Wireless & 1:1 Survey Findings
May 2013
Introduction

• The Cloud team & NCDPI conducted a survey of all LEAs’ and Charter Schools’ wireless capabilities and 1:1 implementation status.
• The survey had a high response rate from LEAs (114 of 115 participating).
• This survey asked for responses on a school by school level, giving a more accurate representation about what’s happening in the state.
Level of Wireless Coverage

• 70 Schools indicated no wireless coverage in their school.

• 818 Schools reported marginal coverage (1 wireless access point for 3 or more classrooms). These schools typically provide some coverage in common academic areas like libraries, and portions of buildings for occasional use.
Level of Wireless Coverage

• 928 Schools have intermediate coverage (1 wireless access point for 2 classrooms). These schools have more widespread coverage across the campus, and may have limited areas of high density coverage.

• 515 Schools have high density coverage (1 or more wireless access point per classroom). These schools have sufficient coverage to implement 1:1 programs campus-wide.
Distribution of Wireless Coverage

- None (70)
- Marginal (818)
- Intermediate (928)
- High Density (515)

- None: 3%
- Marginal: 35%
- Intermediate: 40%
- High Density: 22%
State of Networks

• Thanks to the ongoing support of the School Connectivity Initiative, every school receives a high bandwidth, highly-reliable connection to the school campus.

• However, the state of networks inside schools vary widely.

• Those schools with high density wireless generally have robust internal networks that a potential service provider could operate as a service.

• Interestingly, 130 schools have wireless networks that could support a 1:1 program, but have yet to implement a 1:1.
State of Networks

- Schools with no wireless network, will generally require a full rebuild of their entire network to support wireless.
- Those schools with marginal or intermediate coverage will require more study to determine the appropriate upgrade solution.
- While some schools are nominally ready to increase their coverage to high density, others will require more extensive rebuilds. However, in aggregate it can be assumed that all schools in the intermediate or marginal categories will have significant work to move to high density wireless.
State of Networks

- Need Network Upgrades
- Have a Network to Support 1:1
- 1:1 Implemented

1816
385
130
Growth of 1:1 Computing

• 1:1 programs have grown steadily over the past 4 years. However, schools more frequently adopt incremental wireless expansion and teacher devices, and wait to implement 1:1 programs for students.

• While tablet implementation has grown significantly over the last 2 years, the mainstay of 1:1 programs continues to be traditional or ultrabook laptops.

• Small handheld devices (iPod Touch, PDA’s, etc) continue to be niche implementations and on the decline.

• Given that 130 schools have the network to support 1:1 but do not, additional study needs to occur to determine adoption factors.
Types of 1:1 Devices

- Windows Laptops (209) 54%
- Apple Laptops (70) 18%
- iOS iPad (60) 16%
- iOS Handhelds (14) 4%
- Chromebooks (32) 8%
Do Devices Go Home?

• We asked schools whether devices go home with students in their 1:1 initiatives.

• When schools allow devices to go home, it points to a more mature implementation where use of the device is expected at all levels of instruction.

• Additional study will be needed to determine if the type of device influences a school’s decision to allow the device to go home.

• Currently, slightly more schools allow the device to go home.
Do Devices Go Home?

- 53% Allowed To Take Home
- 47% Only during the school day
How is 1:1 Funded

• Schools have investigated multiple strategies to fund 1:1 initiatives, however the overwhelming majority fund these programs fully from the LEA.

• Some schools have begun to implement Bring Your Own Device Strategies (BYOD) to help underwrite the cost of the programs.

• However, an exclusively BYOD environment would seemingly exclude segments of the student population and point to a less mature implementation.

• More study and policy review need to occur to fully assess the viability of funding models for 1:1 and make recommendations to move forward.
How is 1:1 Funded

- LEA Funded: 74%
- Bring Your Own: 19%
- Both: 7%
We Have A Long Way To Go

• While we have made significant progress in 1:1 across the state, the overwhelming majority of schools do not have 1:1 initiatives.

• The growth of online assessment is pushing schools in the direction of 1:1, but a mature program takes a minimum of 1-2 years to implement and requires significant leadership buy in.

• Currently approximately 20% of High Schools have 1:1 initiatives, with a peak of 101 schools with programs in the 9th Grade. Early College High Schools appear to adopt at higher rates.

• Approximately 16% of Middle Schools have programs, and only 5% of Elementary Schools participate.

• Elementary adoption drops dramatically below 3rd Grade.
1:1 Implementation By Grade

Out of 486 High Schools

- 12+: 25
- 12: 89
- 11: 90
- 10: 90
- 9: 101

Out of 414 Middle Schools

- 8: 65
- 7: 59
- 6: 63

Out of 1420 Elementary Schools

- 5: 69
- 4: 49
- 3: 40
- 2: 25
- 1: 24
- K: 19
Conclusion

• These initial findings will help us as we further investigate a plan to expand wireless networks and 1:1 programs in schools across the state.

• With further study we believe we can more closely identify processes and costs required to implement wireless in schools with marginal or intermediate coverage.

• Our goal is to implement sustainable solutions that are cost effective, robust, and reliable.

• Our initial work has provided significant data to help us move forward with this work.
Survey Questions

W1 Wireless Access Point (AP) Density

We recognize that Access Points may not be installed directly in every classroom, in such case provide the average number of APs per classroom for covered instructional areas. For example, if your instructional space of 50 classrooms has 63 Access Points, answer "1+ APs per classroom." If a wireless array which incorporates multiple radios into a single device and uses directional antennas is deployed, assume that 2 radios is equivalent to 1 Access Point.

☐ 1+ APs per classroom (1)
☐ 1 AP per classroom (2)
☐ 1 AP per every 2 classrooms (3)
☐ 1 AP per 3 or more classrooms (4)
☐ No wireless Infrastructure at this school (5)

If No wireless Infrastructure ... Is Selected, Then Skip To End of Block

W2 WLAN infrastructure is present in media centers, auditoriums, and other common areas with no more than 20 students per access point.

☐ Yes (1)
☐ No (2)

W3 802.11 protocols supported

☐ a (1)
☐ b (2)
☐ g (3)
☐ n (4)

W4 Dual (2.4ghz and 5.0ghz) radios and antennas are in use in each access point.

☐ Yes (1)
☐ No (2)

W5 A professional site survey was conducted as part of the installation process. (ie variables such as building materials, campus layout, etc were used to produce survey)

☐ Yes (1)
☐ No (2)

W6 Wireless access points are connected to gigabit ports on ethernet switches.

☐ Yes (1)
☐ No (2)

W7 Wired LAN is gigabit ethernet operating over category 5e/6 cabling systems.

☐ Yes (1)
☐ No (2)
C1 This school has a 1:1 device program for students.

☐ Yes (1)
☐ No (2)

*If No is Selected, Then Skip To End of Block*

C2 How is the 1:1 student device program funded?

☐ School/LEA Funding (1)
☐ Bring Your Own Device (2)
☐ Both (3)

C3 What is the PREDOMINATE platform and device utilized in your 1:1 student device program?

☐ Windows Laptops (1)
☐ Mac OS Laptops (2)
☐ Chromebook Laptops (3)
☐ iOS iPad (both standard and mini) (4)
☐ iOS Handhelds (iPod Touch, iPhone) (5)
☐ Android Tablets (7” or larger) (6)
☐ Android Handheld (less than 7”) (7)

C4 How are the devices accessible to students?

☐ Only during the school day (1)
☐ Students are allowed to take home (2)

C5 Please indicate all grade levels with 1:1 student device coverage.

☐ K (1)
☐ 1 (2)
☐ 2 (3)
☐ 3 (4)
☐ 4 (5)
☐ 5 (6)
☐ 6 (7)
☐ 7 (8)
☐ 8 (9)
☐ 9 (10)
☐ 10 (11)
☐ 11 (12)
☐ 12 (13)
☐ 12+ (14)