Infrastructure status report
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- Outages and process adjustments
- LG87 cooling remediation
- HITECH-compliant hosting
- NUIT will be reviewing data center tenants
- Investments to date
Outages and process adjustments

- Outages
  - January 11: Business day major interruption of ERP systems (Evanston)
  - March 2: Business day minor interruption affected few systems (Chicago)
  - March 8: Before business day major interruption of all services (Evanston)
  - March 12: Weekend major interruption of all services (Evanston)
  - April 7: Before business day Tech routing center failure (Evanston)
Outages and process adjustments

Tue January 11 – 11:00a-1:00p & 3:30p-5:00p (4.5 hours) (Evanston)

• Root cause: unintended power cycling of a switch stack master node during application troubleshooting
  • Contributing cause: vendor software flaw prevented failover of stack services
  • Result: applications lost connections to databases
  • Remedy: (a) changed processes for maintenance access to data center, (b) patched switch software
Outages and process adjustments

Wed March 2 – 3:55p-4:30p (55 minutes) (Chicago)

• Root cause: firewall rule maintenance
• Contributing cause: vendor software memory leak caused firewalls to freeze
• Result: Chicago applications were isolated from the network and databases
• Remedy: (a) moved firewall rule changes to off-hours, (b) reboot firewalls regularly, (c) obtain vendor patch
Outages and process adjustments

Tue March 8 – 7:30a-7:40a (10 minutes) (Evanston)

• Root cause: firewall rule maintenance
• Contributing cause: vendor software memory leak caused firewalls to freeze
• Result: Evanston applications were isolated from the network and databases
• Remedy: (a) reboot firewalls regularly, (b) obtain vendor patch
Outages and process adjustments

Sat March 12 – 8:05a-8:50a (50 minutes) (Evanston)

• Root cause: router interface configuration maintenance

• Contributing cause: vendor software flaw misapplied a command to the wrong interfaces, disabling routing and preventing failover

• Result: Evanston applications were isolated from the network and databases

• Remedy: (a) stopped using port ranges in commands, (b) obtain vendor patch
Outages and process adjustments

Thu April 7 – 8:00a-8:45a (45 minutes) (Evanston)

- Root cause: Power cycling on edge switch stack in Tech F-wing during maintenance
- Contributing cause: Power-on race condition confused stack switches. Two stack switches were elected masters and flooded the Tech routing center with messages – disabling normal routing
- Result: All network ports from Annenberg north were isolated from the network core
- Remedy: issued new switch stack power-on sequence instructions to ensure a single master is elected
LG87 cooling remediation

- LG87 service interruptions due to interruptions in chilled water
- Additional pumps and a bridge line will be installed
- Design will allow cool water to circulate in a closed loop until central service is restored
- Goal is to make LG87 less sensitive to central cooling interruptions
HITECH-compliant hosting

- NUIT is pursuing HITECH self-certification
- Data encryption may be required
- Goal is to host data sets and applications for approved purposes
NUIT will review current data center tenants

- All data center equipment will be inventoried
- Equipment aged four years and older will be targeted for removal within one year
- NUIT will work with owners to plan retirement of old equipment
- Goal is to conserve energy and improve space utilization
## Investments to date

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<thead>
<tr>
<th></th>
<th>Capital Investments</th>
<th>One-time Investments</th>
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<tr>
<td>FY07 Open Evanston data center research hosting space</td>
<td>$10,159,000</td>
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<td>FY08 Open LG87</td>
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<td>FY08-11 Refit Evanston data center cooling &amp; electrical</td>
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<td>FY08 Inter-campus dark fiber</td>
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<td>FY09-10 Install Quest &amp; Vault</td>
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<td>FY11 Install Quest-2</td>
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<td>FY09-FY11 Researcher investments</td>
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