



# INFORMATION TECHNOLOGY INFRASTRUCTURE NHERI@UCSD

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# Overview

- Summary of equipment
  - IT equipment - List of hardware-software assets used to access NHERI resources
    - Two backup servers for both Data and Video
    - Off-site data backup during testing (daily)
    - On-site data backup during testing (daily)
    - ESEC dedicated 1Gb LAN connection
    - NHERI dedicated 10Gb WAN connection
    - Kali Penetration Testing
    - Snort Network Intrusion Detection and prevention System

# Overview

- Summary of Equipment
  - Two DVR with (16) channels of digital video recording with immediate playback capabilities (synchronized with data)
  - One Exacq Hybrid System can support 16 Coax or 16 IP based Cameras for Safety of the site and Tests
  - One Video Camera called the VideoIQ can track 246 moving objects for safety and security of the site.
  - DJI Mavic Pro Drone

# NHERI@UCSD SITE IT INFRASTRUCTURE

- **1-Gb Campus Wide Area Network**
  - Internet2 participant
- **802.11g Campus Wireless Network**
  - WPA-2 Enterprise security
- **Provide Researchers with meeting room and project room for Project.**
- **Site Provides Guest Wireless Account for Visitors/Researchers**
- **Site dedicated 1Gb LAN**

# Room For Meetings



# Wireless Access Points





# NHERI@UCSD SITE IT INFRASTRUCTURE

- **Fedora Server**
  - Web server (<http://Nheri.ucsd.edu>)
- **Red Hat Enterprise Linux Server**
  - Backup of Nheri.ucsd.edu Web site
- **Kali Server** used for penetration testing of network
- **Snort Server** use for intrusion Detection
- **Windows Server 2008r2**
  - (DHCP) Server for Giving out IP address for the Network
  - Google Drive for Online data and video storage distribution
  - **Drobo** 16-TB Offline Data Backup

# Racks with Servers





# Drobo Data Backup System



# UPS For ESEC



# NHERI@UCSD Video Recording System

- **Axis P1365 (3)**
  - Provide delay-time viewing via web site
  - Provide Time-Lapse for Projects
- **IDVR-Pro H.264 HD CCTV DVR (Coax)**
  - Trigger-based recording for synchronization with data
  - 16 channels of digital video recording with immediate playback capabilities (synchronized with data)
- **NUUO Hybrid Video Recorder/IP NVR**
  - Trigger-based recording for synchronization with data
  - 16 channels of digital video recording with immediate playback capabilities (synchronized with data)





# Coax Cams 1080p HD



# GoPro Cameras

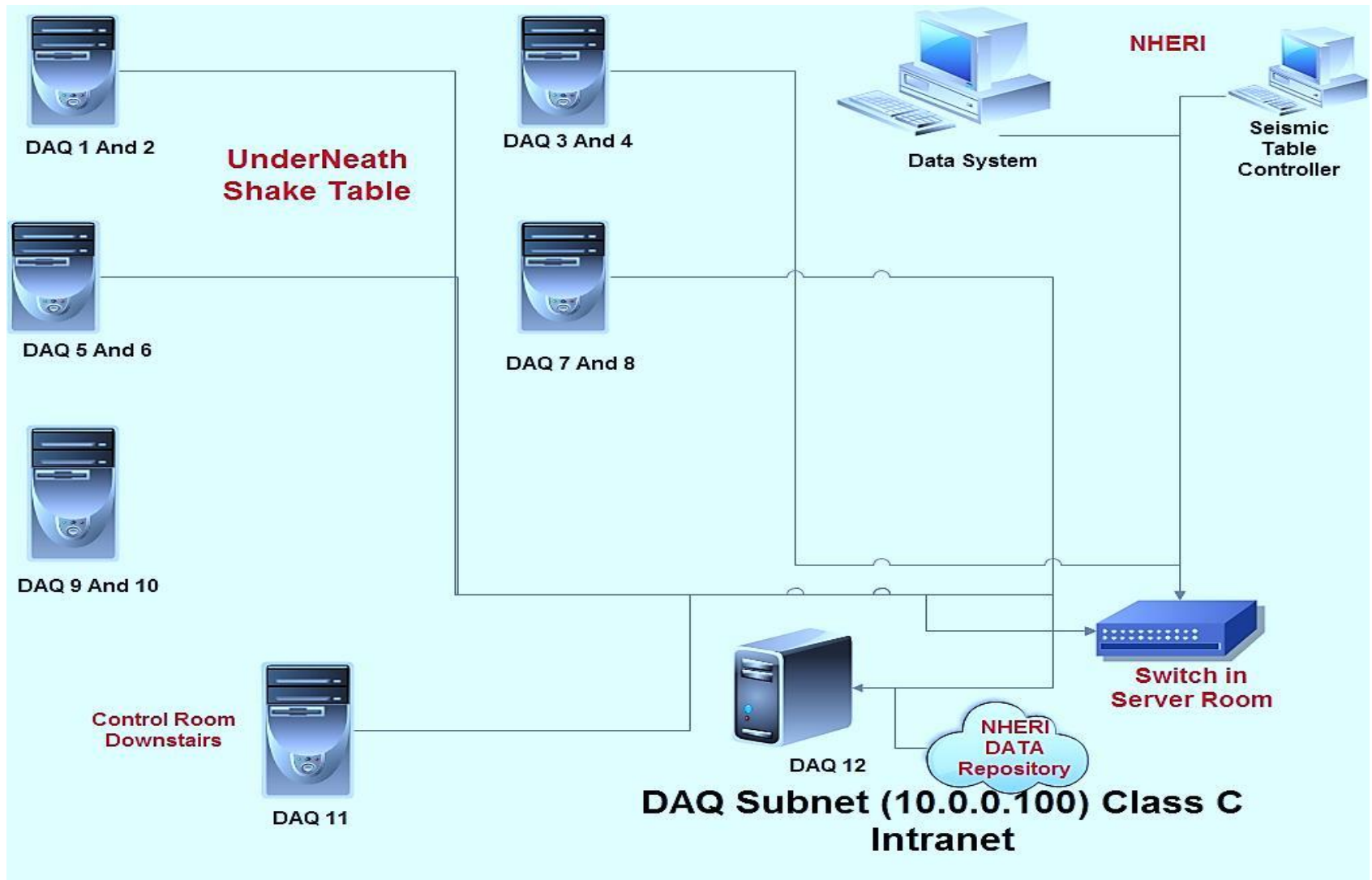




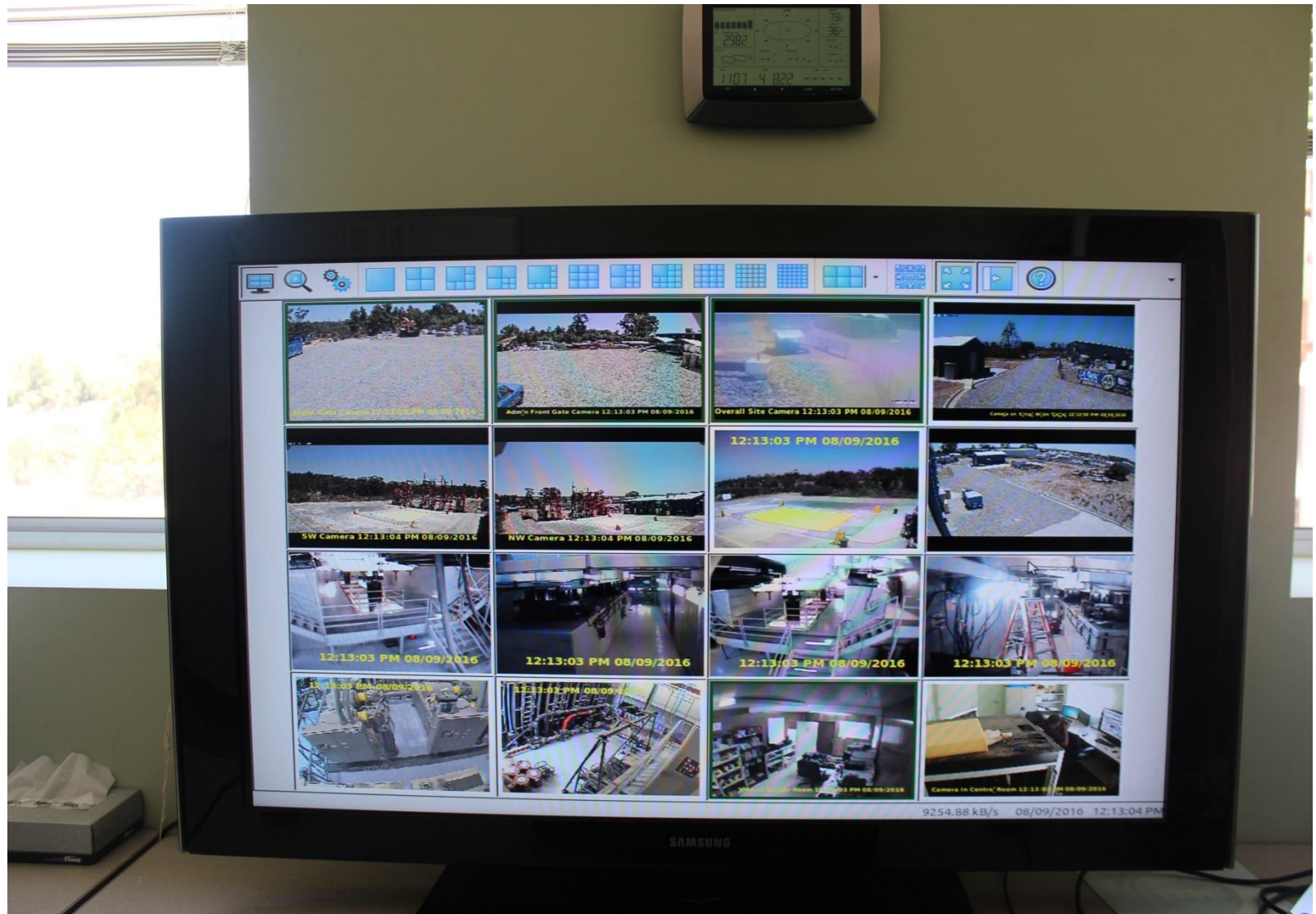
# SITE IT NETWORK

- The site has two types of networks:
  - The general site network visible to the outside
  - The DAQ and Video intranet not visible to outside world

# DAQ and VIDEO Intranet



# ExacqVision Safety Server/Security



# Cameras and lighting for Protections For Site



# SITE IT Cyber-SECURITY

- Physical access controlled for all facilities
- Fedora Server
  - Hot spare server for website
- Data Acquisition Access Control
  - Systems on dedicated intranet, access restricted to key personnel
  - Data transferred using dedicated physical devices
- Data Curation/Archiving
  - Data and metadata backed up immediately
  - Data transferred off-site at end of each test day



# SITE IT Cyber-SECURITY

- Security auditing by IT manager per university regulations
  - Done weekly by UCSD IT security department
  - UCOP has initiated a network/security audit of all UC Campuses, which will include network vulnerability scanning, penetration testing and remediation activity. The vulnerability scanning is very similar to the existing Qualys scanning service already deployed at UCSD.
  - Kali Linux setup for Penetration Testing on the Network
  - Snort Network intrusion Detection and Prevention System

**THANK YOU!**

