Thanksgiving!

And, as usual, to quote Arthur Carlson from “WKRP in Cincinnati”

“As God as my witness, I thought turkeys could fly!’
(at 3:50 mark)
Agenda

- ACNS Update – Rusty Scott
- IS Update – Doug Finnman
- Middleware Update – Randy Miotke
Agenda (cont.)

• RAMtech/Licensing – Diane Noren
• Security – Steve Lovaas
• Network/Telecommunications – Greg Redder
ACNS Update

Rusty Scott

- Azure for Research Workshop
  https://wsnet2.colostate.edu/CWIS6/Events/events/details?id=51

- Data center load testing
  Saturday, 11/19 from 7:30-8:30 AM.
  No downtime is expected.
ACNS Update (cont.)

• IT Consolidation exploration
  - O365
• Help desk ticketing system
• Reduction of MS domains
• CMS
• Accommodating future data center needs
• Timeclock Plus for leave reporting/approval
ACNS Update (cont.)

• Off Campus SMTP.colostate.edu will be disabled on Nov. 28, 2016 around 9 am.

• Hi Performance Computing “summit” update

• ACNS web page moved to Word Press.
  – See any concerns? Please contact: Katie.Banghart@colostate.edu
IS Update

Doug Finnman

• Timeclocks Plus
  – 3rd party time & attendance tool.
  – web, device and mobile options

• Linux migration ongoing
  – Moved Kuali, HR
  – Banner soon

• eID authentication for Oracle HR solution imminent.
Middleware Updates – Randy Miotke

• Shibboleth IdP v3.3 upgrade
  – Enhancements and bug fixes
  – Production in November

• Central authorization (Grouper)
  – Production instance live
  – Offers delegated administration through Grouper UI
  – Authenticated/authorized API access for web applications
  – Training materials and documentation in-process
Middleware Updates

• eduPerson directory upgrade
  – eduPerson Object Class 201602
  – Added attributes:
    eduPersonPrincipalNamePrior, eduPersonUniqueId, eduPersonOrcid

• Reminder: WebAuth no longer supported after July 1, 2017
  – Move to Shibboleth
Middleware Updates

• New federation manager testing

• External/Social Identities Exploration
  – Request to Advisory Committee for Academic Applications (ACAA)
  – Authentication and account linking

• Web accessibility
  – Reminder new campus policy in place.
  – Training to come.
Shibboleth IdP Notes

- Create a friendly Display Name in CSU Federation UI
- Logo that identifies your service or CSU
- Ability to disable SSO
Middleware PDI Offerings

• Authentication
  - Converting WebAuth to Shibboleth for .NET Websites - Adam Warren
  - Shibboleth Service Provider Installation Workshops – Randy Miotke
    • Linux
    • IIS

• Central Authorization
  – Grouper Manager Training – Jeff Ruch
    • UI, groups management, etc.,
  – Grouper Application Developer Training – Jeff Ruch
    • API calls, technical implementation

• Knowledge
  – Colorado Encyclopedia - Greg Vogl and Dawn Paschal
Licensing

Diane Noren

• Adobe
  – Acrobat Pro Campus wide
  – FTE based
  – Renews February
  – New 3 year agreement

• Creative Cloud
  – Cost the same as last year
  – $250.00 per Named User
  – $175.00 per Device—must have computer name
  – Must notify RAMtech if computer name changes
Licensing

• Mathematica
  – Renews at end of the month
  – New 3 year contract
  – Cost is going to be $475.00 per licenses
  – Cost could go down if more users participate
  – Cost directly from Wolfram $650.00

• Microsoft
  – Continuing to send invoices
  – Will have a Licensing meeting early February
RAMtech

• SPSS-Amos
  – January 1 renewal
  – Departmental cost $72.59 this year 10% increase
  - Same license directly from IBM cost  $595.00

• Apple
  – MacBook Pro touch bars shipping is 4-6 weeks
  – Volume purchase for Apps available.

• Questions?
Security Update

Steve Lovaas

• Pulse Connect Secure updates
• Nessus vulnerability scanning project
• How we’re doing
• Some pictures
• Web applications
• Remote access
Pulse Connect Secure update

• Recent OS upgrade: support for Mac OS 10.12 (Sierra)

• Win/Mac/Lin can all use Pulse desktop client

• Bookmarks in web UI are more secure

• Exploring new features
  – HTML for RDP
  – More 2-factor authentication options
Nessus vulnerability scanning

Expectations
• We scan everything
• You fix things
• You tell us
• We review the process

Review
• Adding another scanner (private)
• Mixed progress on fixing
• Mixed feedback
• Comments??
Pre-shaming: Nessus responsiveness/progress

<p>| Top 13 vulnerable units - those with over 100 cumulative critical/high vulnerabilities in 10 months of 2016 |
|---------------------------------------------------|---------------------------------------------------|---------------------------------------------------|---------------------------------------------------|---------------------------------------------------|---------------------------------------------------|---------------------------------------------------|---------------------------------------------------|</p>
<table>
<thead>
<tr>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>YTD</th>
<th>Responsiveness (telling us)</th>
<th>Actions (fixed the problems)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical</td>
<td>High</td>
<td>Critical</td>
<td>High</td>
<td>Critical</td>
<td>High</td>
<td>Critical</td>
<td>High</td>
<td>Critical</td>
<td>High</td>
<td>Critical</td>
<td>High</td>
<td>Critical</td>
<td>High</td>
</tr>
<tr>
<td>Unit 1</td>
<td>Administrative Unit</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>41</td>
<td>Good</td>
<td>Controlled with firewall/ACL, not public</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>66</td>
<td>Waiting to retire problems</td>
<td></td>
</tr>
<tr>
<td>Unit 2</td>
<td>College</td>
<td>35</td>
<td>32</td>
<td>36</td>
<td>35</td>
<td>31</td>
<td>27</td>
<td>31</td>
<td>30</td>
<td>26</td>
<td>27</td>
<td>310</td>
<td>Good</td>
</tr>
<tr>
<td></td>
<td></td>
<td>41</td>
<td>41</td>
<td>53</td>
<td>59</td>
<td>58</td>
<td>57</td>
<td>59</td>
<td>61</td>
<td>60</td>
<td>56</td>
<td>545</td>
<td>High numbers - churn?</td>
</tr>
<tr>
<td>Unit 3</td>
<td>College</td>
<td>11</td>
<td>13</td>
<td>15</td>
<td>15</td>
<td>13</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>11</td>
<td>118</td>
<td>Good</td>
<td>Looking at upgrades</td>
</tr>
<tr>
<td></td>
<td></td>
<td>18</td>
<td>19</td>
<td>20</td>
<td>18</td>
<td>18</td>
<td>17</td>
<td>17</td>
<td>19</td>
<td>19</td>
<td>183</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit 4</td>
<td>Academic Department</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>13</td>
<td>11</td>
<td>15</td>
<td>16</td>
<td>16</td>
<td>17</td>
<td>6</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>104</td>
<td></td>
</tr>
<tr>
<td>Unit 5</td>
<td>Administrative Unit</td>
<td>9</td>
<td>7</td>
<td>7</td>
<td>10</td>
<td>9</td>
<td>8</td>
<td>8</td>
<td>9</td>
<td>8</td>
<td>8</td>
<td>83</td>
<td>Good</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9</td>
<td>8</td>
<td>7</td>
<td>7</td>
<td>8</td>
<td>7</td>
<td>7</td>
<td>8</td>
<td>7</td>
<td>75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit 6</td>
<td>Administrative Unit</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>20</td>
<td>Good</td>
<td>Pushed this process by their requests</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>6</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>102</td>
<td></td>
</tr>
<tr>
<td>Unit 7</td>
<td>College</td>
<td>15</td>
<td>14</td>
<td>17</td>
<td>16</td>
<td>13</td>
<td>16</td>
<td>15</td>
<td>15</td>
<td>13</td>
<td>14</td>
<td>148</td>
<td>Good</td>
</tr>
<tr>
<td></td>
<td></td>
<td>21</td>
<td>22</td>
<td>24</td>
<td>23</td>
<td>23</td>
<td>24</td>
<td>24</td>
<td>22</td>
<td>23</td>
<td>23</td>
<td>223</td>
<td></td>
</tr>
<tr>
<td>Unit 8</td>
<td>Administrative Unit</td>
<td>19</td>
<td>17</td>
<td>22</td>
<td>21</td>
<td>21</td>
<td>21</td>
<td>21</td>
<td>22</td>
<td>21</td>
<td>22</td>
<td>207</td>
<td>Fair</td>
</tr>
<tr>
<td></td>
<td></td>
<td>45</td>
<td>47</td>
<td>46</td>
<td>45</td>
<td>48</td>
<td>46</td>
<td>47</td>
<td>50</td>
<td>48</td>
<td>468</td>
<td>Waiting to retire problems</td>
<td></td>
</tr>
<tr>
<td>Unit 9</td>
<td>College</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>13</td>
<td>13</td>
<td>14</td>
<td>5</td>
<td>6</td>
<td>2</td>
<td>7</td>
<td>77</td>
<td>Marginal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>11</td>
<td>10</td>
<td>11</td>
<td>26</td>
<td>26</td>
<td>24</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>125</td>
<td></td>
</tr>
<tr>
<td>Unit 10</td>
<td>Academic Department</td>
<td>8</td>
<td>9</td>
<td>11</td>
<td>11</td>
<td>10</td>
<td>7</td>
<td>8</td>
<td>6</td>
<td>6</td>
<td>10</td>
<td>86</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td></td>
<td>11</td>
<td>12</td>
<td>11</td>
<td>10</td>
<td>9</td>
<td>10</td>
<td>9</td>
<td>10</td>
<td>9</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit 11</td>
<td>Academic Department</td>
<td>9</td>
<td>9</td>
<td>10</td>
<td>19</td>
<td>20</td>
<td>7</td>
<td>9</td>
<td>7</td>
<td>8</td>
<td>5</td>
<td>102</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td></td>
<td>11</td>
<td>15</td>
<td>14</td>
<td>14</td>
<td>14</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>10</td>
<td>11</td>
<td>125</td>
<td></td>
</tr>
<tr>
<td>Unit 12</td>
<td>College</td>
<td>22</td>
<td>21</td>
<td>23</td>
<td>20</td>
<td>18</td>
<td>16</td>
<td>17</td>
<td>17</td>
<td>15</td>
<td>22</td>
<td>191</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td></td>
<td>44</td>
<td>48</td>
<td>42</td>
<td>42</td>
<td>44</td>
<td>43</td>
<td>40</td>
<td>40</td>
<td>42</td>
<td>41</td>
<td>426</td>
<td></td>
</tr>
<tr>
<td>Unit 13</td>
<td>Administrative Unit</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>9</td>
<td>8</td>
<td>8</td>
<td>7</td>
<td>7</td>
<td>8</td>
<td>77</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7</td>
<td>7</td>
<td>6</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>45</td>
<td></td>
</tr>
</tbody>
</table>
Security events: 2016

EVENT DETAILS – 2,139 EVENTS OVER 12 MONTHS

SHOW:
- ALL
- BOTNET INFECTIONS: 101 EVENTS
- SPAM PROPAGATION: 19 EVENTS
- MALWARE SERVERS: 0 EVENTS
- POTENTIALLY EXPLOITED: 2,016 EVENTS
- UNSOLICITED COMMUNICATIONS: 3 EVENTS
## Web/app security

<table>
<thead>
<tr>
<th>Expectations</th>
<th>Review</th>
</tr>
</thead>
<tbody>
<tr>
<td>• InCommon certificates</td>
<td>• Intermediates? Self-signed?</td>
</tr>
<tr>
<td>• SSL/TLS configuration</td>
<td>• Retire SSLv3, TLS1.0, SHA-1, RC4</td>
</tr>
<tr>
<td>• Authentication: SAML2</td>
<td>• Shibboleth (eID WebAuth sunset)</td>
</tr>
<tr>
<td>• Server security practices</td>
<td>• Look at security headers</td>
</tr>
</tbody>
</table>
Remote Access security

Expectations

• No cleartext/open remote access
  – Always encrypt logins

• Pulse gateway default choice

• Minimize direct remote access
  – Especially with root permissions
  – Even with encryption, it’s a risk

Review

• No telnet, no VNC w/o tunnel
  – No logins over HTTP w/o TLS

• Upgrading gateway hardware

• Look at RDP, SSH, VNC, etc.
  – Many vulnerabilities
  – Brute force, denial of service...
Questions?
Network & Telecom Operations

Network Operations
• Wired infrastructure
• Wireless infrastructure
• Misc

Telecom Operations
• General
• VOIP
Wired infrastructure

Network infrastructure upgrades completed recently:

• Atmos and Atmos Hill
• ERC

Pending:
• MERC
• A variety of outlying buildings
• New routers at South Campus
Wired infrastructure

End of a 6 year long project!

What is next?

...MDFs prioritized by:

• “cleanup needs”
• 10G needs
• 10G to IDF needs
Wired infrastructure

Patch cords for closets must be **Systimax**

Purchase from

- open PO with Anixter
- RamTech

...or better yet – do a telecom service order and get them for free (within reason)!
Wired Infrastructure
Construction projects

Active
– New Stadium
– New Chemistry
– New Biology
– New Health Center
– Shields Underpass

Done
– Prospect Underpass
Wired Infrastructure
Construction projects

Buildings at various stages in the planning process:

- Natural Resources addition
- Animal Science addition
- Education addition
- Moby B-Wing addition
- A/Z addition
- Temple Grandin Facility @ West Campus
- 2 new buildings @ South Campus
By January: All GA buildings to 802.11ac Wave 1

In January: start upgrading GA classrooms to "wave 2" and redeploy APs to replace older devices.

Replace older AP-125's (Non-802.11ac) all over campus.
Wireless Infrastructure

802.11ac upgrades:

- LSC North
- Engineering
- Scott Bioengineering
- McGraw, ATC
- Animal Science
- Laurel Hall
- PreConstruction
- Forestry
- Physiology
- GSB
Wireless Infrastructure

Outdoor wireless: student requested

- Monfort Quad,
- Oval
- MAX University station
- Eddy/Clark C Plaza
- Transit Center
- LSC Plaza & Sculpture Garden any day now
### Wireless Infrastructure - Eduroam

#### User Downloads

**Outdoor wireless:**

<table>
<thead>
<tr>
<th>Platform</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Android 4.4 KitKat</td>
<td>6</td>
</tr>
<tr>
<td>Android 5.0 Lollipop</td>
<td>48</td>
</tr>
<tr>
<td>Android 6.0 Marshmallow</td>
<td>13</td>
</tr>
<tr>
<td>Apple OS X El Capitan</td>
<td>35</td>
</tr>
<tr>
<td>Apple OS X Lion</td>
<td>10</td>
</tr>
<tr>
<td>Apple OS X Mavericks</td>
<td>12</td>
</tr>
<tr>
<td>Apple OS X Mountain Lion</td>
<td>25</td>
</tr>
<tr>
<td>Apple macOS Sierra</td>
<td>2</td>
</tr>
<tr>
<td>Apple OS X Yosemite</td>
<td>50</td>
</tr>
<tr>
<td>EAP config</td>
<td>1</td>
</tr>
<tr>
<td>Linux</td>
<td>59</td>
</tr>
<tr>
<td>Apple iOS mobile devices (iOS 7 and above)</td>
<td>178</td>
</tr>
<tr>
<td>Apple iOS mobile devices (iOS 5 and 6)</td>
<td>0</td>
</tr>
<tr>
<td>MS Windows Vista</td>
<td>2</td>
</tr>
<tr>
<td>MS Windows 10</td>
<td>51</td>
</tr>
<tr>
<td>MS Windows 7</td>
<td>77</td>
</tr>
<tr>
<td>MS Windows 8, 8.1</td>
<td>56</td>
</tr>
</tbody>
</table>
Wireless Infrastructure
Facebook/Twitter feeds

• Facebook:  www.facebook.com/csuwireless

• Twitter:  @CSUWireless
New NOC full time staff member:

• Chase Cope

• Blackout on network changes at end of semester.
  – Emergency? Contact NOC
  noc@colostate.edu
Telecom operations

• Phone problems!? Plan is to transition these to HelpDesk and out of the toc@colostate.edu e-mail.

...or call 491-5881 and Darlene, our campus operator, will help you!
Trying to get to VOIP moves in 3 days or less!

Normal orders are 5 days from approval, not submission – working on this too!
Telecom operations

Missing phone lines...

• Going building by building looking for phones that don’t answer or otherwise don’t exist.
POE, 911, conference phones....

• Going building by building to confirm 911 records.
• Turning off POE for ports not using power.
• Conference room phones:
  – We’ll provide an injector for free
  – If core length an issue, let Telecom know
VoIP Update
VoIP Upcoming/Stats

• Tentative Upgrade of Servers
  – January 8th at 8AM
• Tentative Decommissioning of Nortel Phone switch
  -December 2017
• Q1 implementing call encryption
  -PCI compliance on VoIP network
• 7223 Phones
• 2,293,498 calls in 2016
Pop Quiz – Things Not to Move

- Keystone of arch
- Hand grenade pin
- Your Phone
- All of the above
Reminders

• Moving Phones – Don’t!
  – Telecom will move them for FREE

• Move Policy:
  – Phones can only be moved by ACNS/Telecom. To instigate a phone move by ACNS/Telecom, a service order must be placed: Service Order Form.
  – A $56 fee will be assessed for each phone that was moved without a preceding service order.
  – Turning off POE (Power over Ethernet) to non-phone ports.

• No Building Power = No network = No Phone
Thank you.

Network Operations
&
Telecom Operations
Next Subnet Managers Meeting

Wednesday, March 22, 2017
10 am – noon
LSC 372 - 374

Happy Thanksgiving!