



## Deliverable D13.5 Storage SLA

### Service Level Agreements for Storage: Report and sample documents

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 ABSTRACT Service Level Agreements (SLAs) for data storage. Data storage is a very particular area of IT services that has seen rapid growth over the last 5 years. The technology has grown mature enough to be able to provide a specialised service for small to large organisations that are willing to outsource such capacity to a third party. At the end of the report a number of recommendations for the process of formulation of SLA have been made.

KEYWORDS Storage, SLA, service level agreement, outsource, data centre, service provider

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# 1 Document Scope

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It is becoming increasingly clear that there is a major alternative to ALL of the decisions about which type of digital storage technology to implement, namely to outsource the storage and let someone else provide the technology. At this point, the key issue is not managing technology, but managing a service relationship. We will draw on the experience inside and outside PrestoSpace, and in the STAG technology group, to produce a guidance report including model or example documents. The key issues are still permanence of the storage (degree of risk of loss) and speed of access, but archivists need to know how to specify their requirements, and what questions to ask, in order to actually achieve the required permanence and access.

## 2 Executive Summary

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Service Level Agreements (SLAs) for data storage. Data storage is a very particular area of IT services that has seen rapid growth over the last 5 years. The technology has grown mature enough to be able to provide a specialised service for small to large organisations that are willing to outsource such capacity to a third party. At the end of the report a number of recommendations for the process of formulation of SLA have been made.

## 3 Overview

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SLAs are widely used by service providers in the telecommunications and IT industries. They are measuring tools which provide criteria for both service provider and client to find out if the quality of service provided is satisfactory.

SLAs should be seen as a positive instrument both for Service providers and for their clients. For the service provider it provides a glimpse of the technology workflow and efficiency of their operation. For client it provides a measure to see if the level of service they need is maintained throughout the life of the contract.

This report focuses on SLAs for data storage. Data storage is a very particular area of IT services that has seen rapid growth over the last 5 years. The technology has grown mature enough to be able to provide a specialised service for small to large organisations that are willing to outsource such capacity to a third party.

At the end of the report a number of recommendations for the process of formulation of SLA have been made.

During the report the general concepts behind SLA are analysed, with particular reference to recommendations for setting up SLAs with service providers. The report provides a number of sample SLAs for different forms of data storage, including;

- NAS data storage
- SAN data storage
- Back up services
- Managed storage

- Online hosting and storage
- Data Centres

Based on these documents it has been possible to review the different mechanism utilised in data storage SLAs. The last sample is an SLA template for data storage that incorporates the best aspects of the different mechanisms found during the analysis.

## 4 Service Level Agreements (SLA)

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### 4.1 Overview

With the evolution of multimedia on networks the level of service has become an important identifier in service provider/client relationships. Service Level Agreements support different levels of Quality of Service (QoS). The service provider makes a legally binding commitment to deliver those specified levels of QoS.

We assume an SLA concerns a relationship between a client and a service provider, which in general are quite separate entities. The SLA will define this relationship in terms of QoS. However SLAs can also be defined within an organisation. In this case the service provider intity withn an organisation will provide its service internally – all though it may also provide services to external clients.

The SLA constitutes the legal foundation for the delivery of a service. It is used by all parties in a contract to give an indication of the level of service that is given in relation to SLA parameters.

In most cases the SLA will be between two parties in a Service Provider/Client relationship where the service provider uses the SLA to have a definite, binding record of what is to be provided during the contract. The provider can then use the SLA in any disputes with the client. This works in the clients favour as well; the client can also use the SLA as a legally binding description of the services that the provider has stipulated in the contract.

An SLA normally has the following components:

- A description of the service/s to be provided
- The expected performance of the service/s
- A detailed procedure for handling problems with the service/s
- A procedure for monitoring and reporting the service level to the client
- The consequences for the service provider for not meeting the agreed level of service
- A description of circumstances where the SLA does not apply

The client can use the SLA to verify receiving the agreed level of service. This is enabled by the feedback parameters (performance indicators or other measurement tools) integrated into the SLA. The client can then formally complain once it has

been shown that the service parameter of the SLA has not been reached by the provider. Once the complaint has been logged the procedure for complaint handling should be outlined in the SLA or in the contract.

The architecture of individual SLAs can vary based on the relationship between the organisations involved in the formulation of the SLA. Horizontal SLAs govern the interaction between coordinated peers, whereas vertical SLAs are the subject of subordinated pairs.

In the case of Horizontal SLAs the relationship between the organisations would be where two companies pool their resources in order to provide the same services to a number of clients. Vertical relate to more traditional SLAs where a company requests a service from a service provider. This report will focus on Vertical SLAs. It shall be noted that when SLA is mentioned it will refer to a Vertical SLA unless otherwise stated.

Three phases of the SLA life cycle can be identified:

- The creation phase.
- The operational phase.
- The removal phase.
- 

## 4.2 Creation Phase

An SLA comes into existence once a client has outlined their service requirements to the provider. The provider will then in accordance with the client deliver an SLA that takes into account the level of service needed.

SLA creation involves a number of activities:

- Establishing the SLA as a legally binding part of any contract
- The client subscribing to the service
- Configuration of subsystems to be configured to accommodate the new subscription

Entering the criteria of the SLA into longer-term resource planning

## 4.3 Operational Phase

During this phase the client can assess the SLA in effect and can re-negotiate the SLA if it is found to need updating based on the initial stages of the operational phase. Updating the SLA or changing the SLA can have an effect on the price for the service required.

Below is a sample of the procedure for making changes to an SLA.

- The Service Provider and the Customer shall discuss any change to this agreement (Change) proposed by either and such discussion shall result in either:
  - o a written request for a Change by the Customer; or

- a written recommendation for a Change by the Service Provider,
  - or, if neither the Customer nor the Service Provider wishes to submit a request or recommendation, the proposal for the Change will not proceed.
- Where a written request for a Change is received from the Customer, the Service Provider shall, unless otherwise agreed, submit a Change control note (CCN) to the Customer within the period agreed between them or, if no such period is agreed, within five Business Days from the date of receipt of such request for a Change.
  - A written recommendation for a change by the Service Provider shall be submitted as a CCN direct to the Customer at the time of such recommendation.
  - Each CCN shall contain:
    - the title of the Change;
    - the originator and the date of the request or recommendation for the Change;
    - the reason for the Change;
    - the full details of the Change, including any specifications and user facilities;
    - the price, if any, of or associated with the Change;
    - a timetable for implementation, together with any proposals for acceptance of the Change;
    - the impact, if any, of the Change on other aspects of this agreement, including:
      - the Charges;
      - the contractual documentation; and
      - staff resources;
    - the date of expiry of validity of the CCN (which shall not be less than 30 working days); and
    - provision for signature of the CCN by the Customer and the Service Provider.
  - For each CCN submitted, the Customer shall, within the period of validity of the CCN:
    - allocate a sequential number to the CCN;
    - evaluate the CCN, and as appropriate either:
      - request further information; or
      - approve the CCN; or
      - notify the Service Provider of the rejection of the CCN; and
    - if approved, arrange for two copies of the approved CCN to be signed for or on behalf of the Customer and the Service Provider. The signing of the CCN shall signify acceptance of a Change by both the Customer and the Service Provider.
  - Once signed by the Customer and the Service Provider in accordance with paragraph 5 of this Schedule 6, the Change shall be immediately effective and the Customer and the Service Provider shall perform their respective obligations on the basis of the agreed amendment.

#### The changes affect:

- Quality or service
- Turnaround times
- Prices
- Services

In this way an SLA can be a very flexible tool for managing the relationship between suppliers and clients.

## 4.4 Removal Phase

Upon the termination of a contract the SLA and all associated configurations information in the service system needs to be removed. Removal can be triggered by a number of circumstances such as the service not being renewed or that the service is actively ended.

# 5 SLA for Data Storage

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## 5.1 Overview

In the current IT market several large corporations are delivering data storage services. This can be either as dedicated hardware solutions or a combination of hardware and managed services. The companies fall under the banner of Storage Service Provider or **SSP**. In addition to the storage itself SSPs tend to offer a number of services, including:

- Back-up
- Archiving
- Remotely-managed storage
- Ability to consolidate data from multiple locations

Usually clients are billed at a monthly rate per service.

Storage is large part of current ICT services and infrastructures. Sometimes up to 50% of total IT spending in certain cases. In particular corporate IT are moving towards distributed infrastructures based on mobile devices such as Laptops, PDAs, Mobiles, and home working, all of which require a central store in order for employees to have access to what they need regardless of location and local technology .

Storage, access and back-up is becoming more and more critical. In combination with this the ability to store large amounts of data on secure and distributed networks is beginning to exceed the economies of scale for small and medium size enterprises.

It is in this technological space that SSPs have managed to emerge. Supplying a solution that in terms of quality is outside the normal budget of many enterprises as an integrated business model, these entities can be very cost effective.

Storage networks are complex entities to build and operate. The ability to internally supply such services will swallow up large parts of the IT budget for any organisation. SPPs offer a service that in terms of quality, complexity and security exceeds that of most internal IT departments.

Currently most organizations would consider outsourcing data storage as part of their disaster recovery policy but not their more frontline data storage needs. And it is for

the front line data storage that SLAs are most important. In contrast to Disaster Recovery Back-up, SLAs for general data storage needs to fulfil several elementary levels of service yet these can be extremely complex in terms of security and access. Current practice is to limit the SLA to the delivery of specific services and extent of such services.

Any SLA should cover the points below:

- Good performance
- Very high availability
- Data Security
- Corrective action when a failure occurs
- Meaningful compensation when the SLA fails

This section covers the main storage solutions and configurations including:

- NAS or Network attached Storage
- SAN or Storage Area Network
- Service level agreements for Data Centres

## 5.2 NAS - Network Attached Storage

### 5.2.1 Description

Network attached storage is a dedicated data storage technology that can be attached to a computer network, thereby providing centralised access to users on the network. A NAS mainly just supports software and functionality for data storage, access and management. The NAS will usually contain several hard disks arranged into a redundant configuration.

Networked Attached storage was developed to tackle some of the challenges with data storage in Server-based environments. Network attached storage or NAS is a special purpose device which consists of hard drives with a layer of management software. The NAS is dedicated to serving files over a network.

In other storage models the server has the dual function of controlling both file-sharing and applications, which when traffic expands can slow down the network itself. With NAS infrastructure in place the servers are freed up by assigning NAS components to control all storage and file serving responsibilities.

NAS systems make efficient use of data centre space and can provide many terabytes of storage in high density form factors. As the volume of digital information continues its growth NAS systems can provide scalable solutions that can be upgraded more easily and more cost-effective than DAS configurations.

Several NAS systems can be connected via private connections or VLAN and can be managed centrally which in specific instances can conserve time and resources.



NAS systems are platform independent and a NAS system appears like a native file server to each of its different users.

Lately, NAS technology has developed more sophisticated functionalities which have led to wider adaptation. Higher reliability made possible with RAID and hot swappable drives and components has become standard, as has the possibility to upgrade data protection by adding replication and mirroring for improved integrity of the data stored.

## 5.2.2 NAS Service Level Agreements

Service Level Agreements for such storage services should focus on access and integrity of the data stored. The complexity of the SLA for this kind of storage should be kept at a minimum, to be flexible enough to allow for upgrades and modifications to actual hardware.

## 5.3 SAN – Storage Area Network

### 5.3.1 Description

A SAN is a dedicated, high performance storage network that transfers data between servers and storage devices. This is done separately from the local area network. SANs tend to be high-end storage solutions for critical operations. As a solution, SANs are sophisticated, have complex management and high cost.

Within a SAN infrastructure several component types intermix in order to perform specific tasks. This can include RAID arrays, DASs and tape libraries connected to servers clusters by fibre channel. Fibre channel connectors allow for simultaneous gigabit communication between the different components in the network. This kind of connectivity is ideal for moving large chunks of data across distances.

The distributed architecture of SANs offers higher levels of performance and availability than other forms of storage. Dynamic load balancing across the network enables SANs to provide fast data transfer while reducing I/O latency and server workload. In effect large numbers of users can be served by the SAN without creating bottlenecks on the LAN and the server network. SANs in this way lend themselves well to bandwidth intensive storage such as data-bases, transaction processing and video.

### 5.3.2 SAN Service Level Agreements

Service level agreements for SAN can encompass a range of components. It is necessary to ensure that the underlying technology is capable of supplying the requirements of the client. With a much larger and more complex technology set-up, the SLAs should not necessarily be more complex but should ensure that the underlying technology is solid in terms of supplying the service.

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## 5.4 Data Centres

### 5.4.1 Description

In terms of outsourcing an organisation's data storage requirements, another aspect that features is the integrity of the data centres where the infrastructure is hosted. In the case of a NAS infrastructure the volumes are small enough to be replicated across to a number of sites. When it comes to SANs the large volumes of data will need a secure location to house the infrastructure.

SLAs for the actual data centres where the infrastructure will be hosted are part of providing a complete service. In addition to the cost of outsourcing a SAN to a third-party it is essential to understand the integrity of the physical location/s of the infrastructure. In the case of catastrophes Data Centre integrity becomes a priority. If the infrastructure is only located within one data centre the SLA for the data centre will govern any recovery or reimbursement for data lost.

To add to the complexity, a data centre is inherently a shared resource where several different SLAs can be issued to a number of different clients depending on the services operated.

The overall operational system feeding the data centre operates at a service level different from the data centre itself. In addition there are usually discrepancies between the SLAs of operational systems and any downstream applications.

Removing such discrepancies would force all interconnected applications to operate at the strictest level found among them. In general operational systems require the highest available service level, whereas analytical systems require the highest data quality service level.

## 5.4.2 Service Level Agreements for Data Centres

In SLAs for shared platforms such as data centres it is crucial to understand that different SLAs are appropriate for different elements. In addition data centres tend to service a multitude of different clients and needs. The SLA for such services are therefore very flexible and clients should be aware that they have a solid foundation for negotiating the services levels to fit their criteria.

## 5.5 Recommendations

The following is a set of suggestions based on managing and servicing SLAs:

- Keep the agreement and the services simple, measurable and realistic:
  - o This will make the SLA clear for both the SSP and the client and the processes involved simpler. Being measurable also improves the ability to perform according to the agreement for the provider. If the service is realistic it improves the client-provider relationship in the long term.
- Bring account managers and technology managers together during the formulation of the SLA.
  - o In this way the services required by more forward facing managers can be supported by the underlying technology. Here technology managers can be briefed and brief client representatives on the technology choices. The challenge for defining most SLAs is the balance between the underlying technology and the services required. The underlying technology will be responsible for defining limitations of the initial promises in the SLA. It is therefore important to have technology and business managers interacting in the process of defining SLAs
- Define a map of the commitments and performance indicators outlined in the SLA
  - o These can be tailored to individual clients as long as they are supported by the underlying technology available to the service

provider. If these commitments are not met, there should be clearly defined parameters for what happens in such cases.

## 6 Review of Sample Documents

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This section looks at best of breed sample documents and analyses each according to:

- Type of data storage provided
- Why it has been included
- The range in key variables between good and bad
- What improvements we'd recommend to make it better

The types of SLAs review in this section are:

- Managed storage
- Backup storage
- Online hosting and Storage
- Data centre

### 6.1 Storage SLA Sample Document #1 - Managed Storage

#### 6.1.1 Why this SLA is a good example

The selected SLA is for a NAS managed storage service with the option of a basic plan and a preferred plan both included in the same document. This adds to the simplicity in that the supporting technology serves different SLAs without extensive modifications. It suggests that the SSP can provide a flexible service based on the needs and requirements of the client.

Within the SLA the company has set out the monitoring services that will govern the SLA in conjunction with the measures for non-compliance. The formulation is simple and straight forward and is in line with the recommendations stating that SLAs should be first of all simple and transparent.

The document has:

- Simple outlining of QoS
- Monitoring and measurement of services provided

The provider Verio is a global entity with a strong position in the market for data storage, bandwidth and infrastructure and in this case they have managed to provide a good example of an SLA. [www.verio.com](http://www.verio.com)

## 6.1.2 What is the range in the key variables between bad and good

Back-up	Bad
Retention of files	Acceptable
Security	Good

## 6.1.3 What improvements we'd recommend to make it perfect

In terms of improvements the SLA could offer more on the data storage back-up area. In one section it states that:

*"The Data Backup Services are not intended to be a comprehensive disaster recovery solution. Except as set forth in this SLA, Verio makes no claims regarding the availability or performance of the Data Backup Services."*

Since the data integrity in this part does not offer any assurance on the back-up services it could be something that the company needs to develop. As a general rule it should be noted that the integrity of the services provided by Verio are generally above average.

## 6.1.4 Verio Managed Storage

### 6.1.4.1 Product Overview

This product allows users a wide range of storage options, including file system snapshots, mirroring and full site replication. Access is granted to a secure, sized storage area on a VERIO Network Attached Storage (NAS) device which holds large RAID arrays. The data is accessed by using the CIFS protocol for Windows servers or NFS for UNIX and Linux servers.

A major benefit of using the managed storage platform over server-centric storage is that data is available for access by multiple servers concurrently, i.e. storage is consolidated. Security features allow a variety of access rights based on server roles.

### 6.1.4.2 Services Included

There are three levels of service available:

- Managed Storage: This service consists of a quota of storage capacity available on the NAS platform (from 20GB upwards)

- Snapshot Storage: A storage quota as above plus file system 'snapshots', providing a complete read-only copy of the file system as it was at the time of the snapshot. This enables both revision control and a quick, convenient means of recovering files almost instantly from accidental file deletions, or a return to older versions of files. Snapshots are taken, and retained, on a rolling schedule: each hour for the last 12 hours, every day for the last five days and two-weekly
- Note that a snapshot is an on-line backup. The service provides read-only access to previous snapshots (via a folder named '.snapshot') but these are not stored on any external or off-site backup system. A full backup strategy may combine this service with an off-line backup
- Replicated Storage: A storage quota as above, plus the availability of mirrored file system snapshots, allowing the managed storage data to be replicated to a remote location. This can be considered an off-site, on-line backup of the managed storage data. A disaster recovery strategy may make use of this service in combination with off-line backups.

VERIO Managed Storage is implemented on Network Appliance Filer technology and network features are implemented to ensure secure access, including a private VLAN and IP filtering (ACL) for each server with access.

Storage quotas can be expanded on demand, so that customers only pay for what they need and can grow or shrink their allocation as requirements change.

#### 6.1.4.3 Options

Storage quotas are available in blocks of 20GB storage up to 100GB and in blocks of 50GB from 100GB up to several TB.

Customers with large scale solutions may like to consider dedicated filers.

#### 6.1.4.4 Service Level Agreement

This product is covered as part of the overall VERIO Modular Hosting Solutions SLA.

##### 1. Application of Data Backup and Restore SLA

This Data Backup and Restore Service Level Agreement ("SLA") for Basic Plans applies to Customers of Verio's Data Backup, Retention and Restoration services set forth in Section 2 below (collectively, the "Data Backup Services"). Capitalized terms not otherwise defined in this SLA shall have the meanings set forth in the Agreement. Except to the extent otherwise specifically provided herein or in the Agreement, this SLA becomes effective in the first calendar month after the Data Backup Services have been fully released to the Customer.

This SLA provides Customer with certain rights and remedies regarding the performance by Verio of the Data Backup Services. The amount of credit available per month is subject to a cap as described below.

##### 2. Data Backup Services

- Data Backup
  - o Verio will backup all files and file systems designated by Customer ("Files") by establishing a network connection from Customer's Equipment to Verio's storage infrastructure. Verio will backup the Files in accordance with and subject to the schedule established on the Customer's Sales Order Form.
  - o Subject to Sections Retention and Restoration hereof, for each day in each calendar month during the Term in which Verio fails to backup Files in accordance with clause A(i) above and as the Customer's sole and exclusive remedy for such failure, Customer will receive a credit equal to one day's worth of the total recurring monthly fees paid by Customer to Verio for the applicable calendar month for Data Backup Services.
  
- Retention
  - o Files and transaction logs stored on tape ("Stored Files") will be retained for fourteen (14) days, after which, Verio may, at its option, destroy the Stored Files. Unless otherwise designated, Stored Files will be retained on the Premises.
  - o Subject to Sections Retention and Restoration hereof, for each day in each calendar month during the Term in which Verio fails to provide retention for Stored Files in accordance with clause B(iii) above and as the Customer's sole and exclusive remedy for such failure, Customer will receive a credit equal to one day's worth of the total recurring monthly fees paid by Customer to Verio for the applicable calendar month for Data Backup Services.
  
- Restoration
  - o Verio will initiate restoration of Stored Files that are retained on the Premises within two hours during business hours (09.00 - 18.00 Monday to Friday) and within four hours outside of business hours, from the receipt of the Customer's request.
  - o Subject to Sections Retention and Restoration hereof, for each restore which Verio fails to successfully initiate within the time periods provided in clause C(v) above, and as the Customer's sole and exclusive remedy for such failure, Customer will receive a credit equal to one day's worth of the total recurring monthly fees paid by Customer to Verio for the applicable calendar month for Data Backup Services.

### 3. Customer Permission

Customer expressly grants Verio and Verio's third party service providers, for the purpose of providing the Data Backup Services described in this Schedule, the right to access the Customer Equipment and the right to reproduce the Files.

### 4. Exceptions

Customer shall not receive any credits under this SLA in connection with any failure

of deficiency of the Data Backup Services or a failure to meet the SLA that is caused by or associated with any of the following:

- circumstances beyond Verio's reasonable control, including, without limitation, acts of any governmental body, war, insurrection, sabotage, acts or omissions of third party not engaged or authorized by Verio, embargo, fire, flood, strike or other labour disturbance, interruption of or delay in transportation, unavailability of or interruption or delay in telecommunications or third party services, failure of third party software or inability to obtain raw materials, supplies, or power used in or equipment needed for provision of the Service Level Agreement;
- failure of access circuits to the Verio Network (as defined in clause (i) below)), unless such failure is caused solely by Verio;
- failure of customer's Internet access service, unless such service is provided by Verio and failure is caused solely by Verio;
- general third party telco failure;
- failure of Customer Equipment used in connection with the Data Backup Services;
- scheduled and emergency maintenance;
- DNS issues outside the direct control of Verio; or
- any other acts or omissions of Customer or others authorized by Customer, including without limitation, any negligence, wilful misconduct, or use of the Verio Network or Verio services in breach of Verio's Terms and Conditions and Acceptable Use Policy.
- "Verio Network" means the Verio owned and operated Internet Protocol (IP) routing infrastructure consisting solely of Verio measurement devices at selected Verio points of presence and the connections between them.

#### 5. Credit Request and Payment Procedures

In order to receive a credit, customer must make a request therefore by email to [SLAbreach@verio.co.uk](mailto:SLAbreach@verio.co.uk) or to such other address as may be designated by Verio from time to time. Each request for credit in any calendar month must be received by Verio within seven (7) days of the occurrence giving rise to the credit claim.

Notwithstanding anything in this SLA to the contrary, the total amount credited to a Customer in connection with Data Backup, Retention and Restoration in any calendar month will not exceed, in the aggregate, one hundred percent (100%) of the total recurring monthly fee paid by Customer to Verio for the Data Backup Services for such calendar month.

Each valid credit will be applied to a Customer invoice within two (2) billing cycles



after Verio's receipt of such request. Credits are exclusive of any applicable taxes charged to Customer or collected by Verio.

## 6. General

The Data Backup Services are not intended to be a comprehensive disaster recovery solution. Except as set forth in this SLA, Verio makes no claims regarding the availability or performance of the Data Backup Services.

### 6.1.5 Verio Service Level Agreements for Preferred Plans

#### 1. Application of Data Backup and Restore SLA

This Data Backup and Restore Service Level Agreement ("SLA") for Basic Plans applies to Customers of Verio's Data Backup, Retention and Restoration services set forth in Section 2 below (collectively, the "Data Backup Services"). Capitalized terms not otherwise defined in this SLA shall have the meanings set forth in the Agreement. Except to the extent otherwise specifically provided herein or in the Agreement, this SLA becomes effective in the first calendar month after the Data Backup Services have been fully released to the Customer.

This SLA provides Customer with certain rights and remedies regarding the performance by Verio of the Data Backup Services. The amount of credit available per month is subject to a cap as described below.

#### 2. Data Backup Services

- Data Backup
  - o Verio will backup all files and file systems designated by Customer ("Files") by establishing a network connection from Customer's Equipment to Verio's storage infrastructure. Verio will backup the Files in accordance with and subject to the schedule established on the Customer's Sales Order Form.
  - o Subject to Sections Retention and Restoration hereof, for each day in each calendar month during the Term in which Verio fails to backup Files in accordance with clause A(i) above and as the Customer's sole and exclusive remedy for such failure, Customer will receive a credit equal to one day's worth of the total recurring monthly fees paid by Customer to Verio for the applicable calendar month for Data Backup Services.
- Retention
  - o Files and transaction logs stored on tape ("Stored Files") will be retained for twenty-eight (28) days, after which, Verio may, at its option, destroy the Stored Files. Unless otherwise designated, Stored Files will be retained on the Premises.
  - o Subject to Sections Retention and Restoration 5 hereof, for each day in each calendar month during the Term in which Verio fails to provide retention for Stored Files in accordance with clause B(iii) above and as

the Customer's sole and exclusive remedy for such failure, Customer will receive a credit equal to one day's worth of the total recurring monthly fees paid by Customer to Verio for the applicable calendar month for Data Backup Services.

- Restoration

- o Verio will initiate restoration of Stored Files that are retained on the Premises within two hours during business hours (09.00 - 18.00 Monday to Friday) and within four hours outside of business hours, from the receipt of the Customer's request.
- o Subject to Sections Retention and Restoration hereof, for each restore which Verio fails to successfully initiate within the time periods provided in clause C(v) above, and as the Customer's sole and exclusive remedy for such failure, Customer will receive a credit equal to one day's worth of the total recurring monthly fees paid by Customer to Verio for the applicable calendar month for Data Backup Services.

3. Customer Permission

Customer expressly grants Verio and Verio's third party service providers, for the purpose of providing the Data Backup Services described in this Schedule, the right to access the Customer Equipment and the right to reproduce the Files.

4. Exceptions

Customer shall not receive any credits under this SLA in connection with any failure of deficiency of the Data Backup Services or a failure to meet the SLA that is caused by or associated with any of the following:

- circumstances beyond Verio's reasonable control, including, without limitation, acts of any governmental body, war, insurrection, sabotage, acts or omissions of third party not engaged or authorized by Verio, embargo, fire, flood, strike or other labour disturbance, interruption of or delay in transportation, unavailability of or interruption or delay in telecommunications or third party services, failure of third party software or inability to obtain raw materials, supplies, or power used in or equipment needed for provision of the Service Level Agreement;
- failure of access circuits to the Verio Network (as defined in clause (i) below)), unless such failure is caused solely by Verio;
- failure of customer's Internet access service, unless such service is provided by Verio and failure is caused solely by Verio;
- general third party telco failure;
- failure of Customer Equipment used in connection with the Data Backup Services;
- scheduled and emergency maintenance;

- DNS issues outside the direct control of Verio; or
- any other acts or omissions of Customer or others authorized by Customer, including without limitation, any negligence, wilful misconduct, or use of the Verio Network or Verio services in breach of Verio's Terms and Conditions and Acceptable Use Policy.
- "Verio Network" means the Verio owned and operated Internet Protocol (IP) routing infrastructure consisting solely of Verio measurement devices at selected Verio points of presence and the connections between them.

#### 5. Credit Request and Payment Procedures

In order to receive a credit, customer must make a request therefore by email to [SLAbreach@verio.co.uk](mailto:SLAbreach@verio.co.uk) or to such other address as may be designated by Verio from time to time. Each request for credit in any calendar month must be received by Verio within seven (7) days of the occurrence giving rise to the credit claim.

Notwithstanding anything in this SLA to the contrary, the total amount credited to a Customer in connection with Data Backup, Retention and Restoration in any calendar month will not exceed, in the aggregate, one hundred percent (100%) of the total recurring monthly fee paid by Customer to Verio for the Data Backup Services for such calendar month.

Each valid credit will be applied to a Customer invoice within two (2) billing cycles after Verio's receipt of such request. Credits are exclusive of any applicable taxes charged to Customer or collected by Verio.

#### 6. General

The Data Backup Services are not intended to be a comprehensive disaster recovery solution. Except as set forth in this SLA, Verio makes no claims regarding the availability or performance of the Data Backup Services.

##### Services Not Included

For the Replicated Storage Level, standard snapshots are not replicated with the volume during a replication of the site to another data centre.

## 6.2 Storage SLA Sample Document #2 - Remote Backup SLA

### 6.2.1 Why this SLA is a good example

Remote backup is a service that should be available for mission-critical data. It should include automatic backup of stored data on a regular basis within a 24 hour clock period. Within this SLA the client can define the clock times for when the automatic backup should kick in. The service level here is measured against this number rather than a percentage. For the client this means that it will receive credits for the times when the provider fails to backup data scheduled in the initial contract.

The SLA outlines very simply under which scenarios the backup service will be credited and the circumstances that are credit exempt. Keeping to clear and concise language makes it easier both for the client and the provider to measure the QoS.

- Good overview of services available
- Client set-up of back-up based on a 24 clock
- Simple and transparent

Compared to the other SLA from Verio in this report, the services outlined in the SLA below should be seen as an addition to the service provided in the first SLA. The Remote Backup SLA should be considered in conjunction with other data storage services that Verio provides.

[www.verio.com](http://www.verio.com)

## 6.2.2 What is the range in the key variables between bad and good

Back-up	Good
Retention of files	Acceptable
Security	Good

### 6.2.2.1 What improvements we'd recommend to make it perfect

Again it should be mentioned that this service exempts itself from the high-end market for secure data storage. In the SLA Verio states:

*"The Data Backup Services are not intended to be a comprehensive disaster recovery solution. Except as set forth in this SLA, Verio makes no claims regarding the availability or performance of the Data Backup Services."*

The improvement to this SLA would be in the inclusion of a disaster recovery solution. This could be an extension of the service or as part of a larger service package.

## 6.2.3 Verio Service Level Agreement for Remote Backup Storage

### 6.2.3.1 Remote backup Overview

This Service Level Agreements ("SLAs") applies to Customers of Verio's Remote Backup services as set forth on the Service Order (the "Remote Backup Services"). Capitalized terms not otherwise defined in these SLAs shall have the meanings set

forth in the Agreement. Except to the extent otherwise specifically provided herein or in the Agreement, these SLAs become effective in the first calendar month after the Remote Backup Services have been fully released to the Customer.

The following SLAs provide Customer's sole and exclusive remedies regarding the performance of the Remote Backup Services. The amount of credit available per month is subject to a cap as described below

#### 6.2.3.2 Application of Data Backup and Restore SLA

This Data Backup and Restore Service Level Agreement ("SLA") for Basic Plans applies to Customers of Verio's Data Backup, Retention and Restoration services set forth in Section 2 below (collectively, the "Data Backup Services"). Capitalized terms not otherwise defined in this SLA shall have the meanings set forth in the Agreement. Except to the extent otherwise specifically provided herein or in the Agreement, this SLA becomes effective in the first calendar month after the Data Backup Services have been fully released to the Customer.

This SLA provides Customer with certain rights and remedies regarding the performance by Verio of the Data Backup Services. The amount of credit available per month is subject to a cap as described below.

- Data Backup Services
- Data Backup

Verio will backup all files and file systems designated by Customer ("Files") by establishing a network connection from Customer's Equipment to Verio's storage infrastructure. Verio will backup the Files in accordance with and subject to the schedule established on the Customer's Sales Order Form.

Subject to Sections 3, 4 and 5 hereof, for each day in each calendar month during the Term in which Verio fails to backup Files in accordance with clause A(i) above and as the Customer's sole and exclusive remedy for such failure, Customer will receive a credit equal to one day's worth of the total recurring monthly fees paid by Customer to Verio for the applicable calendar month for Data Backup Services.

#### 6.2.3.3 1. Retention

Files and transaction logs stored on tape ("Stored Files") will be retained for fourteen (14) days, after which, Verio may, at its option, destroy the Stored Files. Unless otherwise designated, Stored Files will be retained on the Premises.

Subject to Sections 3, 4 and 5 hereof, for each day in each calendar month during the Term in which Verio fails to provide retention for Stored Files in accordance with clause B(iii) above and as the Customer's sole and exclusive remedy for such failure, Customer will receive a credit equal to one day's worth of the total recurring monthly fees paid by Customer to Verio for the applicable calendar month for Data Backup Services.

#### 6.2.3.4 2. Restoration

Verio will initiate restoration of Stored Files that are retained on the Premises within two hours during business hours (09.00 - 18.00 Monday to Friday) and within four hours outside of business hours, from the receipt of the Customer's request.

Subject to Sections 3, 4 and 5 hereof, for each restore which Verio fails to successfully initiate within the time periods provided in clause C(v) above, and as the Customer's sole and exclusive remedy for such failure, Customer will receive a credit equal to one day's worth of the total recurring monthly fees paid by Customer to Verio for the applicable calendar month for Data Backup Services.

#### 6.2.3.5 3. Customer Permission

Customer expressly grants Verio and Verio's third party service providers, for the purpose of providing the Data Backup Services described in this Schedule, the right to access the Customer Equipment and the right to reproduce the Files.

#### 6.2.3.6 4. Exceptions

Customer shall not receive any credits under this SLA in connection with any failure of deficiency of the Data Backup Services or a failure to meet the SLA that is caused by or associated with any of the following:

- circumstances beyond Verio's reasonable control, including, without limitation, acts of any governmental body, war, insurrection, sabotage, acts or omissions of third party not engaged or authorized by Verio, embargo, fire, flood, strike or other labour disturbance, interruption of or delay in transportation, unavailability of or interruption or delay in telecommunications or third party services, failure of third party software or inability to obtain raw materials, supplies, or power used in or equipment needed for provision of the Service Level Agreement;
- failure of access circuits to the Verio Network (as defined in clause (i) below)), unless such failure is caused solely by Verio;
- failure of customer's Internet access service, unless such service is provided by Verio and failure is caused solely by Verio;
- general third party telco failure;
- failure of Customer Equipment used in connection with the Data Backup Services;
- scheduled and emergency maintenance;
- DNS issues outside the direct control of Verio; or
- any other acts or omissions of Customer or others authorized by Customer, including without limitation, any negligence, wilful misconduct, or use of the Verio Network or Verio services in breach of Verio's Terms and Conditions and Acceptable Use Policy.
- Verio Network" means the Verio owned and operated Internet Protocol (IP) routing infrastructure consisting solely of Verio measurement devices at selected Verio points of presence and the connections between them.

### 6.2.3.7 5. Credit Request and Payment Procedures

In order to receive a credit, customer must make a request therefore by email to SLAbreach@verio.co.uk or to such other address as may be designated by Verio from time to time. Each request for credit in any calendar month must be received by Verio within seven (7) days of the occurrence giving rise to the credit claim. Notwithstanding anything in this SLA to the contrary, the total amount credited to a Customer in connection with Data Backup, Retention and Restoration in any calendar month will not exceed, in the aggregate, one hundred percent (100%) of the total recurring monthly fee paid by Customer to Verio for the Data Backup Services for such calendar month.

Each valid credit will be applied to a Customer invoice within two (2) billing cycles after Verio's receipt of such request. Credits are exclusive of any applicable taxes charged to Customer or collected by Verio.

### 6.2.3.8 6. General

The Data Backup Services are not intended to be a comprehensive disaster recovery solution. Except as set forth in this SLA, Verio makes no claims regarding the availability or performance of the Data Backup Services.

## 6.3 Storage SLA Sample Document #3 – NAS Storage

### 6.3.1 Why this SLA is a good example

This SLA is specific for NAS storage. It provides a good overview of the ability to upgrade a NAS storage solution. Several upgrade modifications are possible:

- Total storage available to client
- Connection between storage banks
- Data vaulting
- Back-up frequency
- Disaster recovery options

All this will influence the SLA based on the client needs and requirements set up in their business model. The price for expanding the QoS offered will increase according to the services provided. The TeraSafe solution is based on the Nacio technology. Nacio is a high-end provider of large scale storage solution and is a specialist within this area.

#### 6.3.1.1 What is the range in the key variables between bad and good

Back-up	Good
Retention of files	Good

Security	Good
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## 6.3.2 What improvements we'd recommend to make it perfect

The SLA is missing basic provisions such as monitoring outline and credit measurements that could still be included on a general basis regardless of the flexibility of the more hardware related service. In addition support availability is not specified.

## 6.3.3 TeraSafe NAS (Network Attached Storage)

### 6.3.3.1 NAS Overview

TeraSafe NAS (Network Attached Storage) is a powerful yet affordable managed storage service which is scalable from 10 gigabytes to 100 terabytes of on-demand capacity.

TeraSafe NAS is designed for customers with NACIO Dedicated Managed Servers or co-located hosting services.

TeraSafe NAS is the perfect solution for any company with growing storage requirements. Typical applications include...

- email and document archival for regulatory compliance
- financial, legal, marketing or engineering documents
- shared web content for load-balanced web server farms
- database backups
- drawings, images and multimedia files
- temporary storage for log files or application workspace, or
- any application that needs expandable storage.

### 6.3.3.2 On-Demand and Scalable

TeraSafe NAS can eliminate the need to upgrade local storage in your managed or co-located servers. You simply order as much space as you need - when you need it. Because the storage is managed, you don't have to worry about monitoring, maintenance, upgrades or backup, Capacity starts at 10 GB and can be expanded to 100 TB (> 100,000 GB) and beyond.

TeraSafe NAS managed storage is available to customers using NACIO Dedicated Managed Servers as well as those using their own systems co-located in NACIO's Netsource Centre. Connectivity to our storage network is delivered via dedicated Fast or Gigabit Ethernet, and appears to your applications as a Windows (SMB/CIFS) network share, a Unix (NFS) network share, or as an FTP service.



You can start with as little as 10 GB of shared storage and add space as your needs increase. Storage modules are allocated on a shared or customer-dedicated basis depending on your budget, your requirements, and your plans for future expansion.

#### 6.3.3.3 Storage Shareable Across Servers

For web server farms, TeraSafe NAS provides a simple way to share web content across multiple, load-balanced servers. By providing a single storage point for shared content, the need to replicate files across multiple servers can be eliminated.

#### 6.3.3.4 Optional Offsite Vaulting and Tape Backup

Optionally, the data stored on TeraSafe NAS can be electronically vaulted at an offsite location for disaster recovery purposes. Data can also back up to tape using our Robotic Backup Service. Standard and custom backup schedules are available with custom retention of data for short or long-term archival purposes.

## 6.4 Storage SLA Sample Document #4 - Back Up Service Level Agreement

### 6.4.1 Why this SLA is a good example

The SLA below provides both disaster recovery reliance and general data storage service levels. It is fairly short and it is kept simple. Such SLAs are easy to service for both client and provider. To have disaster recovery measure in the SLA provides a good idea of the levels of service that the SSP can provide. In addition it provides a 99.9% uptime of its network which is standard for most data storage.

The document covers:

- Disaster recovery options
- Overview of uptime
- Simple and transparent

Back Up Direct provides a managed service for data storage and back up of data storage for both raw data files, data bases and multimedia files. Most of their services are automated and are very user friendly for SME and larger organisations. It is a UK based company but does provide a mainly European service.

[www.backupdirect.net](http://www.backupdirect.net)

### 6.4.2 What is the range in the key variables between bad and good

Key variables:

Back-up	Good
---------	------

Retention of files	Good
Security	Good

#### 6.4.2.1 What improvements we'd recommend to make it perfect

The only thing that is lacking is information of monitoring and measuring services in place by the provider. It does mention that the client should notify the provider regarding any breaches of the QoS – yet there is no mention of the services in place to measure this.

Adding monitoring measures to the SLA would make it a clear and easy to maintain SLA for both provider and client.

### 6.4.3 Backup Direct™ Service Level Agreement (Business users)

#### 6.4.3.1 Backup Solution Overview

This Service Level Agreement ("SLA") covers performance guarantees for our Business online backup service only, and is made between Backup Direct™ ("Backup Direct™", "Provider", "we", "us", "our") and you ("Client", Customer, "you").

Clients are responsible for checking this document from time to time, as notifications of updates will not be made.

The following SLA Terms and Conditions apply only to Customers agreeing to a Minimum Service Period of one year or more for Backup Direct™ Business Services and only in respect of the provision of such services during such period and where Customer's accounts with Backup Direct™ are in good standing. The Terms and Conditions apply only where a Client is not in material breach of the Terms and Conditions of the Software and Service License Agreement.

Availability of this SLA may be subject to further conditions or qualifications set forth in additional related agreements between Backup Direct™ and the Customer including the Software and Service License Agreement. All remedies set out herein shall not be cumulative, and shall be Customer's sole and exclusive remedy for non-performance under the relevant Agreement.

#### Data Centre Configuration

The Backup Direct™ Data Centre is architected to deliver the maximum system uptime, security and reliability.

#### System Availability Guarantee

We offer a 99.9% uptime guarantee. This means that for any given month, while

unlikely, it is possible that we may experience an average downtime of up to 43.2 minutes per month excluding Scheduled Maintenance.

#### File Restore Guarantee

All files backed up on the Backup Direct™ System will be available for a period of 30 days from the date of backup. In the event of a Client wishing to restore a file or a group of files previously backup on the Backup Direct™ System, Backup Direct™ guarantees that the file or files will be recoverable within four hours from the initial request.

#### Application/Database recovery Guarantee

Application and Database files backed up on the Backup Direct™ System will be recoverable within 24 hours from the initial request.

#### Disaster Recovery Guarantee

In the event of a major data loss by the client involving the loss of entire servers and their contents, where such servers and files are legitimately backed up on the Backup Direct™ System, we will make all reasonable efforts to provide expert guidance to the client in order to restore the system to its original operational state. We will provide such support as is necessary to work with the clients or its suppliers in order to ensure that system files and data files are restored to any replacement hardware subject to the condition that such replacement material is correctly configured, specified and available.

#### Notification of non-performance

To be eligible for compensation under the any of the above Guarantees, the Client must notify Backup Direct™ of a possible incident. Upon opening a support ticket, we will ascertain whether the problem exists within our realm of reasonable control. We will make reference to system log files to confirm the appropriate breach of the performance Guarantee. In the event of a disaster, notification by telephone to the Support Team is acceptable, where the Support Team will validate the nature of the disaster.

#### Compensation Payments

In case of non-performance under this Agreement, the client will be compensated as follows:

**System Availability Guarantee** - if an outage exceeds 43.2 minutes, we will refund 5% (five percent) of the Client's base monthly recurring fee per hour of downtime, up to 100% (one hundred percent) of the base monthly recurring fee.

**File Restore Guarantee** - if a file or set of files is not recoverable within 4 hours of the initial request, we will refund the client 5% (five percent) of the Client's base monthly recurring fee for each MB (Megabyte) of non-restorable data, up to 100% (one hundred percent) of the base monthly recurring fee.

**Application/Database Recovery Guarantee** - if system and or database files or set of files are not recoverable within 24 hours of the initial request, we will refund the client 5% (five percent) of the Client's base monthly recurring fee for each MB (Megabyte) of non-restorable data, up to 100% (one hundred percent) of the base monthly recurring fee.

In all cases these Compensation Payments are non-cumulative and the highest amount for each category will be paid. In all cases the maximum payment in any one month will not exceed 100% of the Client's base monthly recurring fee.

#### Refund Procedures and Exceptions

Clients must notify us via email to [sla@backupdirect.net](mailto:sla@backupdirect.net) or via fax to 08701 417 438, indicating that they wish to pursue their rights as guaranteed by this SLA within 7 days of the incident. If a response from us is not received within 24 hours, the Client should assume that a technical difficulty has prevented us from receiving their request, and should contact our personnel via telephone at 08000 789 437.

#### Scheduled Maintenance

Scheduled Maintenance means any maintenance at the Backup Direct™ Data Centres, where the Customer is notified 48 hours in advance by telephone, email, fax and that is performed during a standard maintenance window Mondays through to Thursdays from 03:00 hours to 07:00 hours GMT

#### Force Majeure

Except in respect of payment liabilities, neither party to this agreement will be liable for failure or delay in performance of its obligations under this SLA due to reasons beyond its reasonably control including: acts of war, acts of God, earthquake, flood, riot, embargo, government act or failure of the Internet, provided that the delayed party gives the other party prompt notice for such cause.

This document was last modified on 03/02/03.

## 6.5 Storage SLA Sample Document #5 - Web Hosting and Storage SLA

### 6.5.1 Why this SLA is a good example

The SLA specifies very clearly the available uptime and how it is measured. This means that the client will be able to establish quickly whether the SSP will and can meet their criteria for data storage.

- Uptime guarantee
- Monitoring overview
- Credit overview

Webair is mainly a web hosting company with some capabilities in online data storage. It is US based and have large client base of SME and other business users. [www.webair.com](http://www.webair.com).

### 6.5.2 What is the range in the key variables between bad and good

Back-up	Bad
Retention of files	Acceptable
Security	Acceptable

#### 6.5.2.1 What improvements we'd recommend to make it perfect

Several improvements would be needed here. Firstly the company relies on the client to monitor and report where the provider has failed to live up to its QoS. In terms of a dispute there is no mention of which software or monitoring services that the provider will rely on. This could make it very difficult in getting credits from the providers. Most importantly in the general section of the SLA Webair states:

*"Webair reserves the right to change or modify this SLA at any time without prior notice. Changes are effective upon posting at [www.webair.com](http://www.webair.com). Except as set forth in this SLA, Webair makes no claims regarding the availability or performance of the Webair Network"*

This is completely unacceptable for any SLA and has been included for the purpose of educating clients in what to look out for. If the SLA can be changed at anytime it is basically not valid for any kind of high-end mission critical data storage.

As mentioned in the Operational Phase section changes to an SLA should be pre-defined under a Change Control Note.

### 6.5.3 Webair Service Level Agreement for Hosting and Storage

#### 6.5.3.1 Online Hosting and Storage Overview

This Service Level Agreement ("SLA") provides Webair's customers (each, a "Customer" or "you") with certain rights and remedies regarding the performance of the Webair Network. The "Webair Network" means the Webair owned and operated Internet Protocol (IP) routing infrastructure through which Webair provides Internet connectivity and IP routing and transit to its customers.

This SLA applies only to Network Outages (as defined herein) on the Webair Network. It does not apply to Webair-branded connectivity services (e.g., DSL) or other services that Webair may provide.

#### 6.5.3.2 1. Network Availability

Our goal is to make the Webair Network available 100% of the time, free of Network Outages. A "Network Outage" is an instance in which you are unable to transmit IP packets from the Webair Network to the public Internet, and receive packets sent to the Webair Network from the public Internet, for more than fifteen (15) consecutive minutes.

For the purposes of this agreement, a Network Outage is deemed to begin at the time you notify us of the outage via our online ticketing system, or, if the ticketing system itself is unreachable, via telephone; and to end at the first time thereafter that our administrators successfully perform a trace route to your Web site from outside the Webair Network.

#### 6.5.3.3 2. Credit for Network Outages

Subject to the exceptions set forth in Section 3, we will issue you a credit for each Network Outage that you report to us and that we confirm by analysis of our router logs equal to one thirtieth (1/30) of the base service plan fee that would otherwise be billed to you in the month in which the Network Outage occurs, multiplied by the number of hours (or portions of hours) that the Network Outage persists, up to a maximum of fifty percent (50%) of your monthly base service plan fee. Network Outages separated by less than one hour shall be treated as a single Network Outage.

The "monthly base service plan fee" consists of the base monthly fee paid by Customer under the applicable service plan, exclusive of all other fees which might be charged to Customer, including, by way of example only and not limitation, fees for set-up, bandwidth usage in excess of that included in the service plan, data storage, extra IP addresses, backup service, or any other services other than those available without additional charge under Customer's service plan.

#### 6.5.3.4 3. Exceptions

No credits shall be issued in connection with any Network Outage caused by or associated with:

- Failure of power, facilities, equipment, applications, systems or connections not provided by Webair;
- Failure of access circuits to the Webair Network, unless such failure is caused solely by Webair;
- General telco failure;
- Scheduled maintenance;
- DNS issues outside the direct control of Webair;
- Outage or error of any Webair measurement system;
- Customer's acts or omissions, including without limitation, any negligence, wilful misconduct, or use of the Webair Network or Webair services in breach of Webair's Terms and Conditions and Acceptable Use Policy, by Customer or others authorized by Customer;
- Any reason beyond the control of Webair, including, without limitation, acts of God or any governmental body, war, sabotage, fire, flood, earthquake or labour disturbance.

#### 4. Data Backup

In its normal course of operations, Webair makes weekly backups of some or all of the content on its network. Webair will make backups available to clients upon

request if such backups exist. Webair provides backups as a courtesy only and is not liable for any loss of data, or downtime resulting from any failure to backup any specific content.

#### 6.5.3.5 5. Credit Request and Issuance Procedures

Requests for credit must be made by e-mail to [billing@webair.com](mailto:billing@webair.com) within seven days of the Network Outage for which credit is requested, and must include your Webair account number, the date and time your Web site was unavailable, and the duration of the outage. Webair may require that you provide additional information before issuing a credit. Credits will usually be applied within two billing cycles of your request. All credits are exclusive of taxes.

#### 6.5.3.6 6. General

Webair reserves the right to change or modify this SLA at any time without prior notice. Changes are effective upon posting at [www.webair.com](http://www.webair.com). Except as set forth in this SLA, Webair makes no claims regarding the availability or performance of the Webair Network.

Notwithstanding anything in this SLA to the contrary, the total amount credited to a Customer in connection with Network Outages in any calendar month will not exceed the base service plan fees paid by that Customer to Webair for that month.

THE CREDITS DESCRIBED IN THIS SERVICE LEVEL AGREEMENT PROVIDE YOUR SOLE AND EXCLUSIVE REMEDY FOR NETWORK OUTAGES AND/OR INTERRUPTIONS IN CONNECTIVITY. WEBAIR CANNOT UNDER ANY CIRCUMSTANCES ISSUE CREDIT OTHER THAN THOSE DESCRIBED IN THIS SERVICE LEVEL AGREEMENT.

Revised 3/18/2004

## 6.6 Storage SLA Sample Document #6 - SLA for Online Storage and Hosting

### 6.6.1 Why this SLA is a good example

Good information on network capacity and capability in this SLA. The global regions in terms of jitter or variation in latency are established. This can provide the client with valuable information on how their service is affected in particular regions especially if the client is predicting particularly high traffic from specific countries.

In terms of hardware, power and uptime the SLA defines well what the QoS for the client will be. To provide an overview of these details give a good indication of the underlining technology supporting the services offered. In addition the technical support and monitoring is outlined within the SLA as well.

The document includes:

- Good overview of network capability

- Clear language on technology and provisions
- Definition of terms used in the SLA
- Regional overview of services provided

ServePath is a hosting and storage company. It provides services for SMEs and consumers especially on the West Coast of the United States. This market will have high demands due to competition and client demands. The company network is very well optimised for delivery across the globe. [www.servepath.com](http://www.servepath.com)

## 6.6.2 What is the range in the key variables between bad and good

Back-up	Acceptable
Retention of files	Acceptable
Security	Acceptable

### 6.6.2.1 What improvements we'd recommend to make it perfect

The SLA is extremely complex and very long. Most of the document is taken up with legal definitions and exceptions. A SLA should be clear and concise to cut down on administration in terms of monitoring the QoS.

## 6.6.3 ServePath 10,000% Guaranteed™ Service Level Agreement (SLA)for Hosting and Storage

### 6.6.3.1 Online Hosting and Storage Overview

This Service Level Agreement (this "SLA") is a binding agreement between ServePath and Customer and supplements the Terms of Service executed between the parties. Terms defined in the Agreement will have the same meaning when used in this SLA.

### 6.6.3.2 Remedies for service failure

#### **A. 10,000% Guaranteed**

(1) If the Service does not achieve the performance levels described in Articles II through VIII below ("Failure"), ServePath will provide Customer with a 10,000% Service Credit (as defined below), pursuant to the provisions, requirements, and limitations of this SLA, including Articles IX through XI.



(2) A "10,000% Service Credit" is a credit equivalent to one hundred (100) times Customer's Service Fees for the duration of the Failure, applied against fees for the Service Element (as defined below) subject to the Failure. (For example, where applicable pursuant to this SLA: a Failure lasting seven (7) hours would result in credit of seven hundred (700) hours of free service; a Failure lasting fifteen (15) minutes would result in a 1500-minute, or 25-hour, credit.) No credit will exceed one hundred percent (100%) of Customer's Fees for such Service Element for the then-current billing month. A "Service Element" is any element or feature of the Service assigned its own price on any ServePath price list or invoice or on any quote given to Customer. All credits referenced in this SLA are 10,000% Service Credits.

**B. Contract Termination Option**

Customer may terminate the Agreement, pursuant to Subsection 3(b) of the Agreement, without advanced notice, in the event that ServePath awards it 60 or more days of total credits during any single contract year, provided 3 or more separate instances of Failure occurred during such year. For purposes of this clause, a contract year is the 12-month period beginning on first day ServePath provides Service. Notwithstanding the foregoing, this SLA does not authorize termination of any Service Element for which ServePath purchased telecommunications circuits or other resources for Customer's sole use.

**C. Exclusive Remedies & Warranty Disclaimer**

The remedies set forth in this SLA are Customer's sole and exclusive remedies for Failure, except as specifically set forth in the Agreement. Nothing in this SLA creates or implies a warranty.

6.6.3.3 Network performance

ServePath will deliver network performance meeting or exceeding the specifications listed in this Article II:

A. Network Performance Terms

"Jitter" means variation in Latency.

"Latency" refers to the amount of time it takes for a packet of data to travel from one point to another.

"Maximum Jitter" means the highest permissible level of jitter within a given period when there is no Network Outage.

"Network Outage" means an unscheduled period during which IP services are not useable due to capacity-constraints on the ServePath network or a hardware failure in the ServePath network.

"Packet Loss" means Latency in excess of 10 seconds.

All Jitter, Latency, and Packet Loss metrics below are monthly averages, unless otherwise noted in this Article II.

**D. Internal Network Performance**

Packet loss < 0.1%

Latency < 5ms

Jitter < 0.5ms

Maximum Jitter: 10 milliseconds within any 15-minute period.

Network Outage < 60 Seconds per occurrence

**E. External Network Performance**

At least two (2) of the specified networks in each continent will meet the performance specifications listed below at any given time, as measured by ServePath. ServePath may change the specific measured hardware devices without notice. (ServePath displays current network performance Statistics online at <http://www.ServePath.com>.)

**North American Network Performance**

- Packet loss to
  - o West Coast of North America < 0.2%
  - o East Coast of North America < 0.3%
- Latency to
  - o West Coast of North America < 45ms
  - o East Coast of North America < 90ms
- Jitter to
  - o West Coast of North America < 1.0ms
  - o East Coast of North America < 1.2ms
- Maximum Jitter: 10 milliseconds during any 15-minute period.
- ServePath currently measures performance to the following North American networks: Verio, Level3, Above.net, UUNet.

**South American Network Performance**

- Latency to South America < 220ms
- Maximum Jitter: 10 milliseconds during any 15-minute period.
- ServePath currently measures performance to the following South American networks:
  - Brazil: UOL, STI
  - Chile: Netline, Firstcom
  - Argentina: UOL Sinectus, Sion

**European Network Performance**

- Latency to Europe < 175ms
- Maximum Jitter: 10 milliseconds during any 15-minute period.
- ServePath currently measures performance to the following European networks:
  - France: Tiscali, France Telecom, Neuf Telecom
  - United Kingdom: NTL, Zen, Pipex
  - Germany: Star 21 Networks, PJS net, T-Online

**Asian Network Performance**

- Latency to Asia < 170ms
- Maximum Jitter: 10 milliseconds during any 15-minute period.
- ServePath currently measures performance to the following Asian networks:
  - Japan: Singtel, Tuka, IA Japan

Hong Kong: Uni Net, Linkage, HK Supernet  
South Korea: Kornet, Mounet, BoraNet / SuperNet

- Australia Network Performance
- Latency to Australia < 200ms
- Maximum Jitter: 10 milliseconds during any period of 0.1% of a calendar month.
- ServePath currently measures performance to the following Australian networks:  
Optusnet, iiNet, Netspace, TPG, Adam Internet

#### South Africa Network Performance

- Latency to South Africa < 480ms
- Maximum Jitter: 10 milliseconds during any period of 0.1% of a calendar month.
- ServePath currently measures performance to the following South African networks:  
South Africa: Coza, XSI-net, Inloco  
Zimbabwe: Mweb, Utande, Telconet

#### ***D. Limitations***

This SLA does not cover (without limitation): (a) network performance to Customer's physical location or internet access point (such as a local DSL/cable modem); or (b) failures due to denial of service attacks.

#### 6.6.3.4 Hardware replacement

60-minute replacement of the following ServePath-provided hardware:

- Hard drive
- Memory
- Processor
- Network Interface Card
- Motherboard (results in complete server replacement)
- Hardware firewall

ServePath will repair or remove and install reasonably comparable replacements if it determines, in its sole discretion, that the hardware is defective. The period listed above begins upon such determination. The period listed above refers only to the time required to physically repair or replace the failed hardware element and does not apply to any time spent: (a) addressing data, operating systems, or other software or systems corrupted or destroyed by hardware failures; or (b) communicating with Customer regarding permissions or instructions.

#### 6.6.3.5 Support response time

- Emergency tickets - 30 minutes
- Non-Emergency tickets - 120 minutes

Upon creation of a support ticket through the Customer Portal, a tracking number will automatically be provided to Customer, and a human support engineer will review the support request within the timeframe listed above. Customer may designate a support ticket "emergency" or "non-emergency," but no ticket will qualify for emergency treatment pursuant to this SLA unless ServePath so classifies it, based on ServePath's assessment, in its sole discretion, of the time sensitivity of the threat to continued Service operation.

Support Staffing - 24 x 365 Telephone, Chat, and Ticketing

ServePath maintains a team of multiple support engineers actively on duty 24 hours per day, every day of the year, providing Customer assistance via telephone, online chat, and online support tickets. Any period during which ServePath does not have one or more support representatives on duty constitutes a period of Failure. Resolution and repair times vary, and this SLA does not address them.

#### 6.6.3.6 Domain name services

Primary DNS availability: 100%

"DNS" means domain name server. A period of DNS failure is any time during which 100% of ServePath's Domain Name Servers simultaneously fail to respond to requests for name resolution. This SLA does not guarantee propagation of DNS data across the Internet or the hosting of secondary DNS service for Customer's primary domain in another location, and it does not guarantee against zone inaccuracies due to operator error. No failure listed in the preceding sentence will be considered a Failure.

#### 6.6.3.7 Power availability and performance

- Availability: 100%
- Voltage fluctuations: +/- 10%

A power Failure is a loss of electrical power or a voltage fluctuation, exceeding the limits above, in any part of the delivery system (utility company supply, on-site generation, UPS, circuit, or power strip) which causes Customer's hardware to shut down. A period of power-related Failure is measured from the time that the support ticket is opened to the time that the electrical supply is restored, and does not include any time required to remedy any issues resulting from the electrical failure.

#### 6.6.3.8 Cooling and environment

- Data Centre Temperature: 67 - 74 degrees Fahrenheit
- Relative Humidity: 35% - 60%

As used in this SLA: (a) relative humidity is the ratio of water vapour density (mass per unit volume) to saturation water vapour density, expressed in a percentage; and (b) both temperature and relative humidity are averages of several measurements, each from one of the Facility's CRAC (computer room air conditioning) units.

ServePath will monitor, but is not required to report to Customer on, environmental conditions in the Facility.

Cooling and environment credits apply to fees for Space rental only. Space rental will be considered a Service Element, and if ServePath has not assigned it a specific price, ServePath may determine, at its sole discretion, the portion of fees attributable to Space rental.

#### 6.6.3.9 Server power cycling

- Server power cycling: < 15 minutes

The Service includes an automated system for cycling each individual power circuit. The Customer Portal allows Customer to request an immediate power cycle (a "Reboot Request"). This SLA applies only to requests for power cycling initiated through such automated system. The figure listed above is the maximum period between the time of the Reboot Request and either the actual server power cycling or notice to Customer that the power cycling failed. Any failure to respond within that timeframe constitutes Failure only if Customer files a trouble ticket, designated "emergency," requesting a manual server power cycle.

#### 6.6.3.10 Credit requirements

The following are required for credits:

- Customer must open a valid and complete trouble ticket through the Customer Portal during any Failure, providing complete information regarding the nature of the problem, including any information reasonably necessary for diagnosis and correction. Customer will provide this notification even if ServePath provides monitoring services.
- Customer must provide ServePath with accurate and complete designated points of contact, using the Customer Portal. Customer must provide ServePath with accurate passwords for maintenance and repair use by ServePath engineers. Delays or failures caused by Customer's failure to abide by the requirements of this Article IX.B do not constitute Failures.
- Customer must request any credits by completing an accurate SLA Credit Request ticket online at the Customer Portal within 48 hours of the start of the Failure.

#### 6.6.3.11 Credit limitations

The minimum period of Failure eligible for a credit is 60 seconds, and shorter periods will not be aggregated. The maximum credit for any single Failure is one month's

Service fees. The maximum credit during a single calendar year, for all Service Elements combined, is two months' Service fees, regardless of the length of Failure or the number of occurrences.

In the event that credits for any calendar month exceed 25% of ServePath's revenues for such period, ServePath may reduce and pro-rate the value of credits given to all Customers for such period so that the aggregate credit given to all Customers does not exceed 25% of revenues. As used in the previous sentence, "ServePath's revenues" and "all Customers" refer to revenues and customers from Internet co-location services sold under the "ServePath" brand, and not to revenues or customers from any other business unit operating under another name or providing services other than or in addition to Internet hosting. ServePath may employ such accounting procedures as it chooses in calculating revenues, in its sole discretion, and nothing herein will be construed to require that ServePath disclose non-public information about its finances to Customer or to any party.

Credits available pursuant to this SLA apply only to future service delivery. ServePath is not required to provide refunds pursuant to this SLA. If Customer's Signup provides for a Prepayment Period, credit will apply to any renewal of such Prepayment Period, but Customer may instead elect to apply credit to any additional ServePath products or services. If Customer retains a credit balance on termination of the account in question, such credit is forfeited. Notwithstanding the foregoing, credits will not be applied against fees for Professional Services, bundled support, or setup fees.

Notwithstanding any provision to the contrary in this SLA, the following do not constitute Failures: (1) downtime during scheduled maintenance or Emergency Maintenance (as defined below) periods; (2) outages caused by acts or omissions of Customer, including its applications, equipment, or facilities, or by any use or user of the Service authorized by Customer; (3) outages caused by hackers, sabotage, viruses, or other third party wrongful actions; (4) DNS issues outside of ServePath's control; (5) outages resulting from Internet anomalies outside of ServePath's control; and (6) outages resulting from fires, explosions, or force majeure. "Emergency Maintenance" refers to any corrective action intended to remedy conditions likely to cause severe Service degradation, as designated by ServePath in its sole discretion. Emergency Maintenance may include but is not limited to actions intended to address hardware or software failures or viruses/worms.

For terms and conditions see:

<http://www.servepath.com/about/ServiceAgreement.htm>

## 6.7 Storage SLA Sample Document #7 - Data Centre SLA

### 6.7.1 Why this SLA is a good example

This SLA is for the actual data centre/s where the infrastructure will be hosted. There is a strong relationship between the supporting technology and the environment where it is hosted.

For specific clients this will be key in identifying providers for their services. The general competence in the SLA is excellent. Of course the main clients of Data Centres tend to be high-end with good technical knowledge so SLAs for Data Centres tends to be much better than consumer and SME SLAs.

In general the strength of this SLA is based in the formulation. It starts with setting a Standard for its service. Here it is outlined what the level of service will be like and what it consists of.

Then it proceeds to the Process. Here the process of setting up the service is detailed and broken down. In general the client will be informed of the normal procedure for the service. This makes measuring the level of service clear and concise.

The last part of each section is Remedy. Here the credit for services non-delivered according to the Process and the Standard is outlined. From these sections the client can easily identify how the provider is measuring against the SLA.

The service is considered premium which means that back-up services, load balancing and internal infrastructure is a very high level of service. This SLA has even included "denial of service attack" as part of the agreement with reporting and support service for such events. For any mission critical data this would be a welcomed addition to the rest of the services offered.

- Simple and transparent language
- Excellent formulation of SLA; Standard, Process and Remedy
- Monitoring and measurement
- Credit payback simplicity
- Infrastructure overview

Verizon is one of the largest Telcos in the world. Formed when Bell Atlantic merged with GTC in 2000. It provides broadband, telephone and communication services for consumers as well as organisations. Since Verizon owns back-bone infrastructure it has the ability to offer data centres and related services. [www.verizon.com](http://www.verizon.com)

## 6.7.2 What is the range in the key variables between bad and good

Back-up	Good
Retention of files	Good
Security	Good

### 6.7.2.1 What improvements we'd recommend to make it perfect

There are hardly any improvements needed for this SLA. If any it would be a listing of the software used within the data centre. This could provide additional information on the infrastructure.

Such a section could include any software the client might wish to install on the infrastructure in order for the provider to understand the actual project that the client is initiating. In addition the provider might be able to provide services that support such software.

## 6.7.3 Verizon U.S.A Data Centre Co-location SLA

This Service Level Agreement ("SLA") only applies to U.S. Data Centre Co-location for Premium Data Centres, including legacy Premium Data Centre Services and legacy Internet Co-location Service for Premium Data Centres.

- [Installation](#)
- [AC Power Availability](#)
- [Network Latency](#)
- [Packet Delivery](#)
- [Network Jitter](#)
- [Data Centre Internet Bandwidth Availability](#)
- [Outage Reporting](#)
- [Data Centre Temperature and Humidity](#)
- [Local Tape Backup and Restore](#)
- [Load Balancing](#)
- [Denial of Service Time Response](#)
- [Total SLA Credits](#)

### Installation

#### ***Installation SLA Standard***

Installation of Verizon Data Centre Internet Bandwidth, standard cabinet, and standard power options is to be completed within 7 business days for any Customer requesting less than 100 Mbps of Data Centre Internet Bandwidth connectivity or 20 business days for any Customer requesting 100 Mbps or more of connectivity. The SLA Installation standard will not apply for customers upgrading beyond standard power.



***Installation SLA Process***

The Installation SLA period will commence after the hosting install engineer verifies service requirements with the Customer and upon the date the hosting install engineer sends an email to Customer stating that the install period has started. The Installation SLA is only available for the installation of Verizon Data Centre Internet Bandwidth, standard cabinets and standard power and it is not available for other Verizon services such as POTS lines, frame relay, Ethernet or any other Verizon connectivity, non-standard or custom cabinet/cage space, non-standard power, or if installation delay is attributable to Customer equipment, acts or omissions of Customer, or its employees or agents, or Customer not passing Verizon's credit check.

***Installation SLA Remedy***

Upon receiving emailed notification from Verizon's Hosting Install Engineer that the Facility is ready for Customer's Equipment, Customer will have 10 days within which to contact Verizon's installation engineer if Customer believes Verizon has failed to meet the Installation SLA. If Customer contacts Verizon within such 10 day period and if Verizon determines in its reasonable commercial judgment that Verizon has failed to meet the Installation SLA, Customer's account will be credited 50% of Verizon's standard Installation Fee for the ordered Data Centre Co-location with respect to which this SLA has not been met.

**AC Power Availability****AC Power Availability SLA Standard**

AC power is to be available to Customer's Data Centre Co-location cabinet 100% of the time.

***AC Power Availability SLA Process***

Customer must have equipment capable of utilizing dual power sources and Equipment must be plugged directly into both the A power strip and the B power strip. Unless otherwise provided in the Service Agreement or Service Amendment, Customer must not permit power consumption to exceed the power rating identified in the Service Agreement or Service Amendment and all equipment must be UL approved. Cabling used by Customer must meet national electrical and fire standards and any specifications provided by Verizon.

"Power Unavailability" consists of the number of minutes that AC power was not available at the Customer's Premium Data Centre Service cabinet to the primary outlet or redundant outlet at the same time. Outages will be counted as Power Unavailability only if Customer opens a trouble ticket requesting an SLA investigation with Verizon technical support within five days of the outage. Power Unavailability will not include Scheduled Maintenance (as defined in this Section 2) or unavailability resulting from (a) any Customer circuits or equipment, (b) Customer's applications or equipment, or (c) acts or omissions of Customer, or any use or user of the service authorized by Customer.

**Scheduled Maintenance for AC Power Availability SLA**

Scheduled Maintenance means any maintenance performed on either primary and/or redundant power feeds to the Customer's cabinet (a) of which Customer is

notified 7 business days in advance for an outage that lasts more than 50 ms and 48 hours in advance for an outage impact of 50 ms or less, and (b) that is performed during a standard maintenance window of 12 AM to 6 AM local time of the Verizon data centre at which Customer's server is located. Information regarding Scheduled Maintenance will be provided to Customer's designated point of contact by a method elected by Verizon (telephone, email, fax or pager). Verizon reserves the right to perform maintenance outside of Scheduled Maintenance during an emergency situation.

### ***Power Availability SLA Remedy***

For each cumulative hour or fraction thereof of Power Unavailability for both A & B circuits, Customer may request a credit for one day of monthly recurring charges for the Data Centre Internet Bandwidth and Space affected by the outage as contracted for in Customer's Data Centre Co-location/Internet Co-location agreement. The total credit will not exceed Customer's total monthly recurring Data Centre Internet Bandwidth and Space charges.

## Network Latency

### ***Network Latency SLA Standard***

Verizon provides a Network Latency SLA standard based on the average round-trip transmission time in milliseconds between Verizon-designated inter-regional transit backbone routers ("Hub Routers") in North America and between New York and London ("Transatlantic"). This Network Latency SLA standard is limited to North America and Transatlantic. The specific Network Latency SLA standard associated with North America and Transatlantic is posted at the following location:

[http://www.verizonbusiness.com/terms/global\\_latency\\_sla.xml/](http://www.verizonbusiness.com/terms/global_latency_sla.xml/)

### ***Network Latency SLA Process***

Latency will be measured by averaging sample measurements taken during a calendar month between Hub Routers in North America and Transatlantic. Each month's Network performance statistics relating to the Network Latency SLAs is posted at <http://www.verizonbusiness.com/about/network/latency/>

### ***Network Latency SLA Remedy***

If Verizon fails to meet the Network Latency Service Level in a calendar month for North American and Transatlantic, Customer may request a credit for that month. The credit will consist of an amount equal to one day of monthly recurring charges for the Data Centre Internet Bandwidth service contracted for in Customer's Data Centre Co-location/Internet Co-location agreement. The total credit will not exceed Customer's total monthly recurring Data Centre Internet Bandwidth charges. In no event will Customer receive credits under this SLA if Customer is already receiving a credit under the Data Centre Internet Bandwidth Availability SLA.

## 6.7.3.1 Packet Delivery

### ***Packet Delivery SLA Commitment***

Verizon offers both a Network Packet Delivery SLA between Verizon-designated inter-regional transit backbone routers ("Hub Routers") in North America and Transatlantic. The Packet Delivery SLA standard associated with North America and

Transatlantic is posted at the following location

[http://www.verizonbusiness.com/terms/global\\_latency\\_sla.xml](http://www.verizonbusiness.com/terms/global_latency_sla.xml)

### ***Packet Delivery SLA Process***

Packet delivery is measured by averaging sample measurements taken during a calendar month between Hub Routers. Network Performance statistics relating to the Network Packet Delivery Service Level for North America and Transatlantic is posted at the following location:

<http://www.verizonbusiness.com/about/network/latency/>.

### ***Packet Delivery SLA Remedy***

If Verizon fails to meet the Network Packet Delivery Service Level in a calendar month, Customer may request a credit for that month. The credit will consist of an amount equal to one day of Data Centre Internet Bandwidth monthly recurring charges with respect to the Service to which a Network Packet Delivery SLA has not been met. The total credit will not exceed Customer's total monthly recurring Data Centre Internet Bandwidth charges for the affected Services. In no event will Customer receive credits under this SLA if Customer is already receiving a credit under the Data Centre Internet Bandwidth Availability SLA.

Network Jitter

### ***Network Jitter SLA Standard (currently applicable only in the U.S.)***

Also known as delay variation, Jitter is defined as the variation or difference in the end-to-end delay between received packets of an IP or packet stream. Jitter is usually caused by imperfections in hardware or software optimization and varying traffic conditions and loading. Excessive delay variation in packet streams usually results in additional packet loss, which affects quality. Verizon's U.S. Network Jitter performance statistics associated with North America is posted to the following location: [http://www.verizonbusiness.com/terms/global\\_latency\\_sla.xml](http://www.verizonbusiness.com/terms/global_latency_sla.xml).

### ***Network Jitter SLA Process***

Jitter will be measured by averaging sample measurements taken during a calendar month between Hub Routers for North America. Each month's Network performance statistics relating to the Network Jitter SLAs for North America will be posted to the following location: <http://www.verizonbusiness.com/about/network/latency/>.

### ***Network Jitter SLA Remedy***

If Verizon fails to meet the Jitter Service Level for North America in a calendar month, Customer may request a credit for that month. The credit will consist of an amount equal to one day of Data Centre Internet Bandwidth charges with respect to the Services to which a Network Jitter SLA has not been met. The total credit will not exceed Customer's total monthly recurring Data Centre Internet Bandwidth charges for the affected Services. In no event will Customer receive credits under this SLA if Customer is already receiving a credit under the Data Centre Internet Bandwidth Availability SLA.

### 6.7.3.2 Data Centre Internet Bandwidth Availability

(applicable only to Verizon-provided Internet bandwidth in Verizon Premium Data Centres)

#### **Data Centre Internet Bandwidth Availability SLA Standard**

Verizon Data Centre Internet Bandwidth Service Availability SLA is to have the Verizon Data Centre Internet Bandwidth (as defined in the applicable service agreement) connectivity provided to customers available 100% of the time. Available means with no Data Centre Internet Bandwidth Unavailability (as defined below).

#### **Data Centre Internet Bandwidth Availability SLA Process**

At a Customer's request, Verizon will calculate Customer's Data Centre Internet Bandwidth Unavailability in a calendar month. Data Centre Internet Bandwidth Unavailability will mean the number of minutes that Verizon Data Centre Internet Bandwidth was not available to Customer other than for the exceptions specified below. This SLA applies only if Customer opens a trouble ticket requesting an SLA investigation with Verizon technical support within five days of the end of the month in which the outage occurred. Data Centre Internet Bandwidth Unavailability will not : (a) include Scheduled Maintenance (as defined in this Section 6), (b) apply to any Customer circuits or equipment, (c) apply to Customer's applications or equipment, or (d) apply to acts or omissions of Customer, or any use or user of the service authorized by Customer.

#### **Scheduled Maintenance for Data Centre Internet Bandwidth SLA**

Scheduled Maintenance will mean any maintenance at the Verizon data centre at which Customer's server is located (a) of which Customer is notified 72 hours in advance, and (b) that is performed during a standard maintenance window of 12 AM to 6 AM local time of the Verizon data centre at which Customer's server is located. Information regarding Scheduled Maintenance will be provided to Customer's designated point of contact by a method elected by Verizon (telephone, email, fax or pager). Verizon reserves the right to perform maintenance outside of Scheduled Maintenance during an emergency situation.

#### **Data Centre Internet Bandwidth Availability SLA Remedy**

For each cumulative hour of Data Centre Internet Bandwidth Unavailability or fraction thereof in any calendar month, Customer may request a credit for one day of Data Centre Internet Bandwidth monthly recurring charges as contracted for in Customer's Data Centre Co-location/Internet Co-location agreement. The total credit will not exceed Customer's total monthly recurring Data Centre Internet Bandwidth charges.

### 6.7.3.3 Outage Reporting

(applicable only to Verizon-provided Data Centre Internet Bandwidth in Verizon Premium Data Centres)

#### **Outage Reporting SLA Standard**

Under Verizon's Outage Reporting SLA, Customer is to be notified within 15 minutes after Verizon's determination that Customer's service is Unavailable (as defined in Section 6). Verizon's standard procedure is to ping Customer's Co-located equipment every five minutes. If Customer's equipment does not respond after two

consecutive five-minute ping cycles, Verizon will deem the service Unavailable (as defined in Section 6) and will contact Customer's designated point of contact by a method elected by Verizon (telephone, email, fax or pager). Data Centre Internet Bandwidth Unavailability will not: (a) include Scheduled Maintenance (as defined in this Section 6), (b) apply to any Customer circuits or equipment, (c) apply to Customer's applications or equipment, or (d) apply to acts or omissions of Customer, or any use or user of the service authorized by Customer.

#### ***Outage Reporting SLA Process***

The Outage Reporting SLA is applicable only to service provided in the contiguous United States and is applicable only if a Customer sets up his IP addresses for monitoring through <https://clientcentral.mci.com>. Customer must open a trouble ticket requesting an SLA investigation with Verizon technical support within five days of the end of the month in which the outage occurred. Customer is solely responsible for providing Verizon accurate and current contact information for Customer's designated points of contact. Verizon will have satisfied its obligations under this Outage Reporting SLA if Verizon contacts Customer's designated point of contact as provided by Customer.

#### ***Outage Reporting SLA Remedy***

If Verizon fails to meet the Outage Reporting Service Level, Customer may request a credit for one day of the Monthly recurring charges for the affected Data Centre Internet Bandwidth and Data Centre Co-location/Internet Co-location space only. Customer may obtain no more than one credit per day, irrespective of how often in that day Verizon failed to meet the Outage Reporting SLA.

### Data Centre Temperature and Humidity

#### ***Data Centre Temperature and Humidity Service Level Objective***

Verizon Premium Data Centres will maintain a temperature of 72 degrees Fahrenheit plus or minus 8 degrees with 20 percent to 65 percent (non-condensing) humidity within the Data Centre as measured at the return air intake of the computer room air conditioning (CRAC) units. Customer's equipment must be designed to operate within these ranges.

#### ***Data Centre Temperature and Humidity Service Level Objective Response***

Verizon will respond to temperature alarms from the computer room air conditioning (CRAC) units within 2 hours and will subsequently take steps as required to solve the problem.

#### ***Data Centre Customer Space Temperature Problem Standard***

Verizon will work with Data Centre customers reporting temperature server alerts from their servers in the Data Centre.

#### ***Data Centre Customer Space Temperature Problem Process***

If Customer has concerns about the temperature within Customer's Data Centre Space, Customer may open a trouble ticket with Verizon by calling the Verizon support line at 800-900-0241 or from the Hosting Client Central portal at <https://clientcentral.mci.com>. Verizon will respond within its standard response intervals based on the severity of the problem and work with Customer to determine the best course of action in terms of changes that can be made by Verizon or by Customer to remedy the issue. Such changes may include (but are not limited to)

Verizon making changes to perforation tiles in the Customer cage, Verizon making changes to the CRAC set points, or Customer making modifications to their equipment configuration. In some cases, recommended changes may require additional charges to the Customer.

## Local Tape Backup and Restore

### **Local Backup SLA Standard**

Verizon will provide successful completions of tape backups of Customer data on servers located at the Data Centre within scheduled windows at least 95% of the time.

### **Local Backup SLA Process**

The percentage of Monthly Successful Completed Backups is determined based on the total number of backup jobs successfully completed within that window, divided by the total scheduled backup jobs during a month. Standard backup windows are eight hours on weekdays and 22 hours on weekends.

### **Local Backup SLA Remedy**

The following Tables set forth the service credits available under the Local Tape Backup SLA. Credit percentages are for Monthly Recurring Backup Charges only.

Table 1 – Local Tape Backup Credits:

- Monthly Successfully Completed Backups	- Service Credit Percentage (maximum)
- 95%	- 0%
- < 95% but >= 90%	- 5%
- < 90% but >= 80%	- 8%
- < 80% but >= 70%	- 12%
- < 70%	- 18%

### **Local Backup SLA Restrictions**

The SLA for Local Backup Services will not apply to any slow or failed backups resulting from (a) any Customer circuits or equipment, (b) Customer's applications or equipment, (c) acts of omissions of Customer, or any use or user of the service authorized by Customer, (e) insufficient backnet connectivity or host processing power, as provided by customer, (f) file systems larger than 100 gigabytes for an 8-hour weekday window, (g) file systems larger than 250 gigabytes for a 22-hour weekday window, (h) open files, open databases, or full file systems, or (i) file systems with extraordinary amounts of individual files.

### **Restore SLA Standard**

Verizon will facilitate successful restores of backed up data to the original device. If the retention period specified by Customer is one year or less, and if acclimatization is not required, restores will commence within 30 minutes of initiation for data stored within the tape library, and within 3 hours of initiation for data stored outside the tape library. If acclimatization is required, restores will commence within 30 minutes of

completion of acclimatization.

**Restore SLA Process**

A restore of data – files, file systems and/or databases, as applicable – will be considered successful once the data to be recovered has been transferred from the tape to Customer's primary storage space in the same condition in which it was backed up. If, as a result of Verizon's actions or inactions, any restore is not successful or does not commence within the above time limits, the Restore will be deemed an unsuccessful restore"

**Restore SLA Remedy**

If Verizon is unable to successfully restore from the tape to Customer's primary storage space in the same condition in which it was backed up, Customer may request a service credit equal to a percentage of the application monthly recurring backup charges as noted in the table below. See also the Local Tape Backup and Restore SLA Remedy section below.

Table 2 – Restore Success Service Credits:

- Monthly Unsuccessful Restores	- Service Credit Percentage (maximum)
- 1	- 5%
- 2	- 8%
- 3	- 10%
- 4	- 12%
- 5 and above	- 15%

**Restore SLA Restrictions**

The SLA for Restore Services will not apply to any failed restore resulting from Scheduled Maintenance (see below) or (a) any Customer circuits or equipment, (b) Customer's applications or equipment, or (c) acts of omissions of Customer, or any use or user of the service authorized by Customer.. In addition, Verizon provides no SLA for failed restores due to missing or unreadable data due to open files, open databases, or full file systems at time of backup. If the tape storage period is longer than one year, no time period for commencement applies.

**Scheduled Maintenance for Restore SLA**

Scheduled maintenance for Restore will mean any Backup Services systems-related maintenance at the Verizon data centre at which Customer's server is located of which Customer is notified 72 hours in advance. Information regarding Scheduled Maintenance will be provided to Customer's designated point of contact by a method elected by Verizon (telephone, email, fax or pager). Maintenance windows for Backup Services systems are typically scheduled on an individual basis to eliminate impact on scheduled backups.

**Tape Backup and Restore SLA Remedy**

Verizon's records and data will be the basis for all Backup and Restore SLA calculations and determinations. The maximum amount of credit in any calendar



month for all Backup and Restore SLAs, in the aggregate, will not exceed 50% of the total charges that would have been charged by Verizon that month for the affected Backup and Restore Service.

Verizon will apply the greater of (i) the Local Tape Backup Credits or (ii) the Restore Success Service Credits, but not both.

#### Load Balancing Service Availability SLA Standard

##### ***Load Balancing Service Availability SLA Standard***

Verizon's Load Balancing Service Availability SLA provides that the Verizon Load Balancing Service (as defined in the applicable Service Attachment) will be available 100% of the time.

##### ***Load Balancing Service Availability SLA Process***

This SLA applies only if Customer opens a trouble ticket requesting an SLA investigation with Verizon technical support within five days of the end of the month in which the Load Balancing Unavailability occurred. At Customer's request, Verizon will calculate the "Load Balancing Unavailability" in a calendar month. "Load Balancing Unavailability" consists of the number of minutes that the Verizon Load Balancing Service was not available to Customer except as provided in the exclusion below. Load Balancing unavailability does not include (a) Load Balancing unavailability which Customer fails to report to Verizon within 30 days from the date the SLA was not met, or (b) any unavailability resulting from: (i) Verizon Load Balancing maintenance as defined under "Scheduled Maintenance" (as defined in this Section 10 below); (ii) Customer's applications, equipment, or facilities; or (iii) acts or omissions of Customer, or any use or user of the service authorized by Customer.

##### ***Scheduled Maintenance for Load Balancing Service Availability SLA***

Scheduled Maintenance will mean any maintenance at the Verizon data centre at which Customer's server is located (a) of which Customer is notified 72 hours in advance, and (b) that is performed during a standard maintenance window of 12AM to 6 AM local time of the Verizon data centre at which Customer's server is located. Information regarding Scheduled Maintenance will be provided to Customer's designated point of contact by a method elected by Verizon (telephone, email, fax or pager). Verizon reserves the right to perform maintenance outside of the normal maintenance window to make any necessary changes during an emergency situation.

##### ***Load Balancing Service Availability SLA Remedy***

If the Load Balancing Service Availability SLA is not met during any given calendar month in accordance with the above, Customer may request a credit for that month. The credit will consist of an amount equal to one day of the Load Balancing monthly Recurring charge for each cumulative hour of Load Balancing unavailability or fraction thereof in any calendar month. The total credit will not exceed the total monthly recurring Load Balancing charge for the affected month. The Customer will receive credits under this SLA even if Customer receives a credit under the Data Centre Internet Bandwidth Availability SLA.



***Denial of Service Response Time Standard*** (this SLA only applies if Customer opens a trouble ticket)

Verizon will respond to Denial of Service attacks reported by Customer within 15 minutes of Customer opening a complete trouble ticket with Verizon Customer Support. A Denial of Service attack is defined as more than 95% bandwidth utilization.

***Denial of Service Response Time SLA Process***

To open a trouble ticket for Denial of Service, Customer must call Verizon at 1-800-900-0241 and state: "I think I am under a Denial of Service Attack". A complete trouble ticket consists of Customer's Name, Account Number, Caller Name, Caller Phone Number, Caller Email Address and Possible Destination IP address / Type of Attack.

***Denial of Service Response Time SLA Remedy***

If Verizon fails to meet the Denial of Service Response SLA in a calendar month, Customer may request a credit for one day of charges for the Data Centre Internet Bandwidth service associated with Customer's Data Centre Co-location/Internet Co-location agreement. The total credit will not exceed Customer's total monthly recurring Data Centre Internet Bandwidth charges. Customer may obtain no more than one credit per day, regardless of the number of Denial of Service SLA non-compliances during the day. Verizon will use trouble tickets and other appropriate Verizon records to determine, in its sole judgment, SLA compliance. Customer must request a credit from Verizon no later than 30 days after the Denial of Service attack occurred.

**Total SLA Credits for Data Centre Internet Bandwidth and Space**

The total amount of credits under all of the above SLAs for which Customer may be eligible in any month will not exceed the Verizon monthly recurring charge for the affected Data Centre Co-location.

**Other Data Centres:**

**U.S. Data Centre Co-location for Standard and Advanced Data Centres**

The service level agreements associated with Data Centre Co-location for Standard and Advanced Data Centres depend on the connectivity that customers obtain in conjunction with the Standard and Advanced Data Centres. The SLA above does not apply to Standard and Advanced Data Centres. Please contact your Verizon account representative to obtain a copy of the SLA that may be applicable to the network connectivity selected.

## 6.8 Storage SLA Sample Document #8 - Data Centre SLA

### 6.8.1 Why this SLA is a good example

This SLA is very comprehensive in terms of outlining what QoS and what service levels are available. It takes a pick and mix attitude towards services so in that sense it is very much aimed at technical managers who know what services they need. Other services that stand out are:

- Monitoring
- Problem severity ratings
- Outline of support response time
- Pick and mix services list

The IRT data centre is part of the Stanford University IT services dedicated to the Medical Campus. Since it supports a variety of users, such as:

- Students
- Practise areas
- Schools

The Data centre has produced a very flexible approach to service its users and this is reflected in the SLA. <http://med.stanford.edu/irt/datacenter/contact.html>

### 6.8.2 What is the range in the key variables between bad and good

Back-up	Acceptable
Retention of files	Good
Security	Good

#### 6.8.2.1 What improvements we'd recommend to make it perfect

Through the SLA the IRT data centres has provided its clients with flexibility in terms of setting the QoS. Most of the SLA is formulated for monitoring, crisis management and multiple client requirements.

That does mean that the SLA is not particularly focused on supplying services for high-end clients or clients with archive requirements. Being based on medical clients most of the applications would be mission critical services but not require extensive storage and access capacity.

The blocks of data generated from video archives would be large compared with medical data. Even considering medical imaging, video archives would be larger and require much quicker access to material and the movement of these assets around the infrastructure. Improvements in the SLA to support different clients could include:

- Data storage available in chunks
- Information on connectivity within the data centre
- Information on tape back-up and other mission critical services

### 6.8.3 Service Level Agreement IRT Data Centre

#### 6.8.3.1 Overview

This Service Level Agreement (SLA) documents the agreement between [Client] and the IRT Data Centre for delivery of Data Centre services including services delivered, levels of service, communications, and pricing. This agreement is in effect from [start\_date] to [end\_date] unless otherwise modified by an amendment. All terms are in effect until modified by an amendment.

Amendments can be added to the agreement at any time that the parties agree. If there are substantial service changes, then some time may be required to implement. The timing of the amendment will be included in the amendment. Changes to the agreement that result in changes in charges may require 30 days to implement.

Either party can terminate this agreement in whole or in part with 30 days notice. The SLA is reviewed on its anniversary. Billing rates may be adjusted based on service level changes.

#### 6.8.3.2 Warranty and Liability

It is the mission of the IRT Data Centre is to provide high quality, cost effective data centre services to the Bio-Medical Community at Stanford.

We commit to protecting the equipment and data supported under this SLA from deliberate damage from IRT Data Centre or other persons provided access to the equipment by IRT Data Centre. However, we will not be held liable for and damage to equipment owned by the Department or data loss that occurs due to accidental actions by IRT staff or other persons.

#### 6.8.3.3 Services Provided to [Client]

This table indicates which services are to be included in this SLA. Pricing of services is via the IRT Data Centre pricing model and attached as an amendment to this SLA.

	Service	Comments
	One Time Services	
	Rack & Computer Installation	
	Backup Implementation	

	Firewall Configuration	
	Ongoing Services	
	Server Hosting	
	Backup and Recovery	
	Unix System Administration	
	Windows System Administration	
	Application Administration	

### **System Availability**

Systems will be available 7X24 except for regularly scheduled maintenance downtime. The downtime maintenance schedule will be negotiated with each client and will occur between 7am and 7pm. Clients will be given at least three (3) business days notice of any scheduled downtime.

The Data Centre is staffed with professional systems administrators from 8 am to 7 pm on workdays. The systems administrators are on call 7X24 for system failures.

### **System Monitoring**

Basic operating monitoring, periodically testing systems for proper functioning, is provided for all systems housed in the Data Centre. The monitoring, using BigBrother, pages the on-call systems administrator when error conditions are detected. Basic monitoring can be viewed at <http://crawlspace.stanford.edu:8000/bb>. External operating monitoring can be arranged through a contract with RedAlert who provides external monitoring. This can be arranged with the client paying the fees (approximately \$25/month/url) for this service.

Usage monitoring provides users with statistics on web site "hits". The Data Centre maintains a WebTrends server for this purpose. Data from the WebTrends server is available to clients on a monthly basis.

### **System Notifications**

The Data Centre will provide a set of email lists for each server and application. The membership of these is determined and maintained by the client. The lists are:

- [system]-info
  - o Will be notified of system logged messages on the operational status of the system.
- [system]-announce
  - o Will receive all Data Centre messages about planned maintenance, systems outages, or other events.
- [system]-[application]-info
  - o Will be notified of system logged messages on the operational status of the application.
- [system]-[application]-announce
  - o Will receive all Data Centre messages about planned maintenance, systems outages, or other events

### **Change Management Process**

All requests for changes to systems or applications, whether originated by the client or by IRT Operations staff must go through the IRT Data Centre change management process for approval. The process starts with a request submitted via HelpSU. Requests will be logged then sent via email to the authorized Client for approval. The Client will return the request via email with approval or denial of the request.

With the exception of emergencies, requests will not be done without Client approval. In the case of an emergency, the client will be contacted as quickly as feasible and informed of the changes.

#### ***Communications Methods***

##### **Standard Requests**

All standard requests for account changes or other non-emergency requests must be submitted via HelpSU <http://Helpsu.stanford.edu>. The request must include:

- Client Name
- System Name
- Application Name
- Nature of the Request,
- Date the Change is Needed
- Problem Severity (level 1, 2, 3 or 4)

##### ***Emergency Requests***

Emergency requests must be submitted either in person or via the Data Centre hot line at (650) 723-8390. If the call transfers to voice mail leave a message which includes your name and a call back phone number. The on call Systems Administrator will be automatically paged within 5 minutes and will return your call.

##### ***Escalation***

If problems are not resolved to the client's satisfaction by the above methods, the client can escalate the response by contacting IRT management in the following order: 1. Associate Director, Data Centre 2. Director, Client Services 3. Chief Information Officer.

##### ***Systems Request Authority***

We will maintain four lists to grant people authority. These lists are in the client CCN and are as follows:

- Master authority list
  - o List of people who can add or remove people from the remaining lists.
- Account change authority list
  - o List of people who can request Account changes.
- Systems changes authority list
  - o List of people who can request System changes.
- Application changes authority list
  - o List of people who can request Application changes.

#### 6.8.3.4 Problem Severity and Response Time

IRT Data Centre will respond to problems according to the following severity levels:

Problem Severity	Initial Response Time	Follow-up w/Client
Level 1 – normal business hours	Respond to client within 30 minutes of notification 100% of the time.	Hourly
Level 1 - off hours	Respond to client within 1 hour of notification 95% of the time	Hourly
Level 2 - normal business hours	Respond to client within 4 hours of notification 100 % of the time	Daily
Level 3 – normal business hours	Respond to client within 1 working day of notification 100% of the time	Weekly
Level 4 –normal business hours	Respond to client within 3 working days of notification 100% of the time	Monthly

##### **Severity Level 1:**

Major Business Impact – defined as a problem that causes complete loss of service to the Client production environment and work can not reasonably continue.

Workarounds to provide the same functionality are not possible and can not be found in time to minimize the impact on the Client’s business. The problem has one or more of the following characteristics:

- A large number of users cannot access the system.
- Critical functionality is not available. The application cannot continue because a vital feature is inoperable, data cannot be secured, backed up, etc.

##### **Severity Level 2:**

Significant Business Impact – this classification applies when processing can proceed but performance is significantly reduced and/or operation of the system is considered severely limited. No workaround is available, however operation can continue in a restricted fashion. The problem has one or more of the following characteristics:

- Internal software error, causing the system to fail, but restart or recovery is possible.
- Severely degraded performance.
- Some important functionality is unavailable, yet the system can continue to operate in a restricted fashion.

##### **Severity Level 3:**

Minor Business Impact – a problem that causes minimal loss of service. The impact of the problem is minor or an inconvenience, such as a manual bypass to restore product functionality. The problem has one or more of the following characteristics:

- A software error for which there is a Client acceptable workaround.

- Minimal performance degradation.
- Software error requiring manual editing of configuration or script files around a problem.

**Severity Level 4:**

No Business Impact – a problem that causes no loss of service and in no way impedes use of the system. The impact of the problem has one or more of the following characteristics:

- A software enhancement for which there is a Client acceptable workaround.
- Documentation error.

6.8.3.5 Data Centre Policies

See IRT Data Centre Policies document for all policies including Security, Change Management, Scheduled Maintenance, Backup and Restore Procedure, Appropriate Use Policy, and Hardware Requirements.

6.8.3.6 Billing

IRT Operations bills on a monthly basis, directly charging the appropriate client account with the agree upon charges.

6.8.3.7 Signatures

This Service Level Agreement has been read and accepted by the authorized representatives of IRT Operations and [Client].

Signature (IRT)      Date	Signature ([Client])      Date
Name	Name
Title	Title

## 7 Storage Service Level Agreement Template

### 7.1 Overview

The document below provides a template for an SLA to fit the client needs and requirements based on the review section of this report. It provides a general tool to define a relationship between a provider and a client.

The recommendations made in regards to specific data storage solutions in this report should be taken into consideration if using the template SLA.

## 7.2 Applicable range

The applicable range for this document would be:

- Managed data storage solutions
- NAS
- SAN
- Back-up solutions
- Data storage in Data centres

## 7.3 Data Storage SLA Template

### 7.3.1 Purpose

The purpose of this Support Service Level Agreement (SLA) is to formalise an arrangement between [service provider] and [the client] to deliver specific support services at specific levels of support and at an agreed-upon cost. This document is intended to provide details of the provision of data backup and retrieval operations to [the client]. This SLA will evolve, with additional knowledge of the client requirements as well as the introduction of other services into the support portfolio provided to [the client].

### 7.3.2 Scope of Agreement

The following services are provided in response to the transfer of data backup and retrievals from [the client] to [service provider].

### 7.3.3 Services Automatically Provided Under This Agreement

The following services are provided in response to the transfer of data backup and retrievals from [the client] to [service provider]:

- Data backups: Defined as the transport of data from data sources to the [service provider]'s designated location.
  - o Operated by [the client or outsourcing provider] designated staff. The backup operation must be performed manually, automatically, or a combination thereof by designated staff of [nominated organization].
  - o Size: A backup operation can be hosted by [service provider] with the following criteria:
    - a. Size: **XXX** GB allocated to storage for this SLA
  - o Data scope: Will be limited to specified data sources. These systems are listed by location and specified data sources. This will be a separate document called “**Data Sources Manifest**” and will be prepared per site or per agreement.
  - o Availability: Backup availability is determined by the Scheduled Maintenance section.



- Data retrieval: [service provider] will guarantee recoverable data within three hours of request via the provided retrieval mechanism.
  - o Retrieval delay or failure: For every MB of data intending to be retrieved that is not recovered for over three hours, the [service provider] will provide (x)% of the periodic cost of the backup and retrieval service to [the client] in the form of credit to current billing period per hour. One hundred percent of the periodic backup and retrieval service cost will be credited forward in the event of a retrieval that is unfulfilled beyond 24 hours or if the retrieval delay calculation exceeds 100%.
  - o Perpetual retrieval failure: If [the client] incurs two or more consecutive retrieval failures, [the client] has the option to cancel this SLA with no further obligation and with all payments to [service provider] halted and current payments refunded. [optional]

### 7.3.4 Requests for Support Specifically Covered Under This Agreement

- Application monitoring: Every effort will be made to conduct periodic monitoring of production applications to assess application availability.

#### **Other services provided under this agreement:**

- Scheduled maintenance: Scheduled maintenance is permitted by [service provider] under the following circumstances:
  - o Advance notification: [the client] will receive e-mail notification no less than (24 – 72) hours before the commencement of the scheduled maintenance. At least two designated members of [the client]'s staff will receive this notification.
  - o Time requirements: Scheduled maintenance will not exceed eight hours of time where retrievals are not available. Backup operations will not be impacted by scheduled maintenance by more than 12 hours.
- [If using Web-based backup] Connectivity and compliance: This agreement will state that each party will be responsible for the following:
  - o [the client]: Connectivity to the Internet in order to connect to [service provider]'s Web-based interface to upload or retrieve content to the data repository.
    - Connectivity performance: Minimum performance at full T1 Internet speeds [1.4 MB/s] with exclusive access for data backups and retrievals.
  - o [service provider]: Connectivity to the Internet to host connections from [the client] to perform backup and retrieval operations.
    - Connectivity performance: Carrier-class connectivity to allow [the client] to connect at full T1 throughput.

#### **Services not provided under this agreement include:**

- Addition of non-static data to backup and retrieval arrangement: Any usage of transactional systems (SQL, Oracle, DB2, Exchange, GroupWise, etc.) or online data that is not static data.
- Local data: Depending on infrastructure, local data may reside on client machines. This agreement encounters only resources listed in the Data scope section.

## 7.3.5 Changes to Service Level Agreement

### **Termination of agreement**

In the event that [the client] wishes to terminate this agreement, a 90-day written notice of intent to terminate must be delivered by [the client] to [service provider].

In the event that [service provider] wishes to terminate this agreement, a 120-day written notice of intent to terminate must be delivered by [service provider] to [the client].

### **Amendment to agreement**

Any amendment to the Terms and Conditions of this agreement would require the approval of [the client] and [service provider] management who signed the Statement of Work in Appendix A. The amendment of the agreement would take place through a CCN to this agreement and the recording of that CCN in Appendix A of this agreement.

There will be an opportunity on a quarterly basis to make adjustments to this SLA. [The client] and [service provider] should work together to make changes at that time.

### **Changes in Connectivity Interfaces for Backups/Retrievals**

New interfaces/enhancements by [service provider] to the application or other mechanism critical to utilising this service will require the following for [the client] by [service provider]:

- Advance notice: At least a 60-day notice of a forthcoming interface/version change.
- Environment coexistence: A 120-day period of coexistence with a previous version.
- Duplicate physical media: A supplemental physical media offload pre-migration of [the client] data of two weeks of backup operations before migration.

## 7.3.6 Levels of Effort

Levels of effort (LOE) to address problem tickets will be reviewed and adjusted accordingly for all new applications and versions/enhancements implemented, or applications decommissioned, during the term of this agreement. All changes will be conducted by [service provider] and [the client] representatives, with a CCN made to this agreement.

## 7.3.7 Renewal of Agreement

This agreement will be renegotiated for the following year by [the client] and [service provider] at the end of the term of this contract.

## 7.3.8 Processes and Procedures Related to This Agreement

In order for best practise in monitoring and measurements of QoS [service provider] shall set fort a process for each service of;

- Standard
- Process
- Remedy

This part of the SLA will be supported by the Statement of work.

**Standard**

Under this heading each service shall be outlined according to what [service provider] normally would include in the service.

**Process**

Under this heading the process for setting up each service shall be outlined for the benefit of the client. It will include time tables and standard procedures that each client will receive.

**Remedy**

Under this heading [service provider] will outline the credit awarded to the client in the case of not complying with the standard or the process.

### 7.3.9 CCN

There are currently no CCNs to this agreement. Any future CCNs will be referenced in the Statement of Work through a CCN Log in Appendix A.

### 7.3.10 Metrics

### 7.3.11 General Terms and Conditions

**Term of agreement**

This agreement is in effect upon the date of acceptance of this agreement and ends on the latest date specified in any terms of the Statement(s) of Work submitted to [the client].

**Organisations**

This agreement is between [service provider] and [the client], as named on the cover of this agreement.

**Approvals**

In order to make this agreement operational, approvals as per Appendix B of the Statement of Work must be in place.

**Key Contacts**

Key contacts are shown in Appendix B of the Statement of Work.

**Dependence on Other Organisations**

[Service provider] is dependent on other internal groups within [the client] of services and external suppliers in providing application support services to [the client]. [The client] will manage the interface into those suppliers as it relates to the provision of services under this agreement.

The list of organizations and vendors that [service provider] is dependent on may change during the term of this agreement.

### 7.3.12 Appendix A

- The Service Provider and the Customer shall discuss any change to this agreement (Change) proposed by either and such discussion shall result in either:
  - o a written request for a Change by the Customer; or
  - o a written recommendation for a Change by the Service Provider,

- or, if neither the Customer nor the Service Provider wishes to submit a request or recommendation, the proposal for the Change will not proceed.
- Where a written request for a Change is received from the Customer, the Service Provider shall, unless otherwise agreed, submit a Change control note (CCN) to the Customer within the period agreed between them or, if no such period is agreed, within five Business Days from the date of receipt of such request for a Change.
- A written recommendation for a change by the Service Provider shall be submitted as a CCN direct to the Customer at the time of such recommendation.
- Each CCN shall contain:
  - the title of the Change;
  - the originator and the date of the request or recommendation for the Change;
  - the reason for the Change;
  - the full details of the Change, including any specifications and user facilities;
  - the price, if any, of or associated with the Change;
  - a timetable for implementation, together with any proposals for acceptance of the Change;
  - the impact, if any, of the Change on other aspects of this agreement, including:
    - the Charges;
    - the contractual documentation; and
    - staff resources;
  - the date of expiry of validity of the CCN (which shall not be less than 30 working days); and
  - provision for signature of the CCN by the Customer and the Service Provider.
- For each CCN submitted, the Customer shall, within the period of validity of the CCN as set out in paragraph of this Schedule 6:
  - allocate a sequential number to the CCN;
  - evaluate the CCN, and as appropriate either:
    - request further information; or
    - approve the CCN; or
    - notify the Service Provider of the rejection of the CCN; and
  - if approved, arrange for two copies of the approved CCN to be signed for or on behalf of the Customer and the Service Provider. The signing of the CCN shall signify acceptance of a Change by both the Customer and the Service Provider.
- Once signed by the Customer and the Service Provider in accordance with paragraph 5 of this Schedule 6, the Change shall be immediately effective and the Customer and the Service Provider shall perform their respective obligations on the basis of the agreed amendment.

## 7.3.13 Appendix B

### *Roles and Responsibilities*

#### 7.3.13.1 [The client]

[The client] has the following general responsibilities under this agreement:

- [The client] will conduct business in a courteous and professional manner with [service provider].
- [The client]'s users, clients, and/or suppliers using the applications stated in the Statement of Work will use the appropriate contact to request support.

#### 7.3.13.2 [Service provider]

[service provider] has the following general responsibilities under this agreement:

- [service provider] will conduct business in a courteous and professional manner with [the client].
- [service provider] will log all backup and retrieval activities from [the client].
- [service provider] will attempt to resolve access, backup, or retrieval problems over the phone on first call within 30 minutes of first request.
- [service provider] will escalate support request to next level of internal support within [service provider] upon approach of established resolution targets.
- [service provider] will provide all information required to scheduled maintenance as soon as possible.
- [service provider] will protect data from [the client] in top-tier vault facility with physical media offload protected off-site.
- Data belonging to [the client] and access to said data will be protected by [service provider] with password protection, digital certificates, Internet encryption, VPN or equivalent technologies, and physical access protection.

There are several roles deployed within [service provider] that are integral to the provision of support services to [the client]. These roles include the following:

- [Enter appropriate roles here]

### 7.3.14 Terms of Agreement

The signatures of this document indicate agreement to its content, that it is valid, has achievable objectives, and represents the intent of Information Services to meet the system needs of (Business Area) as they relate to the (Name) application(s).

This document is controlled by (Name), senior director, Information Services and (Mgmt Name/Title) of (Business Area). Any modifications to this agreement require the review and approval of both parties. Inputs relative to the content or distribution of this document should be forwarded to the director of Information Services.

This document will remain in effect until replaced with an updated version. It will be reviewed annually for currency, accuracy, and completeness. The next review is scheduled for (Month, day) 200\_\_.

## 8 Conclusions

Eight variations on storage service level agreements have been presented, with indications of strengths and weaknesses, and recommended area of application. There are various reasons for using a service provider for storage, including cost, expertise, security. The general idea is to give the job to someone who is highly professional and experienced, and offers a good price – and let them worry about it. Life should then be simpler.

As shown by the documents presented, it isn't all that much simpler. Using a service provider has a technology and complexity all its own. We hope the information presented in this document gives the basic information necessary to work with service providers in an informed and professional fashion.