

# Building a Better Datacenter



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# Assessment of Resources



- ✓ Core Servers
- ✓ Department Servers
- ✓ Phone Systems
- ✓ Routers
- ✓ Backup Servers
- ✓ Media Storage and Retrieval
- ✓ Build room

# Requirements for Resources



- ✓ Space
- ✓ Power
- ✓ HVAC
- ✓ Accessibility
- ✓ Connection with existing networks

# Space



- ✓ Structurally sound
- ✓ Location within building (R.E. plumbing, HVAC, Power, Water level, Genset, floor load, conduit/raceway access)
- ✓ Space for ladder rack and/or raised floor
- ✓ Access for essential staff
- ✓ Build for expansion
- ✓ Rack Selection
- ✓ Ease of keeping clean

# Power



- ✓ Rack densities double since 1998
- ✓ Power more expensive than data
- ✓ 2x (or more!) rule for provisioning
- ✓ UPS strategies (Dual grid source)
- ✓ Genset (Fuel) and transfer switch
- ✓ Distribution of power to racks & servers
- ✓ Remote switching
- ✓ Monitoring and metering (\$\$)

# HVAC



- ✓ Never underestimate your cooling needs
- ✓ Start with sound passive cooling then add your HVAC infrastructure in to it
- ✓ Flow through versus closed loop
- ✓ “Hot Row/Cold Row” layout
- ✓ Don’t forget backup power for HVAC

# Accessibility vs. Security



- ✓ Who?
- ✓ When?
- ✓ What?
- ✓ Why?
- ✓ Keys, Codes or Swipes?
- ✓ Cameras

# Connecting to Networks



- ✓ LAN Patch Panels
- ✓ Upstream and WAN demarcations
- ✓ Inter-Rack network
- ✓ Back-Band Backup Network
- ✓ KVM
- ✓ Think beyond cat-5 (SM/MM Fiber, FC, etc)
- ✓ Grouping servers based on function
- ✓ Monitoring & Metering (Chuck's favorite subject!)



# Planning Stage



- ✓ Start with drawings
- ✓ Use findings from the previous steps to determine your physical requirements
- ✓ Leave space for humans!
- ✓ Raised Floor? Only for ducted AC (or mainframes)
- ✓ Closed Racks? Only when rack is a room to itself
- ✓ Securing items to floor and ceiling

# Tips and Tricks



- ✓ Don't hide your Datacenter  
Visibility brings stature
- ✓ Color code your cabling by function  
(Interconnects, Servers, KVM, Backup)
- ✓ Leave horizontal gaps between servers to  
promote better airflow and to reduce thermal  
bridging and compaction
- ✓ KVM over Cat-5 and back