Internet and Internet2
Service Level Agreement

February 7th 2008
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1. Parties to the Agreement

This service level agreement is valid from the start date to the end date listed below.

**Agreement Period Table 1**

<table>
<thead>
<tr>
<th>Start Date</th>
<th>End Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 1, 2007</td>
<td>June 30, 2008</td>
</tr>
</tbody>
</table>

By signing below, all parties agree to the terms and conditions described in this agreement.

**Service Provider(s) Signatures**

**Service Providers Table 2**

<table>
<thead>
<tr>
<th>Print Name</th>
<th>Department</th>
<th>Telephone</th>
<th>Date</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Customer Signatures**

**Service Level Agreement Customers Table 3**

<table>
<thead>
<tr>
<th>Print Name</th>
<th>Department</th>
<th>Telephone</th>
<th>Date</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3
2. Agreement

The purpose of this Agreement is to define in quantitative terms the Internet and Internet2 services provided to a customer. Typically, the agreement specifies service hours, availability, support levels or duration and any restrictions on support.

2.1.1 Services Provided

Information Technology Services (ITS) provides the Vanderbilt community with redundant, high bandwidth, high availability, connectivity from the Vanderbilt data network to the Internet (commercial) and Internet2 (research).

The following service(s) are provided to the customer by this agreement (See Appendix B for Network Diagram.).

2.1.2 Internet Access

2.1.2.1 This service connects the Vanderbilt data network to the commercial Internet.

2.1.2.1.1 Internet access is considered available when data packets are being transferred to and from the Vanderbilt data network perimeter and Vanderbilt’s external Internet Service Providers (ISPs).

2.1.3 Internet2 Access

2.1.3.1 This service connects the Vanderbilt data network to the Internet2 network.

2.1.3.2 Internet2 access is considered available when data packets are being transferred to and from the Vanderbilt data network perimeter and Vanderbilt’s external Internet2 Service Provider.

The following services are not provided under this Agreement:

- Individual devices connecting to the Vanderbilt internal data network.
- The Vanderbilt internal data network.
2.2 Service Objectives

The processes, procedures and service levels in this Agreement for the Internet and Internet2 connection are followed during the service hours of 00:00:00AM to 23:59:59PM Monday through Sunday.

The Internet and Internet2 service(s) will be available 99.95% of the time during the defined service hours. The following table summarizes the available service windows:

<table>
<thead>
<tr>
<th></th>
<th>Days</th>
<th>Hours</th>
<th>Weekends</th>
<th>Holidays</th>
</tr>
</thead>
<tbody>
<tr>
<td>Availability</td>
<td>7</td>
<td>24</td>
<td>All</td>
<td>All</td>
</tr>
<tr>
<td>Planned Outages</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mean Time to Resolve</td>
<td>-</td>
<td>.03 (1.8 min)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mean Time Between Failures</td>
<td>49</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Recovery Time Objective</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Recovery Point Objective</td>
<td>-</td>
<td>4</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Note: The (-) hyphen denotes items that are not applicable.

- This service is available 24 hours per day 7 days a week.
- Maintenance to support this access does occur, but outages are not expected.
- Incidents are typically resolved in less than 2 minutes.
- This service runs consistently with no interruptions or degradations to service for approximately 49 days at a time.
- The business process does not fully function if this service is down.

2.2.1 Requesting Service, Service Call and Incident Reporting

All customer requests for service, service calls and the reporting of incidents are communicated through the ITS Help Desk at 3-9999. The service provider will resolve service related incidents or requests by the customer based upon the impact to the services provided by this Agreement.

2.2.2 Service Categories

The following table outlines some examples of service related incidents and their identified impacts to these services.

---

1. This objective is based on historical data
2. This objective is specific to Disaster Recovery and Business Continuity
Impact Examples Table 5

<table>
<thead>
<tr>
<th>Impact</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top</td>
<td>• Internet is completely unavailable</td>
</tr>
</tbody>
</table>
| High   | • Internet2 is completely unavailable  
|        | • Internet connectivity is broadly degraded |
| Medium | • Internet2 connectivity is broadly degraded |
| Low    | • Internet connectivity is slightly degraded, general population is not aware  
|        | • Internet2 connectivity is slightly degraded, general population is not aware |

The following table summarizes the service level objectives based upon the impact to the services provided by this agreement:

*Priority Based Service Level Objectives Table 6

<table>
<thead>
<tr>
<th></th>
<th>Top</th>
<th>High</th>
<th>Medium</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Time to Resolve*</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>24</td>
</tr>
</tbody>
</table>

*These times are expressed in hours.
Note: The (-) hyphen denotes items that are not applicable

2.2.3 Exclusions

ITS cannot guarantee “Mean Time to Resolve” timeframes for the following situations:

- Systems that are defined as being in a disaster recovery mode
- Projects that take higher precedence than this service, as deemed by Vanderbilt officers, which could cause changes to this service. Changes or outages to this service will be communicated according to section 2.2.6 of this agreement.

2.2.4 Escalation Procedures

All incidents with Internet 1 and Internet 2 are considered high priority and should be reported to the ITS Network Operation Center (NOC) @ 322-2954 (24x7) (365). The NOC will then contact the network technician on call. As soon as the network technician is informed it is an issue with Internet 1 and/or Internet 2 they will escalate to the network engineer on call. The network engineer on call will assess the situation and either resolve the issue remotely or onsite. The network engineer will also inform the Director of Network Services.
2.2.5 After Hours Support

After hours support is defined as any incident or disruption that is reported outside of normal service hours. The normal service hours are defined in the section 2.2 of this agreement (24/7/365). For time to resolve, see section 2.2.

2.2.6 Outage Notifications

Planned outages are communicated to the customers affected by the outage by the Service Provider. Depending on the breadth of the outage and the impact, these communications may be done by phone call or by email. The area’s Service Delivery Manager could also be utilized with communications.

2.2.6.1 Planned Outages

All planned outages will go through the Service Providers change management process. Changes will be communicated to the affected customers by the Service Provider by phone or email with 5 day notice in advance.

2.2.6.2 Unplanned Outages

The service provider will communicate unplanned outages as time permits. ITS Partner Support will be contacted by the Director of Network Services to coordinate communication to the community.

2.2.7 Scheduled Maintenance

The services provided require regularly scheduled maintenance in order to meet the stated service windows and service level objectives. During this scheduled maintenance, the services provided in this Agreement will be unavailable to the customer. In order to decrease the amount of time that the service(s) are unavailable, a regularly scheduled maintenance interval will be setup that coincides with the maintenance schedules of related services and Operational Level Agreements.

<table>
<thead>
<tr>
<th>Service</th>
<th>Support Team</th>
<th>Maintenance Schedules</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network Maintenance</td>
<td>Service Provider</td>
<td>*Sunday, Tuesday, Thursday between 00:00-6:00 am</td>
</tr>
</tbody>
</table>

*Prior notice of 10 days for scheduled maintenance.

**Even when maintenance occurs users should see no outage.
2.2.8 Constraints

The Service Provider receives service to the internet from a third party vendor. Therefore, community service to the internet could be impacted by outages by these vendors at no fault of the Service Provider.

2.2.9 Measuring Service Results

The following metrics will be setup and maintained by the service provider to ensure IT service delivery to the customer.

<table>
<thead>
<tr>
<th>Metric</th>
<th>Definition</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latency</td>
<td>time delay between the moment something is initiated, and the moment one of its effects begins or becomes detectable</td>
<td>50ms per contract</td>
</tr>
<tr>
<td>Packet Loss</td>
<td>Occurs when one or more packets of data traveling across a computer network fail to reach their destination</td>
<td>Less than 0.5%</td>
</tr>
<tr>
<td>Jitter</td>
<td>Unwanted variation of one or more signal characteristics in electronics and telecommunications</td>
<td>Less than 30 ms</td>
</tr>
<tr>
<td>Utilization</td>
<td>Proportion of the system's resources which is used by the traffic which arrives at it</td>
<td>Less than 90%</td>
</tr>
<tr>
<td>Availability</td>
<td>Proportion of time a system is in a functioning condition</td>
<td>Greater than 99.95%</td>
</tr>
</tbody>
</table>

3. Overview

This Service Level Agreement (SLA) between the Vanderbilt community and ITS establishes a commitment for the Internet and Internet2 access as detailed in this Agreement.

The summary section defines the specific service level objectives for the service(s) provided under this agreement while the overview provides additional details on who the customers are that utilize the service(s).
3.1 Scope

Information Technology Services (ITS) provides the Vanderbilt community with redundant, high bandwidth, high availability, connectivity from the Vanderbilt data network to the Internet (commercial) and Internet2 (research).

The following service(s) are provided to the customer by this agreement (See Appendix B for Network Diagram.).

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3.1.2.2 Internet2 access is considered available when data packets are being transferred to and from the Vanderbilt data network perimeter and Vanderbilt’s external Internet2 Service Provider.

The following services are not addressed under this Agreement:

- Individual devices connecting to the Vanderbilt internal data network.
- The Vanderbilt internal data network.
- Enterprise services. Examples of enterprise services would be Dynamic Host Client Protocol (DHCP) or Domain Name Services (DNS)

3.2 Customers

This service is accessible by all faculty, students and staff within the Vanderbilt community. Consultants and outside vendors may also have access on a limited basis.

3.3 Objectives

The primary goal of this Agreement is to obtain mutual agreement that the proper procedures, requirements and service levels are in place to provide consistent service support and delivery to the customer by the Service Provider(s).

The objectives of this agreement are to:

- Provide clear reference to service ownership, accountability, roles and/or responsibilities
- Present a clear, concise and measurable description of the services offered to the customer
- Match perceptions of expected service offerings with actual service support and delivery.

3.4 Service Level Reviews

This agreement will be reviewed on an interval no greater than one year.

3.5 Service Requirements

3.5.1 Customer

Customers will

- Adhere to Vanderbilt's Computer Privileges and Responsibilities Policy
- Adhere to Electronic Communications Policy HR-025
- Follow appropriate procedures as outlined in this document

3.5.2 Service Provider

The Service Provider will

- Maintain appropriately trained staff
- Communicate, in writing issues, regarding service levels, change management, and so forth.
- Meet response times
- Maintain network hardware within standard life cycle

3.6 Agreement Changes and the Dispute Resolution Process

All requests for changes to this agreement will be done using the Change Management process.
Appendix A

Network Diagram
Appendix B

Network Availability Historical Charts

Network Availability 2007 - 2008 (7/1/2007 to current)

Network Availability 2006 - 2007 (7/1/2006 to current)
Appendix Z

Glossary of Terms and Abbreviations

Internet1 – this service connects the Vanderbilt data network to the commercial Internet

Internet2 – this service connects the Vanderbilt data network to the Internet2 network

Latency—network latency is a measure of how fast a network is running. The term refers to the time elapsed between the sending of a message to a router and the return of that message.

Packet Loss—occurs when one or more packets of data traveling across a computer network fails to reach their destination.

Jitter—describes the variation in the time it takes subsequent data packets to arrive over a network.

Utilization—is the percentage of the total use of bandwidth.

Availability—is the probability a network can perform its required function.