A day in the life of a systems engineer...

Kendall George
Operations Manager, Shared Services Cloud
The University of Oklahoma
kendallg@ou.edu
kg@kendallgeorge.com
@kendallgeorge

December 6, 2012

Who is Kendall?
systems engineer
15+ years
3 continents
AF comm officer
private sector
higher ed
BA
MBA
VCP
podcaster
MS, Linux, Apple
non-partisan

QUIT

HSC cluster

LOCAL RESOURCE POOL

NORMAN R.P.

Tulsa R.P.

SS R.P.

Distributed Resource Pool

vSphere Replication

S2 IPAM / DNS

S2 STORAGE
- Replication
- Backup

S2 Connectivity
- Geo dispersed flat IP space
- Routing

S2 Auth / Idm
- net domain

S2 Db Service
- MS SQL Server

S2 FW / Sec.
- McAfee AV

NORMAN CLUSTER

Local R.P.

HSC Resource Pool

Tulsa Resource Pool

SS R.P.

Distributed R.P.

Tulsa cluster

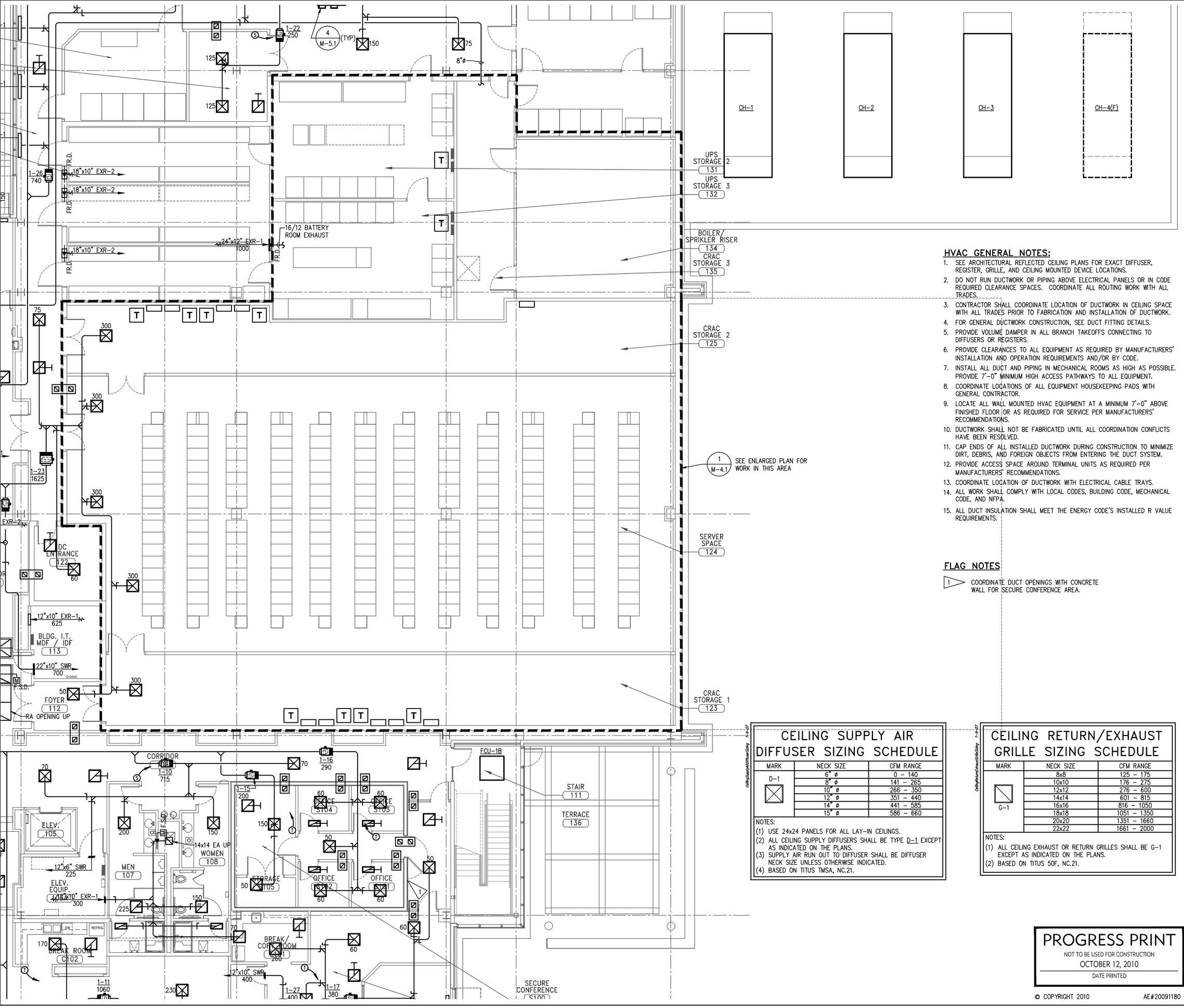
LOCAL

HSC

NORMAN

SS R.P.

3 campuses.
Many data centers.



HVAC GENERAL NOTES:

1. SEE ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT DIFFUSER, REGISTER, GRILLE, AND CEILING MOUNTED DEVICE LOCATIONS.
2. DO NOT RUN DUCTWORK OR PIPING ABOVE ELECTRICAL PANELS OR IN CODE REQUIRED CLEARANCE SPACES. COORDINATE ALL ROUTING WORK WITH ALL TRADES.
3. CONTRACTOR SHALL COORDINATE LOCATION OF DUCTWORK IN CEILING SPACE WITH ALL TRADES PRIOR TO FABRICATION AND INSTALLATION OF DUCTWORK.
4. FOR GENERAL DUCTWORK CONSTRUCTION, SEE DUCT FITTING DETAILS.
5. PROVIDE VOLUME DAMPER IN ALL BRANCH TAKEOFFS CONNECTING TO DIFFUSERS OR REGISTERS.
6. PROVIDE CLEARANCES TO ALL EQUIPMENT AS REQUIRED BY MANUFACTURERS' INSTALLATION AND OPERATION REQUIREMENTS AND/OR BY CODE.
7. INSTALL ALL DUCT AND PIPING IN MECHANICAL ROOMS AS HIGH AS POSSIBLE. PROVIDE 7'-0" MINIMUM HIGH ACCESS PATHWAYS TO ALL EQUIPMENT.
8. COORDINATE LOCATIONS OF ALL EQUIPMENT HOUSEKEEPING PADS WITH GENERAL CONTRACTOR.
9. LOCATE ALL WALL MOUNTED HVAC EQUIPMENT AT A MINIMUM 7'-0" ABOVE FINISHED FLOOR OR AS REQUIRED FOR SERVICE PER MANUFACTURERS' RECOMMENDATIONS.
10. DUCTWORK SHALL NOT BE FABRICATED UNTIL ALL COORDINATION CONFLICTS HAVE BEEN RESOLVED.
11. CAP ENDS OF ALL INSTALLED DUCTWORK DURING CONSTRUCTION TO MINIMIZE DIRT, DEBRIS, AND FOREIGN OBJECTS FROM ENTERING THE DUCT SYSTEM.
12. PROVIDE ACCESS SPACE AROUND TERMINAL UNITS AS REQUIRED PER MANUFACTURERS' RECOMMENDATIONS.
13. COORDINATE LOCATION OF DUCTWORK WITH ELECTRICAL CABLE TRAYS.
14. ALL WORK SHALL COMPLY WITH LOCAL CODES, BUILDING CODE, MECHANICAL CODE, AND NFPA.
15. ALL DUCT INSULATION SHALL MEET THE ENERGY CODE'S INSTALLED R VALUE REQUIREMENTS.

FLAG NOTES

1. COORDINATE DUCT OPENINGS WITH CONCRETE WALL FOR SECURE CONFERENCE AREA.

CEILING SUPPLY AIR DIFFUSER SIZING SCHEDULE

MARK	NECK SIZE	CFM RANGE
D-1	6" ø	0 – 140
	8" ø	141 – 265
	10" ø	266 – 350
	12" ø	351 – 440
	14" ø	441 – 585
	15" ø	586 – 660

NOTES:
(1) USE 24x24 PANELS FOR ALL LAY-IN CEILINGS.
(2) ALL CEILING SUPPLY DIFFUSERS SHALL BE TYPE D-1 EXCEPT AS INDICATED ON THE PLANS.
(3) SUPPLY AIR RUN OUT TO DIFFUSER SHALL BE DIFFUSER NECK SIZE UNLESS OTHERWISE INDICATED.
(4) BASED ON TITUS TMSA, NC.21.

CEILING RETURN/EXHAUST GRILLE SIZING SCHEDULE

MARK	NECK SIZE	CFM RANGE
G-1	8x8	125 – 175
	10x10	176 – 275
	12x12	276 – 600
	14x14	601 – 815
	16x16	816 – 1050
	18x18	1051 – 1350
	20x20	1351 – 1660
	22x22	1661 – 2000

NOTES:
(1) ALL CEILING EXHAUST OR RETURN GRILLES SHALL BE G-1 EXCEPT AS INDICATED ON THE PLANS.
(2) BASED ON TITUS 50F, NC.21.

PROGRESS PRINT
NOT TO BE USED FOR CONSTRUCTION
OCTOBER 12, 2010
DATE PRINTED

© COPYRIGHT 2010

AE#20091180

3600 West Main
Suite 200
Norman, Oklahoma
73072
405.360.1400 p
405.364.8287 f
tmparch.com

Seal:

PRELIMINARY NOT FOR CONSTRUCTIO

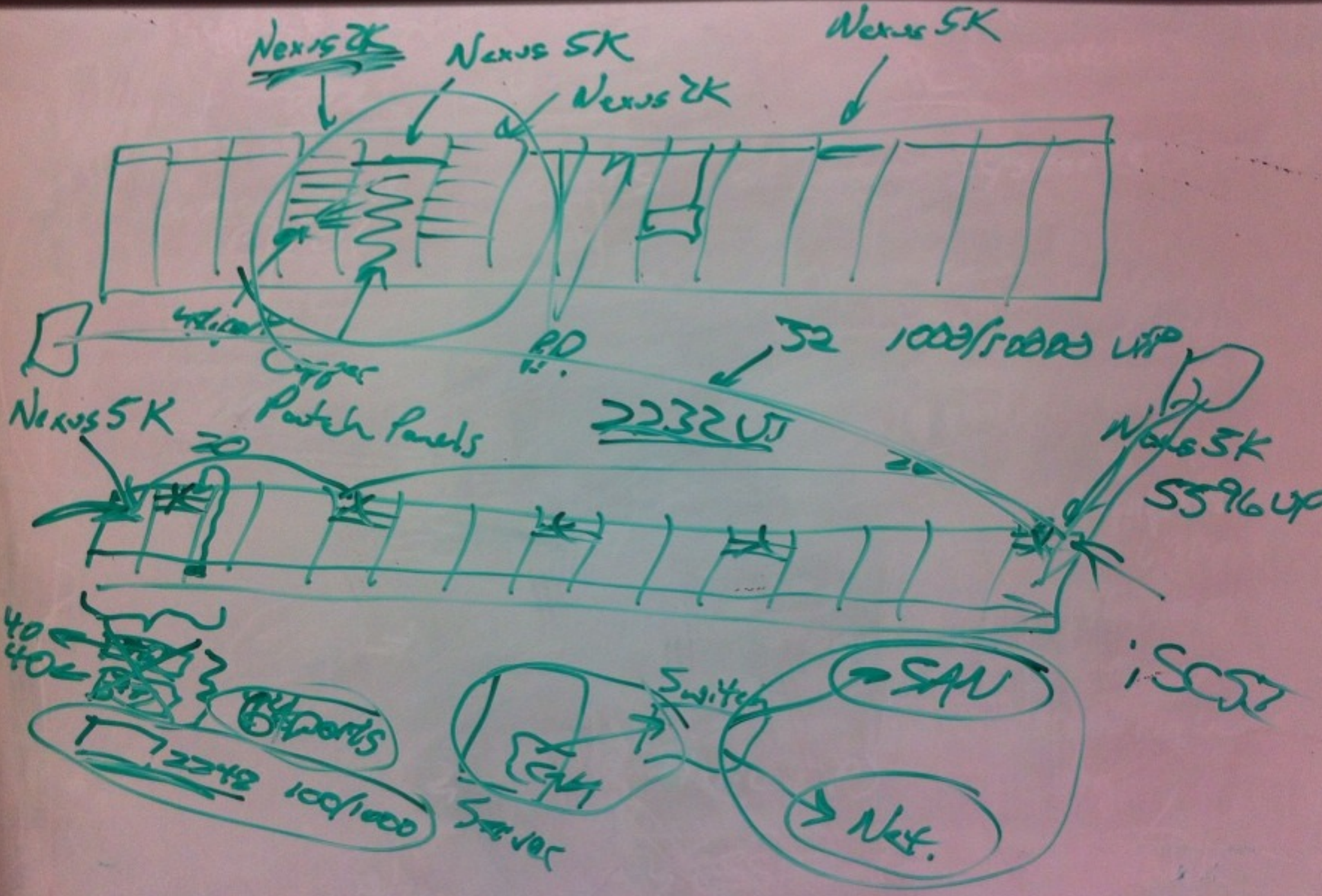
Project:

Four Partners Place
University of Oklahoma
UNIVERSITY RESEARCH CAMPUS
NORMAN, OKLAHOMA

Issue Date:
October 12, 2010 - 60% Check Set

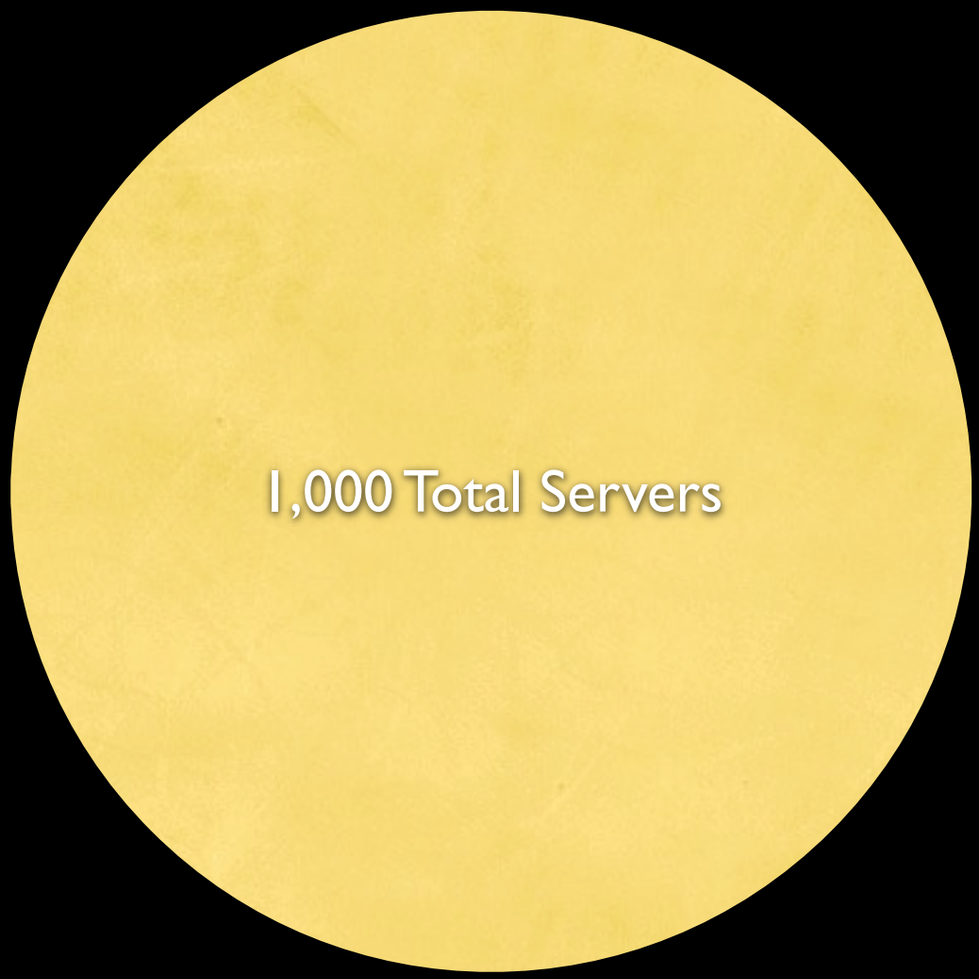
Revisions:

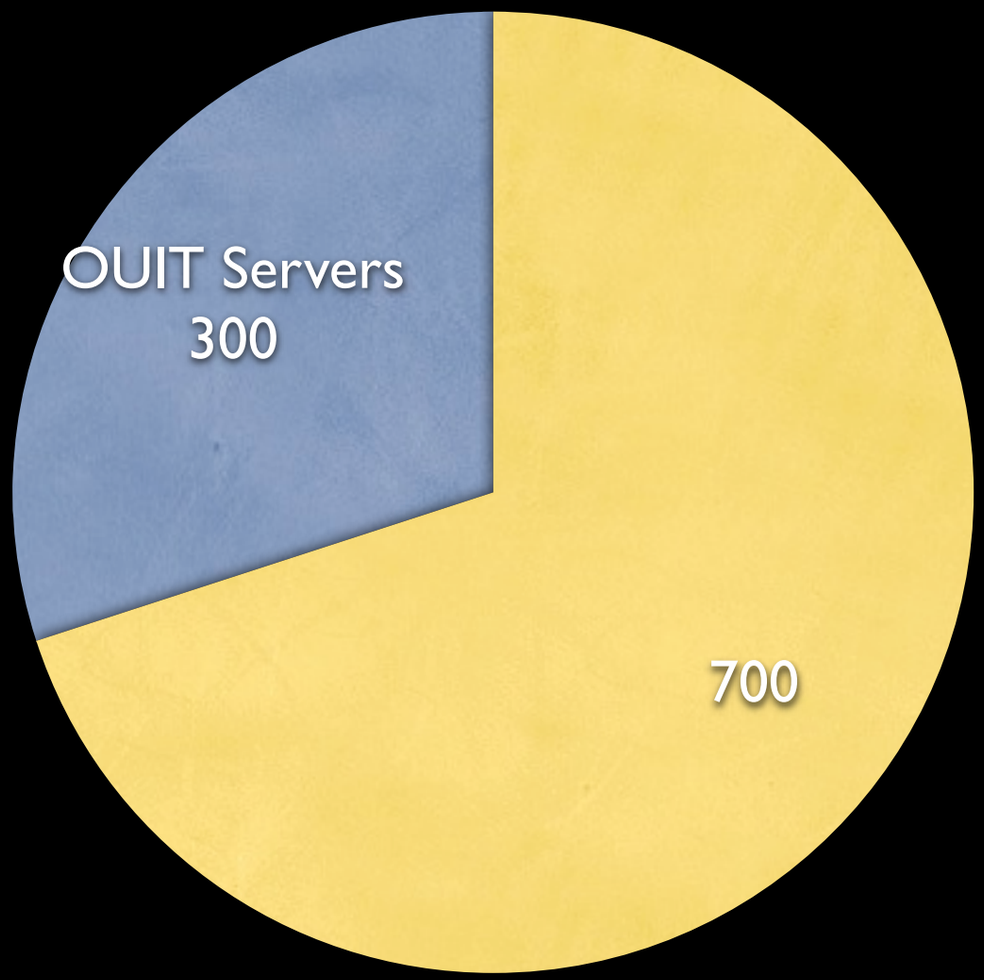
Tate
ENVIROGUARD

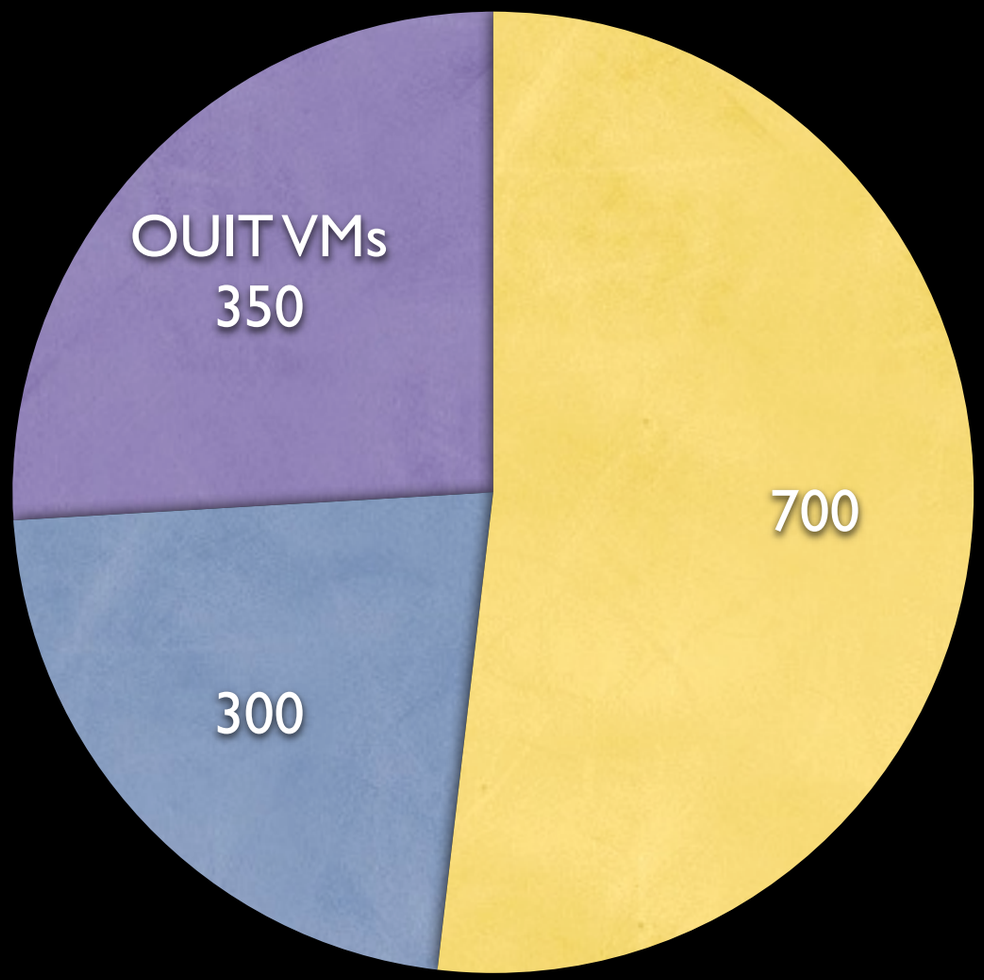

Nexus 2K
Nexus 5K
Nexus 2K
Nexus 5K
Copper
Patch Panels
32
1000/10000 UP
2232 UP
Nexus 5K
20
20
Nexus 5K
5596 UP
40
40
6 ports
2248
100/1000
Server
Switch
SAN
Net.
iSCSI

Friday, December 7, 12

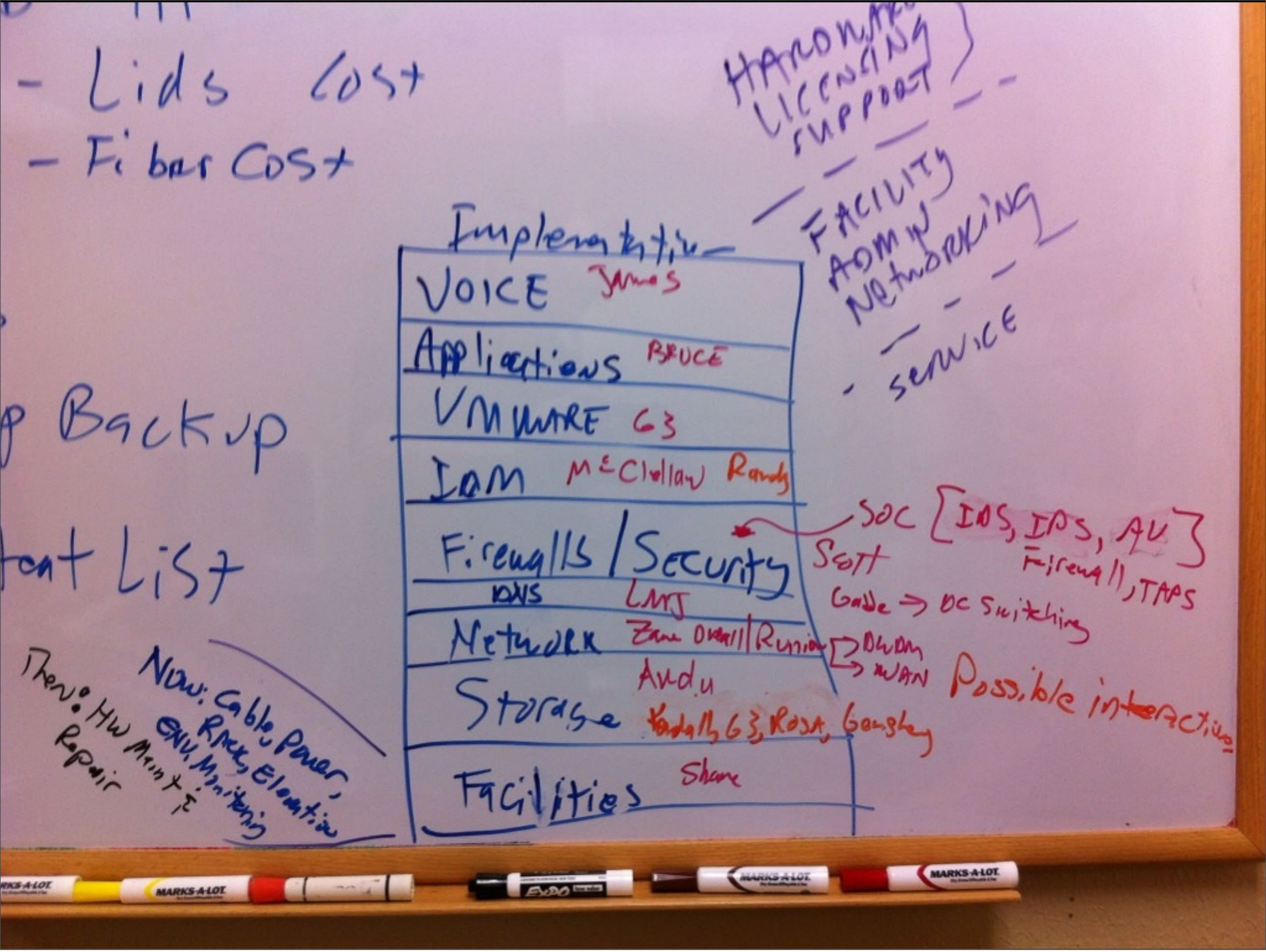
Finite. But, complex.


1,000 Total Servers


OUIT Servers
300
700


OUIT VMs
350
700
300

Applications


- Lids Cost
- Fiber Cost
Backup
List
Implementation
VOICE James
Applications BRUCE
VMWARE G3
IAM McClellan Randy
Firewalls / Security
DNS LMJ
Network Zane Overall / Runion
Storage Andu
Kendall, G3, Rosa, Gensley
Facilities Shane
HARDWARE
LICENSING
SUPPORT
FACILITY
ADMIN
NETWORKING
SERVICE
SOC [IDS, IPS, AV]
Firewall, TAPS
Scott
Gable → DC Switching
DWDM
WAN
Possible interactions
Now: Cable, Power, Rack, Elevation, ENV, Monitoring
Then: HW Maint & Repair

A bunch of stuff everybody does...

back-up
archiving
file shares
developer support
budgeting
Services
DHCP
facilities monitoring
monitoring
SharePoint
Web
messaging
license management
authentication
certificate management
benefits management
imaging
application virtualization
CMS
Video
Remote Desktop
accounts management
Apache
Terminal Server
collaboration
directory services
document imaging
system patching
Conferencing
accounting
www.ou.edu
provisioning
human resources
payroll
virtualization
database
Xythos
Voice Mail
finance
DNS
WebEx
Anti-Virus
email
IdM
Plesk

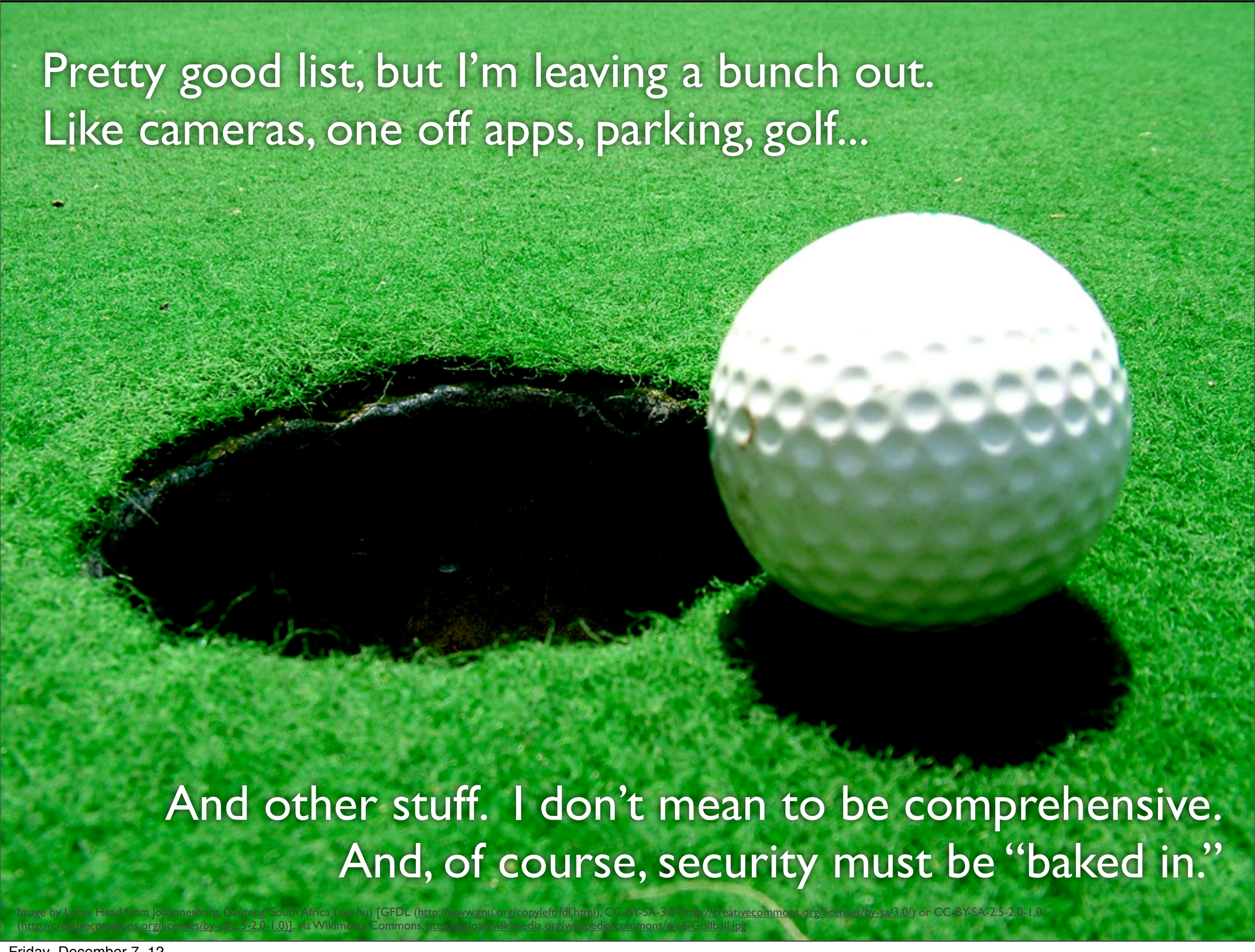
Stuff specific to education...

video capture
tutoring
computer labs
Athletics
Appointment Management
game footage
Electronic Medical Records
learning management system
classroom scheduling
iTunes
UID cards
student system
payment systems
payment card system
degree advising
cash registers
distribution
Health Clinic

Also research...

supercomputing GISweather

Pretty good list, but I'm leaving a bunch out.
Like cameras, one off apps, parking, golf...



And other stuff. I don't mean to be comprehensive.
And, of course, security must be "baked in."

Image by Lotus Head from Johannesburg, Gauteng, South Africa (sxc.hu) [GFDL (http://www.gnu.org/copyleft/fdl.html), CC-BY-SA-3.0 (http://creativecommons.org/licenses/by-sa/3.0/) or CC-BY-SA-2.5-2.0-1.0 (http://creativecommons.org/licenses/by-sa/2.5-2.0-1.0)], via Wikimedia Commons, http://upload.wikimedia.org/wikipedia/commons/e/e6/Golfball.jpg

Who?

TRAINING

SUPPORT

TECH

promotion

- Doc Collab.
- Workflow

Friday, December 7, 12

About 15 people.

Friday, December 7, 12

Friday, December 7, 12

What do we do?

OSI Model

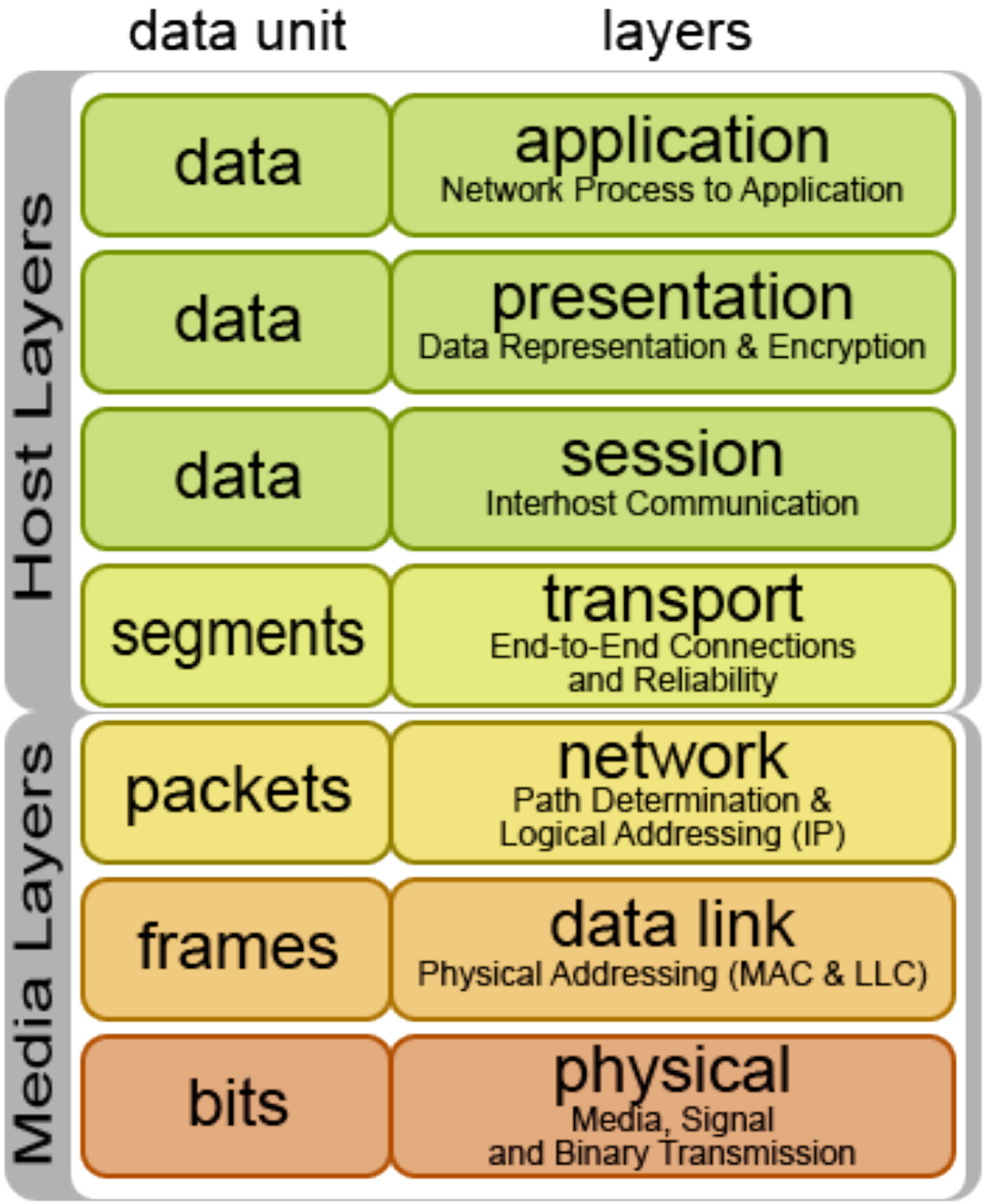
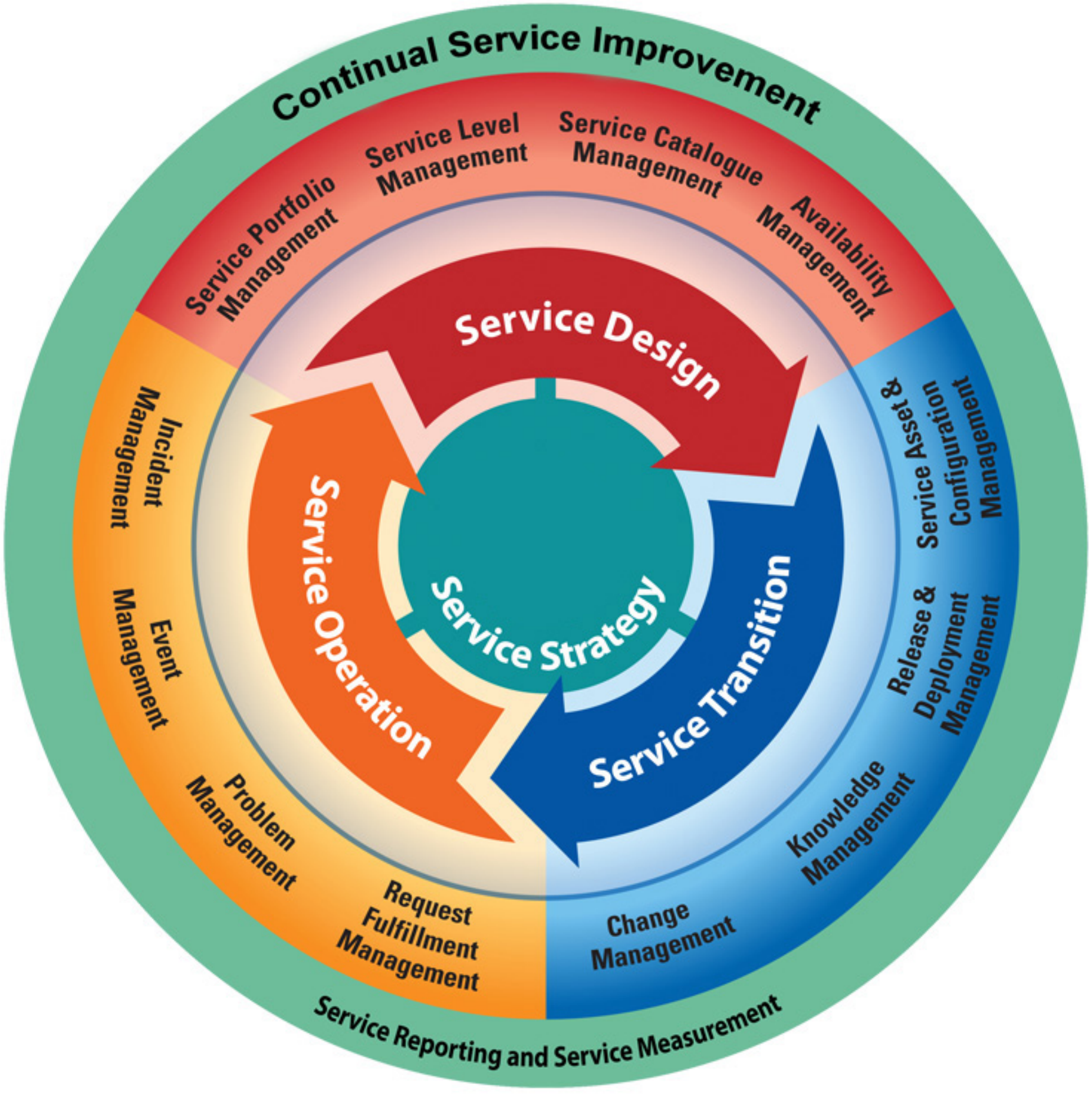


Image by Dino.korah [GFDL (http://www.gnu.org/copyleft/fdl.html) or CC-BY-SA-3.0 (http://creativecommons.org/licenses/by-sa/3.0/)], via Wikimedia Commons, http://commons.wikimedia.org/wiki/File%3AOsi-model.png


Continual Service Improvement
Service Portfolio Management
Service Level Management
Service Catalogue Management
Availability Management
Service Design
Service Asset & Configuration Management
Release & Deployment Management
Service Transition
Service Strategy
Service Operation
Incident Management
Event Management
Problem Management
Request Fulfillment Management
Change Management
Knowledge Management
Service Reporting and Service Measurement

Engineering.

Design Considerations

- Standardization
- Enterprise
- Resiliency
- Availability
- Business continuity
- Disaster recovery

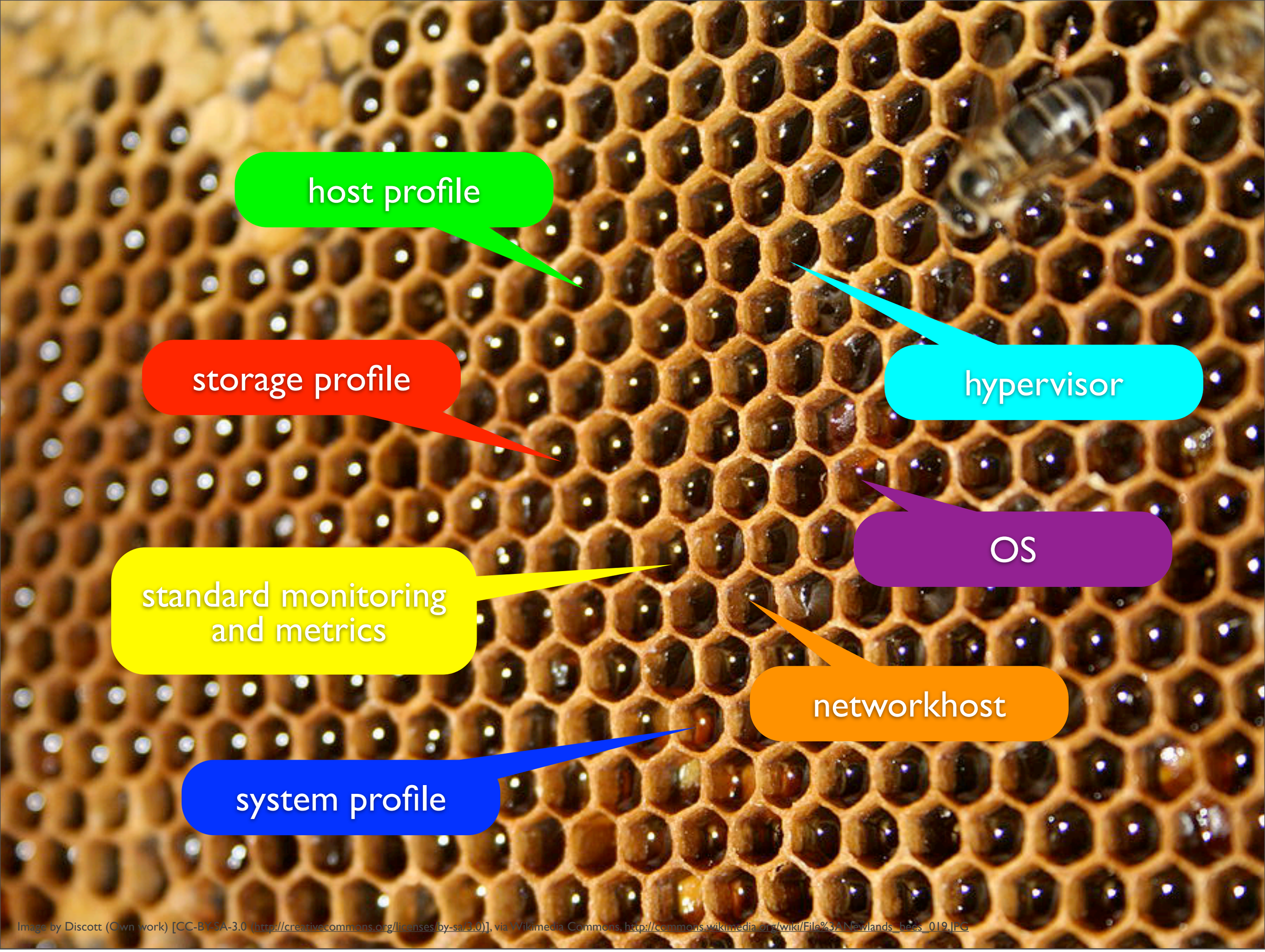


Image by Discott (Own work) [CC-BY-SA-3.0 (http://creativecommons.org/licenses/by-sa/3.0)], via Wikimedia Commons, http://commons.wikimedia.org/wiki/File%3ANewlands_bees_019.JPG

Image by UNKOWN.

TEST

PREPROD

PROD

VLAN 796

SP TEST 1

SP PREP 1/2

SP PROD 1&2

VLAN 797

SP TEST A

SP PREP A/B

SP PROD A/B

VLAN

Shoofly

Chief

NAS 3

12GB

?

NAS 1/2

10GB

EMC

File Edit View Inventory Administration Plug-ins Help

Home ▸ Inventory ▸ Hosts and Clusters

Search Inventory

- CHEROKEE
  - V-Systems Dev Center
    - R900_Cluster-Dev
  - V-Systems Lab Center
  - V-Systems Op Center
    - D1950_Cluster_Day
      - srtcvmhost1.mgmt.
      - srtcvmhost2.mgmt.
      - srtcvmhost3.mgmt.
      - srtcvmhost4.mgmt.
    - R900_Cluster-Prod
    - R900_Cluster-Prod_ERF
      - bryan.esx-mgmt.no
      - canadian.esx-mgmt
      - coal.esx-mgmt.nor.
    - Peoplesoft
    - Student System
  - Security_Cluster
  - V-Systems Security Center

R900_Cluster-Prod

Summary | Virtual Machines | Hosts | DRS | Resource Allocation | Performance | Tasks & Events | Alarms | Permissions | Maps | Profile Comp

General

vSphere DRS:	On
vSphere HA:	On
VMware EVC Mode:	Intel® "Merom" Gen. (Xeon® Core™2)
Total CPU Resources:	487 GHz
Total Memory:	927.93 GB
Total Storage:	36.47 TB
Number of Hosts:	9
Total Processors:	208
Number of Datastore Clusters:	0
Total Datastores:	76
Virtual Machines and Templates:	198
Total Migrations using vMotion:	303

Commands

New Virtual Machine
New Datastore Cluster
Add Host
Edit Settings
New Resource Pool

vSphere HA

Admission Control:	Enabled
Current Failover Capacity:	4 hosts
Configured Failover Capacity:	1 host
Host Monitoring:	Enabled
VM Monitoring:	Disabled
Application Monitoring:	Disabled

Advanced Runtime Info
Cluster Status
Configuration Issues

vSphere DRS

Migration Automation Level:	Fully Automated
Power Management Automation Level:	Off
DRS Recommendations:	0
DRS Faults:	0
Migration Threshold:	Apply priority 1, priority 2, and priority 3 recommendations.
Target host load standard deviation:	<= 0.094
Current host load standard deviation:	0.016 (Load balanced)

View Resource Distribution Chart
View DRS Troubleshooting Guide

Storage

Storage resources | Status | Drive Type | Cap

Recent Tasks

Name, Target or Status contains:

Name	Target	Status	Details	Initiated

Tasks | Alarms

Friday, December 7, 12

KTLO

Operations Considerations

- Event Management
- Incident Management
- Request Fulfillment

Tools of the trade.

https://unixtools.ou.edu/ GLaDOS - Unix Monitoring ...

File Edit View Favorites Tools Help

APERTURE LABORATORIES

Enterprise Monitoring System

UnixTools.ou.edu

Icinga Search

- Home
  - Chell
- Icinga
- MRTG
- Cacti
  - Admin
- Syslog
- RTS
- SIS Printers
- NetBotz
- IT Docs
- Cobbler

Statistics

NOC: 68 °F NOC (West End): 66.2 °F Merrick: 82.4 °F

	Total	OK	Warning	Critical	Unknown	Acknowledged
Hosts	246	246	0	0	0	0
Services	1473	1456	2	15	0	14

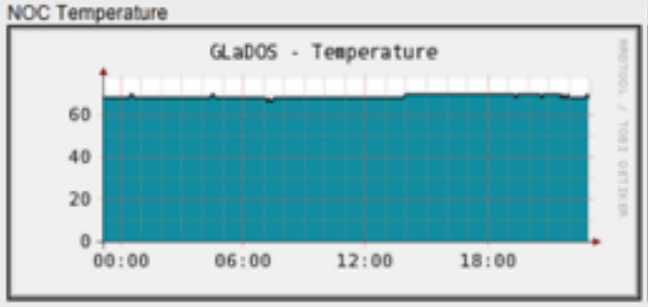
Current Service Alerts

As of 11:08:38 PM on Wednesday, December 5, 2012

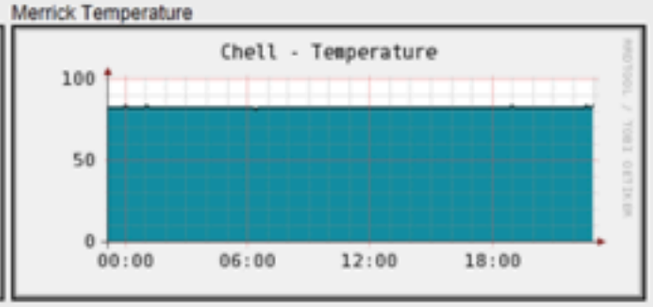
Hostname	Service	Status	Last Change
Indianapolis SIS TD Oracle RAC	disk	Warning	2012-11-08 17:43:13
Eugenefisk SIS Dev BPELSOA	disk	Warning	2012-06-21 01:53:50
Georgia SIS Prod Appworx	Zombie Processes	Critical	2012-11-28 12:20:15

Temperature Profiles

NOC Temperature

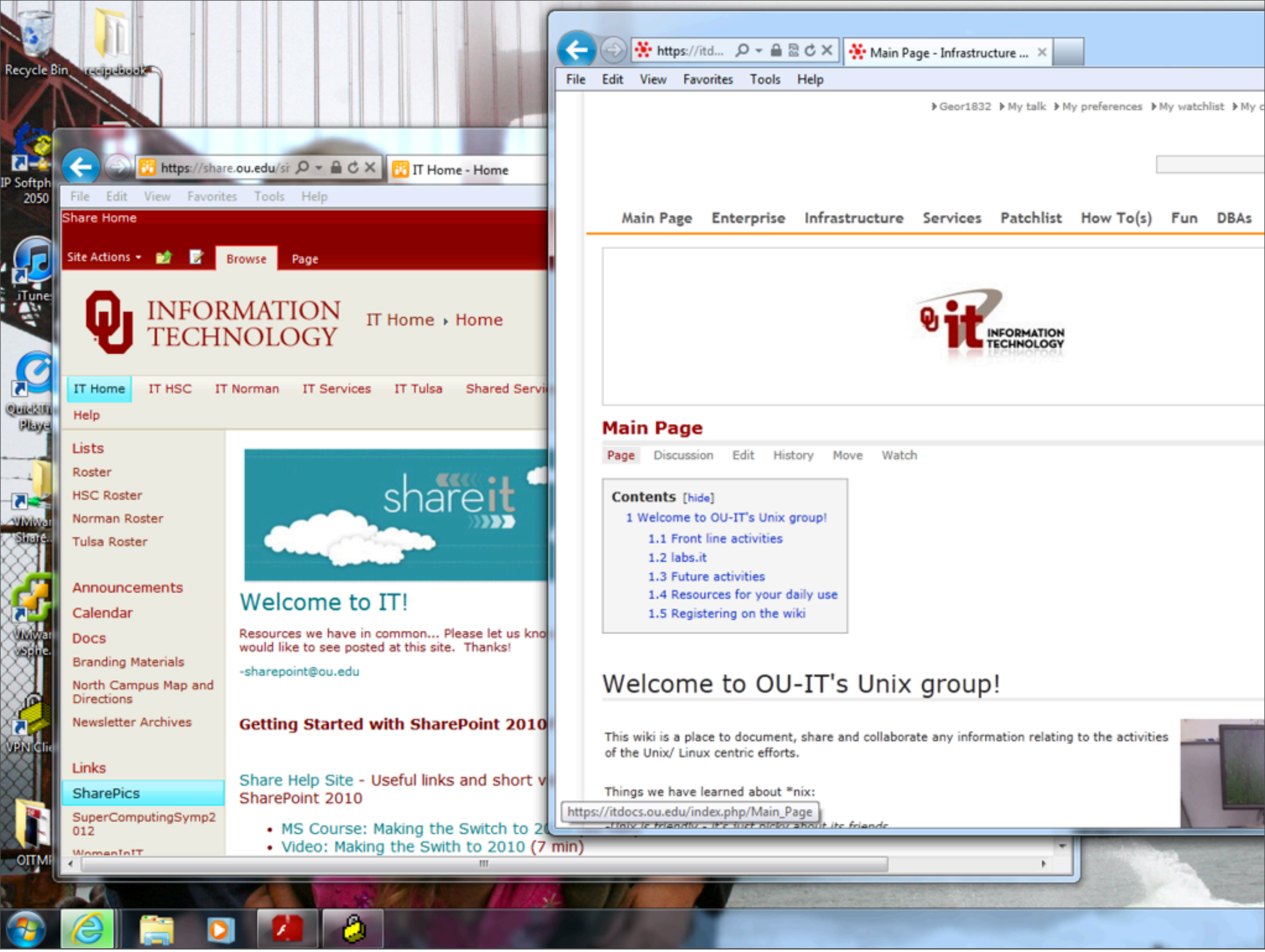


Merrick Temperature

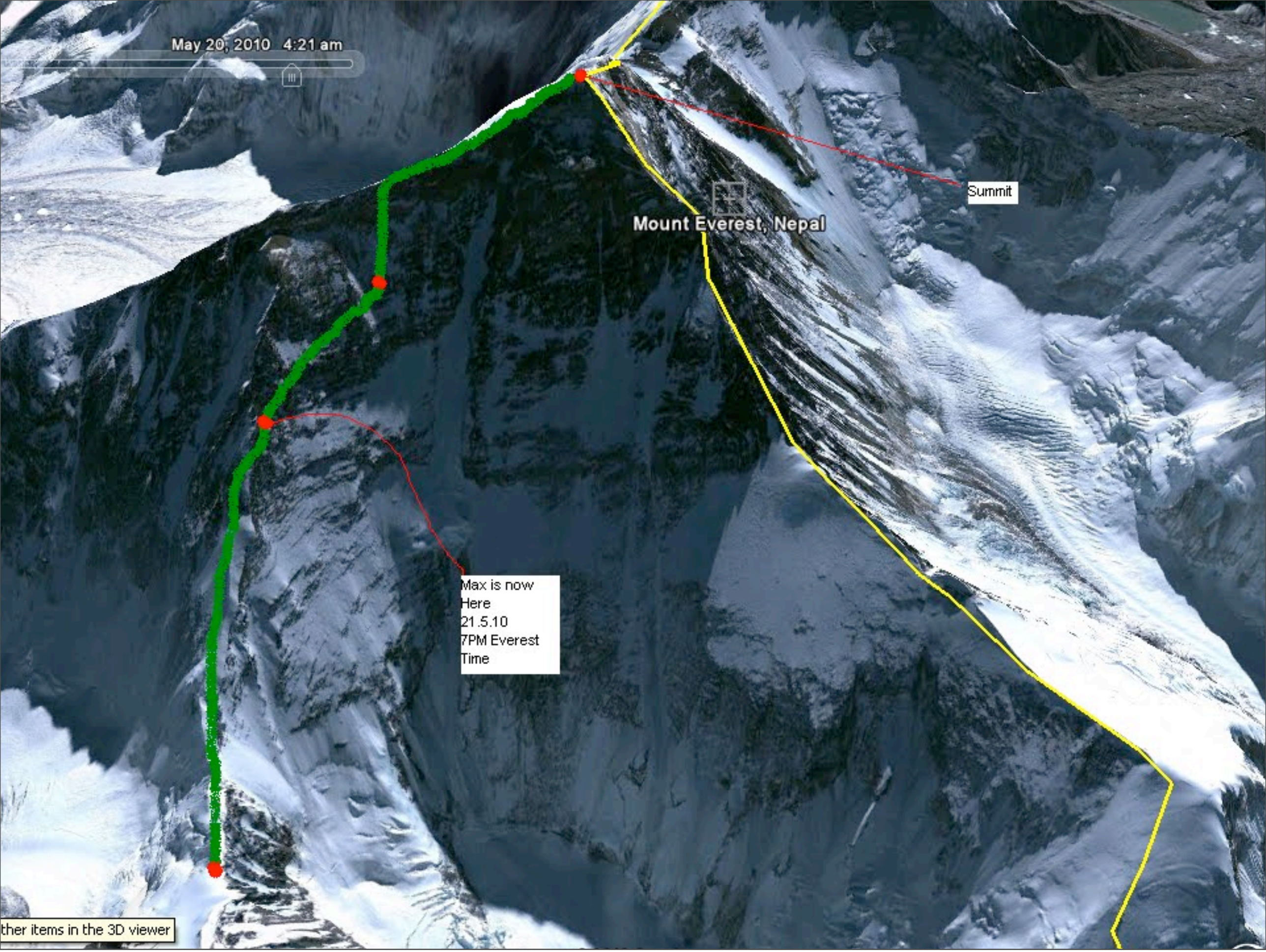


1998-2012 Aperture Laboratories

Icinga Alert RSS Feed


Recycle Bin
recipebook
IP Softph 2050
iTunes
QuickTime Player
VMware Share...
VMware vSphe...
VPN Clie
OITMP
https://share.ou.edu/si
IT Home - Home
File Edit View Favorites Tools Help
Share Home
Site Actions
Browse
Page
INFORMATION TECHNOLOGY
IT Home › Home
IT Home
IT HSC
IT Norman
IT Services
IT Tulsa
Shared Servi
Help
Lists
Roster
HSC Roster
Norman Roster
Tulsa Roster
Announcements
Calendar
Docs
Branding Materials
North Campus Map and Directions
Newsletter Archives
Links
SharePics
SuperComputingSymp2012
WomenInIT
shareit
Welcome to IT!
Resources we have in common... Please let us kno
would like to see posted at this site. Thanks!
-sharepoint@ou.edu
Getting Started with SharePoint 2010
Share Help Site - Useful links and short v
SharePoint 2010
MS Course: Making the Switch to 20
Video: Making the Swith to 2010 (7 min)
https://itd...
Main Page - Infrastructure ...
File Edit View Favorites Tools Help
Geor1832 My talk My preferences My watchlist My c
Main Page Enterprise Infrastructure Services Patchlist How To(s) Fun DBAs
INFORMATION TECHNOLOGY
Main Page
Page Discussion Edit History Move Watch
Contents [hide]
1 Welcome to OU-IT's Unix group!
1.1 Front line activities
1.2 labs.it
1.3 Future activities
1.4 Resources for your daily use
1.5 Registering on the wiki
Welcome to OU-IT's Unix group!
This wiki is a place to document, share and collaborate any information relating to the activities of the Unix/ Linux centric efforts.
Things we have learned about *nix:
https://itdocs.ou.edu/index.php/Main_Page

So, you want to be a systems engineer?


May 20, 2010 4:21 am
Summit
Mount Everest, Nepal
Max is now
Here
21.5.10
7PM Everest
Time
ther items in the 3D viewer

Questions?