

# IBM Managed Hosting & Application Services

Service Guide

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## IBM Managed Hosting and Application Services (MH&AS) Service Guide

IBM® Managed Hosting and Application Services provides the hosted services described in this Service Guide (the “Service” or “Services”) primarily at IBM cloud data centers (CDCs) that allow a Client to run and manage enterprise business applications from a hosted environment. With this Service, IBM manages IBM-provided equipment, software and applications located in space at a CDC.

### Agreement and Structure

The entire agreement between IBM and Client governing the Services consists of (1) the IBM Cloud Services Agreement (the “CSA”) or IBM Client Relationship Agreement (the “CRA”) or other master agreement executed between the IBM and Client and specifically referenced in the applicable Transaction Document for these Services; (2) the Pricing Schedule; and (3) this IBM Managed Hosting and Application Service Guide (the “Service Guide” or “MH&AS Service Guide”), (collectively, the “Agreement”). The Pricing Schedule and this Service Guide are Transaction Documents as defined in Client’s agreement with IBM.

This Service Guide consists of the following sections:

- Service Description (SD)
- Service Level Agreements (SLAs)

Client may order Services and individual service components as expressly described in a Transaction Document (“Service Components”) by executing a Pricing Schedule or comparable Transaction Document with IBM, which includes the charges applicable to the Services, applicable SLAs, any optional Services, and any additional terms and conditions. Additional Services may be ordered via an addendum to an active Pricing Schedule executed by Client and IBM. Except as otherwise expressly set forth in the Agreement, in the event of a conflict, the order of precedence shall be (1) the Pricing Schedule (or comparable Transaction Document), (2) this MH&AS Service Guide, and (3) the master agreement (e.g., CSA, CRA).

Unless otherwise expressly set forth in the Agreement, upon expiration of the Pricing Schedule (or comparable Transaction Document) term, the Services and Service Components under the Agreement shall auto renew on a month-to-month basis until either Client or IBM terminates the Services and Service Components by providing 30 days prior written notice to the other. Client shall pay for all Services and Service Components provided through the effective date of termination and any applicable termination charges specified in the Agreement.

The Service Description describes the Managed Hosting and Application Services available under the terms of the Agreement. The latest dated Service Description for the Services will prevail over an earlier version of that Service Description, except as may be expressly specified otherwise.

The Agreement represents the entire agreement regarding Client’s access to and use of the Services and replaces any prior oral or written communication between Client and IBM. By submitting a Pricing Schedule to IBM, Client is not relying on any representation that is not specified in the Agreement including without limitation any representations concerning: i) estimated charges for the Services; ii) performance or function of the Services; iii) the experiences or recommendations of other parties; or iv) results or savings Client may achieve. Additional or different terms in any written communication from Client (such as a purchase order) are void.

Client agrees IBM may publicly refer to Client as a subscriber to the Services in a publicity or marketing communication.

IBM may revise this Service Guide at any time; provided, however, if IBM revises the Service Guide and the revision has a materially adverse impact on Client and IBM does not affect revisions

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that remedy such materially adverse impact within 30 days after receipt of notice from Client, then Client may, as Client's sole remedy, elect to terminate the affected Services on 30 days notice to IBM, given not later than 90 days after Client first learns of the revision to the Service Guide. Materially adverse impacts do not include changes required by governmental authority or assessment of or changes to additional charges such as surcharges or taxes.

Use of any software provided by IBM is subject to acceptance by Client and user of applicable license terms.

As a condition of use or obtaining the Service, Client shall comply with all rules, policies and guidelines described in the Service Guide, and other policies published or identified to Client by IBM.

In addition, the IBM Acceptable Use Policy ([www.ibm.com/services/aup.html](http://www.ibm.com/services/aup.html)) applies to the use of the Services.

### Service Description (SD)

#### SD-1. Policies and Procedures

The Services provided under this Service Guide shall always be used in compliance with IBM then-current general policies and guidelines ("General Policies") and the policies and guidelines of IBM underlying telecommunications providers ("Network Policies") (collectively the General Policies and Network Policies are sometimes herein referred to as "Policies"). All Policies, are set forth in the Service Guide. The most recent version of the Service Guide including all updates is available at the following link [IBM Managed Hosting & Application Services Guide](#)

Client is provided with access to a portal via user id and password, which is an IBM provided resource that can be used by the Client for Client requests and operations monitoring. Client's use of the Portal is strictly for informational purposes and does not form a part of the Agreement.

Client shall not be permitted physical access to the environment. IBM Move, Add Change service requests to support Client managed devices can be made through the Portal.

### Service Description (SD)

#### SD-2. Service Infrastructure

##### SD-2.1. Service Location

IBM Managed Hosting and Application Services provides service primarily at one or more CDCs in the following locations in the United States. Service description availability is dependent upon location as defined in the applicable Pricing Schedule.

SEI Locations
Dallas TX
Irving TX

Ashburn VA
Poughkeepsie NY

### **SD-2.2. Service Enablement Infrastructure**

Service is provided using Service Enablement Infrastructure (SEI), which includes facilities, power, network connectivity, IBM management infrastructure and the Client hosted infrastructure and applications on an as-available basis at CDCs. Facilities include CDC conditioned space (raised-floor space), including the monitored environmental infrastructure necessary to support using conditioned space in the CDC.

Service includes the building and deployment of the Client hosted infrastructure. Building of hosting infrastructure includes IBM provisioning of the infrastructure required by the Client to deploy equipment, software and services within a CDC. IBM will provide:

- Project planning and coordination to design and provide the required infrastructure
- Receipt and acceptance of IBM-managed equipment at the CDC
- Acceptance of Client-owned equipment shipped to the CDC
- Racking, stacking and cabling of equipment as agreed to by IBM in the design
- Installation, configuration and testing of infrastructure and IBM-managed equipment and software (such as servers, storage and applications)

#### **SD-2.2.1. Maintenance**

Maintenance is performed on a routine basis or during scheduled maintenance windows. Scheduled maintenance includes system upgrades, enhancements or routine maintenance which is announced on the Portal at least two days in advance or maintenance determined by IBM to be an emergency upon notice provided through the Portal (“Scheduled Maintenance”). Scheduled maintenance windows are excluded from SLA calculations and remedies.

#### **SD-2.2.2. Power**

Service includes power as available and subject to the limitations stated.

### **SD-2.3. Client Managed Equipment in IBM Managed Space**

The Service includes the amount of space and power, in increments defined in the Pricing Schedule and up to thirty minutes of Move Add Change (MAC) (as defined herein) per month. Client will have no physical access to Client-managed Equipment in IBM Managed Space.

IBM is not responsible, and the Service does not include, care for Client-owned materials or equipment shipped to or installed at a CDC.

Prior to shipping any materials or equipment to a CDC or causing a third party to ship any materials or equipment to a CDC, Client shall notify IBM by opening a ticket using the portal or by contacting the help desk.

Client will provide IBM with:

- Cabling diagram defining purpose, interfaces, ports and IPs
- List of all Client owned materials or equipment to be located in IBM Managed Space, including specifications to determine rack/space/power requirements.

All Client shipments to a CDC shall be identified by Client name and Client ID on the shipping label. IBM is not responsible for, and Client assumes all risk of loss for, Client-shipped materials delivered to a CDC.

#### **SD-2.4. Support for IBM-Managed Infrastructure, Equipment and Software**

IBM will notify Client within 45 calendar days after IBM becomes aware that the maintenance of any IBM-provided equipment or software is no longer supported by its manufacturer, or that repair parts and/or patches or upgrades cannot be reasonably obtained for the equipment or software, or that another reasonably satisfactory maintenance provider is not available to maintain the equipment or software (“Support Discontinuance”). IBM will inform Client if the Service will be impaired by the Support Discontinuance and advise Client of alternatives to the continued use of the affected equipment or software. If Client does not authorize IBM to replace such equipment or software after notice of Support Discontinuance or otherwise make reasonable alternative arrangements within 60 calendar days following IBM’s notice, IBM shall not be liable for failure to meet applicable service level agreements arising from the failure of equipment or software subject to the Support Discontinuance.

Client will use supported versions of client software or will purchase extended support from the applicable vendor. Should Client cease making maintenance payments or fail to purchase extended support from the applicable vendor, thereby resulting in use of unsupported versions of client software (“Unsupported Versions”), then (a) all necessary patches, fixes, and upgrades will be performed by IBM on a time and materials basis and billed to the Client; (b) Any issues under the SLA that were caused by any Unsupported Version will be excluded from the calculation of Availability; and (c) additionally, to the extent that security patches are no longer made available for any Unsupported Versions, IBM reserves the right to take any necessary action to protect IBM’s network from associated vulnerabilities.

IBM may provide update/migration custom services with respect to Support Discontinuance or Unsupported Versions for an additional charge to Client.

#### **SD-3. Security**

IBM operates the Service Enablement Infrastructure under policies and procedures that are designed to provide physical and logical/IT security to IBM Managed Hosting and Application Services infrastructure, facilities and systems. The [IBM Data Security and Privacy Principles](#) document defines the technical and organizational measures applied to IBM Cloud Services inclusive of IBM Managed Hosting and Application Services.

##### **SD-3.1. Security Policies**

IBM maintains a wide-ranging security program with the objective of broadly incorporating security measures into all IBM computing and networking environments. IBM identifies the security controls and technical specifications for the MHAS Client environment in an Information Security Control Document (ISCD). IBM provides this document to set forth the Security Controls within the scope of the applicable Pricing Schedule. IBM reviews and updates this document on a regular basis.

The Client will:

- Determine appropriate Security Policy requirements based on business objectives, assessment of risk, and interpretation of legal, regulatory and contractual obligations

- Validate that the security controls specified in the ISCD meet the Client requirements
- Request exceptions to the ISCD, as needed
- Notify IBM through the change request process if Client security requirements change

IBM has undertaken to obtain applicable security-related certifications for certain of the Services or Service Components (or features) described in this Service Guide, including under ISO 27001. IBM will provide validation of its auditing results under these standards, where applicable, upon Client request,

IBM will provide, at Client's request, on an annual basis, a copy of the latest multi-Client Service Organization Controls (SOC) 1 Type II auditing report to Client with respect to IBM's facilities from which the Client's Services are hosted. IBM will permit Client site visits only in select CDCs, on reasonable prior notice, not more than once per contract year. Such reviews will be subject to Client's compliance with IBM security procedures. If the site visit requires the participation of IBM personnel, Client will pay time-and-materials for the time spent by IBM personnel relating to the site visit.

**Cardholder data** – The Services described in this Service Guide do not store, process or transmit cardholder data but rather provide one or more infrastructure components that may be used by Clients to store, process or transmit cardholder data. Components of the hosting and IT infrastructure services described in this Service Guide may come within the scope of one or more Payment Card Industry Data Security Standard (PCI DSS) assessment activities conducted by IBM as part of one or more service-specific PCI DSS assessment(s). The Services or Service Components described in this Service Guide are subject to a PCI DSS assessment Information and media handling – IBM security standards specify the means and levels of protection for information in transit or in storage regarding the type of environment and media and within each information classification. The standards also specify the requirements for information destruction and media sanitization.

When Client discloses Client content which includes personal or other sensitive third party data to IBM for the purpose of having IBM process such data, Client confirms that it has the required legal authority and provided the necessary notice and consents to do so to the extent permitted by applicable law, Client agrees that IBM has the right to monitor electronic communications transiting the Infrastructure, to ensure compliance with IBM's legal and regulatory obligations and its internal policies.

## **SD-3.2. Security Services**

### **SD-3.2.1 Firewall**

IBM installs and manages physical and virtual infrastructure and software licensing to support Client virtual and physical firewall policies. During implementation, IBM creates initial firewall policies to restrict all unnecessary and unauthorized access to environments, and tests firewalls and networking components. The service is available in a high availability virtualized, standalone single hardware platform or high-availability dual hardware platform configuration. Updates to physical, virtual and software based firewall policies are made through the Move, Add, Change process as requested by Client.

### **SD-3.2.2 Web Application Firewall**

As an option and for additional charges, IBM can install and manage physical and virtual infrastructure and software licensing to support Client web application firewall policies. During implementation, IBM creates and tests initial web application firewall policies. Updates to web

application firewall policies are made through the Move, Add, Change process as requested by Client.

### **SD-3.2.3. Network-Based Intrusion Prevention**

IBM implements network-based intrusion prevention, monitors the systems, responds to intrusion prevention system alerts and performs event correlation. A standard IPS policy will be applied to all Client solutions.

### **SD-3.2.5 Anti-Virus Software**

Anti-virus software is installed and managed on IBM managed virtual and dedicated servers using Microsoft Windows Server and Red Hat Enterprise Linux operating system software. Anti-virus software is required for all Operating System and Advanced Managed servers.

### **SD 3.2.6. Host Based Intrusion Prevention**

As an option, and for additional charges, IBM can implement host based intrusion prevention, monitors the systems and responds to the intrusion prevention system alerts where such option is purchased by Client.

### **SD-3.2.7. Two Factor Authentication**

IBM provides licensing, installation and proactive monitoring and management for two factor authentication alerts for IBM managed servers. RSA SecurID is required for Clients who retain server administrative access to Client systems.

### **SD-3.2.8. Disk Encryption**

As an option and for additional charges, IBM can provide software licensing and agent installation to Client devices to encrypt Client data on the IBM managed storage disk volume where such option is purchased by Client.

### **SD-3.2.9. Compliance Management**

IBM uses compliance management tools to enable compliance with IBM security policy and standards. Additional Client specific configurations can be supported as an option.

### **SD-3.2.10. Security Information and Event Management**

IBM will perform Security Information and Event management services to collect and store security and audit logs. IBM implements monitoring, correlation of events, notifications, analysis and reporting of log data.

### **SD 3.2.11. File Integrity Monitoring**

IBM implements file integrity monitoring for all IBM-managed operating systems. IBM validates the integrity of OS files using an automated verification method between the current file state and the IBM baseline. As an option, and for additional charges, IBM can implement file integrity monitoring for IBM-managed application software files.

### **SD-3.2.12. Vulnerability Scans**

IBM will perform routine vulnerability scans on Service Enablement Infrastructure, including the Client hosted infrastructure, and will notify Client if an identified risk vulnerability requires Client's immediate attention. Notice of such risk vulnerabilities might include a cure period allowing Client

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time to resolve the vulnerability. IBM can suspend Service if Client is unable to or does not cure the risk vulnerability in the allocated timeframe or if such risk vulnerability might cause imminent threat or harm to the IBM network or use of IBM Services or network by unauthorized people.

### SD-3.2.13. Client Audits

Client or Client-sponsored third-party audits of the Service, functions related to the Service or IBM facilities are not permitted unless expressly authorized in writing by IBM. Client may request an audit in writing to IBM through a service request ticket. All desired audit points should be defined in the request for review. Client is required to execute a separate agreement with IBM establishing the rates, terms and conditions under which Client or its third-party auditor are entitled to audit a Service, functions related to the Service or IBM facilities.

### SD-3.2.14. Penetration Testing

IBM will perform penetration testing on Service Enablement Infrastructure annually as defined in [IBM Data Security and Privacy Principles](#). As an option, and for additional charges, IBM can implement penetration testing for Client hosted infrastructure.

### SD-3.3. Security Services - Included and Optional

Included services are included in Client's charges and any optional services can be provided for additional charges

Service Feature	Included	Optional	
Primary Firewall	X		All Client solutions include an IBM-managed primary firewall. Primary firewall rules support inbound/outbound network traffic
Software based virtual firewall	X		Virtualized Client solutions include software based virtual firewall rules that support internal network (LAN) segmentation
NIPS	X		Standard NIPS included as part of all Client solutions with a software based virtual firewall
Web Application Firewall		X	Base level service includes up to five WAF
Anti-Virus Protection	X		Installed, monitored and managed on all IBM Operating System and Advanced Managed servers
Two Factor Authentication	X		Required for Clients who retain server administrative access to Client systems.
HIPS		X	
Disk Encryption		X	
Compliance Management	X		Client specific configurations can be supported as an option.
SIEM (infrastructure)	X		SIEM applied to internal SEI infrastructure
SIEM (Client environment)		X	SIEM applied to Client solution

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File Integrity Monitoring – Operating System	X		IBM implements file integrity monitoring by validating the integrity of an IBM-Managed operating system using an automated verification method between the current file state and the IBM baseline.
File Integrity Monitoring – Application Software		X	IBM implements file integrity monitoring by validating the integrity of an IBM-Managed application software using an automated verification method between the current file state and the IBM baseline
Vulnerability Scanning	X		IBM will provide non-authenticated internal network-based vulnerability scanning.
Penetration Testing	X		Penetration testing applied to internal SEI infrastructure
Penetration Testing		X	Penetration testing applied to Client hosted infrastructure

**SD-4. Network Infrastructure****SD-4.1. Managed Internet Access Services**

Managed Internet Access Services provide Client with an IP connection. Managed Internet access connectivity includes configuration of:

- Internet bandwidth at a specified outbound Internet data transfer rate per Gbps as defined in the applicable Pricing Schedule
- Internet bandwidth at a specified committed information rate as defined in the applicable Pricing Schedule
- VLANs and IP devices

**SD-4.2. Client Terminated Circuit**

Connectivity supporting a Client terminated circuit connects the Client environment to secure space or other point of connection to allow connectivity to a Client network. The circuit to support back-end connectivity into the IBM Service Enablement Infrastructure is not included and must be ordered separately by the client in accordance with IBM circuit fiber requirements.

Clients must provide the Client managed devices or contract for Hosted Managed Router in support of private circuits that terminate in the Clients hosted network. Client is responsible for the configuration of the Client managed devices.

IBM will be responsible for extending the circuit(s) from the demarcation point to the Client-provided equipment and/or IBM managed router. For each circuit, IBM will provide the Client with a single IP from a Client-Terminated Circuit (CTC) VLAN for a client device to connect to the IBM network/switch. Client will provide IPs and manage all inter-networking between the client-provided devices.

Client will procure at least one POTS (Plain Old Telephone Line) per CDC for out-of-band management of Client managed devices.

### SD-4.3. Data Center Interconnectivity

Interconnectivity is provided between CDCs as defined in the applicable Pricing Schedule. Interconnectivity is enabled using a private wide area network (WAN) to enable geographic diverse server-to-server connectivity, load-balancing, high availability, and disaster recovery offerings. Data Center Interconnectivity includes configuration of:

- Private WAN bandwidth at a specified data usage transfer rate per Gbps as defined in the applicable Pricing Schedule
- Private WAN bandwidth at a specified committed information rate as defined in the applicable Pricing Schedule

Bandwidth utilization of the private WAN at the following CDCs is metered at a per Mb/s and Clients requiring datacenter interconnectivity will be billed monthly at a specified usage transfer rate. Interconnectivity options are described below:

Server-to-Server Connectivity:

Poughkeepsie, NY ⇔ Ashburn, VA
Dallas, TX 1 ⇔ Dallas, TX 2

Disaster Recovery:

Poughkeepsie, NY ⇔ Dallas, TX 1
Ashburn, VA ⇔ Dallas, TX 2

### SD-4.4. Site-to-Site VPN Tunneling

The site to site VPN option includes provisioning and installation of an IPsec compliant device on the Clients hosted network. IBM will provide configuration based on Client specifications.

IBM configuration and testing of the VPN tunnel at the IBM location is based on Client-provided IP identification of Client Internet Protocol Security (IPsec)-compliant device on the Client's network. Client is responsible for maintaining configuration on the device and for maintaining connectivity between the Client location and the Internet.

### SD-4.5. Translation of IP Addresses

In the event of a conflict of private IP addresses, Client shall provide network address translation to map IBM private IP addresses to public IP addresses at Client site(s). Client has no ownership or transfer rights to any IP address assigned to Service and may not use IP addresses or VLANS not assigned to Client.

### SD-4.6. Outbound Mail Relay (OMR)

The Services support OMR.

### SD-4.7. Domain Name System Hosting

IBM will support domain names for Client as specified on the technical service document. Client registers domain names and makes IBM the technical contact with the domain name registrar.

### **SD-4.8. Support for Microsoft Active Directory® Support**

IBM offers two options for using the Microsoft Active Directory domain controller.

- IBM-managed Active Directory – Includes deployment, configuration and management of operating system and operating system monitoring agents onto the Active Directory server, including installation and configuration of domain controller, patching, monitoring and troubleshooting authentication and replication issues. IBM retains sole domain administrator access (Advanced Server Management). Client is not provided root or equivalent access to operating systems. At least two Active Directory servers are required for redundancy. IBM will perform an initial load of base roles, organization unit, users and distribution groups not to exceed one hour.
- Client-managed – Includes deployment and configuration of operating system onto Active Directory server. Client is responsible for all domain controller configuration management, patching, monitoring and troubleshooting of all domain issues. Client retains sole domain administrator access. Not available in conjunction with Advanced Managed server environments

### **SD-5. Client Networking**

The Client Networking functions listed below are implemented using an integrated, highly available, virtualized or physically dedicated network infrastructure. Client networking can be used with Client Terminated Circuits and/or Managed Internet Access and can also be used with the all IBM Server Management options.

#### **SD-5.1. Managed LAN Switching**

Managed LAN switching provides Client with one or more LAN Layer 2 or Layer 3 switches that enable aggregation of multiple devices. If Client requires five or more cross connects to support connectivity, Client is required to order dedicated LAN switching or another device to support the cross connects.

#### **SD-5.2. Managed Load Balancing**

Managed Load Balancing balances traffic across Client's servers located within an IBM CDC using Gigabit Ethernet connection to the Internet.

IBM will provide local traffic management, proactive monitoring, health checking, reverse proxy, and load distribution. Optionally and for additional charges, Managed Load Balancing may include support for IRules and Global Traffic Manager (GTM).

The service is available in a high availability dedicated virtual configuration, and as a dedicated physical hardware configuration. Physically dedicated configurations require that Client also purchase IBM-managed LAN switching services.

#### **SD-5.3. Application Accelerators**

Application accelerators are load balancing service options supporting Secure Sockets Layer (SSL) acceleration, caching and compression to improve application performance and network efficiency. Optionally, application acceleration may include hardware/software compression, caching, enhanced web acceleration and SSL acceleration.

When SSL acceleration is ordered, IBM is not responsible for providing and managing any required encryption certificate keys and passwords. The service is available in a high availability

virtualized, standalone single hardware platform or high-availability dual hardware platform configuration.

#### **SD-5.4. Hosted Managed Router**

Hosted managed router provides a managed router dedicated for use by an IBM Managed Hosting and Application Services Client in a CDC. The hosted managed router enables Layer 3 connections to Managed Internet Access or Client Terminated Circuit connectivity. The service is available in a physically dedicated single hardware platform or high-availability dual hardware platform configuration.

#### **SD-6. Server Infrastructure**

The Server Infrastructure functions listed below are implemented using an integrated, highly available, virtualized or physically dedicated computing infrastructure. Server infrastructure services can be used with Client Networking and with IBM Managed Storage options.

IBM maintains a library of certified server hardware, hypervisor, operating system, middleware and application software configurations, which are used to build and deliver IBM Managed Hosting and Application services.

##### **SD-6.1. Server Hardware**

IBM will provide management of server hardware. IBM maintains a library of certified server hardware configurations, which are used to build and deliver server, hypervisor, operating system, and application monitoring and management services. Managed Server Hardware Services include:

- Monitoring and resolution of detected hardware failures
- Coordination of preventative maintenance
- Installation and maintain firmware upgrades
- Power cycling or reboot
- Physical inspection of all hardware components.

In cases where IBM repairs managed Server Hardware, IBM will re-image the server using the applicable current IBM-certified server hardware. IBM may modify (including the right to discontinue) a certified server hardware.

Managed Server Hardware may be used to deliver physical or virtual servers. Physical servers are IBM-certified and managed physical devices dedicated to a single Client.

Virtual machines are IBM-certified and managed virtual devices configured with virtual core processor units (vCPUs) and virtual memory. IBM Managed virtual servers can be delivered on a physically dedicated or multi-tenant platform.

##### **SD-6.2. Server Management**

IBM applies server management to Client hosted infrastructure.

## **SD-6.2.1 Client Managed Servers**

### **SD-6.2.1.1. Bare Metal**

Client managed Bare Metal servers are implemented to augment Operating System and Advanced Server Management options as part of a total Client solution. Bare Metal can include deployment and configuration of the operating system. Client is responsible for configuration management, internal monitoring, patching and troubleshooting of all issues. Client retains sole domain administrator access.

IBM will provide proactive monitoring and alerting of Server Hardware, network accessibility (ping) and web service (TCP Port 80) for Bare Metal servers. IBM will also perform verification that nonweb TCP services respond to connection requests on a specific port, such as 21-FTP, 23-Telnet and 25-SMTP, on request by Client. Client is solely responsible for configuring, patching and ongoing management of bare metal operating systems; and complying with all licensing requirements, as well as managing configuration, monitoring and optimization of all Client applications, including any requirement for backup.

### **SD-6.2.1.2. Client Managed Virtual Machines – private cloud**

IBM will provide a physically dedicated server infrastructure that is dedicated to a single Client using VMware-based virtualization software to create virtualized compute environments or virtual machines. IBM retains access and control over the physical server infrastructure and the VMware virtualization software.

IBM provides management and proactive monitoring of the VMware hypervisor software. Client is provided a 100 percent reserved virtual data center, which may be used by Client to create virtual machines, virtual apps and virtual networks using VMware™ software. Client is solely responsible for configuring, patching and ongoing management of virtual machine operating systems and complying with all licensing requirements, as well as managing configuration, monitoring and optimization of all Client applications loaded on a virtual machine, including any requirement for backup.

### **SD-6.2.2. Operating System Management**

IBM will provide management of server and operating system support, allowing Client administrative rights to the operating system. Client is required to specify the number, type of operating system and configuration of the virtual machine and physical server instances. Use of operating system software is subject to acceptance by Client of software license terms. A Move, Add, Change (MAC) order is required to instantiate a new virtual machine or change an existing virtual machine.

Client is given administrative access rights (root/server administration privileges) to the operating system and is responsible for managing Client applications.

If operating system failure occurs, IBM will return server to the latest certified IBM operating system image (rebuilds) when necessary. Service includes a maximum of two rebuilds per server per year. Additional rebuilds will be charged at time and material rates. Rebuilds restore IBM-certified operating system only and do not restore Client data, applications or application configuration.

IBM provides proactive monitoring of IBM-managed operating systems. IBM will provide Clients with notification of Priority 1 events related to operating systems. IBM will monitor and manage the IBM-supported operating systems and will provide Client with electronic notifications.

Alarms and/or events are generated per predefined usage thresholds assigned to each component being monitored; thresholds are set by default and can later be modified. Client is provided access to near-real time and historical reports for each monitored parameter, alarms and/or events. Alarms or notifications are available through the Portal.

Should Client change the configuration of the operating system or associated monitoring components in place that provides the monitoring service, Client will be billed a MAC charge to reconfigure the monitoring tools. If Client software fails entirely and the server must be re-imaged, at Client's request, IBM will re-image with the current IBM-supported operating system and monitoring files. Client will be charged a MAC fee to re-image the server, and this activity does not carry an SLA for Service restoration.

### **SD-6.2.3. Advanced Managed Servers**

IBM manages and proactively monitors the availability, performance and recovery of its IBM-managed reference operating systems and IBM-certified application software for Advanced Managed servers. IBM provides service reports, change request, trouble reporting and communications tools to Clients through the Portal. IBM retains exclusive administrative access to the Service platform. Service does not include root or equivalent Client access to operating systems.

### **SD-6.2.4. Application Awareness**

Application awareness provides proactive monitoring of software applications installed on IBM Operating System and Advanced Managed servers. To be eligible for monitoring using application awareness, the Client software application must write to the syslog or events log as specified by IBM. Based on the data that the Client software application writes to the syslog or event log, application awareness provides notification of alarms and/or events. Application awareness alarms and/or events are generated per specific conditions defined by Client and written to the event or syslogs assigned to each monitored element.

MAC charges apply on an hourly charge basis for reconfiguration of an application monitor when Client changes the configuration of the IBM OS-managed server.

### **SD-6.2.5 Server Patch Management**

Updates and software patches for Windows operating systems on Operating System and Advanced Managed Servers are applied automatically via scripts during standard Scheduled Maintenance windows. IBM will provide notice of an update or patch in advance of the Scheduled Maintenance window.

## **SD-7. Managed Storage**

Managed storage provides Client access to a managed, multitenant or physically dedicated storage infrastructure located at an SEI location. Clients can connect their servers to the storage platform through Fibre Channel (FC) for storage area network (SAN) or Ethernet for network-attached storage (NAS) or iSCSI (multitenant only). Storage management services include:

- Supporting data availability
- Monitoring storage system status
- Performing software updates
- Configuration changes

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- Replacing failed components
- Capacity management including allocating new capacity, resizing existing allocations, decommissioning capacity, data destruction and disk degaussing, and utilization reporting

Other storage related functions may require additional fees or need to be managed by the Client at the operating system, database, or application level depending on which management services have been contracted for those other offerings.

### SD-7.1. Managed Storage Tiers

Managed storage is delivered on a multi-tenant or physically dedicated array using predefined primary storage tiers. Clients utilizing the standard tier configurations leverage standardized, snapshot and replication features. Storage tier options are differentiated by cost and performance.

SAN – Fibre Channel	Performance Profile
Tier 0	High I/O, Low Capacity
Tier 1	Enhanced Performance
Tier 2	Enterprise Grade
Tier 3	High Capacity, Low I/O
NAS – NFS-CIFS	Performance Profile
Tier 1	Enhanced Performance
Tier 2	Enterprise Grade
Tier 3	High Capacity, Low I/O
iSCSI	Performance Tiers
Tier 1	Enhanced Performance
Tier 2	Enterprise Grade
Tier 3	High Capacity, Low I/O

Dedicated managed storage technical specifications and licensing can be tailored specifically to meet Client requirements. Standard tier configurations, snapshot, and replication features may not be available.

Other storage related functions may require additional fees or need to be managed by the Client at the operating system, database, or application level depending on which management services have been contracted for those other offerings.

### SD-7.2. Storage Capacity

Capacity limitations may apply or extended delivery timelines could be necessary to accommodate large capacity requests. Dedicated storage, switch hardware or replication

bandwidth could be required depending on the total amount of storage capacity and/or number of switch ports and/or replication bandwidth needed for the storage environment

Additional fees apply for backup or storage services if Client environment exceeds designated backup or storage limits.

### SD-7.3. Maintenance

Maintenance of the managed storage infrastructure may require migration of Client data. IBM will notify Client in writing when data migration is necessary to allow a mutually agreeable maintenance window to support maintenance activities.

### SD-7.4. Connectivity to Managed Storage services

Connectivity to the dedicated and multi-tenant storage infrastructure is provided over redundant 1Gbps or 10Gbps IP Ethernet (NFS/CIFS/iSCSI) or redundant 16Gbps Fibre Channel (SAN).

All Client managed servers, or other hardware appliances requiring connectivity to dedicated managed storage must be configured with IBM certified NICs or HBAs.

Servers connected to SAN using a minimum of two separate connections to two IBM-certified host bus adapters (HBAs) per server.

Servers connected to NAS must run UNIX-based operating systems to use Network File System (NFS) protocol or Microsoft Windows-based operating systems to use Common Internet File System (CIFS) protocol

Associated monthly service charges per IP Ethernet, and/or Fibre Channel, switch ports will apply as necessary.

### SD-7.5. Storage Service Level Support

	Client Management		Operating System Management	Advanced Management
	Bare Metal Server	Client Managed VMs		
Level of Support for Managed Storage	Availability of storage Infrastructure	Availability of storage repositories or data stores within the hypervisor.	Availability of data within the operating system of the bare metal server and/or VMs.	Availability of data within the operating system, as well as any managed middleware, databases, or applications on bare metal servers and/or VMs.

### SD-8. Data Protection for Managed Storage

Backup options for physical and virtual servers are described below. These data protection options can only be used on file systems provided through the multitenant Managed Storage offerings. Dedicated managed storage offerings can use these services if appropriate technical specifications and licensing requirements are met. File systems using internal disks on bare metal

servers cannot leverage these data protection services. Additional fees apply for backup or storage services if Client environment exceeds designated backup or storage limits.

### SD-8.1. Storage Snapshot Backups

Storage Snapshot Backups are available for file systems provided through the multitenant or dedicated managed storage offerings. Storage capacity is allocated per GB as necessary to meet the Client contracted data protection requirements and services are billed monthly based on total allocation.

Storage snapshot backups include supporting data availability, configuring snapshot and replication schedules, and facilitating restore of data from snapshots.

Snapshot Option	Definition
<b>BU-5</b>	Ability to restore retained data to any day within the previous 5 days with 24hr RPO/RTO.
<b>BU-14</b>	Ability to restore retained data to any day within the previous 14 days with 24hr RPO/RTO
<b>BU-30</b>	Ability to restore retained data to any day within the previous 30 days with 24hr RPO/RTO

### SD-8.2. Storage Snapshot Backup Replication

Daily snapshots are retained up to 30 days with asynchronous replication to secondary offsite storage. Remote replication network bandwidth from the primary SEI location to the secondary location is available for an additional charge per gigabyte. Remote replication requires custom scripting; additional charges will apply for the generation of the local replication scripts.

Optional local replication of storage is available for an additional charge per gigabyte. Local replication requires custom scripting; additional charges will apply for the generation of the local replication scripts.

### SD-8.3. Storage Snapshot Service Level Support

Backup Type	Client Managed	Operating System Management	Advanced Management
BU-5 BU-14 BU-30	Available Crash-Consistency Only*	Available Crash-Consistency Only*	Available Application consistency is provided for IBM managed databases and applications that can be supported by standard tools and scripts. Database Roll-Forward is provided for IBM managed databases supporting that feature. This includes retaining database archive logs from the previous 24 hours in order to minimize data loss when restoring database data from the most recent storage snapshot.
	*Does not guarantee recoverability of open files associated with running VMs, applications, or databases.		

**SD-8.4. Storage Snapshot Backup Condition/Limitation**

Storage snapshots do not guarantee recoverability of the operating system or Client applications. Storage snapshots require that application and database files be in a consistent state—that is, either not in use or with usage temporarily suspended—during the storage snapshot execution.

Storage snapshots do not include integration with Client managed operating systems, databases, or applications. Database or application integration with storage snapshots is only provided for IBM managed databases and applications that can be supported by standard tools and scripts.

If necessary, Clients shall provide pre- and post-backup scripts for Client managed or non-standard databases and applications. Clients will be responsible for maintaining alignment between scripts and database configurations and therefore IBM cannot guarantee application-consistency of snapshots for Client managed or non-standard databases and applications.

**SD-9. Disaster Recovery Options**

As an option and for additional charges, IBM® Managed Hosting and Application Services can provide disaster recovery options for the managed services described in this Service Guide. Disaster recovery enables the failover of managed services defined in the Pricing Schedule from the primary SEI location to the secondary geographically disparate SEI location within a required Recovery Point Objective (RPO) and Recovery Time Objective (RTO). The RPO is defined as the amount of time in which data is lost prior to the declared disaster, and the RTO is defined as the amount of time to recover managed services after a declared disaster.

Disaster Recovery provides for coordinated implementation of all applicable MHAS managed network, OS, storage, database, and application services. The service provides controlled procedures to support failover from primary to secondary SEI locations, as well as scheduled updates and patches to facilitate symmetry between the primary and secondary SEI compute instances as necessary to support disaster recovery.

Connectivity between primary and secondary SEI locations can leverage:

- Data Center Interconnectivity to provide the bandwidth for data replication between SEI managed compute instances and storage volumes and applies associated Mb/s bandwidth utilization fees as necessary to meet the Client contracted disaster recovery requirements.
- Client Terminated Circuits (CTC) to provide client dedicated connectivity between SEI locations and may be required to accommodate replication for large quantities of data with high data change rates.

Disaster Recovery options can include a disaster recovery plan which is tested annually. Supplemental DR tests are available per client request for an additional cost as described in the Pricing Schedule. If IBM declares a site disaster at an SEI location, MHAS will notify the client and execute applicable DR plans. The SEI managed disaster recovery service does not provide for client declared disasters.

**SD-9.1. Disaster Recovery for IBM Managed Databases with Roll Forward Option**

The service provides the retention of database archive logs from the previous 24 hours in order to minimize data loss when restoring database data from the most recent storage snapshot. Service available for Clients with IBM managed databases and applications utilizing IBM managed storage offerings delivered to an available standby DR environment at an alternate datacenter within the defined RTO/RPO.

## SD-10. Managed Data Backup

The managed data backup and restore service provides a 24x7 data backup process for Client information such as individual files, file systems and online or offline databases. Data backup and restore is not a disaster recovery service.

### SD-10.1. Fixed Rate Managed Backup

Fixed Rate Managed Backup Options				
BU-3	Daily incremental backups with bi-weekly full and cumulative backups	Client may restore to: - Any day within the past 30 days; Up to 30 daily incremental backups each retained for 30 days. - Any week in the past 90 days; Up to 12 bi-weekly full and cumulative backups each retained for 90 days. - Any quarter in the past 180 days; Up to 2 quarterly full backups each retained for 180 days. (The last full backup in the last month of the quarter, usually in March, June, Sept., Dec., or as specified by Client)	Daily Offsite Replication and/or Daily Vaulting (Optional weekly vaulting)	AES 128-bit Encryption
BU-2	Daily incremental backups with bi-weekly full and cumulative backups	Client may restore to: - Any day within the past 30 days; Up to 30 daily incremental backups each retained for 30 days. - Any week in the past 1 year; Up to 52 bi-weekly full and cumulative backups each retained for 365 days.	Daily Offsite Replication and/or Daily Vaulting (Optional weekly vaulting)	AES 128-bit Encryption
BU-1	Daily incremental backups with bi-weekly full and cumulative backups	Client may restore to: - Any day within the past 90 days; 90 daily incremental backups each retained for 90 days. - Any week in the past 1 year; Up to 52 bi-weekly full and cumulative backups each retained for 365 days. - Any quarter in the past 5 years; Up to 20 quarterly full backups each retained for 1825 days. (The last full backup in the last month of the quarter, usually in March, June, Sept., Dec., or as specified by Client)	Daily Offsite Replication and/or Daily Vaulting (Optional weekly vaulting)	AES 128-bit Encryption

### SD-10.2. Usage Based Managed Data Backup

- Client-defined file systems and database files are backed up on a weekly backup cycle initiated within an IBM-defined window. Each week, IBM will automatically create one full backup and then six daily incremental backups. The most recent four full backups and 24 incremental backups are retained. Twenty-eight days of Client data backup will be available for restore purposes. One full back up for a month is stored offsite for three months. On Client request, data stored offsite may be ordered for delivery to a CDC for restoration. Backup is encrypted as a standard.

Day	Backup Type
Day 1	Full back up 1 (direct restore from full backup 1 available until full back up on Day 29)

Day	Backup Type
Day 2 – Day 7	Incremental backups (direct restore available until overwritten)
Day 8	Full back up 2 (direct restore available until full back up on Day 29)
Day 9 – Day14	Incremental backups (direct restore available until full back up on Day 29)
Day 15	Full back up 3 (direct restoral available until full back up on Day 29)
Day 16 – Day 21	Incremental backups (direct restoral available until full back up on Day 29)
Day 22	Full back up 4 (direct restoral available until full back up on Day 29; full backup 1 available for 3 months from offsite vault)
Day 23 – Day 28	Incremental backups (direct restoral available until full back up on Day 29)
Day 29	Full back up 5 (replaces full backup 1)
Day 30 – Day 35	Incremental backups (overwrites incremental backups from Day 2 through 7)
Day 36	Full back up 6 (replaces full backup 2)
Day 37 – Day 42	Incremental backups (replaces incremental Day 9 – Day 14)
Day 43	Full back up 7 (replaces full backup 3)
Day 44 – Day 49	Incremental backups (replaces incremental Day 16 – Day 21)
Day 50	Full back up 8 (replaces full back up 4; full back up 8 available for 3 months from offsite vault)
Day 51 – Day 56	Incremental backups (replace Day 23 – Day 28)
Day 57	Full back up 9 (replaces full backup 5)
Cycle continues as shown	

Optional backup and retention arrangements are available, including:

- Duplication of weekly full backup stored offsite
- Extended offsite retention. Offsite storage means that the encrypted Client backup is physically transported to an offsite location.

### SD-10.3. Managed Backup Service Restores

Client may restore data that has been previously backed up. Restoring data available onsite will begin within 60 minutes of IBM's receiving Client's request. Restoring data stored offsite will begin within 60 minutes of IBM's receiving the backup data onsite.

### SD-10.4. Purchase of Managed Backup Data

Copies of available backup data are available for an additional charge upon Client request. Prior to termination of subscription to managed backup and restore service, Client may purchase copies of the managed backup data. Upon Service termination, stored data is no longer available.

### SD-10.5. Managed Backup and Restore Connectivity

Connectivity to the dedicated and multi-tenant storage infrastructure is provided over redundant 1Gbps or 10Gbps IP Ethernet.

All Client managed servers, or other hardware appliances requiring connectivity to dedicated managed storage must be configured with IBM certified NICs.

Associated monthly service charges per IP Ethernet switch port will apply as necessary.

Dedicated switch hardware could be required depending on the total number of switch ports needed for the Client hosted environment.

### **SD-10.6. Suspended Servers—Maximum Term 90 Days**

Servers subscribed to the Managed Backup service may suspend backup for a maximum of 90 days. If suspended for more than 90 days, reactivation of service is required and is subject to additional nonrecurring charges.

## **SD-11. Managed Middleware**

IBM provides managed middleware solutions deployed onto dedicated virtual and/or physical Advanced Managed servers.

Service includes application installation, administration and support for the middleware application environment. IBM will monitor, alert, resolve and restore application events and provide Client with electronic notifications.

IBM will apply relevant patches, fixes and updates (excluding major new releases) and perform data protection, managed backup and/or disaster recovery services as defined in the applicable Pricing Schedule. Client and IBM specific roles and responsibilities for certified middleware applications are defined in the applicable Pricing Schedule.

Alarms and/or events are generated per thresholds assigned to each application being monitored. Client is provided access to reports for monitored parameters, alarms and/or events. Alarms or notifications are available through the Portal.

### **SD-11.1. Web Server Management**

Web server management includes installation, configuration, monitoring and proactive management of IBM certified web server software.

### **SD-11.2. Application Server Management**

Application server management includes installation, configuration, monitoring and proactive management of IBM certified application server software.

### **SD-11.3. Database (DB) Management**

Database management includes installation, configuration, monitoring and proactive management of IBM certified database software. An IBM operation DB administrator (ODBA) will provide day-to-day operation of Client database management system (DBMS) software package. The ODBA will execute all changes to the DBMS or DB instances that require system-level administrative access; upgrade or change the DBMS configuration files as required; provide fault analysis and fault management for errors related to the DBMS; make recommendations for directory/file structure and placement for optimal performance; and manage backup, restore and recovery of DBs as specified by Client. IBM's ability to restore DBs to a specific point in time is dependent on Client-provided backup and recovery services. IBM is not responsible for management of DB content.

#### **SD-11.3.1. Database (DB) Clustering Service**

DB clustering service manages a clustered configuration of server hardware and Advanced Managed servers that are bundled with supported DBs (managed storage service), with an

active/passive DB cluster configuration that runs two identically configured systems with access to an IBM managed storage service. Each DB server within the cluster is designated as either active or passive. Using cluster software and high-availability private network connections, the servers within the cluster remain aware of the active DB server's status. When the active DB server fails or does not respond to queries, the passive DB server is activated, and all DB transactions are directed to it for processing.

DB clustering service is implemented in three phases:

1. Initial build and delivery of functional DB cluster – Upon completion of environmental readiness test after installation, DB integration begins.
2. Database integration – Upon request by Client, IBM builds Client DB cluster based on Client specifications. Upon completion of operations readiness testing, monthly recurring charges for service begin. Additional DB integration activities shall be billed as MAC services.
3. Post-production tuning – For the first 14 calendar days after DB integration, IBM will monitor and manage the DB cluster and provide optimization and tuning to the DB cluster configuration

## **SD-12. Application Services**

Subject to acceptance by Client of applicable software license terms, IBM will provide IBM-certified (or will manage Client-provided) applications hosted on and supported by IBM Service Enablement Infrastructure. Managed Application Services are delivered with Advanced Managed servers using SEI.

### **SD-12.1. eCommerce**

IBM provides managed eCommerce solutions deployed onto dedicated virtual and/or physical Advanced Managed servers.

Service can include application installation, administration and support for the eCommerce environment. IBM will monitor, alert, resolve and restore application events.

IBM will apply relevant patches, fixes and updates (excluding major new releases) and perform data protection and managed backup services as defined in the Pricing Schedule. Client and IBM specific application, implementation and support responsibilities are defined in the Pricing Schedule.

Alarms and/or events are generated per thresholds assigned to each application being monitored. Client is provided access to reports for monitored parameters, alarms and/or events. Alarms or notifications are available through the Portal.

### **SD-12.2. SAP**

IBM provides managed SAP solutions deployed onto dedicated virtual and/or physical Advanced Managed servers.

Service can include application installation, administration and support for the SAP environment. IBM will monitor, alert, resolve and restore application events. Service can be designed to support Client specific use cases (i.e. non-production sandbox, or remote management). IBM will apply relevant patches, fixes and updates (excluding major new releases) and perform data protection and managed backup services as defined in the applicable Pricing Schedule. Client and IBM specific responsibilities are defined in the applicable Pricing Schedule

Alarms and/or events are generated per thresholds assigned to each application being monitored. Client is provided access to reports for monitored parameters, alarms and/or events. Alarms or notifications are available through the Portal.

**SD-12.2.1. Implementation and Support Services**

For HANA related projects, IBM project management will ensure installation of prerequisite service packs are installed.

IBM will install the SAP application(s), using customer provided licenses. IBM will configure the application(s), setting parameters, configuring monitoring agents, and implementing file system layouts, transport strategy, operating system patches and backup strategy. Server, database, operating systems (OS), storage, and networks necessary to support the application(s) will be configured. OS and network security policies will be defined by IBM. IBM will perform testing and quality assurance activities including: operational readiness checks, automation of startup and shutdown procedures, and documentation of environment controls. When operational readiness checks are completed, IBM will perform testing of initial migration and test for redundancy and configuration standards.

**SD-12.2.2. Basis Technical Support**

IBM will implement the Clients' transport strategy, and will be consulted by the Client of changes, imports, or issues with transports.

IBM will schedule and support SAP maintenance jobs.

**SD-12.3. Oracle**

IBM provides managed Oracle solutions deployed onto dedicated virtual and/or physical Advanced Managed servers.

Service includes application installation, administration and support for the hosted Oracle environment. IBM will monitor, alert, resolve and restore application events.

IBM will apply relevant patches, fixes and updates (excluding major new releases) and perform data protection and managed backup services as defined in the applicable Pricing Schedule. Client and IBM specific application, implementation and support responsibilities are defined in the applicable Pricing Schedule.

Alarms and/or events are generated per predefined thresholds assigned to each application being monitored; thresholds are set by default and can later be modified. Client is provided access to reports for monitored parameters, alarms and/or events. Alarms or notifications are available through the Portal.

**SD-12.4. Messaging & Collaboration**

IBM provides a managed Microsoft Unified Communication solution deployed in a single-tenant configuration of dedicated virtual and/or physical Advanced Managed servers, including Active Directory integration.

Service includes application installation, administration and support for the hosted Microsoft Exchange, SharePoint and/or Skype for Business environment as identified in the applicable Pricing Schedule. IBM will monitor, alert, resolve and restore application events; apply relevant patches, fixes and updates (excluding major new releases) and perform data protection and managed backup services and optional archiving as defined in the Pricing Schedule. Client and

IBM specific application, implementation and support responsibilities are defined in the applicable Pricing Schedule.

### **SD-13. IBM Support Services**

#### **SD 13.1. Implementation Management**

IBM will provide implementation services for the infrastructure and applications as defined in the applicable Pricing Schedule. Implementation services include project management, project planning and assistance with the preparation of the environment at the Service Location in support of the Services. Following execution of the Pricing Schedule, IBM will coordinate a conference call with Client's program sponsor to prepare for the project. During the conference call, IBM will:

- Review and confirm project objectives, scope and approach;
- Establish project timeline, schedule and milestones
- Review project assumptions
- Review Client-provided documentation and diagrams supporting the Services.

Implementation management service can also provide:

- Support during the preproduction implementation stage.
- Inventory and provisioning
- Develop and implement operations readiness test and cutover procedures prior to the management being transitioned to lifecycle support teams.
- Technical support to assist with Client's application deployment.

A project plan will be developed which will define the activities required to install the infrastructure and applications.

Client is required to:

- Assign a single point of contact to ensure ongoing Client focus and support
- Provide a single point of contact that will work with IBM to coordinate scheduling and logistical support.
- Provide technical resources to assist with the implementation of the Services
- Provide an access list of person(s) authorized for: access, opening trouble tickets, scheduling maintenance, requesting changes
- Identify those employees authorized to request modifications to the access list
- Provide timely access to and participation of Client personnel during implementation activities, in accordance with the schedule mutually agreed upon

#### **SD-13.1.1. Inventory and Provisioning**

This service provides management of ordering, tracking and delivery of IBM-owned/managed hardware and software, including software licensing provided by IBM and delivered on IBM-owned or managed hardware. Client is responsible for ordering, tracking and delivery of Client owned/managed software applications. IBM will communicate processes to support change activity to the IBM-managed environment.

**SD-13.1.2. Test and Turn-Up of the Managed Services**

IBM will perform system validation testing of IBM-managed Service Components prior to transition to lifecycle support by:

- Assigning the IP address space pursuant to forecasted design
- Validating that IBM managed infrastructure and applications are operational and subject to IBM monitoring
- Validating that noncertified or uniquely configured software is operating according Client specifications as defined in the applicable Pricing Schedule
- Document and audit environment controls, devices and configuration to verify operational readiness
- Apply quality assurance methodology to environment including redundancy testing and automated startup/shutdown procedures including supported applications as contracted
- User acceptance testing prior to environment go live

To allow IBM to complete system validation testing, Client shall:

- Coordinate testing in conjunction with IBM test schedules.
- Provide additional information or documentation relating to Client managed elements within overall service design as required to allow IBM to complete testing.
- Provide user acceptance testing prior to environment go live

**SD-13.1.3. Cut-Over of Production Traffic**

Upon notification from IBM of production and lifecycle support readiness, Client is responsible for redirecting Domain Name System (DNS) entries from the existing sites/services (if applicable) to the IBM-supported IP addresses. When necessary, IBM will validate the DNS redirection.

**SD-13.2. Lifecycle Management**

Lifecycle management is available during normal business hours. Lifecycle management includes assignment of a project executive who will support initial transition to lifecycle support. The project executive will provide ongoing support for:

- Management of maintenance intervals
- Monitoring of problem or failure events, tracking events to closure and root cause analysis for Priority 1 outages
- Management of service level agreements
- Stewardship reporting
- Change management oversight
- Billing review and dispute resolution

**SD-13.2.1. Operating Service Reviews**

The project executive conducts operating service reviews through weekly status, monthly operating or quarterly strategic reports with Client based on agreed-on intervals.

**SD-13.2.2. Escalation**

The project executive is the single point of contact for escalations. The project executive monitors and tracks trouble tickets to resolution. IBM and Client will develop Client-specific escalation procedures within 30 days of Service activation, which will define:

- The frequency interval and circumstance for escalation
- Exceptions to escalation rules

**SD-13.3.3. Portal**

Where necessary to allow IBM to provide monitoring and management of Services to Client, Client authorizes IBM to access Client information using the Portal.

**SD-14. General Terms****SD-14.1. Client Orders for Service or Service Components**

To order IBM Managed Hosting Services and Application Services, IBM and Client will develop a technical service definition form that contains the technical details necessary to provision service on infrastructure at a CDC. "Infrastructure" includes IBM and Client provided equipment and software applications that constitutes the physical and virtual computing, storage and network devices used to run software operating systems and applications, and may also include, but is not limited to, routers, switches, servers, and peripheral devices (including security service devices and fiber optic), used to provide the Service.

Client is required to provide all technical details necessary to identify Service components required before Service may be provisioned.

**SD-14.2. Move, Add, Change (MAC) for Client and Operating System Management Clients**

MAC orders are classified as either soft, which can be completed by IBM remotely, or hard, which require onsite and/or engineering work by IBM.

**SD-14.2.1. MAC Rates**

MAC Order Rates in USD	
MAC Order Type	Price
Standard soft MAC order	\$55 per 15-minute increment
Expedited soft MAC order	\$75 per 15-minute increment
Emergency soft MAC order	\$95 per 15-minute increment
Standard hard MAC order	\$440 plus \$55 per 15-minute increment
Expedited hard MAC order	\$660 plus \$75 per 15-minute increment
Emergency hard MAC order	\$880 plus \$95 per 15-minute increment
MAC orders (soft or hard) requiring more than four hours to execute and/or more than two resources to complete are individual case basis and will be charged on a time and material basis.	

Each month, Clients with server management up to and including Operating System management are allotted one soft standard MAC order not to exceed two hours per Client server per Client ID (monthly MAC order allotment). MAC orders in a monthly allotment expire at the end of the month. MAC orders more than the monthly allotment are subject to the rates in the MAC order rate tables above.

Clients may request up to six change requests per month per Managed Firewall. Additional changes may be charged per Pricing Schedule definition.

MAC orders must be placed by the Client using the Portal. Change orders that affect the Service, such as ordering additional Services and hardware, cannot be submitted using the MAC order process.

#### **SD-14.2.2. MAC Lead Times**

Lead times for MAC orders are dependent on the type of order: standard, expedite or emergency. Lead times for MAC orders are not guaranteed.

- Standard – Standard soft MAC order lead time is three business days. Standard hard MAC order lead time is 5-10 business days.
- Expedite – Requests for expedited soft or hard MAC orders of less than three business days but more than four hours are negotiated at the time of the order.
- Emergency – Requests for emergency soft or hard MAC orders for implementation within four hours are negotiated at the time of the order. SLAs may be suspended for up to 24 hours after an emergency MAC order has been completed.

Lead time is the time that elapses between when IBM is notified of the request—which is reviewed, validated, developed and approved for the work/implementation plan—and when the requested work begins. Lead time does not include dedicated equipment procurement and circuit provisioning time frames or third-party installation vendor availability.

#### **SD-14.3. Move, Add, Change (MAC) for Advanced Managed Servers and Application Services Clients**

There is no limitation on MAC orders for managed application service Clients with advanced managed servers unless as otherwise stated in the Pricing Schedule.

#### **SD-14.4. Services Rates, Billing and Service Activation**

Billing for Service shall be on a nonrecurring (one-time) and monthly recurring basis. Billing for Service or Service Component begins on the date(s) specified in the Pricing Schedule.

Client will reimburse the travel and out-of-pocket expenses that IBM incurs in performing the Services and which have been pre-approved by Client in writing. IBM may charge late payment fees at the lower of 2% per month (24% per annum) or the maximum rate allowed by law for overdue payments.

By written agreement of the parties and for additional fees, IBM can perform (a) work that is beyond the scope the Services; and (b) implementation of a Corrective Release that adds new functionality to, or modifies the existing functionality of, Client Software or Software Application.

Any requests for additional services may be submitted to IBM in accordance with the Change Control Procedure specified in the Pricing Schedule.

##### **SD-14.4.1. Service Activation Date**

For all IBM managed Services or Service Components, the Service Activation Date for the Services or for the individual Service Component(s) is the implementation date.

The implementation date for operating system server management Services is the date when the infrastructure and applications for Client service is installed by IBM and supplied with network connectivity, regardless of whether Client managed content or software applications have been deployed by Client.

For Application Services Clients with advanced managed servers or other Services or Service Components, the implementation date is when IBM provides notice that the Service is available for use or the date on which a Client or user begins using the Service or Service Component, whichever date is earlier.

#### **SD-14.4.2. Client Delay of Service Activation**

If Client's actions or omissions—including Client's failure to supply information necessary to fulfill Client's order—cause IBM to be unable to complete Service activation of a Service or Service Component by the scheduled Service Activation Date, at IBM's election, IBM may cancel the Service or Service Component subject to the Client-caused delay and charge Client the charges set forth in the applicable Pricing Schedule.

#### **SD-14.4.3. Committed Information Rate Billing**

For billing purposes, including calculation of the excess bandwidth fee, Committed information rate bandwidth is calculated based on measurement of a 95th percentile of usage, as follows:

- Data samples are collected every five minutes (288 readings per 24 hours and 8,640 readings per 30-day month).
- The higher of two readings (outgoing and incoming) of total bandwidth over each time period is used as the transfer rate.
- At the end of each month, these readings are tabulated high to low. The top 5 percent data points are removed.
- The next highest reading, the 95th percentile, is used as the measure of bandwidth used during the month.

### **SD-14.5. Termination or Cancellation of Services or Service Components**

#### **SD-14.5.1. Termination of Services or Service Components**

Client may terminate Services or Service Components after the Service Activation Date as specified in the Pricing Schedule by (1) providing not less than ninety (90) days prior written notice; (2) paying for all Services and Service Components provided up through the effective date of termination; and (3) paying all disconnection, deinstallation and applicable termination charges, as described in the applicable Pricing Schedule.

#### **SD-14.5.2. Withdrawal of Services or Service Components**

Unless expressly otherwise provided in the Agreement, and unless applicable law or regulation mandates otherwise, IBM may discontinue providing the Services upon 12 months' notice or a Service Component upon 120 days' notice to Client, but only where IBM generally discontinues providing the Services or Service Component to similarly situated Clients.

**SD-14.5.3. Removal of Property**

Client shall remove all Client-owned devices from CDC by the effective termination or cancellation date. If Client fails to remove all equipment and other property from Client space or the CDC within 45 days of such disconnection, termination, cancellation or expiration, Client:

- Agrees that IBM may dispose of such property as it deems appropriate, which may include, at IBM's election, the sale, destruction or erasure of such property
- Fully and completely releases IBM from any and all liability arising out of such disposal, of whatever nature, and shall fully indemnify, defend and hold IBM harmless against any and all claims of third parties directly or indirectly arising out of or related to such disposal.

To the extent provided by applicable law, Client's failure to remove any property from a CDC does not create any terms of bailment between Client and IBM, and IBM disclaims any status as a bailee.

**SD-14.5.4. Return of Data**

Not later than 30 days after expiration or termination of the applicable Pricing Schedule, and after all invoices have been paid by Client, IBM will, at Client's expense, return the Client Content and personal property of Client in IBM's possession or control.

**SD-14.6. Data Center Location**

IBM, at its expense, may change the location of the data center at any time upon sixty (60) days prior written notice to the Client. Upon Client's request, IBM will provide information to reasonably demonstrate that the new data center facilities are at least equivalent to the current data center facilities in all material respects. IBM will develop a migration plan prior to any move, and Client and IBM will agree on any Client activities included in the plan, such as Client testing requirements or assistance. Client will perform its activities at its own expense.

**SD-14.7. Third Party Software License Rights and Restrictions**

Client will retain all its rights, title, and interest in and to Client content. Client content and the Services may contain confidential information and other valuable proprietary information. Neither party, directly or through a third party, will alter, copy, reverse engineer, decompile, disassemble, attempt to derive source code from, license, sell, transfer, lease, disclose, or modify or remove any copyright or proprietary notice, from Client content (in the case of IBM) or from the Services (in the case of Client). Client also will comply with all third-party license terms for Client software.

Services may contain software licensed by IBM or licensed by third party software providers. Specific terms below may apply depending on the software licensor, and in addition third party software and its use will be licensed in accordance with the applicable third-party license agreement ("Third Party Agreement"). The Third-Party Agreement is an agreement between Client and the third-party software owner or rights holder only. IBM is not a party to any such Third-Party Agreement. Client receives no warranties, indemnities or express or implied patent or other license from IBM with respect to any third-party software. IBM's provision of Services hereunder does not constitute a distribution of the third-party software by IBM.

**SD-14.7.1 Client Provided Software**

Client is permitted to bring and upload its own properly licensed non-operating system software (BYOSL) for use within the Services by installing it directly on a VM. Client is responsible to ensure

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Client has the necessary licenses, entitlements, and approvals for adding, installing, uploading, transferring, and using such software with the Services.

For any Client provided Microsoft software, Client shall ensure that any BYOSL Microsoft software uploaded by Client to a VM in the IBM cloud environment is covered with licenses / software maintenance (if required) which are adequate in type and sufficient in quantities to comply with Microsoft's license requirements and that they are eligible to be used in a multi-tenant cloud environment. Client agrees to reimburse IBM for any reasonable costs and other amounts that IBM may incur from Client's failure to obtain these licenses or approvals.

Services are provided from a shared, multi-tenant environment operated by IBM as a service provider. The following provisions apply to any BYOSL non-operating system software licensed to Client by Microsoft Corporation or a Microsoft authorized reseller.

For the purposes of this provision, "License Mobility through Software Assurance" means the rights described in the section titled "License Mobility through Software Assurance" in the Microsoft Product Use Rights. The Microsoft Product Use Rights are located at: <http://www.microsoft.com/licensing/software-assurance/default.aspx> or a successor site.

In order to exercise License Mobility through Software Assurance rights, Client must, prior to uploading any Microsoft software as BYOSL to a VM in the IBM cloud environment, execute the "Mobility Verification Form" located at: <http://www.microsoft.com/licensing/software-assurance/license-mobility.aspx> or at a successor site and submit the completed Mobility Verification Form to Microsoft for verification.

Microsoft will provide IBM and Client with confirmation of Client verification status to exercise the License Mobility through Software Assurance Product Use Rights, and the specific products and license counts Client will be authorized to deploy in the IBM cloud environment. This information may be used to support compliance reviews and discussions.

If IBM or Microsoft believe in good faith that Client is not complying with the terms of License Mobility through Software Assurance, as described in the Product Use Rights, Client must cooperate in good faith with Microsoft or IBM to investigate and remedy any potential non-compliance. If requested by IBM and/or Microsoft, Client agrees to provide any additional and reasonable information to support the investigation and remediation, if any, of the non-compliance.

If Microsoft determines that Client is non-compliant with the License Mobility through Software Assurance program requirements, Microsoft will provide Client with written notice of the non-compliance which will include an itemization of the non-compliant issues. Client will work with Microsoft to resolve the Client's status and determine if termination can be avoided. If the parties are unable to achieve a mutually agreeable resolution, Microsoft will provide Client and IBM with written notice to terminate the benefits of License Mobility through Software Assurance for Client. Upon receipt of such notice, Client will promptly remove the instances provided in the notice and utilized by Client and provide written notice to Microsoft with a copy to IBM.

Client must ensure that any License Mobility through Software Assurance Product deployed in the IBM cloud environment uses the Client's own Product media and keys.

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Client's licenses under the License Mobility through Software Assurance program must remain on a VM within the same CDC for no less than ninety (90) days. Client may move instances under a particular license from one IBM CDC to another IBM CDC; however, Client may not (a) move the instances run under that license back to the Client computing environment, (b) outside of IBM's CDC, or (c) to another third-party cloud data center within ninety (90) days of the last assignment.

For software Client has licensed separately from IBM Corporation ("IBM Software") only those that are listed as "eligible" in the "Table of Eligible BYOSL Software Programs" on the PA Website may be uploaded as BYOSL software for use in the Services. For such IBM Software,

Client is responsible to:

- a. Have accepted and remain in compliance with all terms of the applicable PA Agreements covering the Entitlements;
- b. Have accepted and remain in compliance with the PA Attachment for Sub-Capacity Licensing Terms; and
- c. Maintain a written record of any use of Entitlements with the Services. Client is responsible to have acquired sufficient Entitlements to cover Client's use of such IBM Software on a selected VM compute resource size in accordance with requirements set forth on the PA Website.

**SD-14.7.2. Additional Service Component Software Terms**

If Client uses software for which Client does not have proper licensing IBM may assess additional charges based upon actual use and require Client to obtain proper licensing.

Client understands IBM may be required by agreement with the applicable third-party supplier of software to provide usage data and entitlement information specific to usage of a third party Services Component. Client will be responsible to such third-party supplier for any improper use.

Client's use of Services Component Software, governed by the applicable license agreement, which may include license information or other documentation associated with such software, ("License Agreement"). For Service Component Software from the IBM Corporation, applicable license agreements are also available at <http://www.ibm.com/software/sla> (by selecting the option to "search for a specific program license agreement" and then entering the name of the IBM software).

Notwithstanding any terms of a License Agreement to the contrary, the following terms apply to all Service Component Operating System Software, and each SC Software product for which Client brings Client's own existing license, except if otherwise specified by Client's license with the software provider:

- The Services Component is provided for a term set forth in the Agreement and is not perpetual;
- No installation or download by Client of a Services Component, in whole or in part, is permitted except as set forth in the applicable Pricing Schedule
- No copies (including back-up copies) of a Services Component, in whole or in part, are permitted except as specifically set forth in the applicable Pricing Schedule

- No transfer of a Services Component, in whole or in part, is permitted during the term of the Services; and
- Any money back guarantee and warranty that may be provided in a License Agreement may not apply to Services Components.

Services Components may not contain all features or functions of the generally available software available directly from the software licensor.

### **SD-14.7.3. Additional Terms for all Microsoft Software**

Use of a Microsoft SC Operating System Software or Microsoft Application software product is provided as third-party software. For Microsoft SC Operating System software, the applicable Third-Party Agreement/ additional license terms are:

- Client shall not remove, modify, or obscure any copyright, trademark or other proprietary rights notices that are contained in or on the Products;
- Client shall not reverse engineer, decompile or disassemble the Products, except to the extent that such activity is expressly permitted by applicable law;
- Microsoft disclaims, to the extent permitted by applicable law, all warranties by Microsoft and any liability by Microsoft or its suppliers for any damages or remedies, whether direct, indirect, or consequential, arising from the Software Services. For the purposes of this section Software Services means the services IBM provides to Client that make available, display, run, access or otherwise interact, directly or indirectly, with the Products;
- IBM may disclose Client information such as the total number of licenses and country of usage, Client name and address;
- Technical support for the software Services will be provided by IBM or a third party on IBM's behalf (and not Microsoft or its suppliers);
- Microsoft SC Application Software product acquisition or download, the installation of the Microsoft SC Application Software, and its ongoing support and lifecycle management remain the sole responsibility of the Client; and
- There is a "No High-Risk Use" requirement that the User may not use the Microsoft software ("Product") in any application or situation where the Product(s) failure could lead to death or serious bodily injury of any person, or to severe physical or environmental damage ("High Risk Use"). Examples of High Risk Use include, but are not limited to: aircraft or other modes of human mass transportation, nuclear or chemical facilities, life support systems, implantable medical equipment, motor vehicles, or weaponry systems. High Risk Use does not include utilization of Products for administrative purposes, to store configuration data, engineering and/or configuration tools, or other non-control applications, the failure of which would not result in death, personal injury, or severe physical or environmental damage. These non-controlling applications may communicate with the applications that perform the control, but must not be directly or indirectly responsible for the control function.

**SD-14.7.4. Microsoft Application Software with License Administration Services**

For Advanced Managed VMs only, Client may order licenses for available Microsoft SC application Software by submitting a change order. IBM will provide the software product libraries and license keys as necessary. IBM will perform license administration for the selected software products, invoice for the quantities consumed, and will perform compliance reporting required by Microsoft's Service Provider License Agreement program. The Client is responsible for actual software product installation, maintenance, and ongoing lifecycle management as defined in the applicable Pricing Schedule. Client will readily assist IBM with monthly reconciliation of consumption of the Microsoft SC application Software.

IBM will work with Client to reconcile the number of licenses for payment purposes. IBM will then invoice Client monthly based on Client's actual consumption. This mechanism also provides tracking and invoicing for Clients who install, but do not formally request, the Microsoft SC Application Software.

**SD-14.8. Export Compliance**

Each party will comply with all applicable export and import laws and associated embargo and economic sanction regulations, including those of the United States, that prohibit or restrict the export, re-export, or transfer of products, technology, services or data, directly or indirectly, to certain countries, or for certain end uses or end users. Client acknowledges that IBM may use global resources (non-permanent residents used locally and personnel in locations worldwide). Client shall not provide content that is export controlled or requires an export license by IBM or its Affiliates.

**SLA-1. Service Level Agreements****SLA-1.1. Definitions**

The following definitions apply to the service level agreements (SLAs) described in this Service Guide:

- **Connectivity** is the installation and maintenance of cabling to provide front- and back-end handoffs to a Client in the CDC.
- **SEI infrastructure** is the networking, compute and storage components, such as Internet access, routers, compute and storage, that IBM manages to deliver Service to multiple Clients in a CDC.
- **Outage** is measured in minutes and is the time a Service or Service Component is unavailable on an unscheduled basis, unless stated otherwise. An outage does not include time when the Service or Service Component is unavailable during a scheduled period for maintenance, repair or upgrade. Client notice of a scheduled maintenance, repair or upgrade may be given directly to Client or by posting on the Portal and is deemed received by Client upon posting.
- **Maintenance** time can be either for scheduled maintenance or emergency maintenance. Scheduled maintenance is maintenance, repair or updating activities that are performed during a maintenance window established by IBM; for example, a maintenance window published on the Portal or a maintenance window agreed to by IBM and Client. IBM can also perform scheduled maintenance by providing Client a minimum of five business days notice prior to the day the scheduled maintenance will occur. Emergency maintenance is unscheduled maintenance, repair or updating activities that are necessary in order to protect

IBM facilities, network services or the security of Client and IBM equipment or property. IBM will attempt to provide reasonable notice to Client when IBM determines that it is required to perform emergency maintenance prior to the maintenance activity being performed.

### **SLA-1.2. General Terms Applicable to Service Level Agreements (SLAs)**

- Except where an individual SLA states differently, SLAs and the collection of data measurements against a performance objective shall begin on the 91<sup>st</sup> day after Service Activation Date.
- SLA reporting will be made available to Client in the next complete monthly reporting period.
- Performance measurement data can be made available to Client through the Portal.

### **SLA-1.3. Service Level Agreement (SLA) Exclusions and Limitations**

IBM is not responsible for failure to meet an SLA resulting from any of the following events:

- Negligent conduct or misuse of the Service by Client
- Conduct of a third party service provider providing Service to Client
- Failure or deficient performance of power, equipment, services or systems not provided by IBM
- Unplanned network volumes more than the capacity being provided on the Service Activation Date or changes in Client business requirements not reported to IBM by Client through the change order process, such as adding a new location or new services
- Service interruptions, deficiencies, degradations or delays:
  - Due to Client equipment managed by IBM that has not been upgraded by Client as required by IBM
  - Due to Client equipment managed by IBM or for which maintenance is not available
  - Due to failure of code or software managed and/or written by Client or a third party vendor for Client
  - During any period when IBM or its agent is not afforded access to Client equipment or when IBM or its agent is prevented from implementing software patches or upgrades necessary for IBM to provide Service
  - During any application failures caused by Client disrupting or adversely impacting its service or failing to respond to alerts as agreed or creating false alerts
  - During any period when a Service Component is removed from service for maintenance, replacement or rearrangement purpose or for the implementation of a Client order
  - Due to act by Client through the use of root or administrative access to a virtual or physical server
  - Due to interruptions caused by a Client-managed Active Directory domain controller, including, without limiting the foregoing, interruptions arising from faulty domain communications, domain policies on the environment, or the security configuration of the domain controller.
- Client's refusal to allow IBM to perform maintenance deemed necessary to maintain the Service, whether scheduled or unscheduled

- Force majeure conditions

## SLA-1.4. Service Level Agreement (SLA) Claims

### SLA-1.4.1. SLA Process

Each month IBM will measure SLAs and, where Client is due a remedy, IBM will issue a credit against the ensuing month's service fees in accordance with this Service Guide.

To be eligible for an SLA service credit, Client shall notify IBM in writing of a claim within 10 days of the day IBM failed to meet the SLA performance objective or that Client otherwise became eligible for the SLA service credit. Client shall send its claim to an email address specified by IBM. All claims submitted by Client shall include the date and time of the outage or other event that Client believes makes it eligible for an SLA service credit. IBM shall, in its sole and reasonable determination, verify and determine Client's eligibility for an SLA service credit.

### SLA-1.4.2. SLA Claims Limitations

Client may only receive service credits equal in the aggregate, to up to one month's IBM Managed Hosting and Application Services charges during any calendar quarter. Client will not receive a service credit for IBM Managed Hosting and Application Services installation charges, other monthly recurring charges or charges related to additional services. Any SLA credit paid to Client shall constitute the Client's sole and exclusive remedy for IBM's failure to meet an SLA.

## SLA-2. Service Level Agreement (SLA) Matrix

Service Availability SLA: Singular SLA covering all solution components			
	Service Level	Metric	
<b>Managed Hosting</b>	Hypervisor Availability	99.9%	
	Operating System Availability		
	Database Availability		
	Data backup and restore infrastructure availability	99.9%	
	Data backup and restore service backup availability	Completion of backup in 24-hour period	
	Data backup and restore service restore availability	Restore is initiated within 60 minutes	
	Data backup and restore infrastructure availability	99.9%	
<b>Managed</b>	<b>Middleware</b>	Application Availability	99.9%
	<b>eCommerce</b>	Application Availability	99.9%
	<b>SAP</b>	Application Availability	99.9%

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<b>Applications</b>	<b>Oracle</b>	Application Availability	99.9%
	<b>Messaging</b>	Application Availability for Exchange	99.9%
		Application Availability for Skype for Business	99.9%
		Application Availability for SharePoint	99.9%
		Application Availability for Archiving	99.5%

**SLA-3. Service Level Agreements (SLAs)**
**SLA-3.1. Managed Hosting - Service Availability SLA**
**SLA-3.1.1. Description**

IBM offers a service availability SLA for Managed Hosting, including network, server & storage services. This SLA measures the overall availability of the service. Server availability is determined based on management type:

- Client Managed Bare Metal Servers: measures availability of the Client's physical server infrastructure resources managed by IBM
- Client Managed Virtual Machine: measures availability of the Client's physical server infrastructure resources and the VMware-based virtualization software managed by IBM
- Operating System Management: measures availability of the Client's server infrastructure, inclusive of operating systems managed by IBM.
- Advanced Server Management measures the availability of a Client's server infrastructure inclusive of certified application software managed by IBM

IBM will measure and track any Priority 1 fault associated with the applicable servers. IBM will create trouble tickets associated with these events. IBM will calculate the amount of downtime per month, across all Client servers managed by IBM, to determine the overall server availability results.

**SLA-3.1.2. Service Level**

The performance objective for Managed Hosting service availability SLA is set forth in the table below. If IBM does not meet this performance objective in each calendar month, Client is eligible for SLA service credit as described in the table.

Service availability is measured by the following calculation:

- $X = [(N - Y) * 100] / N$ 
  - X = availability percentage
  - N = total hours per month
  - Y = hours the service was not available solely because of an act or omission by IBM (excluding maintenance)

Managed Hosting Service Availability Performance Objective			
SLA = 99.9%	<99.9% – 95.0%	<95.0% - 90.0%	<90.0%
Service credit applicable to Client monthly charge for Managed Hosting	5%	10%	20%

### SLA-3.1.3. Exceptions

#### SLA-3.1.3.1. Unavailability Arising from Client-Managed Microsoft Active Directory

Client is not eligible for SLA service credits for IBM failure to meet the performance objective for IBM Managed Application Services – virtual hosting availability SLA due to interruptions caused by a Client-managed Active Directory domain controller, including, without limiting the foregoing, interruptions arising from faulty domain communications, domain policies on the environment, or the security configuration of the domain controller.

#### SLA-3.1.3.2. Root Access Exception

IBM is not responsible for the failure to meet the performance objective of the availability SLA if directly caused by an act of the Client through the use of root or administrative access to a virtual or physical server.

### SLA-3.1.4 Managed Data Backup and Restore Service SLA

#### SLA-3.1.4.1 Description

IBM offers three SLAs for data backup and restore service: infrastructure availability, backup availability and restore availability. Client is eligible to receive a service credit if IBM fails to meet the performance objective for one or more of these SLAs.

#### SLA-3.1.4.2. Service Level

The performance objectives for the data backup and restore service SLAs are that IBM meet or exceed the performance objectives set forth in the tables below. If IBM does not meet a performance objective in a given calendar month, Client is eligible for data backup and restore service SLA service credit as described in the tables.

#### SLA-3.1.4.3. Measurement Responsibility

Daily system logs measure data backup and restore service availability and restore metrics. Daily and archive backup metrics are measured by daily Veritas Technologies® NetBackup® logs. Backup success status is available on the Portal.

#### SLA-3.1.4.4. Data Backup and Restore Service SLA: Infrastructure Availability

The performance objective for the data backup and restore SLA for infrastructure availability is set forth in the table below. If IBM does not meet this performance objective, Client is eligible for SLA service credit as described in the table.

Data backup and restore service infrastructure availability is measured by the following calculation:

- $((TM - TDT) / TM) \times 100 = \% \text{ data backup and restore service availability}$

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- TM = total available data backup and restore service minutes per month (total minutes in a month - maintenance = TM). Total scheduled available minutes do not include time attributed to maintenance.
- TDT = total down time minutes in a month when the data backup and restore service was unavailable due to an outage.

<b>Data Backup and Restore SLA Performance Objective: Infrastructure Availability</b>				
SLA = 99.9%	<99.9% - 98.0%	<98.0% - 90%	<90.0% - 50%	<50.0%
Client is eligible for service credit against the monthly recurring charge for data backup and restore service (not entire hosting service).	5% of total data backup and restore service fees billed for the affected CDC	15% of total data backup and restore service fees billed for the affected CDC	25% of total data backup and restore service fees billed for the affected CDC	No charge for data backup and restore service for the affected CDC

**SLA-3.1.4.5. Data Backup and Restore Service SLA: Backup Availability**

The performance objective for the data backup and restore SLA for backup availability is set forth in the table on the next page. If IBM does not meet this performance objective, Client is eligible for SLA service credit as described in the table.

<b>Data Backup and Restore SLA Performance Objective: Backup Availability</b>	
<b>Performance Objective</b>	<b>SLA Credit</b>
Client is eligible for service credit for data backup and restore backup availability if a daily backup of Client data is not successfully completed within a 24-hour period. A successful completion is determined by the NetBackup status code stating that the backup has completed successfully.	Daily backup charge waived

**SLA-3.1.4.6. Data Backup and Restore Service SLA: Restore Availability**

The performance objective for the data backup and restore SLA for restore availability is set forth in the table below. If IBM does not meet this performance objective, Client is eligible for SLA credit as described in the table.

<b>Data Backup and Restore SLA Performance Objective: Restore Availability</b>	
<b>Performance Objective</b>	<b>SLA Credit</b>
Client is eligible for service credit for data backup and restore service restore availability if a restore request is not successfully initiated within 60 minutes of request.	10% of that month's data backup and restore service charge for the affected host will be credited to the Client on the following month's invoice.

**SLA-3.1.4.7. Exceptions**

IBM shall not be responsible for a failure to meet a performance objective due to:

- Network or system problems outside the "line of demarcation" (includes local public utility outages, natural disasters and other force majeure events)

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- Changes made to Client-hosted infrastructure without proper notification (24 hours) to IBM
- Unsuccessful backup completion caused by events outside of IBM's control, such as changes that need to be completed by Client for Client-managed services

**SLA-3.2. Managed Application - SAP SLA****SLA-3.2.1 Description**

IBM provides an Availability SLA for Client's production environment each month of 99.90%. "Availability" means a Client end-user's ability to access the production environment over the Infrastructure. Availability is calculated in accordance with the following formula:  
 $x = [(n - y) * 100]/n$ , where x = Availability percentage, n = total hours per month, and y = hours the Service was not available solely because of an act or omission by IBM for Services within IBM's direct control as detailed in applicable Parts of the Pricing Schedule (excluding Maintenance).

**SLA-3.1.2 Measurement Responsibility**

Client's sole and exclusive remedy for IBM's failure to meet the Availability SLA will be a credit issued by IBM against the ensuing month's Service Fee in accordance with the following:

AVAILABILITY	CREDIT
<99.90% to 97.00%	5%
<97.00% to 95.00%	10%
<95.00% to 90.00%	15%
<90.00%	25%

**SLA-3.3. Managed Application - Oracle SLA****SLA-3.3.1 Description**

IBM provides an Availability SLA for Client's production environment each month of 99.90%. "Availability" means a Client end-user's ability to access the production environment over the Infrastructure. Availability is calculated in accordance with the following formula:  
 $x = [(n - y) * 100]/n$ , where x = Availability percentage, n = total hours per month, and y = hours the Service was not available solely because of an act or omission by IBM for Services within IBM's direct control as detailed in applicable Parts of the Pricing Schedule (excluding Maintenance).

**SLA-3.3.2 Measurement Responsibility**

Client's sole and exclusive remedy for IBM's failure to meet the Availability SLA will be a credit issued by IBM against the ensuing month's Service Fee in accordance with the following:

AVAILABILITY	CREDIT
<99.90% to 97.00%	5%
<97.00% to 95.00%	10%
<95.00% to 90.00%	15%
<90.00%	25%

### SLA-3.4. Managed Application - eCommerce SLA

#### SLA-3.4.1 Description

IBM provides an Availability SLA for Client's production environment each month of 99.90%. "Availability" means a Client end-user's ability to access the production environment over the Infrastructure. Availability is calculated in accordance with the following formula:  
 $x = [(n - y) * 100]/n$ , where  $x$  = Availability percentage,  $n$  = total hours per month, and  $y$  = hours the Service was not available solely because of an act or omission by IBM for Services within IBM's direct control as detailed in applicable Parts of the Pricing Schedule (excluding Maintenance).

#### SLA-3.4.2 Measurement Responsibility

Client's sole and exclusive remedy for IBM's failure to meet the Availability SLA will be a credit issued by IBM against the ensuing month's Service Fee in accordance with the following:

AVAILABILITY	CREDIT
<99.90% to 97.00%	5%
<97.00% to 95.00%	10%
<95.00% to 90.00%	15%
<90.00%	25%

### SLA-3.5. Managed Application - Middleware SLA

#### SLA-3.5.1 Description

IBM provides an Availability SLA for Client's production environment each month of 99.90%. "Availability" means a Client end-user's ability to access the production environment over the Infrastructure. Availability is calculated in accordance with the following formula:  
 $x = [(n - y) * 100]/n$ , where  $x$  = Availability percentage,  $n$  = total hours per month, and  $y$  = hours the Service was not available solely because of an act or omission by IBM for Services within IBM's direct control as detailed in applicable Parts of the Pricing Schedule (excluding Maintenance).

**SLA-3.5.2 Measurement Responsibility**

Client's sole and exclusive remedy for IBM's failure to meet the Availability SLA will be a credit issued by IBM against the ensuing month's Service Fee in accordance with the following:

AVAILABILITY	CREDIT
<99.90% to 97.00%	5%
<97.00% to 95.00%	10%
<95.00% to 90.00%	15%
<90.00%	25%

**SLA-3.6 Managed Application - Messaging & Collaboration SLA****SLA-3.6.1. Microsoft Exchange****SLA-3.6.1.1. SLA Description**

IBM provides an Availability SLA for the Exchange production environment each month of 99.90%. "Availability" means Client end-users' ability to access their mailbox on the mailbox server over the Infrastructure. Availability is calculated in accordance with the following formula:  $x = [(n - y) * 100] / n$ , where  $x$  = Availability percentage,  $n$  = total hours per month, and  $y$  = hours the Service was not available solely because of an act or omission by IBM for Services within IBM's direct control as detailed in the applicable Parts of this Pricing Schedule (excluding Maintenance). To avoid ambiguity, IBM's liability does not extend to functionality that depends, directly or indirectly, on the trust between IBM hosted Active Directory and the Client's Active Directory.

**SLA-3.6.1.2 Measurement Responsibility**

Client's sole and exclusive remedy for IBM's failure to meet the Availability SLA will be a credit issued by IBM against the ensuing month's Exchange Production Service Fee in accordance with the following:

AVAILABILITY	CREDIT
<99.90% to 97.00%	5%
<97.00% to 95.00%	10%
<95.00% to 90.00%	15%
<90.00%	25%

The credit will be based only on the Mailbox server(s) affected. This means that if one Mailbox server of two is affected, the credit will be one half of the amount calculated in accordance with these percentages.

### SLA-3.6.2. Archiving Production Environment

#### SLA-3.6.2.1. SLA Description

IBM provides an Availability SLA for Archiving production environment each month of 99.50%. “Availability” means Client end-users’ ability to access their archive on the archive server over the Infrastructure. Availability is calculated in accordance with the following formula:  
 $x = [(n - y) * 100]/n$ , where  $x$  = Availability percentage,  $n$  = total hours per month, and  $y$  = hours the Service was not available solely because of an act or omission by IBM for Services within IBM’s direct control as detailed in the applicable Parts of this Pricing Schedule (excluding Maintenance). To avoid ambiguity, IBM’s liability does not extend to functionality that depends, directly or indirectly, on the Active-Directory trust.

#### SLA-3.6.2.2 Measurement Responsibility

Client’s sole and exclusive remedy for IBM’s failure to meet the Availability SLA will be a credit issued by IBM against the ensuing month’s Archiving Service Fee in accordance with the following:

AVAILABILITY	CREDIT
<99.50% to 97.00%	5%
<97.00% to 95.00%	10%
<95.00% to 90.00%	15%
<90.00%	25%

The credit will be based only on the Archiving server(s) affected. This means that if one Archiving server of two is affected, the credit will be one half of the amount calculated in accordance with these percentages.

### SLA-3.6.3. Skype for Business

#### SLA-3.6.3.1 SLA Description

IBM provides an Availability SLA for the Skype for Business production environment each month of 99.90%. “Availability” means the ability for any of the Client’s end-users’ to access the Skype for Business Front End, Edge [IF PROVIDED], Mediation [IF PROVIDED], and Group Chat [IF PROVIDED] server roles within an Skype for Business pool over the Infrastructure.

Availability is calculated in accordance with the following formula:

**IBM Managed Hosting and Application Services**

$x = [(n - y) * 100]/n$ , where  $x$  = Availability percentage,  $n$  = total hours per month, and  $y$  = hours the Service was not available solely because of an act or omission by IBM (excluding Maintenance). To avoid ambiguity, IBM's liability does not extend to functionality that depends, directly or indirectly, on the Active-Directory trust.

Client's sole and exclusive remedy for IBM's failure to meet the Availability SLA will be a credit issued by IBM against the ensuing month's Skype for Business Service Fee in accordance with the following:

AVAILABILITY	CREDIT
<99.90% to 97.00%	5%
<97.00% to 95.00%	10%
<95.00% to 90.00%	15%
<90.00%	25%

The credit will be based only on the Skype for Business server roles affected within a Skype for Business pool. This means that if none of the servers in a specific role covered in Availability and implemented for the Client within a pool can be accessed, the credit will be calculated by dividing the number of servers affected by the total number of servers in the pool. If there are multiple Skype for Business pools at various sites, the credit will be pro-rated based on the number of users in the affected pool and the total number of users across all sites and pools.

**SLA-3.7. Managed Hosting and Application Services Response Time SLA****SLA-3.7.1. SLA Description**

IBM offers an SLA for time response time. Response Time is measured from the time that IBM receives notice of an incident until the time that IBM responds to Client. "Notify" as used in this section refers only to notification that occurs in electronic form through email or on the Portal.

IBM will respond to 100% of Priority incidents during the hours of support for the Client per the following:

LABEL	DEFINITION	RESPONSE TIME
Priority 1	Incident that prevents all Client use of the Service	within 15 minutes
Priority 2	Incident with significant and materially adverse effect on use of the Service or on Client's key business processes	within 30 minutes
Priority 3	Incident with nominal adverse impact on use of the Service or on Client's key business processes	within 60 minutes

Client's sole and exclusive remedy for IBM's failure to meet the response time will be a \$750 credit for each failed Priority 1 response, \$500 for each failed Priority 2 response and \$250 for each failed Priority 3 response.

**P-1. Pricing**

Rates and charges for IBM Managed Hosting and Application Services are found in the applicable section of this Service Guide or in the applicable Pricing Schedule.

Rates and charges set forth in this Service Guide are subject to change. Modification of the Service Guide shall be deemed notice of the change to Client.

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End of Service Guide

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