

# Birth of a Virtual Network Operating Center

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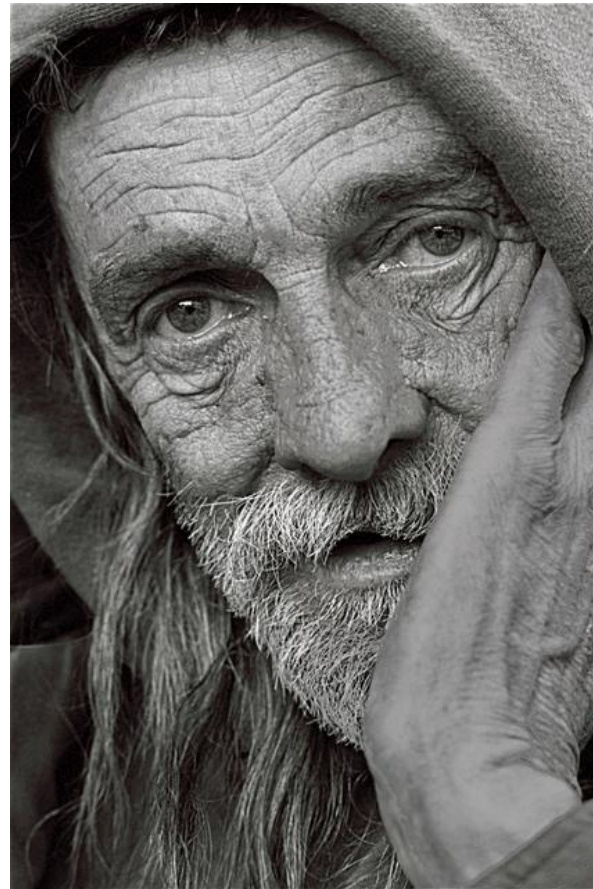
## Who We Are

- **Michel Davidoff**  
Director CyberInfrastructure, Chancellor's Office
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Associate Director Network Services, CSU Monterey Bay
- **Richard Ainslie**  
Network Administration Analyst, CSU East Bay

# Agenda

- How the VNOC was born
- What is the VNOC
- The value of the VNOC
  - Technical
  - Strategic
    - Campus
    - Chancellor's Office
- What we did
- Where we are today
- The future

# How the VNOC was born



# Who is going to survive this ...



## What is the VNOC

- A collaboration of 13 CSU campuses to monitor and ultimately perform change management for the participating campuses networks
- A team of campus network analysts who were assigned to work part time in the VNOC
- An opportunity for professional growth – become an expert in the technology
- Opportunity to be more efficient and effective while using a single set of common tools and standards

## **The strategic value of the VNOC**

- Widen the use of standards
- Leverage the collaboration between campuses
- Evolution to excellence
  - How does my campus compare to others
  - Budgeting
  - Future planning
  - Making decisions based on data (Sample CIO report)

# The technical value of the VNOC

- Build the common infrastructure elements:
  - NMS tools
    - Tunnels to the NMS tool provider campus
    - Shared admin and tasks
  - Perform “health check” and slowly fine-tune the network
  - Develop measuring methodologies and reporting
  - Set appropriate thresholds
  - Document and use true common best practices
  - Tenacious commitment to solving problems
    - Is available tech support being used? Many issues can be solved with a single call
    - Peer VNOC analysts work through issues collectively
    - No problems go unresolved



## What we did

- Placed NMS tools on two campuses
- Built GRE tunnels
- Created a shared admin environment
- Temporarily left local (duplicate) NMS tools in place
- No problems went unresolved
  - AP MTU anomaly
  - Sample problem 2

## How big is the VNOC ?

- ~2400 Devices switches and routers
- ~1800 Router interfaces
- ~7000 Access Points
- ~175K Ethernet ports
- ~1.1 Million continuance SNMP polls
- Impact on
  - Over 250K students
  - Over 20K faculty and staff

## Where we are today



**We can all agree that ...**



# We are seeing the light at the end of the tunnel



**I hope this does not happen ...**



# We are working together to solve this puzzle



## Where we are today

- Monitoring 13 campuses
- A team of campus network analysts who were assigned to work part time in the VNOC
- In process to add change management



## The Future

- Executive Council to review project
- Decisions about the future to deploy or fold
- Possible deployment strategies
  - VNOC analysts are full time and report to VNOC Manager/Director
  - Stay on “home campus”
  - Add Change Management and new technologies

Questions?

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