Chapter 10.4
IBM Consulting Services – Federal Public Sector

IBM zCloud FEDERAL CLOUD SERVICES

This zCloud Service Catalog defines the core foundation services of the standard offering. The zCloud Platform as a Service (PaaS) is provided through its underlying Infrastructure as a Service (IaaS), the IBM Federal SmartCloud for Government (SCG). There are also optional and customizable services available with the IBM zCloud Federal offering upon request.

1. zCloud Federal Platform as a Service (PaaS) Hosting Service

Service Description:
IBM will provide z platform infrastructure services up through and including the IBM z mainframe Operating System. Associated IaaS Infrastructure Managed Services and Security Services are provided through IBM's Federal community cloud, SmartCloud for Government (SCG), which holds a Federal Risk and Authorization Management Program (FedRAMP) High Joint Authorization Board (JAB) accreditation. While physically located at the Federal Information Security Modernization Act (FISMA) compliant IBM Federal Data Centers (Raleigh, NC and Boulder, CO), IBM zCloud Federal, IBM's z mainframe environment, is hosted within the SCG cloud edge and security boundary and inherits the SCG FedRAMP high accreditation.

In support of the Client's planned workloads, hosted mainframe infrastructure of "compute" (MIPS) and memory is configured with storage (Direct Access Storage Device/DASD), and backup infrastructure (proposed as a Virtual Tape Library) and configured for primary and secondary Federal Data Center (FDC) locations. The zCloud Federal environment provides z mainframe Logical Partition (LPAR) hosting in both the primary and secondary Disaster Recovery (DR) sites of the FDCs. Replication for zCloud storage and zCloud backups to a secondary IBM FDC provides the Client with data protection and serves as the foundation to enable full mainframe disaster recovery capability across the IBM FDCs in the future.

What is Included:
The client has access to zCloud virtual resources which are configured for their use based upon their individual requirements.

- Cloud - z MIPS/MSUs – CPU capacity – Available by MIPS/MSUs
- Cloud - z Memory – Available by gigabyte (GB)
- Cloud - z LPARS – Operating system images – Available by the quantity
- Cloud - z Storage – Disk and Virtual Tape – Available by GB
- Cloud - z Storage Replication – Disk and Virtual Tape – Available by GB
- Cloud - z Backup – Available by GB

IBM measures the processing capacity of IBM Z systems mainframe processors in units for Million Service Units (MSUs). This capacity is frequently converted to Millions of Instructions Per Second (MIPS) due to the greater familiarity that term.

Memory, or in mainframe terminology, real storage, is analogous to the RAM in a desktop or laptop computer. It is where active programs (including the operating system, middleware, and application programs) and their in-flight data reside.

Running multiple LPARs provides a method for dividing workloads into groups with common characteristics and allowing these groups to run together in a common environment.

The zCloud Storage service provides configuration, operation, and maintenance of data sets within the client's virtual zCloud environment.

Supplementing the storage managed service, IBM will operate a storage replication managed service enabling Client to leverage asynchronous replication of Client's Direct Access Storage Device (DASD) storage to a secondary IBM FDC to provide additional data protection in the event of a disaster at the primary FDC.

IBM operates a FedRAMP compliant backup managed service, zBackup, based on the IBM virtual tape platform. The zBackup managed service includes replication of virtual tape data to a secondary FDC to provide data protection in the event of a disaster at the primary FDC.

(FISMA)/Federal Risk and Authorization Management Program (FedRAMP) Compliance Management

- Management and maintenance of cloud infrastructure
- Management and maintenance of intra-site backup replication infrastructure
- Monitoring and performance tuning of cloud infrastructure
- Monthly security patching of cloud infrastructure hardware (firmware) and software
- Security maintenance and monitoring of cloud

Infrastructure Maintenance & Support

- Perform problem determination and troubleshooting for cloud infrastructure devices and services
- Incident, Change, Asset, Configuration and Problem management for cloud infrastructure
- Support and maintenance of zCloud tools and software
- On-site repair coordination for zCloud infrastructure devices
- Vulnerability remediation for zCloud infrastructure device

How We Charge:
zCloud Service monthly charges are based on client selection of six components and the quantity needed to support their z Mainframe environment:

- Total allocated z MIPS tier – The z Mainframe CPU "compute power level" is calculated using the Peak Rolling Four-Hour Average usage computed using standard Sub- Capacity Reporting Tool (SCRT) z/OS product Million Service Units (MSU) utilization and a MSU to MIPS conversion factor of approximately 8.2 MIPS:1 MSU, depending on the specific processor model.
- Total allocated Memory per gigabyte (GB)
- Total allocated LPARs
- Total allocated Disk and Virtual Tape Storage per gigabyte (GB)
- Total allocated source Z Storage Replication per gigabyte (GB)
- Total allocated z Backup supporting data disaster recovery (DDR)

In support of the zCloud Federal offering, there are standard services (i.e., Systems Administration, Enterprise Operations Center (EOC), Enterprise Systems Monitoring (ESM), included as part of the underlying core foundation of services.

2.0 zCloud RESOURCES - Description of Individually priced Components

2.1 zCloud – z MIPS - CPU Processor capacity, Available as MSUs/MIPS

Service Description:
IBM measures the processing capacity of IBM Z systems mainframe processors in units for Million Service Units (MSUs). This capacity is frequently converted to Millions of Instructions Per Second (MIPS) due to the greater familiarity that term. Each MSU is equivalent to approximately 8.2 MIPS. The exact conversion factor depends on the specific processor model the specific workload being measured.

IBM will provide total requested CPU processor capacity. The client can control how this capacity is allocated across their LPARs. Options available include setting the number of logical processors assigned to each LPAR, setting the capacity of each individual LPAR, setting the total capacity of groups of LPARs, and capping the utilization of individual LPARs or groups of LPARs.

In addition to normal CPU capacity, IBM offers a number of additional options for addressing temporary increases in CPU capacity demand. Among these options are Capacity for Planned Event (CPE), On/Off Capacity on Demand (OOCOD), and Capacity Backup (CBU).

The client has the option of contracting for specialty processors to compliment the general-purpose processors described above. These specialty processors are designed to process specific types of workloads. zIIP processors are used for DB2 workloads, and IFL processors are used for Linux workloads. The primary advantage of using specialty processors is that specialty processor capacity is not included when calculating usage-based software license costs.

2.2 zCloud – z Memory – Real storage allocated to each of the client's LPARs

Service Description:

Memory, or in mainframe terminology, real storage, is analogous to the RAM in a desktop or laptop computer. It is where active programs (including the operating system, middleware, and application programs) and their in-flight data reside.

Each active z/OS LPAR requires a minimum of 8GB of real storage. Larger production LPARs may require significantly more real storage to operate efficiently.

Unlike processors, real storage is not shared between LPARs. Real storage is exclusively allocated to a single LPAR.

2.3 zCloud – z LPARS – a Logical Partition (LPAR) is a single instance of an operating system image

Service Description:
Running multiple LPARs provides a method for dividing workloads into groups with common characteristics and allowing these groups to run together in a common environment. LPARs can be used to separate development, test, and production environments to reduce the risk of adverse impacts to important business processes. LPARs can also be used to provide redundancy and eliminate single points of failure.

Multiple Individual LPARs can be completely isolated from other LPARs, or groups of LPARs can be coupled together in a SYSPLEX.

The architectural limit on the number of LPARs that can be configured on a single IBM Z system processor is more than 80, but practical limitations of real storage, I/O throughput, and available processing capacity typically limit the number of LPARs that can reasonably reside on a single IBM Z systems processor to much fewer.
The zCloud Federal offering currently supports LPARs running the z/OS operating system and Coupling Facility LPARs. Native zVM and zLinux LPARs are not currently supported.

Federal zCloud Storage Hosting

2.4 zCloud zStorage &

2.5 zStorage Replication

Service Description:
IBM operates a FedRAMP compliant, mainframe optimized storage managed service with FICON connectivity to support mainframe attachment. The zCloud Storage service provides configuration, operation, and maintenance of data sets within the client's virtual zCloud environment. Supplementing the storage managed service, IBM will operate a storage replication managed service enabling Client to leverage asynchronous replication of Client's Direct Access Storage Device (DASD) storage to a secondary IBM FDC to provide additional data protection in the event of a disaster at the primary FDC.

2.6 zBackup Service via Virtual Tape Library (VTL)

Service Description:
IBM operates a FedRAMP compliant backup managed service, zBackup, based on the IBM virtual tape platform. In addition to traditional backup capabilities, the service includes the provisioning and management of logical tapes and scratch volumes to support daily virtual tape usage. The zBackup managed service includes replication of virtual tape data to a secondary FDC to provide data protection in the event of a disaster at the primary FDC.

3.0 OPTIONAL SERVICES

3.1 zCloud Federal Data Disaster Recovery (DDR)

Service Description:
Data replication between Primary site and Secondary site will use four 10Gbps circuits (two for Mainframe environment and two for Distributed environment) -

configured with path diversity. Replication technologies will be provided by IBM's data replication services. The solution is designed to provide a 4-hour maximum Recovery Time Objective (RTO) for Infrastructure up to OS, and a 5-minute maximum Recovery Point Objective (RPO) for data, depending on the Client workload volume to replicate.

3.2 zCloud Federal LPAR Disaster Recovery (DR)

Service Description:
LPAR Disaster Recovery (DR) replication between Primary site and Secondary site will use four 10Gbps circuits - configured with path diversity. Replication technologies will be provided by IBM's data replication services. The solution is designed to provide a 4-hour maximum Recovery Time Objective (RTO) for Infrastructure up to OS, and a 5-minute maximum Recovery Point Objective (RPO) for data, depending on the Client workload volume to replicate.

3.3 zCloud Federal Z Transformation and Application Modernization Services

Service Description:
This service provides custom labor to support a client's application transformation and modernization based on the client's requirements. The IBM zCloud Federal team provides licensing and support for deploying and configuring IBM Application Discovery & Delivery Intelligence (ADDI), IBM z/OS Connect and Application Delivery Foundation for z Systems (ADFz) SW to allow the client to discover and create APIs with zero to minimal changes to assets. The ability to expose assets selectively to systems of interaction, through standard Representational State Transfer (REST) APIs with minimal to no code changes, is a key next step to opening up the application landscape and embarking on the digital transformation journey.

Middleware Optional Services

3.4 zCloud Federal SW CICS Application Services

Service Description:

The IBM zCloud Federal team provides licensing and support for deploying and configuring IBM CICS application services SW.

3.5 zCloud Federal SW DB2 Application Services

Service Description:
The IBM zCloud Federal team provides licensing and support for deploying and configuring IBM DB/2 application services SW.

3.6 zCloud Federal SW Websphere Application Server (WAS) Application Services

Service Description:
The IBM zCloud Federal team provides licensing and support for deploying and configuring IBM WAS application services SW.

3.7 zCloud Federal SW Websphere MQ Series (WAS MQ) Application Services

Service Description:
The IBM zCloud Federal team provides licensing and support for deploying and configuring IBM WAS MQ Series application services SW.

3.8 zCloud Federal SW IMS Application Services

Service Description:
The IBM zCloud Federal team provides licensing and support for deploying and configuring IBM Information Management System (IMS) application services SW.