

# Security

## Overview

LSST has two apparently conflicting goals:

- **Openness** - generous access to data by scientists and the public
- **Security** - reliable infrastructure and long-term data integrity

As a large and publicly exciting project, LSST can expect to attract many kinds of interest, ranging from scientific curiosity to active attacks. We must ensure that we:

- Encourage engagement by providing access to data
- Prepare for both attacks and disasters
- Ensure the functioning of our essential data-collection pipeline
- Protect the long-term integrity of our data

## Important Dates

- May 15 - Annotated Outline (for All Hands Mtg)
- August 2008 - Review draft for inclusion in NSF PDR
- October 2008 - NSF PDR due

## Types of Security

1. Physical Security -- buildings, networks, cables, electric power, physical machines
2. System-level Security -- operating systems, processes, file systems, local user accounts & root access
3. Applications -- services, registries, trust networks, bandwidth management
4. User Access -- personal workspaces, job management, user interfaces

## Sites

See also a [table of LSST security realms](#).

- Mountaintop
  - ◆ Network access *strictly through base facility*
  - ◆ Important roles: Buffering, Network transfer to Base Facility
- Base facility (at La Serena)
  - ◆ [Who *can* access?]
  - ◆ *No public access* (all through collocated Data Access Center)
  - ◆ Nightly processing (real-time)
  - ◆ Data transferred to Archive Center
- Archive Center (at NCSA)
  - ◆ [Who *can* access?]
  - ◆ Data Archive
  - ◆ Primary data processing
- Data access Centers
  - ◆ Operated by LSST

1. Collocated with the Archive Center (NCSA)
  2. Collocated with Base Facility (La Serena)
  3. San Diego
  4. Education and Public Outreach (EPO)
- ◆ Possibly others, independently funded

## Shared Facilities

Where LSST shares a site, we can expect to collaborate with other organizations on security, especially physical security.

- NCSA
  - ◆ The LSST Archive Center will be housed in NCSA's Petascale Computing Facility, which will also house the NSF supercomputing cluster Blue Waters, expected to come online in 2011.
  - ◆ NCSA's security policy document is linked below.

[Needed: list of other organizations whose facilities we will share]

## Threats

What threats does LSST need to guard against?

[To be filled in & organized -- this is really just a placeholder]

- Data deletion, both accidental & malicious
- DOS, both accidental & malicious
- Loss of connectivity (is this a security issue, an operations issue, or both?)
  - ◆ Between mountaintop & base station
  - ◆ Between base station & archive center

Are these threats too abstract? Should we focus on things like "cable cut" instead of "loss of connectivity"? Both the cause & the symptom are important.

## Questions

How does security policy relate to:

- Disaster preparedness? For example, cable cuts on the mountain?
- Application performance? In particular, denial-of-service that exploits expensive computations?
- Measuring and ensuring data integrity?
- Data provenance (especially the relationship between authentication and data provenance)?

## Related Documents

[NCSA Security Policies](#)

[NOAO Security Policies](#)

- [?Cybersecurity and Acceptable Use](#) (html)
- [?Acceptable Encryption Use Policy](#) (pdf)
- [?Network Audit Policy](#) (pdf)
- [?Backup Policy](#) (pdf)
- [?Information Sensitivity Policy](#) (pdf)
- [?Laptop Security Tips](#) (pdf)
- [?Guidelines for Choosing a Good Password](#) (pdf)
- [?Privileged Account Access Policy](#) (pdf)
- [?Remote Access Policy](#) (pdf)
- [?Server Security Policy](#) (pdf)
- [?Wireless Access Policy](#) (pdf)

#### Guides

- [?Guide to NIST security documents](#) (pdf, March 2007, 36 pages)
- [?NIST Security Handbook for Managers](#) (pdf, October 2006, 178 pages)
- [?NIST Security Handbook](#) (pdf, 1995, 290 pages)
- [?RFC 2196 - Site Security Handbook](#) (html, 1997)

#### Document Template Collections

- [?SANS](#)
- [?NIST archive](#)
- [?Templates from Ephemian](#) (attached below)