providing speeds between 2 and 35Mbps
- Cellular mobile access – ie. 3G & 4G
- ADSL fixed-rate, ADSL Max, ADSL 2+, or shared fibre (FTTx) broadband access.

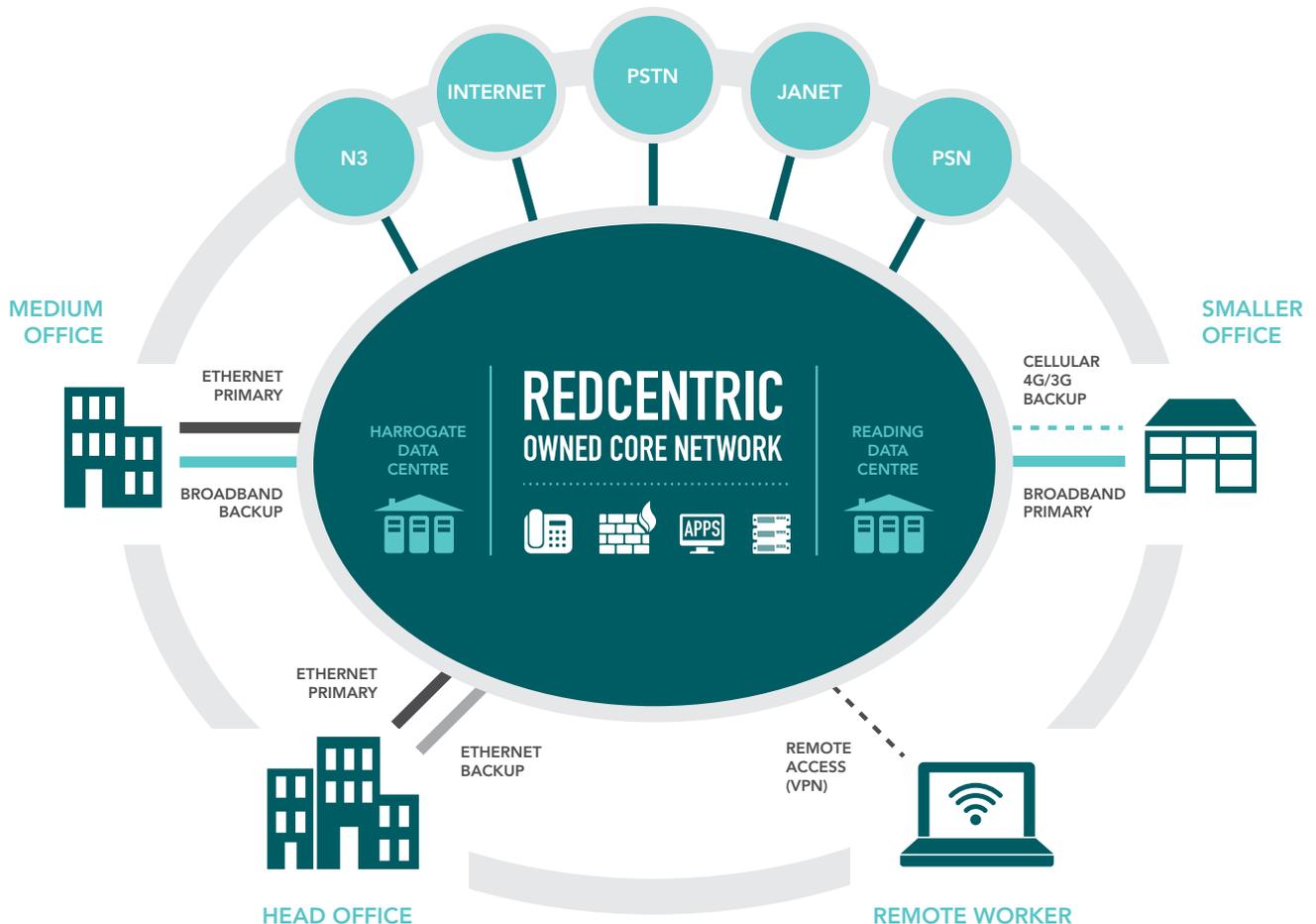


Diagram showing options to access Redcentric cloud services

CONNECTIVITY

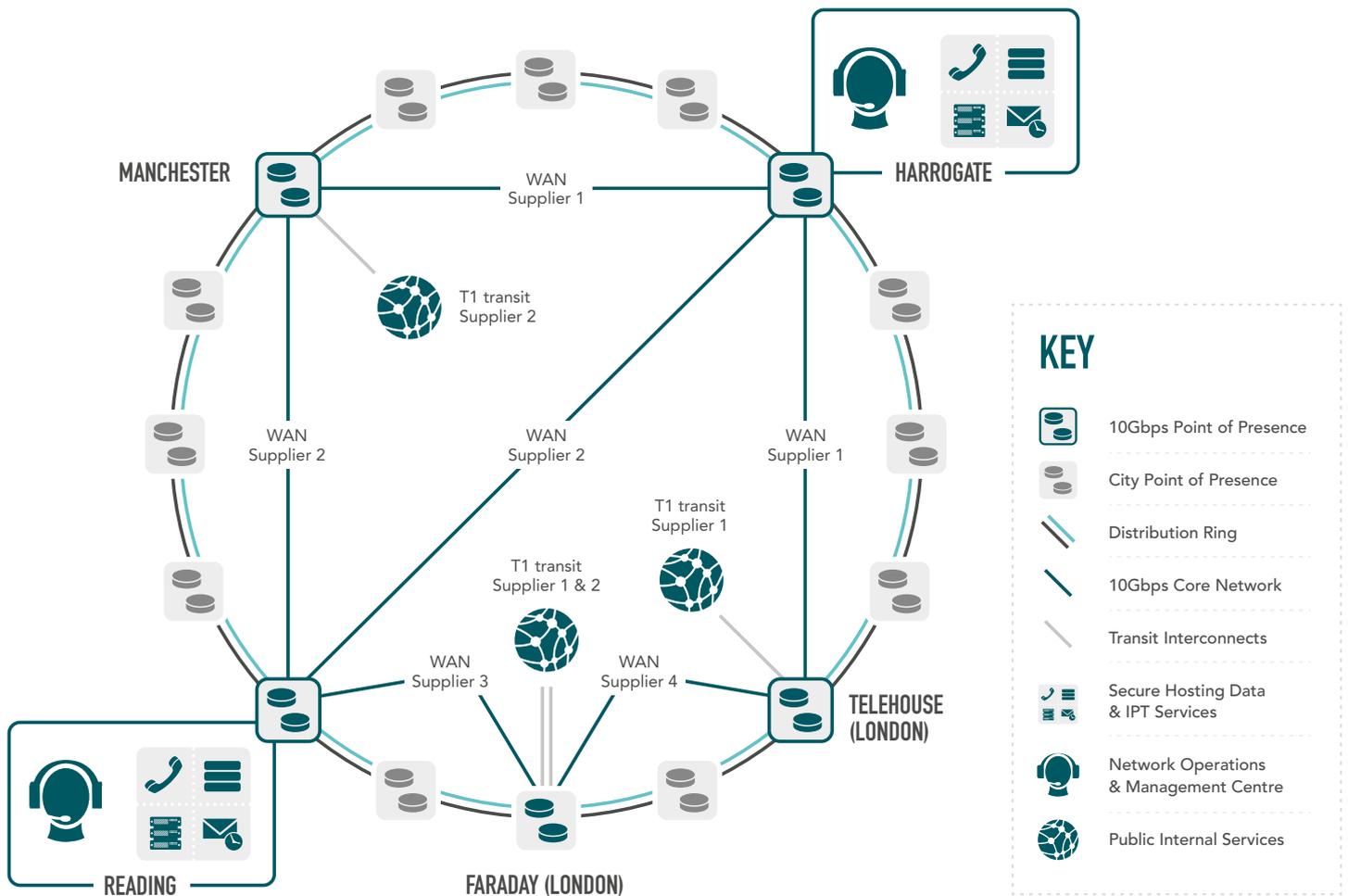
Where customers wish to deploy a private circuit from one or more of their sites to the Redcentric core, Redcentric undertakes the following tasks as part of the Managed Connectivity Service allowing the customer to concentrate on their core business:

- Identification of the best technology and supplier to meet specific connectivity requirements
- Design connectivity solution including any resilience, QOS and convergence objectives
- Project Manage the implementation of the solution
- Procure, configure, deploy and test all components
- Provide 24x365 monitoring with proactive fault management
- Provide access to performance reporting information

REDCENTRIC'S 10GBPS CORE AND DISTRIBUTION NETWORKS

Redcentric's key POPs and Data Centres are connected via a 10Gbps core backbone where each site connects to at least two others using different carriers.

The 10Gbps network is further enhanced by a 2.4Gbps distribution network that has POPs situated in major cities around the UK. POPs are used for directly connecting client sites in major cities to the Redcentric network, typically using short-haul Ethernet connections.



CONNECTIVITY

INTERNET CONNECTIVITY

Redcentric's Internet connectivity service provides robust Internet connectivity to customer sites and to customer environments within Redcentric data centres. Redcentric has fault-tolerant interconnections with several Tier-1 transit providers at various sites across the UK. Internet access can be delivered to customer sites using various broadband and Ethernet circuit options as detailed above, and is available within all Redcentric data centres.

Redcentric is an Internet registry partner of RIPE (Réseaux IP Européens) and has devolved authority for allocated IP address space. Redcentric also runs a Border Gateway Protocol (BGP) routing Autonomous System (AS). For outbound Internet browsing, Redcentric assumes clients connecting to the Internet will use Port Address Translation (PAT) to map internal private Internet addresses to a single public Internet address.

The Redcentric Internet service incorporates a secondary email server as a backup facility to the customer's own Simple Mail Transfer Protocol (SMTP) email server should it be required. If the customer's email server or network connection fails, incoming emails will be temporarily held on the Redcentric resilient secondary email server infrastructure. These stored mails will then be sent to the customer's email server once it is back online.

As part of the Internet service, Redcentric provides highly available, resilient Domain Name Service (DNS) infrastructure to resolve Internet Protocol (IP) addresses for outgoing web, email and other requests from users of the Internet service.

FIREWALL

Redcentric's managed firewall service is based on a hardware appliance or specialist firewall software running on a purpose built platform. The firewall controls traffic between devices on networks with different security levels. The firewall is configured to meet a customer's specific requirements. The managed firewall service is designed to offer passive defence, providing restrictions on the source and destination IP addresses, service ports and/or applications that are allowed to pass through the firewall. Redcentric monitors the firewall for hardware failure and staff manage the firewall configuration and provide advice on proposed configuration changes.

The function of any firewall is to filter traffic as it passes from one network to another, also called border protection, based upon pre-determined criteria. No firewall can protect against all protocol or application weaknesses, and new software vulnerabilities are discovered regularly. All devices protected by a firewall should be administered with the same level of diligence as if the firewall were not present.

FEATURE SUMMARY

- Single device or high availability firewall pairs are available.
- Choice of firewall vendor for multi-layer protection
- Firewalls can be deployed on a customer's site or within a Redcentric Data centre
- Support for site-to-site Virtual Private Networks (VPN)
- Support for remote client VPNs for home workers.
- Utilises Network Address Translation (NAT) to hide customer network addresses from the Internet (IPv4 only)
- Fully configurable rule-base managed by Redcentric's trained professionals.
- Customers receive advice and guidance on the effectiveness of the implemented rule-base, and any proposed changes.
- Application aware, Layer 7 model options available
- Unified Threat Management (UTM) functionality options
- Multi-context hardware firewall options

Redcentric configures the firewall(s) with rules that meet the customer's operational requirements. Redcentric recommends that prior to implementing any firewall solution the customer undertakes a full security review. One component of this security review should be the creation of a network security policy. The security policy can form the basis of the firewall rule-base and UTM configuration that will be implemented on the firewall(s).

Redcentric deploys firewalls from various vendors including Cisco Systems, Fortinet and Palo Alto. Intrusion Detection and Prevention (IDS/IPS), Anti-virus, and Web filtering functionality is optionally available on certain models. Firewalls are available in various sizes, and with capabilities to meet the needs of customers wishing to enforce network boundary security at small office sites through to very large corporate head offices and hosting environments within data centres.

All subscription and licensing costs required to deliver basic and, when chosen, optional functionality are included in the charges for the managed firewall service.

Redcentric supports IP-Security (IP-sec) and Secure Socket Layer (SSL) VPNs to firewalls and routers and other devices where compatibility exists.

CONNECTIVITY

Redcentric also supports IP-sec and optionally client based SSL remote user VPNs. User authentication options include integration with corporate directory structures (e.g. Lightweight Directory Access Protocol – LDAP), external 2-factor authentication systems (available separately), and suitable third-party authentication servers using the Remote Access Dial-in User Service (RADIUS) protocol.

Redcentric polls managed firewalls regularly to check for availability and critical events (these include hardware failures, environmental alarms etc. where available). Service tickets are automatically generated on the Redcentric system when faults are detected. The tickets are managed by engineering professionals in Redcentric's operations centre

UTM OPTION

Anti-virus, content filtering and intrusion detection updates are periodically downloaded to the firewall automatically.

A single policy/profile for each of these services will be defined which can be tailored and applied to certain traffic as required. This single policy/profile is suffice for the majority of customers but Redcentric will create and administer additional policy/profiles as required.

When the firewall detects that an AV or IDS signature has triggered, the customer will be notified so that they can investigate accordingly.

SECURE REMOTE ACCESS

Redcentric's Secure Remote Access service offers a robust, flexible and secure way for remote workers to access information and business applications whilst away from their usual work location. A piece of software on the user's PC (or tablet or other remote device) communicates with the Redcentric platform across a ubiquitous Internet connection and a secure tunnel is built between the two. The user's data is passed through this tunnel, then from the remote access platform to the customer environment hosting the application and/or data. The service includes highly secure two-factor authentication to ensure that only legitimate users can connect. Strong Encryption is implemented on the tunnel between the user and the platform to protect sensitive information in transit.

Remote Access Service supports organisations by:

- Enables Remote Working - Enables NAS's staff to access key resources remotely via any internet connection and suitably enabled device
- Supports Business Continuity – The service allows NAS's users to continue working away from their formally connected offices, enabling business continuity and recovery from unexpected or disastrous events that prevent them attending their official place of work
- Increased Front-end Focus – The service is managed by Redcentric hence allowing NAS's staff to concentrate on their core business activities
- Scalable and Flexible – The service delivers best-of-breed remote access connectivity and can scale easily to meet the needs of customers as they grow
- Access to Value-Adding Service Propositions – The service is designed to complement, support and enhance the entire Redcentric portfolio of cloud based services

SERVICE CONSTRAINTS

MAINTENANCE WINDOWS

Redcentric is committed to continually improving and expanding its core network and data centre capabilities, thus striving to provide the highest levels of service to its customers. In order to facilitate these improvements, it is necessary to carry out essential work from time to time. These activities are carefully scheduled through the use of an internal change control process which is designed to present maximum visibility of that change and thereby ensure that planning and implementation are carried out to minimize the effect on customers and their network services.

For the benefit of our customers Redcentric will allocate a pre-determined planned window which will be utilised to carry out any core infrastructure changes which may carry a minimal risk of disruption to service, or in some instances a period of service downtime which would be kept to an absolute minimum. In either instance, customers will be notified of the full details of the requirement with a minimum of 14 days' notice prior to the maintenance window. Generally Redcentric will endeavour to carry out any improvements in the reserved windows listed below; however unforeseen circumstances might dictate that improvements are carried out at other times. Notwithstanding such notice Redcentric shall still provide the Services in accordance with the applicable Service Level.

Redcentric will endeavour to give customers as much notice as possible.

In very exceptional circumstances, there may be an emergency requirement to instigate work outside of these maintenance windows, however, every effort will be made to avoid disruption during core service hours and prior notification will be issued at the earliest possible opportunity.

There may be occasions when there is a requirement for an Emergency Change to be carried out (e.g. a hardware failure to a core network device which has caused loss of resilience). Emergency Change allows for Change to be fast tracked with <14 days customer notification. Emergency Change is only used in exceptional circumstances, where there will be a significant business impact should the change not be expedited. Emergency Change records are thoroughly reviewed by the Redcentric Change Advisory Board (CAB) to assure they were justified.

LEVEL OF CUSTOMISATION PERMITTED

Redcentric cannot provide any customisation of shared IaaS.

Redcentric can provide customisation of dedicated IaaS. This includes, but is not limited to:

- Build to specific security requirements
- Build to specific hypervisor host specifications to meet the customer use case, such as CPU sockets/cores, memory footprint, accelerator cards, graphics card, etc
- Build to include specific storage technologies, such as all flash arrays

SCHEDULE FOR DEPRECATION OF FUNCTIONALITY/FEATURES

Redcentric commit to providing services for the duration of the G-Cloud contract.

PRICING

SOLUTION PRICING

Redcentric utilise flexible charging for IaaS to enable the customer to scale up and down on their use of the service. This operates on a monthly in arrears basis allowing Redcentric measure for the service use and then charge the customer.

Redcentric charge for service activation to cover:

- Professional services provided to assist with customer on-boarding
- Capital expenditure incurred by Redcentric, to build customer dedicated platforms, on behalf of the customer

SERVICE ACTIVATION CHARGE

| Service Element | Details | Charge |
|-----------------------------------|--|---|
| Shared IaaS | Redcentric will provide the customer with access to the IaaS platform to provision virtual machines | Included in the monthly service charge |
| Dedicated IaaS | Redcentric will design, build, install and test the customer dedicated platform. The hypervisor hosts quantity and configuration will be agreed with the customer | Charge specific to the quantity and configuration of hosts and storage platforms deployed |
| Dedicated IaaS | Charge for Redcentric to assure the environment to Official level | £15,000 |
| Dedicated IaaS primary storage | Charge to design, build, install and test a storage platform dedicated to the customer. The storage platform quantity and configuration will be agreed with the customer | Charge specific to the quantity and configuration of storage deployed |
| Hosted physical servers | Redcentric will design, build, install and test the server. The server quantity and configuration will be agreed with the customer | Charge specific to the quantity and configuration of hosts deployed |
| Managed server service | Redcentric will deploy the server, record the configuration and setup monitoring. | £200 per server (Windows and RHEL) £200 per server (Security hardening) |
| Managed backup service | Redcentric will install the agent software and plug-ins on all source servers, provide training for customer admin staff and enable the off-siting of backup data | £1,500 for service setup Agent plugins included in the monthly service charge |
| Software licensing | Redcentric will make the licence from its service provider agreements | Included in the monthly service charge |
| Storage replication and snapshots | Redcentric will configure replication and snapshots for agreed servers and schedules | Included in the monthly service charge |
| Disaster recovery service | Redcentric will design, build, install and test the disaster recovery service, including shared or dedicated IaaS resource for recovery | Charge specific to the quantity and configuration of hosts deployed |

PRICING

| Service Element | Details | Charge |
|-------------------------------|--|---|
| Network appliance service | Redcentric will design, build, install and test the network appliances | £1,500 Cisco ASA-5515X pair £1,500 Juniper SRX-220 pair £1,500 Cisco ASA-5525X pair £1,500 Citrix NetScaler hardware pair £5,600 IDS on Cisco ASA For Citrix NetScaler software pair, included in the monthly service charge |
| Network connectivity services | N/A | Refer to separate Redcentric G-Cloud service definition |
| Managed database service | N/A | Refer to separate Redcentric G-Cloud service definition |
| Managed desktop service | N/A | Refer to separate Redcentric G-Cloud service definition |

STANDARD DELIVERABLES (NO ADDITIONAL CHARGES)

Redcentric provide inclusive professional services within the delivery of IaaS, covering:

- Presales consultation for Redcentric services
- Completion of all supporting documentation (Schematics and schedules)
- Provision of services as per the supporting documentation

ADDITIONAL CHARGEABLE SERVICES

Redcentric provide additional chargeable professional services to cover:

- Creation of customer specific server templates
- Conversion and import of customer servers into the service
- Excess engineer time (incurred through additional onsite works required, customer delays or lack of site readiness)
- Specialist disaster recovery / business continuity planning and implementation
- Business and technical strategy planning
- Out of business hours installations
- Failed appointments
- Follow up technical consultations such as redesign workshops
- Specialist post implementation design work – for example full migration planning, documentation and implementation

PRICING

| Service Element | Details | Charge |
|-------------------------|--|-------------------------|
| Professional Services | Technical Consultancy – Onsite – UK Only | £1,000 / day |
| | Technical Consultancy – Offsite | £750 / day |
| | Technical Consultancy – Onsite – UK Only (evening/night) | £1,500 / day |
| | Technical Consultancy - Offsite - (evening/night) | £1,000 / day |
| | Technical Consultancy – Offsite – Rest of World | £1,200 / day + expenses |
| | Technical Project Management – Onsite | £1,000 / day |
| | Technical Project Management – Offsite | £750 / day |
| Delivery & Installation | Engineer excess hours charges (per hour) | TBC / hour |
| | Engineer out of hours surcharge | TBC / hour |
| | Failed engineer appointment | TBC / visit |

ONGOING MONTHLY SERVICE CHARGE

The following table details the chargeable elements associated with the ongoing use of the IaaS.

IAAS MONTHLY SERVICE CHARGE

| Service Element | Details | Monthly Charge |
|--|---|---|
| Share IaaS / Resource unit | The variable charge based on the CPU and RAM resources allocated to powered-on servers in any given month | £10.00 |
| Dedicated IaaS / Resource unit or host | Customers can choose either variable charges for dedicated IaaS based on resource units, or a fixed charge for the number of IaaS hosts deployed. Subject to a minimum order of 500 resource units or 4 hosts. | £20.00 per resource unit. £2,500.00 per host |
| Primary storage / Archive tier GB | The variable charge based on the peak amount of archive storage allocated in any given month | £0.15 |
| Primary storage / Standard tier GB | The variable charge based on the peak amount of standard storage allocated in any given month | £0.20 |
| Primary storage / Performance tier GB | The variable charge based on the peak amount of performance storage allocated in any given month | £0.30 |
| Primary storage / High performance tier GB | The variable charge based on the peak amount of high performance storage allocated in any given month | £0.45 |
| Dedicated primary storage | The charge to provide a storage platform of fixed capacity and performance | Charge specific to the quantity and configuration of storage deployed |

PRICING

IAAS / OPTIONAL MONTHLY SERVICE CHARGES

| Service Element | Details | Monthly Charge |
|--|---|---|
| Hosted physical servers | The fixed charge for the server hosting and management | Charge specific to the quantity and configuration of hosts deployed |
| Managed serve service | The per managed server charge for the operating system licence, patching and monitoring | £30 base charge (Windows & RHEL) £40 Windows licence £20 RHEL licence £50 patching £20 monitoring |
| Managed backup service | The per GB charge for data stored in the vault | £0.25 |
| Software licensing | The charge per user, core or processor to provide a software licence | Charge specific to the licence provided |
| Disaster recovery / Protected server | The variable charge to protect a virtual server in a second data centre | £40.00 for priority 1 server £30.00 for priority 2 server £25.00 for priority 3 server |
| Disaster recovery / Shared IaaS resource unit | The variable charge based on the CPU and RAM resources allocated to disaster recovery servers in any given month in an alternate data centre | £5.00 |
| Disaster recovery / Dedicated IaaS resource unit or host | The charge to provide dedicated IaaS disaster recovery platform. Customers can choose either a variable charge based on resource unit or a fixed charge based on the number of IaaS hosts deployed. Subject to a minimum order of 500 resource units or 4 hosts. | £10.00 per DR resource unit. £1,500.00 per DR host |
| Replicated storage / Archive tier GB | The variable charge based on the peak amount of archive storage allocated in any given month | £0.15 |
| Replicated storage / Standard tier GB | The variable charge based on the peak amount of standard storage allocated in any given month | £0.20 |
| Replicated storage / Performance tier GB | The variable charge based on the peak amount of performance storage allocated in any given month | £0.30 |
| Replicated storage / High performance tier GB | The variable charge based on the peak amount of high performance storage allocated in any given month | £0.45 |

PRICING

| | | |
|-------------------------------|--|--|
| Network appliance service | The fixed charge for provision of the network appliance service. | £595.00 Cisco ASA-5515X pair £595.00 Cisco Juniper SRX-220 pair £1,095.00 Cisco ASA-5525X pair £995.00 Citrix NetScaler hardware pair £703.00 IDS on Cisco ASA £300.00 Citrix NetScaler VPX 10Mb std £600.00 Citrix NetScaler VPX 200Mb std £600.00 Citrix NetScaler VPX 10Mb ent £1,100.00 Citrix NetScaler VPX 200Mb ent |
| Network connectivity services | N/A | Refer to separate Redcentric G-Cloud service definition |
| Managed database service | N/A | Refer to separate Redcentric G-Cloud service definition |
| Managed desktop service | N/A | Refer to separate Redcentric G-Cloud service definition |

IAAS RESOURCE UNITS

IaaS resource units are used to account for the CPU and RAM resource allocated to powered-on servers on within IaaS.

1 IaaS resource unit will be counted per GB of RAM allocated. For example:

- 1 server with 16GB RAM equates to 16 IaaS resource units
- 2 servers with 8GB RAM each equates to 16 IaaS resource units
- 8 servers with 2GB RAM each equates to 16 IaaS resource units

The following table details the IaaS resource units counted for the various CPUs allocated per server.

| Total CPUs allocated to a server | Additional IaaS resource units allocated |
|----------------------------------|--|
| 1 | 0 |
| 2 | 2 |
| 4 | 5 |
| 6 | 10 |
| 8 | 20 |

PRICING

The following table details the IaaS resource units counted for the various CPUs allocated per server.

| Server description | IaaS resource units for CPU | IaaS resource units for RAM | IaaS resource units total |
|--|-----------------------------|-----------------------------|---------------------------|
| Test application server with: | 0 | | |
| 1 CPU and 1GB RAM | 0 | 1 | 1 |
| Windows Active Directory domain controller with: | 5 | | |
| 2 CPUs and 4GB RAM | 2 | 4 | 6 |
| Exchange 2010 mail database server with: | 20 | | |
| 4 CPUs and 16GB RAM | 5 | 16 | 21 |
| SQL 2008 database server with: | | | |
| 8 CPUs and 32GB RAM | 20 | 32 | 52 |

DISCOUNTS

Should the total monthly charge exceed £50,000 the discount available is 5%.

Should the total monthly charge exceed £100,000 the discount available is 10%.

Any reduced charges under this Service Level Agreement will be confirmed by credit note issued by Redcentric to our customers,

EXAMPLE 1 – SMALL DEPLOYMENT

The following example highlights a small customer IaaS deployment, consisting of:

- 4 virtual servers on shared IaaS with a combined total of 80 IaaS resource units
- The 4 servers consume primary storage from tier of 50GB standard, 1000GB performance and 500GB high performance
- The 4 servers are deployed with no server management, but do utilise 1500GB of managed backup
- The servers are housed by a Cisco ASA5515X firewall pair

The charge for this service would be:

| Element | Qty | Total Service Activation | Total Monthly Service Charge |
|----------------------------|------|--------------------------|------------------------------|
| Shared IaaS resource units | 80 | £0.00 | £800.00 |
| Standard storage | 50 | £0.00 | £10.00 |
| Performance storage | 1000 | £0.00 | £300.00 |
| High performance storage | 500 | £0.00 | £225.00 |
| Managed backup service | 1500 | £1,500.00 | £375.00 |
| Managed firewall pair | 1 | £1,500.00 | £595.00 |
| Totals | | £3,000.00 | £2,305.00 |

PRICING

EXAMPLE 2 – LARGE DEPLOYMENT

The following example highlights a large customer IaaS deployment, consisting of:

- 5 Dedicated IaaS hosts in the primary data centre for production use
- 5 Dedicated IaaS disaster recovery hosts in the secondary data centre for production recovery
- 7 Dedicated IaaS hosts in the secondary data centre for development & test purposes
- Dedicated IaaS environment in both data centres assured to Official level
- 50TB Performance storage in the primary data centre
- 10TB High performance storage in the primary data centre
- 50TB Replicated performance storage in the secondary data centre
- 10TB Replicated high performance storage in the secondary data centre
- 50TB standard storage in the secondary data centre
- 150 virtual servers deployed, all licensed for Windows and managed by Redcentric with a hardened image
- 50 virtual servers protected for DR, with 20 priority 1 and 30 priority 2
- 5 Cisco ASA5525X firewall appliance pairs
- 2 Juniper SRX-220 firewall appliance pairs
- 2 Citrix NetScaler load balancer hardware appliance pairs
- 5 hosted physical, each of identical configuration of 2 x 16 core CPU, 512GB and 2TB local disk all licensed or Windows and managed by Redcentric with a hardened image

The charge for this service would be:

| Element | Qty | Total Service Activation | Total Monthly Service Charge |
|---|--------|--------------------------|------------------------------|
| Dedicated IaaS hosts | 12 | £12,000.00 | £30,000.00 |
| Dedicated IaaS DR hosts | 5 | £5,000.00 | £7,500.00 |
| Dedicated IaaS environment assurance | 2 | £30,000.00 | £0.00 |
| Performance storage | 50,000 | £0.00 | £15,000.00 |
| High performance storage | 10,000 | £0.00 | £4,500.00 |
| Replicated performance storage | 50,000 | £0.00 | £15,000.00 |
| Replicated high performance storage | 10,000 | £0.00 | £4,500.00 |
| Standard storage | 50,000 | £0.00 | £10,000.00 |
| Managed servers (Windows base, patching & monitoring) | 155 | £62,000.00 | £15,500.00 |
| Managed servers (Windows licence) | 165 | £0.00 | £6,600.00 |
| DR protected server tier 1 | 20 | £0.00 | £800.00 |
| DR protected server tier 2 | 30 | £0.00 | £900.00 |
| Cisco ASA5525X firewall appliance pairs | 5 | £7,500.00 | £5,475.00 |
| Juniper SRX-220 firewall appliance pairs | 2 | £3,000.00 | £1,190.00 |
| Citrix NetScaler load balancer hardware appliance pairs | 2 | £3,000.00 | £1,990.00 |
| Hosted physical servers | 5 | £3,000.00 | £9,250.00 |
| Totals (before scale discount) | | £125,500.00 | £2,305.00 |
| Totals (with 10% scale discount) | | £125,500.00 | £115,384.50 |

SERVICE LEVELS

Redcentric understand the importance of the services that our Customers are looking to contract for as defined within your requirements.

Redcentric already have SLAs and Penalties (service credits) as standard offerings for each of our managed services.

AVAILABILITY

IaaS shall be deemed available when the customer is able to access and use the customer's applications and services hosted by Redcentric. This may include periods where the customer is unable to access applications and services, where it is demonstrated by Redcentric to the customer's satisfaction, or where any inability to access the customer's applications and services is the result of permitted downtime.

Any reduced charges under this Service Level Agreement will be confirmed by credit note issued by Redcentric to our customers, confirming the adjustment to be made to the following monthly charge.

An overview of Redcentric's SLAs are detailed below:

| Redcentric Service | Service element | % Service Level | Measurement Period |
|--|--|---|--------------------|
| Shared IaaS | % Core system availability | 99.99% | Calendar month |
| Dedicated IaaS | % Core system availability | 99.99% | Calendar month |
| Hosted physical servers | % Server availability | 99.5% | Calendar month |
| Managed server service | % Server availability | Equal to % service level from the underlying platform | Calendar month |
| Managed backup service | % Managed backup server vault availability | 99.0% | Calendar month |
| Storage replication and snapshot service | % Storage controller availability | 99.99% | Calendar month |
| Disaster recovery service | % Recovery core system availability | 99.99% | Calendar month |
| Network appliance services | % Appliance availability | 99.99% load balancing 99.5% single firewall 100% dual firewalls in high availability | Calendar month |
| Network connectivity services | % Availability | Equal to the availability service level of the Redcentric access circuit or data centre port. | Calendar month |
| Managed database services | % Server availability | Equal to % service level from the underlying platform | Calendar month |
| Managed desktop services | % Core system availability | 99.0% single site 99.99% dual site | Calendar month |

SUPPORT HOURS

The Customer Service operation is available 24x7x365 and can be contacted by telephone, email or via the Customer Portal. Your call is routed directly to our Service Management Centre (SMC) who will log your Service Call, agree the call priority and assign a customer interaction number which will allow your request to be identified efficiently and tracked at all times.

SERVICE LEVELS

SEVERITY DEFINITIONS

The following table defines examples of the priorities to be used by the Customer and Redcentric when logging calls. Redcentric shall respond to all requests for support in accordance with the table below.

| Priority 4 (Low) | Typical Event |
|--|--|
| <p>Classification:</p> <ul style="list-style-type: none"> Monitoring of an open Incident. | <ul style="list-style-type: none"> Monitoring Phase if required for a previously categorized P1-P3 Incident (for example health-check/performance monitoring of a customer's CPE). Not to be treated as Advice and Guidance as this should be an Interaction. <p>Redcentric call handling process:</p> <p>Logged service calls will be progressed between the hours of 09:00 - 17:30 hrs until resolved.</p> |
| Priority 3 (Medium) | Typical Event |
| <p>Classification:</p> <p>Single user issue but not a VIP.</p> <ul style="list-style-type: none"> Call Logging: 24/7/365 Response: Within 1 business day | <ul style="list-style-type: none"> Admin change of one users telephony account. <p>Redcentric call handling process:</p> <p>Logged service calls will be progressed between the hours of 09:00 - 17:30 hrs until resolved.</p> |
| Priority 2 (High) | Typical Event |
| <p>Classification:</p> <p>Error or fault with the installed product or service but which has no critical effect. Operational but degraded product or service. Temporary work-around may be available</p> <p>Call Logging: 24/7/365</p> <p>Response: Within 4 Hours - 24/7/365</p> | <ul style="list-style-type: none"> Backup task/agent failure Remote LAN/WAN circuit errors or IP packet loss System performance degraded Non specific fault or problem <p>Redcentric call handling process: Logged service calls will be progressed 24/7/365 until resolved</p> |
| Priority 1 (Critical) | Typical Event |
| <p>Classification:</p> <p>Error or fault with the installed product or service, which is causing severe impact to Customer operations. Product or Service unusable.</p> <p>Major incidents.</p> <ul style="list-style-type: none"> Call Logging: 24/7/365 Response: Within 1 hour - 24/7/365 | <ul style="list-style-type: none"> Escalation of Priority 2 call Complete failure/unavailability of backup service Data Circuit failure Customer unable to connect to Internet Major problem with firewall System Failure <p>Redcentric call handling/escalation process: Logged service calls will be progressed</p> <ul style="list-style-type: none"> 24/7/365 until resolved <p>Routine notification to Team Leader</p> |

"Typical events" are illustrative only and are not limited to the events listed.

SERVICE CREDITS

The Parties agree that the payment of Service Credits is a reduction in Charges for the receipt of a deficient Service and that Service Credits are the only remedy for failure to meet a Service Level. The Service Credits are calculated by reference to the Charges for the Service affected.

AVAILABILITY AND PERFORMANCE CALCULATIONS

The availability Service Level is calculated at the end of each Measurement Period and is calculated as follows:

$$\text{Percentage Availability} = \frac{(\text{MP}-\text{SU})\times 100}{\text{MP}}$$

Where:

MP = Measurement Period. This is the total number of minutes in the measurement period.

SU = Service Unavailability. This is the total number of minutes in the measurement period when the Service is not available for use by the Customer for reasons other than those set out below.

The following events shall be excluded from any assessment of Service unavailability:

Service unavailability due to the acts or omissions of the Customer or its employees, agents or subcontractors (excluding Redcentric).

SERVICE SPECIFIC DETAILS

INFRASTRUCTURE AS A SERVICE

The Service availability measure will be the percentage of the period in the measurement period, that the core server hosting platform is available to operate the Customer's server(s).

Service availability measurement will be measured from when the fault is logged by the Customer or identified by Redcentric (whichever is earlier) to the time when the core server hosting platform becomes available for operational use.

MANAGED BACKUP SERVICE

Service availability measurement will be measured from when the fault is logged by the Customer or identified by Redcentric (whichever is earlier) to the time when the MBS vault becomes available for operational use.

HOSTED PHYSICAL SERVERS

Service availability measurement will be measured from when the fault is logged by the Customer or identified by Redcentric (whichever is earlier) to the time when the hosted physical server becomes available for operational use.

SERVICE CREDITS

SERVICE CREDITS

The service credit shall be calculated for each service as follows:

$$\text{Service Credit} = \frac{C \times H}{MH}$$

Where:

H = the number of full completed hour(s) in excess of service level.

C = total charges payable in respect of the service for the same month.

MH = the total number of hours in the same month.

Except for the following services:

| Service | Service Credit Value |
|--|--|
| Managed backup service | 5% of monthly Service Charge for 1 instance of MBS vault outside of SLA 10% of monthly Service Charge for 2 instances of MBS vault outside of SLA 20% of monthly Service Charge for 3 instances of MBS vault outside of SLA 30% of monthly Service Charge for 4 instances of MBS vault outside of SLA 40% of monthly Service Charge for 5 instances of MBS vault outside of SLA 50% of monthly Service Charge for 6 instances of MBS vault outside of SLA 60% of monthly Service Charge for 7 instances of MBS vault outside of SLA 70% of monthly Service Charge for 8 instances of MBS vault outside of SLA 80% of monthly Service Charge for 9 instances of MBS vault outside of SLA 90% of monthly Service Charge for 10 instances of MBS vault outside of SLA 100% of monthly Service Charge for 11 instances of MBS vault outside of SLA 100% of monthly Service Charge where any one instance exceeds 72 hours |
| Network appliance services – Firewalls | Single firewall: ≥99.5% = no service credit ≥99.0% but <99.5% = 5% of monthly service charge ≥97.0% but <99.0% = 15% of monthly service charge <97% = 20% of monthly service charge Dual firewall in high availability ≥100% = no service credit ≥99.0% but <100% = 5% of monthly service charge ≥97.0% but <99.0% = 15% of monthly service charge <97% = 20% of monthly service charge |

SERVICE SUPPORT

Redcentric is a managed communications and IT company. We don't like to think of ourselves as selling you a product; we prefer to think of it as us becoming part of your telecom and IT team.

SERVICE SUPPORT

Redcentric will monitor and manage the service up to and including core system, except where the customer takes the managed server service, in which case Redcentric will monitor and manage up to an including the customer's guest operating system level.

Redcentric's customer service operation is available 24/7/365 and can be contacted by telephone, email or via the customer portal. The customer call is routed directly to the Service Management Centre (SMC) who will log your service call, agree the call priority and assign a customer interaction number which will allow your request to be identified efficiently and tracked at all times. Our highly skilled engineers will then deal directly with the query.

Redcentric employs over 470 staff, 80% are customer facing. The skills within our support engineers have vary from server and storage specialists (EMC, NetApp and Isilon), to Microsoft and VMware specialist, to network and routing specialists (Cisco, Riverbed etc), data management and protection specialists (e.g. Symantec, IBM, i365, etc).

ALL SERVICES 24/7 MANAGED AND MONITORED

Within Redcentric's core infrastructure is a resilient monitoring and management platform. All core and managed customer equipment is polled and interrogated for performance and availability. If at any point a threshold for one of these parameters is breached, our browsers will automatically instigate the support process. The alerts that are generated are specific to device and interface availability along with CPU threshold. As well as communicating the fault to the customer, the interactions are available for viewing on Redcentric's InForm portal. Interactions will also be collated and reported in Monthly / Quarterly service reviews.

The entire Redcentric-owned infrastructure is monitored by our industry leading browsers within Redcentric's' core. Each device is polled at five minute intervals. If a single poll is missed the browsers begin the automated process of generating alerts and the support process is instigated. An engineer will be tasked with verifying the fault is in existence and will progress accordingly. All hardware in the solution is owned, maintained and managed by Redcentric.

Where requested, customer equipment configurations are routinely backed up to a central location ready for remedial action of faulty hardware. Replacement hardware is built and taken to site by a Redcentric engineer.

Any alerts that are generated are passed directly to our frontline 24/7/365 team. This team is skilled in all aspects of Redcentric's portfolio to the extent that 70% off all tickets are handled through to completion by this team. Product specific tickets for services such as networks are escalated to our Networks Team. Again this team is available 24/7/365 and will progress any issues round the clock. Our 24/7/365 team are trained to know when to escalate to the appropriate teams once initial checks have been carried out. Redcentric operate a transparent support model and full details of the escalation path are provided to the customer with contact details.

SERVICE SUPPORT

PROBLEM MANAGEMENT

Redcentric's Problem management process is responsible for managing the lifecycle of all problems. The primary objectives are to prevent problems and resulting incidents from happening, to eliminate recurring incidents and to minimise the impact of incidents that cannot be prevented.

Problem management includes the activities required to diagnose the root cause of incidents and to determine the resolution to those problems, it is also responsible for ensuring that the resolution is implemented through the appropriate control procedures, especially change management and release management. Problem management will also maintain information about problems and the appropriate workarounds and resolutions, so that the organisation is able to reduce the number and impact of incidents over time. In this respect, problem management has a strong interface with knowledge management, and tools such as a known error database will be used for both.

Although incident and problem management are separate processes, they are closely related and will typically use the same tools and may use similar categorisation, impact and priority coding systems. This will ensure effective communication when dealing with related incidents and problems. Our Service Desk and 2nd line Support teams ensure that problem tickets are raised where required. Our 3rd line Specialist Teams ensure that they investigate problem tickets in a timely manner and liaise with suppliers where applicable. The Customer Services Director ensures that regular reviews of problem tickets are conducted.

- A problem ticket can be raised by anyone in the business but typically this would be by a member of the support organisation (Service Desk, 2nd or 3rd line support)
- The ticket is assigned to the relevant specialist team where the manager of the team will allocate according to the resources available at that time
- The specialist will then work on the problem to identify the root cause, determine and test the fix and subsequently raise a RFC (Request For Change)
- The change will then go through a defined change authorisation process before final CAB approval and customer notification (if required) – re: the change management policy
- The change will be scheduled; all relevant parties informed, training and documentation provided as required and finally implemented. If successful, a Known Error Record (KER) will be created and stored in the known error database and the problem ticket together with related records will all be closed.

MINIMISING IMPACT DURING MAINTENANCE

Redcentric is committed to continually improving and expanding its core network and data centre capabilities, thus striving to provide the highest levels of service to its customers. In order to facilitate these improvements, it is necessary to carry out essential work from time to time. These activities are carefully scheduled through the use of an internal change control process which is designed to present maximum visibility of that change and thereby ensure that planning and implementation are carried out to minimize the effect on customers and their network services.

For the benefit of our customers, Redcentric will allocate a pre-determined planned window which will be utilised to carry out any core infrastructure changes which may carry a minimal risk of disruption to service, or in some instances a period of service downtime which would be kept to an absolute minimum. In either instance, customers will be notified of the full details of the requirement with a minimum of 14 days' notice prior to the maintenance window. Generally Redcentric will endeavour to carry out any improvements in the reserved windows listed below; however unforeseen circumstances might dictate that improvements are carried out at other times. Notwithstanding such notice Redcentric shall still provide the Services in accordance with the applicable Service Level.

Redcentric will endeavour to give our customers as much notice as possible.

In very exceptional circumstances, there may be an emergency requirement to instigate work outside of these maintenance windows; however, every effort will be made to avoid disruption during core service hours and prior notification will be issued at the earliest possible opportunity.

There may be occasions when there is a requirement for an Emergency Change to be carried out (e.g. a hardware failure to a core network device which has caused loss of resilience). Emergency Change allows for Change to be fast tracked with <14 days customer notification. Emergency Change is only used in exceptional circumstances, where there will be a significant business impact should the change not be expedited. Emergency Change records are thoroughly reviewed by the Redcentric Change Advisory Board (CAB) to assure they were justified.

SERVICE MANAGEMENT

Redcentric is a managed communications and IT company. We don't like to think of ourselves as selling you a product; we prefer to think of it as us becoming part of your telecoms and IT team. As such we pride ourselves on the service that we provide to our customers.

An aligned account management team will be provided from the outset, the account team consists of a Client Account Manager (CAM), and a Service Delivery Manager (SDM).

Specifically, Redcentric's account management team will:

- Be the Client Advocate – Redcentric's Account Management team is measured and rewarded against client satisfaction
- Provide an empowered point within Redcentric to which issues surrounding satisfaction of service may be escalated and resolved
- Offer assurances that Redcentric will be acting in their interest at all times
- Act as a Single Point of Contact – for all non-technical issues; working collaboratively at all times with the Client Account Manager to develop a thorough understanding of your business needs and growth. Through understanding our customer's goals and the technology that is used, we are able to give proactive recommendations that are customer/site specific and will facilitate and support growth
- Act as a Communication Channel – the Service Delivery Manager (SDM) will be the key point of contact for customers wishing to develop their critical applications or infrastructure. They are responsible for organising meetings and / or conference calls with developers, systems integrators and Redcentric staff to discuss performance and upgrades.
- Troubleshoot and provide Problem Resolution – although the Service Management Centre will provide immediate technical assistance for faults, the SDM will co-ordinate medium-term projects with the intention of resolving recurring problems should they arise.
- Provide Trusted Advice – the Redcentric Account Management Team becomes an extension and trusted advisor of the Client's IS/IT department and will foster additional business relationships with the client to achieve common goals.
- Take a Proactive Approach – the Redcentric Account Management Team will take a proactive approach to the Clients critical application or infrastructure environments.

To help integrate the Redcentric account team with our customers IT team we need to meet the individual team and understand their challenges, what works well and where we might be able to help. To gather all the details we need for the migration, we would setup regular meetings, which would also help build relationships.

As we have done with other public sector accounts, we also set up peer-to-peer meetings between support managers and team leaders, technical engineers, product managers and directors from both sides if possible. The aim is for both businesses to understand each other on as many levels as possible.

SERVICE MIGRATION

Redcentric's Project Managers are registered PRINCE2 Practitioners, having a wide and diverse portfolio of skills based on previous experience and the requirements for delivering Redcentric's services. The team has a combined wealth of experience, gained from a variety of I.T. industry sectors.

Redcentric will assign a dedicated Project Manager as a single point of contact for the delivery of all services to the Authority, who will engage with the relevant Authority staff at the earliest possible stage, to ensure full project lifecycle management. Additionally, there will be a minimum of 2 (PRINCE2 qualified) Project Support staff assigned to assist the Project Manager throughout the delivery, ensuring continuity of service. The Service Delivery department operates a clearly defined escalation hierarchy to ensure the prompt resolution of any concerns or queries.

Redcentric will operate a tailored and perhaps most importantly, flexible project management approach to the delivery, in line with the Authority's requirements and stipulations. We fully understand how critical it is for any organisation to have no service interruptions. The key element to any successful delivery or migration strategy is planning – our ethos is based on the adage: "if you fail to plan, you plan to fail". To this end, we encompass planning activities throughout the lifecycle of all deliveries and migrations.

Redcentric will work with the Authority to produce a low-risk migration strategy that meets the Authority's requirements, taking steps to mitigate any potential or actual risks and having contingency plans in place, agreed in advance with the Authority. We can provide advice based on experience, as to the benefits and risks associated with proposed strategies under consideration.

Redcentric will:

- Contribute to Project Initiation Documentation as and when desired;
- Agree and adopt a well-defined Communication Strategy and Communication Plan with the Authority at the earliest opportunity;
- Liaise with the Authority to ensure that a Project Kick-off Meeting is held at the earliest opportunity, between all resources involved, to discuss and agree roles and responsibilities, deliverables, timeframe, migration strategy and testing procedures;
- Hold regular planning Meetings/Calls (as defined by the Authority) throughout the lifecycle (frequency determined in agreement with the Authority), where the previous stage of work is reviewed and the next stage of work examined in detail;
- In addition to the above, a full Lessons Learned review will be held at the end of each defined stage of the migration, where these can be discussed and incorporated into the planning for future stages;
- Issue regular project updates (frequency determined in agreement with the Authority), in addition to regular Checkpoint and Highlight Reports as required by the Authority;
- Operate a full risk management approach, including the maintenance and issue of RAID logs;
- Ensure the Authority approval and signoff of migration plans and any associated documentation, e.g. Call-flow schematics, Dialling Plans, Number Porting requirements, Scopes of Work, Failover Testing Plans, Training Frameworks and Requirements, Circuit/Voice Testing Requirements etc.;
- Ensure that the services are delivered to meet the Authority's Acceptance Criteria at every stage of the delivery;
- Hold a full project Lessons Learned review when all services have been delivered/migrated and fully document these, to be issued to both parties with the aim of continual improvement.
- Will be happy to engage with the Authority in any Business Benefit Review discussions or meetings if desired.

SERVICE MIGRATION

THE TEAMS INVOLVED IN THE DELIVERY OF THE SERVICE WILL BE AS FOLLOWS:

Project Manager:

A single point of contact for the project ensuring that all work streams, tasks and communications are carried out in a timely manner, within the time frames agreed at the start of the project. The Project Manager defines the tasks required to meet the project deliverables and coordinates all the technical resources aligned to the project in order to successfully complete each element. The Project Manager manages the documentation of the project ensuring strict information is stored, protected and distributed effectively, as well as ensuring that ultimately each piece of work completed within the project is completed to the required standard. The Project Manager will also coordinate any equipment procurement required for the project. The project manager reports to the Project Board.

Project Support:

Providing assistance to the Project Manager with some of the low level tasks involved in planning, documenting and executing the project. Also provides cover for the Project Manager during any periods of planned leave or short-term unplanned absence. Project support report to the Project Manager.

Service Delivery Manager:

Throughout the project implementation our customer's assigned Service Delivery Manager will:

- Initiate any reporting matrix regarding each individual installed service
- Confirm all site/cost centre billing elements
- Confirm all customer portal access to all implementations
- Provide initial bandwidth availability/utilisation reports
- Provide access lists
- Initiate the customer's portal access, change control permission
- Become the point of contact for our customers with regards to planned maintenance and incident alerts.

RESPONSIBILITIES

CUSTOMER RESPONSIBILITIES

The customer will be responsible for the following:

- Allocating correct quantities of CPU, RAM, Disk and Network resources appropriate for the operating system and applications within the virtual server
- Installation, support, patching and upgrading of the operating system
- Installation, support, patching and upgrading of the applications(s)
- Licensing of operating system and application(s)
- Ensure that all customer OS and application licenses are compliant with the customer's vendor specific licensing agreements
- Identifying and operating a suitable data management policy to protect against data loss from corruption
- Ensure that the required application vendor(s) support deployment within a VMware environment

The customer shall undertake the following responsibilities during the term of this agreement:

- Day-to-day management of the Agent
- Single and multiple server restores
- Backup data deletion requests for the customer servers that are no longer required
- Securely store the encryption pass-phrases for all backup tasks used by the customer

REDCENTRIC RESPONSIBILITIES

Redcentric will be responsible for the following:

- Provide, support and maintain physical data centre environment
- Provide, support and license highly available physical processing platform
- Provide, support and license highly available virtual environment

Redcentric shall undertake the following responsibilities during the term of this agreement:

- Maintain the availability of the managed backup service in-line with service level agreement
- Perform software and hardware updates on the managed backup service director, web portal and supporting servers
- Capacity management of the managed backup service director and vaults

TECHNICAL REQUIREMENTS

SERVICE DEPENDENCIES

Redcentric will utilise additional complementary chargeable services to support the database service, such as network connectivity.

- Connectivity – Redcentric’s network services and/or the Internet are required to access the Virtual Server Hosting service.
- Data Management – Redcentric provides managed storage, backup and archiving services.
- Security – Redcentric’s Managed Firewall Service provides protection for traffic traversing network boundaries with different trust levels

DETAILED TECHNICAL INTERFACES

The shared IaaS self-service interface is accessible via commonly available web browsers, such as Internet Explorer, Chrome and Firefox.

The dedicated IaaS self-service interface utilise both commonly available web browsers and VMware’s vSphere application.

ADDITIONAL INFORMATION

TRAINING

N/A

DETAILS OF ANY TRIAL SERVICE AVAILABLE.

N/A

ORDERING AND INVOICING PROCESS;

Services are billed monthly in arrears.

Payment can be via:

- Purchase order
- BACS'

TERMINATION TERMS:

Redcentric will provide assistance where possible to facilitate a transition to any replacement service.

Redcentric will not be obliged to disclose any confidential information to the customer or replacement supplier, or to transfer any assets, contracts, employees or third party licences.

Redcentric will provide an inventory of all data relating to the services that is under the control of the Redcentric and details of the data structures in which the Customer Data is stored.

Redcentric will transfer all the customer data relating to the services to the customer.

Note that there are no additional charges for storing patient data other than the service charges listed. If, at the end of the contract, the customer decides that Redcentric will continue to store data for archiving purposes instead of being transferred to the customer, this will be covered in a subsequent Service Agreement and the commercials will be agreed at the time of that Service Agreement.

At the end of the contract with the customer and if the customer does not wish to renew their service.

Redcentric will assist the Customer in facilitating the orderly transition of the Redcentric Services (in whole or part) from Redcentric to the Customer or any replacement supplier upon the expiry or earlier termination of the agreement. This section sets out the principles regarding the service transition that form the base of an Exit Plan.

Redcentric shall produce an Exit Plan upon notification of termination of the agreement, in accordance with the principles set out in this section, as soon as practicable (but not later than 60 days) after any notice of termination of the agreement.

EXIT PLAN

The Exit Plan shall, unless otherwise agreed with the Customer:

- address each of the issues set out in this Exit Plan in order to assist the Customer in facilitating the transition of the Redcentric Services from Redcentric to a replacement supplier, or the Customer ensuring to the extent reasonably possible that there is no disruption in the supply of Services and that there is no deterioration in the quality of delivery of the Services during any period of transitional assistance;
- provide an estimate of the scope of transitional assistance that may be required by the Customer and suggest how such assistance might be provided (if required); and
- provide an estimate of Redcentric's personnel that may be required to provide transitional assistance and suggest the management structure to be put in place and employed to provide such transitional assistance.

AGREEMENT TERMINATION

On termination or expiry of the Service Agreement, the Customer must undertake the following responsibilities:

- agree a time and date for the Redcentric owned equipment to be removed; and then
- remove the Customer's equipment at the agreed time on the agreed date in a sequence to be specified by the Customer

ADDITIONAL INFORMATION

ADDITIONAL TRANSITION ASSISTANCE

Where the Customer requests the provision of additional transitional assistance, in addition to that required under this section, Redcentric shall provide such assistance as an additional service. The additional transitional assistance detailed here shall be chargeable at the Redcentric prevailing time and materials consultancy day rates.

The transitional assistance shall, at the Customer's option, include any one or more of the following, but in each case only in relation to assets which are the subject of the Redcentric Services:

- notifying the Customer or replacement supplier of procedures to be followed and providing management to ensure these procedures are followed in relation to the transfer of the Redcentric Services;
- providing assistance and expertise as reasonably necessary to identify all material operational and business processes (including all supporting documentation) used by it or the Customer or replacement supplier in the provision of the transferring Redcentric Services;
- documenting the current status of work in progress and transferring such work in progress, including any partly completed developments and any partly completed Service Agreement changes to the Customer or any replacement supplier;
- to the extent that Redcentric is reasonably able to do so, providing assistance and expertise as reasonably necessary for examining all relevant roles and responsibilities in place for the provision of the Redcentric Services and the transitional assistance;
- providing information within Redcentric's possession about capacity and performance requirements;
- providing reasonable assistance to the Customer in procuring and receiving replacement services;
- co-operating in the execution of the plan for the migration of the Customer data (if any) compiled or used in the performance of the Services to the Customer or the replacement supplier providing skills and expertise of a suitable standard;
- assisting the Customer and the replacement supplier in the execution of a parallel operation involving the provision of the Redcentric Services (in whole or part) at the same time as the replacement services;
- the provision of all reasonable assistance required by the Customer to ensure the smooth transfer of the Redcentric Services to the Customer or the replacement supplier;
- providing any technical advice as may be reasonably required by the replacement supplier or the Customer to facilitate the provision of the replacement services to commensurate service levels and standards to those required by this Service Agreement;
- answering all reasonable questions including requests for technical advice from the Customer or its replacement supplier regarding the general nature of the Services.

COMPANY PROFILE

Redcentric is one of the UK's leading managed services provider, with a pioneering pedigree that goes back to the earliest days of business Internet and IP networking. We have built on that heritage and developed our capabilities to allow us to be a strong strategic partner for those organisations embracing IT as an enabler. We are here to support them, whether that be with traditional infrastructure or making the move and taking advantage of what the Cloud and hybrid environments have to offer.

Today we can offer a rich end-to-end solution portfolio covering the full spectrum of networks, data, voice, mobile, and applications, designed and delivered by our own highly skilled teams from our privately owned, UK based multi-million pound infrastructure.

Our ethos is one of collaboration, our aim is transformation, helping clients secure desired outcomes, substantive gains and a measured route forward for the future.

Our assurance comes from a long track record across both the private and public sectors, characterised by deep domain expertise, continuous innovation, proactive management and an enduring commitment to business improvement through better IT. We'd like to think that there are hundreds of organisations out there where Redcentric has already made a significant and lasting difference.

DIFFERENTIATORS

- **Outcomes focused** We don't define ourselves by the services we offer but the outcomes we secure for clients. Every project starts with the end-game, what you want to achieve, and we work back from there to design and deliver solutions that are best geared to meeting your various objectives: cost savings and cost certainty; greater productivity and reliability; enhanced security and resilience; increased agility and responsiveness; and improved potential for innovation and competitiveness, all while providing support and flexibility throughout the term of any contract and easy exit strategies to ensure working with Redcentric from start to finish is simple.
- **Multi-service, multi-site** IT now embraces many disciplines and the cost-effective, streamlined delivery of a complex web of technologies is only compounded by the disparate physical estates of many of today's organisations. Our great strength is our ability to be a unifying force: a single, centralised provider of multiple services across multiple sites, a partner who can manage a full range of IT needs however diverse and challenging.
- **Managed journey** We are not about the provision of one-off IT commodities but rather helping clients over the short, medium and long-term through the strategic alignment of our services to organisational requirements. Managed and Cloud-based (with services, on and off premise solutions, there's a rich potential roadmap for clients and we can guide you on your journey at whatever speed and in whatever direction the need dictates.
- **Core service infrastructure** We believe that service quality is dependent on end-to-end control and capability, which is why we've spent the past three decades building our own infrastructure and skills base: a UK-wide MPLS network, Tier-3 standard UK data centres, a large ITIL-based support operation, and staff whose average tenure is 10+ years. Such solidity and dependability at our core translates into consistent, high-grade delivery of services and support day in, day out.
- **Accredited working** We have poured a huge amount of time, money and resource to develop best-in-class systems, processes and people that in turn allow us to attain the highest standards of certification and accreditation. These are not badges of honour, but hard-earned evidence of our commitment to quality, security and integrity, and our efforts to gain trust.
- **At the leading-edge** We are always reviewing our proposition, introducing new proven technologies that dovetail with our existing offering; and bringing these opportunities for further gains to clients as an intrinsic part of contract and relationship evaluation. But this spirit of innovation goes beyond bits and bytes, it is embedded in the very fabric of Redcentric as a service organisation. You may see it equally in a unique supply arrangement or a pragmatic project execution, the common factor being a willingness to think and do differently, to go beyond norms and conventions if that's what it takes.
- **Organisational health** As an organisation we are committed to investing the most that we can to build a sustainable, successful business that can deliver genuine IT outcomes for clients. We are continually refreshing our core systems or; adding capacity and capability, to the tune of many millions but ensuring this is without penalty to clients. We also invest in our staff and work hard to develop and preserve a culture that prioritises staff satisfaction and motivation. We believe the happier, more engaged and dynamic we are as a service provider the more we can achieve together and ultimately the better service we can provide to clients.

- 7 locations throughout the UK
- Multiple wholly owned UK data centres
- Upwards of 40,000 IP voice and SIP Trunk users
- Managing tens of thousands of network connections
- Accredited to connect and supply over Janet
- ISO 9001 & 27001 certified 22301
- Serving over 2000 customers across the UK
- ITIL Compliance
- Authorised to process HM Government data marked 'Official-Sensitive'
- HSCIC approved N3 aggregator
- Accredited to store patient data
- 13 years of N3 experience
- Experienced and successful G-Cloud approved supplier

COMPANY PROFILE

COMPANY STRUCTURE



Harrogate – Head Office and Data Centre

Central House
Beckwith Knowle
Harrogate HG3 1UG

London – Office

John Stow House
18 Bevis Marks
London EC3A 7JB

London – Data Centre

Lifeline House
80 Clifton Street
London EC2A 4HB

Reading – Data Centre

3-5 Worton Drive
Reading
Berkshire RG2 0TG

Theale – Support Centre

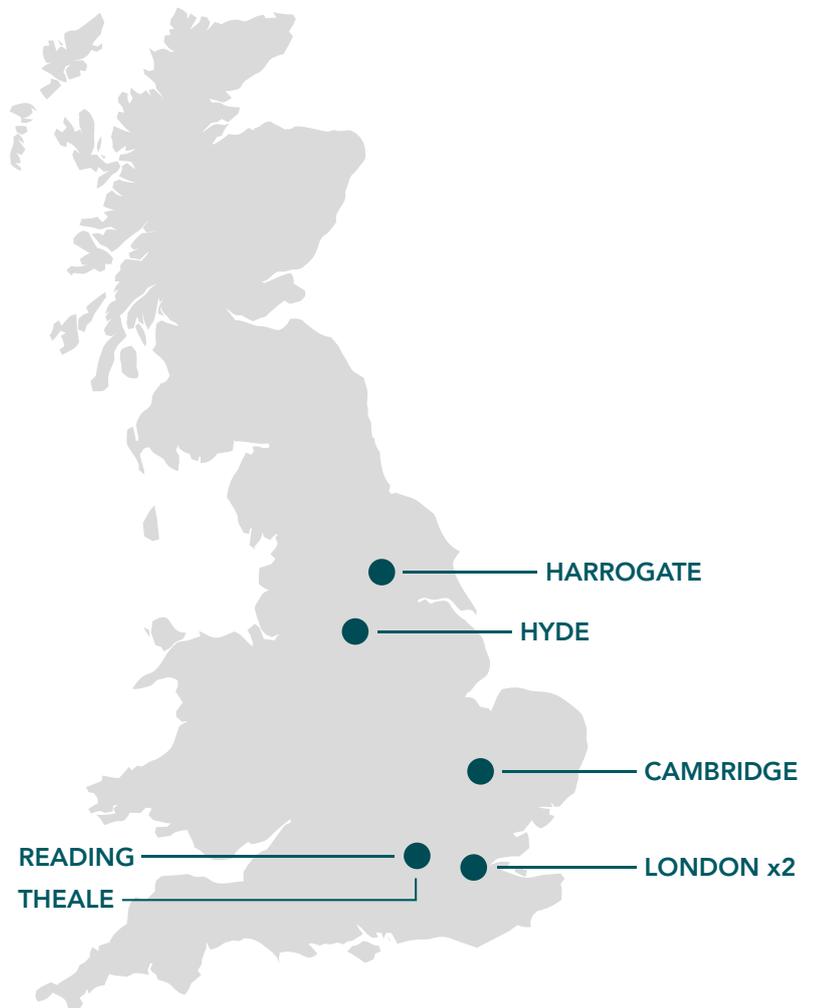
2 Commerce Park
Brunel Road
Theale, Reading
Berkshire RG7 4AB

Cambridge – Office and Data Centre

Newton House
Cambridge Business Park
Cowley Road
Cambridge CB4 0WZ

Hyde – Support Centre

Unit B, SK14 Industrial Park
Broadway
Hyde SK14 4QF



COMPANY PROFILE

CERTIFICATIONS

Redcentric can point to a long list of ISO and HM Government accreditations that underscore the standards and protections we put in place when we are entrusted with clients key IT assets.

- **ISO 9001** is the internationally recognised standard for an organisation's Quality Management. The term 'quality' refers to all those features of a product or service which are required by the customer. An organisation's 'Quality Management' refers to an organisation's actions to ensure that its products or services satisfy its customers' quality requirements and complies with any regulations applicable to those products or services. At Redcentric we continuously monitor, report and review the quality of service across all services, including physical infrastructure, network infrastructure, hardware and software used, operational and business processes to ensure we maintain a high quality of service. Throughout the lifecycle of any managed services contracts we continuously review and upgrade all service elements where required and applicable, to ensure ongoing service improvements.
- **ISO 27001** is the internationally recognised standard for an organisation's Information Security Management System (ISMS) and the objective of the standard is to provide a model for establishing, implementing, operating, monitoring, reviewing, maintaining and improving this ISMS, using a continual improvement approach. Redcentric aims to be recognised as an organisation adhering to the highest level of Information Security and therefore have an externally certificated ISMS that complies with the recognised industry standard for information security. ISO 27001 certification gives our customers and associates the confidence that Redcentric can be a trusted business to the public, as well as an information security assured supplier of managed services.
- **ISO 22301**
- **PCI DSS** is the Payment Card Industry Data Security Standard and is a worldwide information security standard assembled by the Payment Card Industry Security Standards Council (PCI SSC). The standard was created to assist payment card industry organisations which process card payments, to prevent credit card fraud via enhanced data security controls. The standard applies to all organisations that hold, process or exchange cardholder information.

The below formal certifications demonstrate the capability and alignment with Information Assurance requirements as mandated by the Public Sector.

- Authorisation to process HM Government data protectively marked 'Official-Sensitive'
- Authorised to transmit, process and store Person Identifiable Data (PID)

- Health and Social Care Information Centre (HSCIC) accreditation – "N3 ISP" (Network Access Agreement 0740)
- HSCIC IGSOC-compliant commercial third party (NACS code: 8GY91)
- HSCIC accredited and compliant data centre hosting facilities, including for Clinical Systems environments (Reference: YGMAP)
- HSCIC approved N3 Application Provider (YGMAY)
- HSCIC-accredited N3 Service Provider (Network Access Agreement Number: 0740)
- Accreditation to connect to and supply services over Janet into all connected institutions and organisations
- Formally transition and certify our Cloud services from BIL to meet the new Government security classifications
- Become a formal PSN (Public Services Network) certified service provider / supplier
- Become a HSCN certified service provider

HISTORY

Redcentric was incorporated on 11th February 2013. The business of the Redcentric Group is made up of the demerged Managed Services components of the Redstone Group, as enhanced by the acquisition of Maxima in November 2012. The acquisition of Maxima augmented the network assets owned by Redstone, including its connectivity, Cloud and hosting capabilities with a well-regarded mid-market business specialising in ICT managed services, managed security, unified communications and Cloud services. Further to this, the acquisition provided the Redcentric Group with an enhanced onshore and offshore 24 hour/365 day support function to underpin its service level agreements.

On 6th December 2013 Redcentric acquired InTechnology Managed Services limited. The integration of the two companies was completed on 1st July 2014 and InTechnology Managed Services Limited officially changed its name to Redcentric Solutions Limited.

Further to this, on 13th April 2015, Redcentric Group announced that it acquired Calyx Managed Services Limited.

The combined businesses, operating under Redcentric Solutions Limited, enjoy a scale that has enhanced their presence in the marketplace and provided an enlarged customer base to cross-sell a broad suite of well-regarded and supported services.

REDCENTRIC EXPERIENCE

As a final thought after reading our document, Redcentric would like to provide you with the assurance that we are not new players to the public sector; although our brand is not as big as some of our competition, this has not stopped us being able to compete, and subsequently deliver, some high profile services to the public sector. These services include but not limited to the following:

CONTRACT WIN WITH LEGAL AID AGENCY – 20 AUGUST 2015



Redcentric will provide a consolidated, flexible application development & test platform, facilitating the re-hosting of multiple current LAA environments through the provision of an Oracle Engineered Systems SuperCluster-based Platform-as-a-Service (PaaS), delivered from a high security level Redcentric data centre. The deal is designed to substantially improve the LAA's operational efficiency and facilitate agile delivery of LAA's core systems. Procured through G-Cloud, the contract will incorporate integrated provision of expert Oracle Agile Implementation Services and Advanced Customer Support.

CONTRACT WIN WITH HSCIC – 29 JUNE 2015



Through a two year contract Redcentric will provide Database as a Service (DBaaS) devised to support a national infrastructure programme. DBaaS will power a repository for healthcare data in England enabling a range of reporting and analysis to support the NHS in the delivery of healthcare services. Delivered by Redcentric's team of database experts, the managed service is a proven model for delivering high availability cloud database environments and will support HSCIC's critical repository. DBaaS, procured via the G-Cloud framework, will be provided from Redcentric's England based secure and accredited data centres, delivering a highly scalable and high performance system.

REDCENTRIC WIRELESS NETWORK LANDS AT MOD ON TIME AND UNDER BUDGET – 20 MARCH 2015



The project provides a new high-speed wireless LAN at the Academy in Wiltshire, which trains personnel from the British Armed Forces, MOD Civil Service and other national and international government departments, with the aim of improving technology-based learning across its 250-acre site of around 170 buildings. Within a tight 12 week timeframe and 7% under budget, Redcentric installed in excess of 500 wireless access points and 25 kilometres of optical fibre on the Academy site. The project was managed within the constraints of operating within a working educational establishment and its busy timetable. State-of-the-art Wi-Fi performance was essential for the roll-out of the Academy's Technology Enhanced Learning (TEL) strategy and the improvement of the overall online experience for both staff and students. In order to provide the coverage required, Wi-Fi needed to be installed in over 50 of the buildings of the site. Their diverse nature – from a Grade 2 listed country house, to 1930s brick properties, to modern steel frame structures needed to be factored into Redcentric's approach, both in terms of installing equipment and obtaining the best possible coverage.

NHS CONTRACT WIN – 05 JUNE 2014



The two year contract is to provide a unique solution engineered for application performance, providing fast processing and quicker application deployment, making its big data more manageable. The contract was procured through G-Cloud and is in addition to an earlier agreement with the same partner announced on 24 February 2014. Redcentric will also deliver a range of services including networking services and hosted / virtual desktop infrastructure (VDI).

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