

**Preparing for 1:1 education initiatives:**

**Infrastructure and Reality**

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**What is a 1:1 initiative?**

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**A: One computer per user**

# What goes into planning a 1:1 initiative?

Three major pieces:

# **1. Financial**

**Not in this preso!**

## **2. Professional development and building lesson plans to utilize the technology**

**Still not in this preso!**

# **3: Infrastructure!**

**The fun part !**



# Items to consider:

- Electrical
- Network
- Physical
- Security
- Inventory Control/Asset Tracking
- Repair/Spares
- Imaging

# Sample School

- 4 Grades @ 100 students and teachers per grade = 400 laptops in use
- 25 Apple Airport Extreme Access Points

# Electrical

# Charging Laptops

- Where to physically place 400 laptops?
- Is the buildings electrical service up to the task?
- $400 \times 45\text{w}(1.85\text{A}) = 18,000\text{w}(740\text{A})$

# Access Point Power

- How do you supply power to a school full of AP's? Local to install? POE?
- Is the buildings electrical service up to the task?
- $25 \times 0.4A = 10A$

# Network

# Bandwidth

- Do all users get a fair slice of the bandwidth pie?
- Can the network backbone support all the users?
- Can each AP support the number of users connecting to it?
- What type of data is being passed?



# Network Management

- **Network monitoring: SNMP, Intermapper, etc.**
- **More network nodes means more “things” to look at and pay attention to.**



# Sub-netting

- Separation of wired and wireless network
- Wireless can often lead to networks growing out of control and sub-netting helps you keep control

# Physical

# Storage

- What do you do to safely store 400 laptops?
- What level of security do you need?
- Is the storage area the same as the charging area?
- How/where do the units get stored during school vacations?

# Security

# Data and Network

- How do you secure your wireless network from intrusion?
- What level of security do you need?
- Can the outside world access internal servers and controlled data?
- Can the wireless data be sniffed?

# Inventory Control/ Asset Tracking



# Keeping track of it all

- **1:1 initiatives often bring on new inventory issues**
- **A method of databasing all pertinent information is not a luxury; It is a necessity**
- **Who needs to see this data?**
- **In what form should it take?**

# Items to track:

- Serial numbers
- Asset tag numbers
- MAC addresses of all active ports
- Configuration files
- Laptops, access points, networking gear and any other system equipment



# Repair

# Dude, it's broke!

- Getting one machine repaired is straight forward. What do you do when you have 400?
- Laptops are more prone to user damage.
- Are the repairs covered under warranty?
- Budget for non-warranty repairs?

# Spares

- There should be a spares pool for laptops.
- The inventory needs to be able to track spares.
- Does the user get their original machine back?
- There should be spares for AP's and any other mission critical pieces.

# Imaging

- How do you deploy new or revised software to hundreds of machines?
- Time and technology must be organized to apply to the imaging process
- Imaging can not be done hastily. The image must be tested and proven robust

# Questions?

**Thanks!**