UCLA
Communications Technology Services/
Campus Backbone Network Users

Campus Backbone Network Connection
Service Level Agreement

Effective Date _____________________
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1.0 SCOPE

The UCLA Campus Backbone Network (CBN) is a "network of networks" connecting on-campus school, divisional and departmental networks. Connection to the CBN provides access to departmental campus computing resources, University of California system resources, and regional, national and international networks. The CBN provides transport for Internet Protocol (IP) communications. Other protocols can be supported if tunneled within IP by the connecting networks. Users are connected to the CBN via a school, division, and/or departmental Local Area Network (LAN) and the appropriate Backbone Network Access Equipment (BNAE). Individual workstations, computers, file servers, and/or gateways cannot be connected directly to the CBN. The BNAE is selected, purchased, maintained and owned by Communications Technology Services (CTS).

The following document serves as a service level agreement and outlines all services made available to UCLA CBN connection users.

2.0 SERVICES PROVIDED

The following services are to be provided by CTS.

2.1. Connection to the CBN via the campus fiber plant
2.2. Connection to the Internet and Internet2 via the CENIC operated CalREN network
2.3. Routing of IPv4 unicast and multicast packets between connected networks
2.4. Network management and monitoring to ensure high availability and reliability
2.5. Technical support to Network Coordinators (NCs) for the resolution of CBN related problems
2.6. Delegation of IP address space
2.7. Domain Name Service on a case-by-case basis
2.8. A Help Desk for problem reporting and resolution
2.9. One week advance notice of scheduled outages due to non-emergency maintenance
2.10. Notification via e-mail of changes in the CBN operational status

In addition, CTS will provide and maintain:

2.11. Redundant CBN routing and switching equipment
2.12. Redundant links connecting CBN network equipment
2.13. Maintenance contracts for CBN network equipment
2.14. On-site spares for critical CBN equipment
3.0 DEPARTMENTAL RESPONSIBILITIES

There are specific responsibilities that must be assumed by UCLA organizational units to ensure successful operation of the CBN. There is an expectation that each department will be technically self-sufficient and equipped to resolve its own LAN-related technical problems. Your understanding of these responsibilities and agreement to fulfill them forms the basis for the conditions under which your department will be connected to the CBN. CTS is available to assist your department in understanding and implementing these responsibilities, if needed.

3.1. Assume full responsibility for departmental network operations and maintenance.
3.2. Provide appropriate security for the departmental networks, servers, workstations, and other networked equipment – including compliance with all applicable University policies and guidelines (see http://www.icompass.ucla.edu/policies.htm for a listing of applicable IT policies and guidelines).
3.3. Designate a technically qualified liaison person as your NC to work with CTS. This person will act as the departmental representative for problems associated with the CBN. Departments are required to designate an alternate contact person for times when the NC is unavailable.
3.4. Keep departmental contact information for their NC and Alternate NC current. Updates are to be made at the NOC web site http://www.noc.ucla.edu/
3.5. Complete a LAN Support Profile and submit it with this agreement; this document must be updated and submitted to the CTS annually.
3.6. Provide guidelines to departmental users regarding policies and procedures for reporting problems to the department's NC.
3.7. Maintain accurate records of the departmental network to assist in problem resolution and troubleshooting.
3.8. Inform CTS, in advance, of changes to the departmental network which may affect other CBN users.
3.9. Provide responsible management and stewardship of delegated IP address space.
3.10. Ensure that interconnect cabling between departmental network and the CBN connection point is performed by CTS.
3.11. Upon successful completion of both planning and technical review, this Agreement will be effective for a term of one year from the date signed.
4.0 SERVICE LEVELS

4.1 Reporting

CTS shall provide regular reports to document CTS performance and compliance with the Service Levels. CTS will promptly investigate and correct failures to meet agreed upon service levels. During and following such investigations, CTS will advise the affected departments of the status of resolution efforts, and will document root causes and corrective actions taken in published outage reports.

4.2 Service Level Agreement Table

The table below outlines the Service Level Agreement performance expectations.

4.2.1. Service Level Measurements

The Service Level measurements as outlined in the Service Level Table are detailed below. Measurements are established per incident, except for availability and performance targets. Availability and performance targets are reported for each calendar month and fiscal year.

4.2.1.1. Time to Notify

The time between and event being observed or reported to the Network Operations Center and notification of an authorized departmental contact(s). Notification includes messages left via phone or e-mail when direct contact cannot be established.

4.2.1.2. Problem Status Update

Notification of problem resolution or an estimated time for problem resolution. Further notification, should the estimated time need revision, is provided prior to the estimated time in the most recently issued problem status update.

4.2.1.3. Severity Definitions

Severity One:

Severity one encompasses large-scale connectivity problems, such as an entire department or large portion thereof losing connectivity. Significant performance problems can also constitute a severity one problem, such as extremely low network performance for a large number of users.
Severity Two:

Severity two entails small-scale connectivity problems, such as a limited number of users experiencing connectivity problems. Wide spread performance problems that are not causing a complete work stoppage also fall within the realm of severity two.

4.2.1.4. Time to Resolution:

The time between and event being observed or reported to the Network Operations Center and the problem being resolved or mitigated.

4.2.1.5. Availability:

Availability is calculated as the percentage of time (in a given interval) that a service is functioning without active Severity One issues. The basic calculation for percent availability in a month is:

\[
Availability = \left(1 - \frac{\text{total time service is unavailable} - \text{total time service is unavailable due to exceptions}}{\text{total time in a month}}\right) \times 100
\]

Exceptions are defined as follows:

- Planned/Scheduled outages reserved for maintenance
- Department or third party changes in equipment and/or software revisions unless authorized and coordinated with CTS
- Outages due to customer activity.
- Force Majeure

4.2.1.6. Performance Measures:

CTS will make baseline reachability, throughput, packet loss, latency, and jitter measures across the campus backbone on a regular basis. The results of these measurements will be published via the web.

A measurement system will be implemented that tests each of the listed performance metrics on a continuous basis. The primary measurement points will be at the campus distribution routers which provide backbone connectivity to departmental networks.
Service Level Table (Figure 1):

<table>
<thead>
<tr>
<th>Service Area</th>
<th>Measurement (Reported Monthly)</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Business Hours(^1)</td>
</tr>
<tr>
<td><strong>Fault Management</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Problem Notification</td>
<td>Time to Notify</td>
<td>30 min</td>
</tr>
<tr>
<td>Problem Status Update</td>
<td>Time to Notify</td>
<td>1 Hour</td>
</tr>
<tr>
<td>Problem Resolution</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Software(^3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Severity 1 Issue</td>
<td>Time to Resolution</td>
<td>2 Hours</td>
</tr>
<tr>
<td>Severity 2 Issue</td>
<td>Time to Resolution</td>
<td>4 Hours</td>
</tr>
<tr>
<td>Hardware(^4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Severity 1 Issue</td>
<td>Time to Resolution</td>
<td>4 Hours</td>
</tr>
<tr>
<td>Severity 2 Issue</td>
<td>Time to Resolution</td>
<td>8 Hours</td>
</tr>
<tr>
<td><strong>Performance Management</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Availability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CBN Connectivity</td>
<td>Time Available (Minus Exceptions)</td>
<td>99.5%</td>
</tr>
<tr>
<td>Internet and Internet2 Connectivity</td>
<td>Time Available (Minus Exceptions)</td>
<td>99.5%</td>
</tr>
<tr>
<td><strong>Performance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Packet loss across core</td>
<td>Distribution Router to Distribution Router</td>
<td>&lt; 0.1%</td>
</tr>
<tr>
<td>Latency across core</td>
<td>Distribution Router to Distribution Router</td>
<td>&lt; 5 ms</td>
</tr>
<tr>
<td>Jitter across core</td>
<td>Distribution Router to Distribution Router</td>
<td>&lt; 1 ms</td>
</tr>
</tbody>
</table>

\(^1\)Business Hours are 8am - 5pm, Monday – Friday excluding holidays.

\(^2\)Non-business hours are all hours outside the Business Hours.

\(^3\)Software problems refer to failures that are rooted in software, firmware, or associated configuration options that can be resolved remotely.

\(^4\)Hardware problems refer to failures of a physical nature, such as logic board, or the physical topology (i.e., cabling) and require on-site repair services.
4.3 Escalation Procedure

If the Network Operations Center fails to meet its obligations under this agreement, or a problem incident is of unusual severity, the following escalation procedure has been established to expedite resolution:

Contact the Manager, Network Operations, Scott Harvey:
(310) 206-5346 (office)
(310) 962-4981 (mobile)
(310) 915-3033 (pager)

If the Manager, Network Operations is unavailable or cannot resolve the issue, contact the Associate Director, Network Engineering and Operations, Michael Van Norman:
(310) 206-5579 (office)
(310) 613-5579 (mobile)
(310) 915-3220 (pager)

If the Associate Director, Network Engineering and Operations is unavailable or cannot resolve the issue, contact the Director, Communications Technology Services, Michael Schilling:
(310) 825-5125 (office)
(310) 930-9473 (mobile)
(310) 636-4300 (pager)
5.0 CBN MAINTENANCE

Hardware and software upgrades to the CBN are made at the discretion of CTS and will be made with a minimum disruption of service.

Non-emergency maintenance activities that will cause an interruption of service will be performed, barring any special circumstances that require coordination of alternate dates and/or times, on Sundays during the hours of 0700 – 1300.

Non-emergency maintenance activities that are not expected to cause an interruption of service will be performed on Monday through Saturday during the hours of 0500 – 0700.

Emergency maintenance may be scheduled at any time in accordance with the severity and impact of the need.

For all scheduled maintenance, notifications noting the date, day, time, and description of the work involved will be sent out via e-mail to the Network Coordinators. Notifications for non-emergency maintenance activities will be sent a minimum of one week prior to the scheduled maintenance period. Notification of emergency maintenance activities will be sent as much in advance as possible on a best-effort basis.

6.0 NETWORK ACCESS CHARGES

In addition to interconnect cabling costs, which vary, the department will incur a one-time network connection charge. This charge is for costs associated with the acquisition, installation, operation, and maintenance of the network equipment required for the connection to the Campus Backbone Network. Costs of each primary connection are determined by the speed and connection points.

7.0 CUSTOMER SATISFACTION MEASUREMENT

In order to acquire feedback and identify customer needs, an online survey will be administered in order to evaluate services performed by CTS on an annual cycle. Customers are encouraged to provide their feedback during any point in time. Customers may do so by contacting CTS Quality Management and Organizational Performance unit at quality@cts.ucla.edu