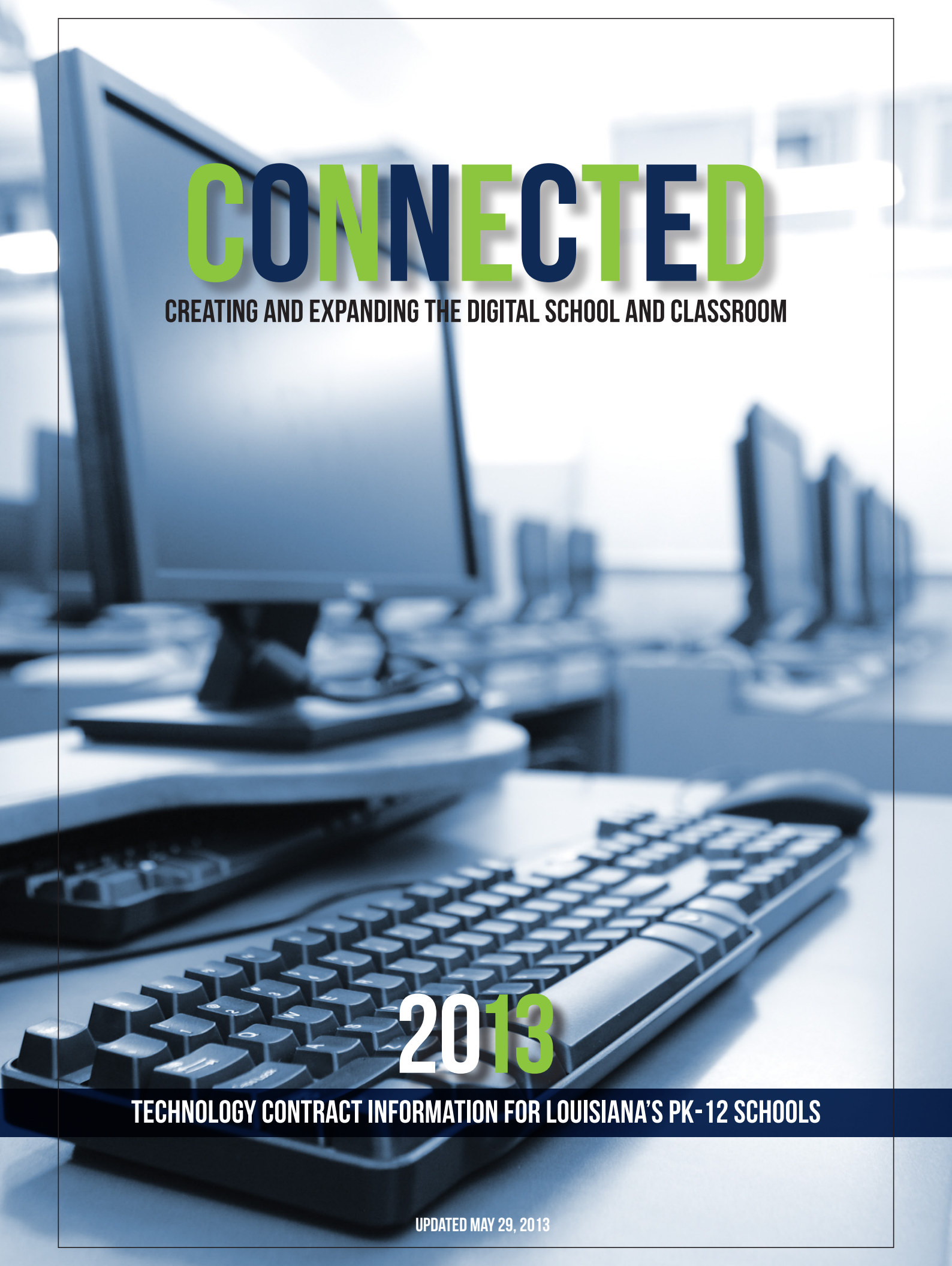

CONNECTED

CREATING AND EXPANDING THE DIGITAL SCHOOL AND CLASSROOM

2013

TECHNOLOGY CONTRACT INFORMATION FOR LOUISIANA'S PK-12 SCHOOLS

UPDATED MAY 29, 2013

HIGHLIGHTED CONTRACTS

In this issue of Connected, LDOE is releasing new lower pricing on some of these most popular models of laptops, desktops and tablet computers sold by Dell, Hewlett Packard and Lenovo. Future issues will feature Apple Bundles, Microsoft discounts on Windows upgrades, network and wiresless guidance and pricing, etc...

New issues of Connected will be posted on an as-needed basis and as new pricing or catagories become available. Please continue to check back for updates and new pricing that is only available to our Louisiana schools.

Desktop Hardware	Page 4
Laptop Hardware	Page 8
Computer Hardware and Peripheral Contracts	Page 12
WiFi Network Information	Page 15
Web Filtering	Page 101
Software Licensing	Page 131

FOR MORE INFORMATION

LOUISIANA DEPARTMENT OF EDUCATION
Information Technology
www.louisianaschools.net

Contact: EdTech@la.gov for more information

CHANGING THE WAY KIDS LEARN

Get your classrooms cruising with OptiPlex desktops and third-generation Intel Core processors. Created for net worked environments, they're IT dream machines designed to minimise costs over time by making setup, management and security easy.

CONTRACT # WN11ACA | CUSTOMER AGREEMENT # 403834/NASPO B27160

OPTIPLEX 3010 MINITOWER

DETAILS

- 3rd Gen Intel Core i3-3220 Processor (Dual Core, 3.30GHz, 3MB, w/ HD2500 Graphics)
- 4GB, NON-ECC, 1600MHZ DDR3 Memory, 2 DIMM
- Dell USB Keyboard
- Intel® Integrated Graphic Card w/Single HDMI/VGA
- 250GB 3.5" SATA 3.0Gb/s Hard Drive and 8MB Data Burst Cache
- Windows 7 Professional
- Dell MS111 USB Optical Mouse
- 16X DVD+/-RW SATA
- Internal Speaker
- Dell Limited Hardware Warranty Plus Service 3 Year
- 3 Year Basic Hardware Service: Next Business Day Onsite Service After Remote Diagnosis

GOOD

LA PK-12 PRICING

$495.91

Quote # 642114587

OPTIPLEX 7010 MINITOWER

DETAILS

- 3rd Gen Intel Core i5-3470 Processor (6MB, 3.2GHz) w/HD2500 Graphics
- 4GB, NON-ECC, 1600MHZ DDR3 Memory,1 DIMM
- Dell USB Keyboard
- Intel® Integrated Graphics w/o Adapters Video Card
- 500GB 3.5 6Gb/s SATA Hard Drive with 16MB DataBurst Cache
- Windows 7 Professional 64-bit
- Dell MS111 USB Optical Mouse
- 16X DVD+/-RW SATA
- Internal Speaker
- Dell Limited Hardware Warranty Plus Service 3 Year
- 3 Year Basic Hardware Service: Next Business Day Onsite Service After Remote Diagnosis

BETTER

LA PK-12 PRICING

$603.13

Quote # 642114809

OPTIPLEX 9010 MINITOWER

DETAILS

- 3rd Gen Intel Core i5-3470 Processor (6MB, 3.2GHz) Intel vPro enabled w/ HD2500 Graphics
- 8GB, NON-ECC, 1600MHZ DDR3 Memory, 2 DIMM
- Dell USB Keyboard
- 1GB AMD RADEON HD 7470 Video Card w/ VGA and DVI Adapters
- 500GB 3.5 6Gb/s SATA HD w/ 16MB DataBurst Cache
- Windows 7 Professional 64-bit
- Dell MS111 USB Optical Mouse
- 6X DVD+/-RW SATA
- Internal Speaker
- Dell Limited Hardware Warranty Plus Service 3 Year
- 3 Year Basic Hardware Service: Next Business Day Onsite Service After Remote Diagnosis

BEST

LA PK-12 PRICING

$649.98

Quote # 642115096

CALL YOUR LOCAL DISTRICT DELL REPRESENTATIVE OR ORDER AT 1.800.274.7799 • WWW.DELL.COM

COMPETITIVE CLASSROOM SOLUTIONS

Prepare your learning space to be a leader in technology that commands success. DETEL offers products and services that exceed expectations, offering extra value combined with solid classroom performance.

LA State Contract #'s 405031 & 409463

DETEL NLINE I3

DETAILS

- Desktop Slimline 300w
- Intel H61 Express Chipset
- 3rd Gen Intel Core i3-3220 Processor (Dual Core, 3.30GHz)
- 250GB HDD 3.5" SATA 3.0GB/s
- 4GB, Non ECC, DDR3 1333MHz Memory
- 24x DVD/RW
- Microsoft USB Keyboard and Mouse
- Intel Integrated Graphics VGA/DVI
- Intel High Definition Audio
- Integrated Lan
- Windows 7 Pro(64bit)
- 3 year Parts and Labor Warranty

ADDITIONAL SERVICES INCLUDED WITH ALL DESKTOPS

- Onsite Set-Up
- Legendary Service
- Imaging Included

GOOD

LA PK-12 PRICING

$599.00

Quote # PARCC004

DETEL NLINE4 I5

DETAILS

- Desktop Slimline 300w
- Intel H61 Express Chipset
- 3rd Gen Intel Core i5-3470 Processor (6MB, 3.2 GHz)
- 500GB HDD 3.5" SATA
- 4GB, Non ECC, DDR3 1333MHz Memory
- 24x DVD/RW
- Microsoft USB Keyboard and Mouse
- Intel Integrated Graphics VGA/DVI
- Intel High Definition Audio
- Integrated Lan
- Windows 7 Pro(64bit)
- 3 year Parts and Labor Warranty

BETTER

LA PK-12 PRICING

$675.00

Quote # PARCC005

DETEL NLINE8 I5

DETAILS

- Desktop Slimline 300w
- Intel B75 Express Chipset
- 3rd Gen Intel Core i5-3470 Processor (6MB, 3.2 GHz)
- 500GB HDD 3.5" SATA
- 8GB, Non ECC, DDR3 1333MHz Memory
- 24x DVD/RW
- Microsoft USB Keyboard and Mouse
- Intel Integrated Graphics VGA/DVI
- Intel High Definition Audio
- Integrated Lan
- Windows 7 Pro(64bit)
- 3 year Parts and Labor Warranty

BEST

LA PK-12 PRICING

$725.00

Quote # PARCC006

CALL YOUR LOCAL DETEL ACCOUNT EXECUTIVE

PHONE: 1-866-335-8611 • EMAIL: INFO@DETEL.COM • FAX: 1-225-952-9432

QUANTITY DISCOUNTS AVAILABLE • CONTACT DETEL TO CUSTOMIZE YOUR DESKTOP OR LAPTOP SOLUTION.

BRINGING EDUCATION TO LIFE

HP has always been a leader in cutting-edge computer technology.
Now, with new Intel® architecture, we've taken processing power to the next level
so that your students can truly experience education beyond the classroom.

LA - STATE OF LOUISIANA (WSCA/NASPO) CONTRACT # 404160-B27164, Quote # 8234111-3

GOOD

HP COMPAQ PRO 4300 SMALL FORM FACTOR DESKTOP PC

DETAILS

- Windows 7 Professional 64 (available through downgrade rights from Windows 8 Pro)
- Intel® H61 Express Chipset
- High-Efficient Chassis
- Intel Core i3-3220 Processor (3.30 GHz, 3 MB Cache)
- 4GB DDR3-1600 DIMM (1x4GB) RAM Memory
- 250GB 7200 RPM 3.5 1st Hard Drive
- SuperMulti DVDRW Optical Drive
- Intel HD Graphics 2500 Card
- Integrated Broadcom BCM 57788 Gigabit
- Ethernet LAN with Lightning protection
- HP USB Standard Keyboard - Win 8
- HP USB Optical BLK Mouse
- Application software - Microsoft Office Starter 2010
- 3/3/3 SFF Warranty

LA PK-12 PRICING
$464.00

BETTER

HP COMPAQ PRO 6300 SMALL FORM FACTOR DESKTOP PC

DETAILS

- Operating systems - Windows 7 Professional 64 (available through downgrade rights from Windows 8 Pro)
- Intel® Q75 Express Chipset
- Standard Chassis
- Intel Core i5-3470 Processor (3.20 GHz, 6 MB Cache)
- 4GB DDR3-1600 DIMM (1x4GB) RAM Memmory
- 500GB 7200 RPM 3.5 1st Hard Drive
- SuperMulti DVDRW Optical Drive
- Intel HD Graphics 2500 Card
- Intel® 82579LM Gigabit Network
- HP USB Standard Keyboard - Win
- HP USB Optical BLK Mouse
- Application software - Microsoft Office Starter 2010
- 3/3/3 SFF Warranty

LA PK-12 PRICING
$522.00

BEST

HP COMPAQ ELITE 8300 SMALL FORM FACTOR DESKTOP PC

DETAILS

- Operating system - Windows 7 Professional 64 (available through downgrade rights from Windows 8 Pro)
- Intel Core i5-3470 Processor (3.20 GHz, 6 MB Cache)
- Intel® Q77 Express Chipset
- 8GB DDR3-1600 DIMM (1x8GB) RAM Memory
- 500GB 7200 RPM 3.5 Hard Drive
- SuperMulti DVDRW Optical Drive
- Intel HD Graphics 2500 Card
- Integrated Intel 82579 GbE Network
- HP USB Standard Keyboard - Win 8
- HP SFF Chassis Tower Stand
- HP USB Optical BLK Mouse
- Application software - Microsoft Office Starter 2010
- 3/3/3 SFF Warranty

LA PK-12 PRICING
$560.00

Inside sales representative: Brett Windle, (888) 202-4682 ext. 7713625

Field Representative: John Crawfort, john.crawford@hp.com

Order at: http://welcome.hp.com/country/us/eng/solutions/pub_sector.html or Fax 800-825-2329

TRANSFORMING EDUCATION, EMPOWERING TEACHING

Lenovo computer becomes a portal for guiding students through individualized learning experiences that strengthen comprehension without lengthening the school day. It is a fusion of methodology and technology that gives each student an equal opportunity to excel.

LA - STATE OF LOUISIANA (WSCA/NASPO) CONTRACT # B27168-406254

LENOVO THINCENTRE M72E TINY

DETAILS

- Windows 8 Pro 64 Downgrade to Windows 7 Pro 64 English
- Platform: H61 Tiny 35W M72e W8DG
- Processor: Core i3-2120T 2.6GHz 3M Cache
- Memory: 4GBx1 PC3-12800 DDR3 SoDIMM
- Hard Drive: 320GB 7200RPM 2.5" SATA
- Graphic Card: Integrated Video
- Keyboard: USB FullSize US EN W8
- Mouse: Enhanced Optical USB Mouse
- Audio Card: Integrated Audio
- Ethernet: Integrated Intel GIGA
- Warranty: 3 years Onsite

LA PK-12 PRICING
$418.80

LENOVO THINCENTRE M72E SFF

DETAILS

- Windows 8 Pro 64
- Platform: H61 SFF 85W M72e W8DG
- Processor: Core i5-3470 3.2GHz 6M Cache
- Memory: 4GBx1 PC3-12800 DDR3 UDIMM
- Hard Drive: 250GB 7200RPM SATA
- Graphic Card: Integrated Video
- Optical Drive: DVD Recordable W7
- Keyboard: USB FullSize US EN W8
- Mouse: Enhanced Optical USB Mouse
- Audio Card: Integrated Audio
- Ethernet: Integrated Intel GIGA
- Warranty: 3/3

LA PK-12 PRICING
$560.90

LENOVO THINKCENTRE M72Z ALL IN ONE

DETAILS

- Operating System: Windows 8 Pro 64 Downgrade to Windows 7 Pro 64 English
- Platform: H61 AIO Non-touch M72z W8DG
- Processor: Core i3-3220 3.30GHz 3M Cache
- Memory: 4GBx1 PC3-12800 DDR3 SoDIMM
- Hard Drive: 500GB 7200RPM SATA
- Graphic Card: Integrated Video
- Optical Drive: Slim DVD Recordable W7
- Keyboard: USB FullSize US EN W8
- Mouse: Enhanced Optical USB Mouse
- Audio Card: Integrated Audio
- Ethernet: Integrated Intel GIGA
- Internal Speakers: Internal Speakers
- Warranty: 3/3

LA PK-12 PRICING
$615.38

Sales Operations: Amy Skalon, 866.758.8448, amyska@cdw.com
Sales Manager: Nicci Fagan, 866.259.1463, niccci.fagan@cdwg.com

EDUCATING THE MOBILE STUDENT

CONTRACT # WN11ACA | CUSTOMER AGREEMENT # 403834/NASPO B27160

GOOD BETTER BEST

DELL LATITUDE E5430

Budget-friendly with E-Family docking capability.

DETAILS

- 3rd gen Intel Core i5-3320M Processor (2.6GHz, 3M cache, Upgradable to Intel vPro technology)
- 4.0GB, DDR3-1600MHz SDRAM, 1 DIMM Memory
- Intel HD Graphics 4000 Video Card
- 320GB Hard Drive, 7200RPM
- 14.0" HD (1366x768) Anti-Glare WLED-backlit screen
- Windows 7 Professional, 64-bit
- 65W 3-Pin, AC Adapter
- 8X DVD+/-RW
- Light Sensitive Webcam and Noise Cancelling Digital Array Mic.
- Dell Wireless 1504 802.11g/n Single Band Wi-Fi Half Mini-card
- 6-Cell (60WH) Primary Lithium Ion Battery, (2.8Ah)
- Dell Limited Hardware Warranty Plus Service 3 Year
- 3 Year Basic Hardware Service: Next Business Day Onsite Service After Remote Diagnosis

LA PK-12 PRICING
$800.24
Quote # 642114475

DELL LATITUDE E6430

Business class laptops powered by the latest Intel® Third Generation Core™ i processor, and available in a wide variety of sizes and features.

DETAILS

- 3rd gen Intel Core i5-3320M Processor (2.6GHz, 3M cache, Upgradable to Intel vPro technology)
- 4.0GB, DDR3-1333MHz SDRAM, 1 DIMM Memory
- Intel HD Graphics 4000 Video Card
- 320GB 7200rpm Hard Drive 9.5mm
- 14.0" HD (1366x768) Anti-Glare WLED-backlit, WiGig capable screen
- Windows 7 Professional, 64-bit
- 65W 3-Pin, AC Adapter
- 8X DVD
- Light Sensitive Webcam and Noise Cancelling Digital Array Microphone
- Dell Wireless 1504 802.11g/n Single Band Wi-Fi Half Mini-card
- 6-Cell (60WH) Primary Lithium Ion Battery, (2.8Ah)
- Dell Limited Hardware Warranty Plus Service 3 Year
- 3 Year Basic Hardware Service: Next Business Day Onsite Service After Remote Diagnosis

LA PK-12 PRICING
$885.00
Quote # 642112651

DELL LATITUDE E6430U

The most durable and manageable vPro-enabled Ultrabook™ delivers high levels of productivity powered by Intel® Core™ i processors.

DETAILS

- 3rd gen Intel Core 3427U Processor (1.8GHz, 3M cache, Upgradable to Intel vPro technology)
- 4.0GB, DDR3-1600MHz SDRAM Memory, 2 DIMMS
- Internal English Dual Point Backlit Keyboard
- Intel HD Graphics 4000 Video Card
- 64GB Mobilty Solid State Hard Drive
- 14.0" HD (1366x768) Anti-Glare WLED-backlit
- Windows 7 Professional, 64-bit
- 65W 3-Pin, AC Adapter
- 8X DVD+/-RW
- Light Sensitive Webcam and Noise Cancelling Digital Array Microphone
- Dell Wireless 1504 802.11g/n Single Band Wi-Fi Half Mini-card
- 6-Cell (60WH) Primary Lithium Ion Battery, (2.8Ah)
- Dell Limited Hardware Warranty Plus Service 3 Year
- 3 Year Basic Hardware Service: Next Business Day Onsite Service After Remote Diagnosis

LA PK-12 PRICING
$1065.00
Quote # 642112942

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DETEL©

MOVING TOWARDS A BETTER EDUCATION

This mobile technology is a combination of security and performance backed by DETEL's 3 year product warranty. Our locally based company offers premium technology solutions at an affordable price, driving our Louisiana students down the path of success.

LA State Contract #'s 405031 & 409463

GOOD BETTER BEST

DETEL NOBLE I3

DETAILS

- Intel Core i3-3217U (1.8 GHz)
- 15.6" HD LED 1366x768
- 4 GB DDR3 RAM
- 500GB HDD 5400rpm
- Windows 8 (64bit) downgraded to Windows 7 (64bit)
- Intel Integrated GMA HD Graphics
- DVD-RW/CD-RW
- 802.11 b/g/n Wireless LAN
- 0.3 MP Camera
- 50 WHrs 6-cell Li-ion Battery
- 1 year Accidental Warranty
- 3 year Parts and Labor Warranty

ADDITIONAL SERVICES INCLUDED WITH ALL LAPTOPS

- Onsite Set-Up
- Legendary Service
- Imaging Included

LA PK-12 PRICING
$749.00
Quote # QTE0004497

DETEL NOBLE I5

DETAILS

- Intel Core i5-3337U (2.7 GHz)
- 15.6" HD LED 1366x768
- 8 GB DDR3 RAM
- 750GB HDD 5400rpm
- Windows 8 (64bit) downgraded to Windows 7 (64bit)
- Intel Integrated GMA HD Graphics
- DVD-RW/CD-RW
- 802.11 b/g/n Wireless LAN
- 0.3 MP Camera
- HDMI Out
- 50 WHrs 6-cell Li-ion Battery
- 1 year Accidental Warranty
- 3 year Parts and Labor Warranty

LA PK-12 PRICING
$842.00
Quote # QTE4498

DETEL NOBLE I7

DETAILS

- Intel Core i7-3537U (3.1 GHz)
- 15.6" HD LED 1366x768
- 8 GB DDR3 RAM
- 1TB HDD 5400rpm
- Windows 8 (64bit) downgraded to Windows 7 (64bit)
- Intel Integrated GMA HD Graphics
- DVD-RW/CD-RW
- 802.11 b/g/n Wireless LAN
- 0.3 MP Camera
- 50 WHrs 6-cell Li-ion Battery
- 1 year Accidental Warranty
- 3 year Parts and Labor Warranty

LA PK-12 PRICING
$999.00
Quote # QTE0004499

CALL YOUR LOCAL DETEL ACCOUNT EXECUTIVE

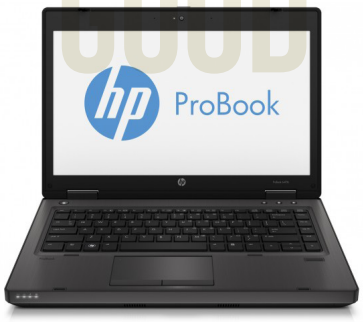
PHONE: 1-866-335-8611 • EMAIL: INFO@DETEL.COM • FAX: 1-225-952-9432

QUANTITY DISCOUNTS AVAILABLE • CONTACT DETEL TO CUSTOMIZE YOUR DESKTOP OR LAPTOP SOLUTION.

ANY WHERE, ANY TIME LEARNING

LA - STATE OF LOUISIANA (WSCA/NASPO) CONTRACT # 404160-B27164, Quote # 8234111-3

GOOD



HP PROBOOK 6470B NOTEBOOK PC, WITH MOBILE

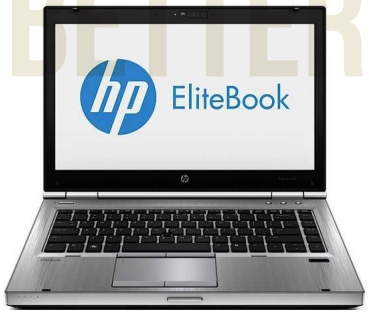
HP's most configurable notebook with the optimal combination of features for education use .

DETAILS

- Intel® HM76 chipset, Intel® HD Graphics
- Windows 8 Pro 64
- Intel® Core™ i5-3320M Processor, 2.60 GHz, (Turbo up to 3.3 GHz) 1600 MHz, 3 MB L3 Cache
- Mobile Intel® HM76 Chipset
- Integrated HD Webcam
- 14.0-inch diagonal LED-backlit HD anti-glare (1366 x 768) Screen with Webcam
- Intel® HD Graphics 4000 (Core i3/i5/i7) Card or Intel® HD Graphics 3000 (Core i3-2370M) Card
- 4 GB 1600 MHz DDR3 SDRAM Memory (1 DIMM)
- 320 GB 7200 rpm SATA hard drive
- DVD±RW SuperMulti DL Drive (in upgrade bay)
- DualPoint Keyboard (Win 8 KB) only available if (Win 8 OS) is selected
- Wireless LAN - 802.11bgn 1x1
- 65W Hardware Kit Adapter
- 6-cell (55 WHr) Lithium-Ion battery
- 3/3/0 Warranty

LA PK-12 PRICING
$725.00

BETTER



HP ELITEBOOK 8470P NOTEBOOK

Best-in-class design, leading technologies, and feature-rich with greater security, enhanced manageability, and premium support.

DETAILS

- Operating system - Windows 8 Pro 64
- Intel® Core™ i5-3320M Processor, 2.60 GHz, (Turbo up to 3.3 GHz), 1600 MHz, 3 MB L3 Cache
- Mobile Intel® QM77 Express Chipset
- 14.0-inch diagonal LED-backlit HD anti-glare (1366 x 768) display
- Integrated HD Webcam
- Intel® HD Video Graphics 4000 Card
- 4 GB 1600 MHz DDR3 SDRAM memory (1 DIMM)
- 320 GB 7200 rpm SATA hard drive
- DVD±RW SuperMulti DL Drive (upgrade bay)
- DualPoint Keyboard (Win 8 KB) only available if (Win 8 OS) is selected.
- Wireless LAN - 802.11bgn 1x1
- Adapter - 65W Hardware Kit
- 6-cell (62 WHr) Lithium-Ion battery
- Warranty - HP Elite Support with limited 3 year standard parts and labor warranty 3/3/0
- Slots: 1 Express Card/54, 1 Smart Card Reader, & 1 SD/MMC

LA PK-12 PRICING
$798.00

BEST

HP ELITEBOOK FOLIO 9470M

Sleek and thin, combining the finest features and technology with best-in-class battery life of up to 9 hours.

DETAILS

- Operating system - Windows 8 Pro 64
- Intel® Core™ i5-3317U Processor, 1.7 GHz, (Turbo up to 2.6 GHz), 1600 MHz, 3 MB L3 Cache
- Mobile Intel® QM77 Express Chipset
- 14.0-inch diagonal LED-backlit HD anti-glare (1366 x 768) display
- Integrated HD Webcam
- Intel® HD 4000 VIdeo Graphics Card
- 4 GB 1600 MHz DDR3 SDRAM Memory (1 DIMM)
- 180 GB Solid-State Drive (SSD)
- DualPoint Backlit Keyboard
- Wireless LAN - 802.11bgn + BT (1x1)
- 45W Hardware Kit Adapter
- 4-cell (52 WHr) Lithium-Ion battery
- Warranty - 3/3/0 Warranty

LA PK-12 PRICING
$979.00

Inside sales representative: Brett Windle, (888) 202-4682 ext. 7713625

Field Representative: John Crawfort, john.crawford@hp.com

Order at: http://welcome.hp.com/country/us/eng/solutions/pub_sector.html or Fax 800-825-2329

ENGAGED LEARNING

Now you can ignite students' interest in learning and expand instructors' teaching prowess with durable, reliable and powerful computers from Lenovo. Our computers use rich media to draw students into their subjects because engaged students simply learn better.

LA - STATE OF LOUISIANA (WSCA/NASPO) CONTRACT # B27168-406254

GOOD

LENOVO THINKPAD X131E

DETAILS

- Windows 8 Pro w/ W7 Downgrade
- Intel Core i3-2367M on MB
- X131e Intel, Intel I3-2367M
- X131e 11.6WHD, WW AG Black Display
- ThinkPad a/b/g/n BT(2x2&BT4.0)
- Mobile Broadband upgradable
- 6 cell LI Battery X131e
- 4 GB PC3-12800 DDR3 Memory (1 DIMM)
- 320GB 7200rpm Hard drive
- X131e 720p HD Camera
- 65W AC Adpt US (2pin)
- 3 Year Depot/Express Warranty

ADDITIONAL WARRANTIES & ACCESSORIES

- Lenovo 3 Year Onsite Upgrade for X131e ($14.82)
- Lenovo 3 Year Accidental Damage Protection for X131e ($96.87)
- Lenovo 3 Year Onsite Next Business Day + Accidental Damage Protection for X131e ($110.54)
- Lenovo 3 Year Computrace Mobile for X131e ($49.00)

LA PK-12 PRICING
$576.92

BETTER

LENOVO THINKPAD E431

DETAILS

- Windows 8 Pro 64 Downgrade to W7 Pro 64
- E431 Intel HD Graphics
- Intel Core i3-3120M
- E431 14.0HD Anti-Glare, WWAN Display
- Intel Centrino Advanced-N 6205
- Mobile Broadband upgradable
- 6cell LI Battery
- 4 GB PC3-12800 DDR3 Memory (1 DIMM)
- DVD Recordable, UBE w/SWR
- 320GB 7200rpm Hard Drive
- E431 No Camera Mic
- 65W AC Adpt US (2pin)
- 1 Year Depot/Express Warranty

ADDITIONAL WARRANTIES & ACCESSORIES

- Lenovo 3 Year Depot Warranty Upgrade for E431 ($76.34)
- Lenovo 3 Year Onsite Warranty Upgrade for E431 ($114.90)
- Lenovo 3 Year Depot Warranty Upgrade + Accidental Damage Protection for E431 ($153.46)

LA PK-12 PRICING
$554.91

BEST

LENOVO THINKPAD T430

DETAILS

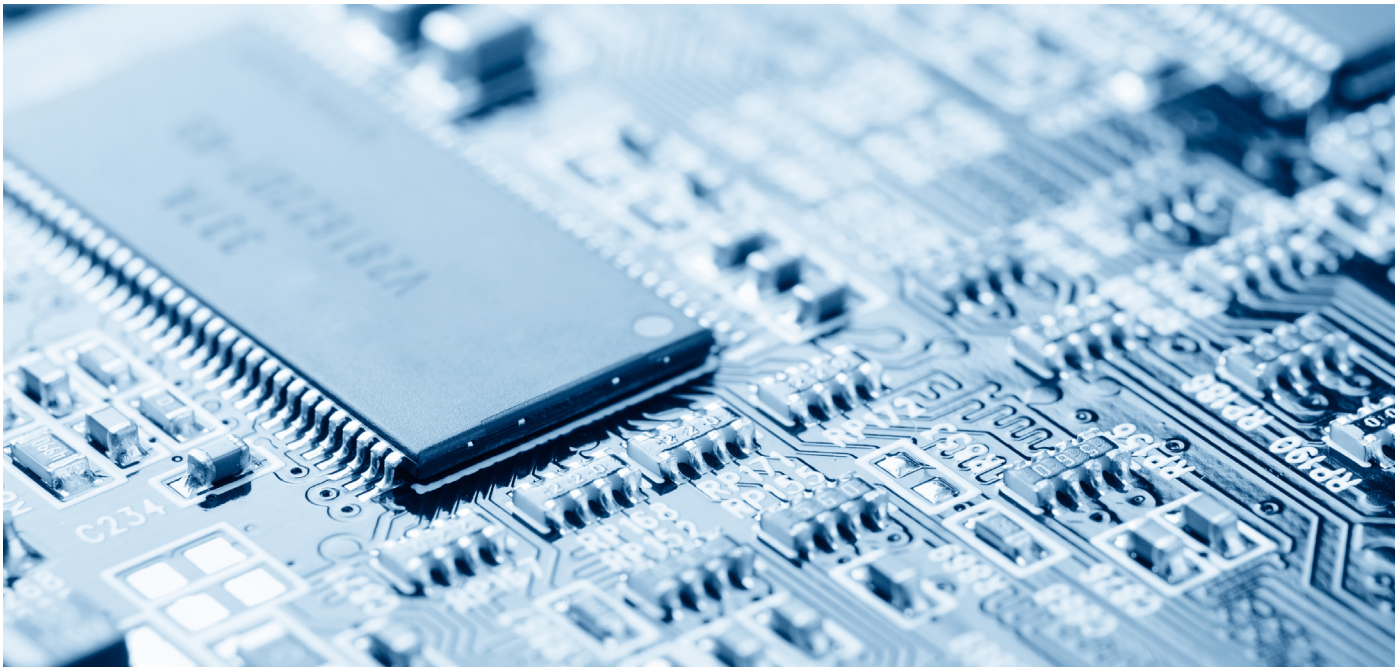
- Windows 8 Pro 64 Downgrade to W7 Pro 64
- T430 Intel HD Graphics
- Intel Core i5-3320M
- T430 14.0HD Anti-Glare, WWAN Display
- Intel Centrino Advanced-N 6205
- Mobile Broadband upgradable
- 6cell LI Battery TWL70+
- 4 GB PC3-12800 DDR3 Memory (1 DIMM)
- DVD Recordable, UBE w/SWR
- 320GB 7200rpm Hard Drive
- T430 No Camera Mic
- T430 Exp CS & 4-1 CR
- 65W AC Adpt US (2pin)
- 3 Year Depot/Express Warranty

ADDITIONAL WARRANTIES & ACCESSORIES

- Lenovo 3 Year Onsite Warranty Upgrade for T430 ($79.78)
- Lenovo 3 Year Accidental Damage Protection for T430 ($119.66)
- Lenovo 3 Year Onsite Next Business Day + Accidental Damage Protection for T430 ($148.15)
- Lenovo 3 Year Computrace Complete for T430 ($75.22)

LA PK-12 PRICING
$821.58

Sales Operations: Amy Skalon, 866.758.8448, amyska@cdw.com
Sales Manager: Nicci Fagan, 866.259.1463, niccci.fagan@cdwg.com



COMPUTER AND PERIPERALS STATE CONTRACTS

The following contracts were created by the Louisiana Office of State Purchasing (OSP). For questions regarding these contracts, contact either the OSP contact listed below or contact the LDOE Education Technology Support Team at EdTech@la.gov

APPLE MICROCOMPUTER & PERIPHERALS

LA State CONTRACT #404553
Effective Dates: 09/17/2009 - 08/31/2014
OSP Contact: MARY.COPPAGE@LA.GOV, 225.342.8028

DETAILS:
Computers, Laptops, iPads, and iPhones.

Product Restrictions:
- Local area networks
- LCD projectors
- Professional Services
- Trade-ins
- Travel
- Take-back programs
- Lease agreements
- Volume Purchase Program Vouchers

ORDERING:
1.800.800.2775 or https://ecommerce.apple.com/asb2b/home/(rdb=0)/.do

LA EDUCATION PRODUCT AND SALES SUPPORT:
Maureen Brim, mbrimm@apple.com, 504.491.5651

DELL MICROCOMPUTER & PERIPHERALS

LA State CONTRACT #403834
Effective Dates:
OSP Contact: MARY.COPPAGE@LA.GOV 225.342.8028

DETAILS:
Computers, Laptops.

Product Restrictions:
- Local area networks
- LCD projectors
- Professional Services
- Trade-ins
- Travel
- Take-back programs
- Lease agreements
- Volume Purchase Program Vouchers

ORDERING:
1.888.518.3355

DETEL MICROCOMPUTER & PERIPHERALS

LA State CONTRACT #405031
Effective Dates: 06/02/2011 - 06/01/2013
OSP Contact: MARY.COPPAGE@LA.GOV, 225.342.8028

DETAILS:
Computers, Laptops.

Product Restrictions:

- Take-back programs
- Lease agreements

ORDERING:
1.866.338.3511 or

LA EDUCATION PRODUCT AND SALES SUPPORT:
Wayne Macaluso, wayne@DETEL.com, 225.952.9430

GOV CONNECTIONS MICROCOMPUTER & PERIPHERALS

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225.342.8028

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Product Restrictions:
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225.342.8028

DETAILS:
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Product Restrictions:
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- Professional Services
- Trade-ins
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- Lease agreements

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225.342.8028

DETAILS:
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Product Restrictions:
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WIFI NETWORK INFORMATION

In this issue of Connected, we have added a new section which contains information on various WIFI options that are available to districts. Many districts are looking for guidance and information which will help them determin e what type of WIFI they need to purchase and what the costswill be for that associated upgrade. To assist in that process, we have asked a number of vendors to create wifi implementation plans and pricing for two sample schools: one elementary school and one high school. These schools are real schools from within the state. Vendors were provided basic statistics (number of students, number of devices, etc.) and layouts of the schools but were not given any details about their locations or which district they were from. They were thenvv asked to price these out at a discounted state contract pricing level in order to provide an indication of what the networks would cost.

This section contains their uneditted responses. These are only examples and provided for your reference and inforamtion. For an accurate investment for your specific circumstances, you should work with your vendor to complete a site survey to determine exactly what is required for your envionment and circumstances.

FOR MORE INFORMATION

LOUISIANA DEPARTMENT OF EDUCATION
Information Technology
www.louisianaschools.net

Contact: EdTech@la.gov for more information

Meraki

Cisco Systems is pleased to provide recommendations to the Louisiana Department of Education (DOE) for K-12 school district wireless networks. Cisco has the most complete portfolio of wireless LAN solutions in the industry. More specifically we offer two primary wireless architectures that fit well in the K-12 environment. These are the premised based controller solution and the cloud managed solution which is based on our Meraki Cloud Managed Wireless product.

Both solutions involve placement of access points (APs) on premise, at the schools. Both solutions make deployment and ongoing management easy and cost-effective by centralizing the control and management of the APs. The premise based solution accomplishes this by placing the control mechanism, the wireless controller, on the customer site. The cloud managed solution accomplishes this by placing the control mechanism in the Cisco Meraki cloud.

This document includes our recommendations for both the premise based controller solution and the cloud managed solution.

Note that Cisco also offers AP's that are not configured and managed by controller mechanisms. These are referred to as "autonomous AP's. While these AP's are appropriate for certain deployments we do not recommend them for K-12 environments.

Cisco Systems Wireless LAN Recommendations
For
K-12 School Districts in Louisiana

Wireless Environments

We understand that the DOE is interested in recommendation for two distinct K-12 wireless environments as follows:

- Indoor wireless deployments in lab areas with a focus on these areas to be used as the primary PARC testing areas for a school campus
- Ubiquitous indoor campus wireless deployments for schools with 1-to-1 laptop/tablet initiatives

While these two environments represent very different wireless deployments in their specifics, they are very similar in one very important respect. They both represent high density environments, meaning many wireless users and their devices located in a small area such as a lab or classroom and most, if not all, actively using the wireless network simultaneously. User density is the critical factor in the design for such an environment. Aggregate available bandwidth is delivered per radio cell, and the number of users and their connection characteristics (such as speed, duty cycle, radio type, band, signal, and SNR) occupying that cell determines the overall bandwidth available per user.

For high density environments it is essential that the design is based on AP's supporting 802.11n technology, and more specifically, 5Ghz channels. Non-802.11n AP's, or 802.11n AP's that that do not offer 5Ghz channels, will not support the user density, the needed bandwidth, and the expected user experience for this environment.

802.11n AP's with 2.5Ghz radios can be used as part of the solution but these AP's should also have 5Ghz radios. A primary reason for use of the 5Ghz spectrum, as opposed to 2.4Ghz, is that 5Ghz offers several more non-overlapping channels compared to 2.4Ghz which is limited to 3. The implication of this is the ability to densely pack 5Ghz AP's in a small area which substantially increases the available bandwidth.

Recommendations for a Premise Based Controller Solution

Access Points

Cisco recommends the followings 802.11n APs:

- Cisco Aironet 3602i
- Cisco Aironet 2602i
- Cisco Aironet 1602i (possible solution for elementary schools)

The 3602i and 2602i AP's are ideal for high density, high bandwidth environments as are typical in the K-12 arena. These AP's have 2.4Ghz and 5Ghz radios and internal antennas. These Cisco Aironet APs standout with such features as

- Cisco ClientLink 2.0
- Cisco CleanAir
- Cisco VideoStream

The choice between the 3602i and the 2602i primarily revolves around performance and price. The 3602i is Cisco 's highest performing AP (4x4 MIMO with 3 spatial streams). It also modular and as such will be able to be upgraded in the future to support the new 802.11ac wireless standard. The 2602i has a slightly lower performance envelope (3x4 MIMO with 3 spatial streams) and is not modular. The 3602i is higher priced than the 2602i.

The 1602i AP's are a 3rd option for elementary schools. The assumption is that elementary schools have lower wireless performance requirements which can be met by the lower cost 1602i AP's. These are 802.1n AP's with 4x4 MIMO and 2 spatial streams. The 1602i supports CleanAir Express which is a "lightweight" implementation of the CleanAir technology.

Figure 1 Cisco Aironet 3602i

Follow this link for more information on the Aironet 3602i APs: http://www.cisco.com/en/US/products/ps11983/index.html

Figure 2 Cisco Aironet 2602i

Follow this link for more information on the Aironet 2602i APs: http://www.cisco.com/en/US/products/ps12534/index.html

Figure 3 Cisco Aironet 1602i

Follow this link for more information on the Aironet 1602i APs: http://www.cisco.com/en/US/products/ps12555/index.html

Controllers

Which controller we recommend will depend on the controller deployment option you choose. The two options are:

- Per school controller deployment
- Centralized controller deployment

Typically the centralized controller deployment is more economical, simply because fewer controllers are being purchased, deployed, and managed. One particular advantage of a per school controller deployment is the support of the Bonjour gateway capability for the Apple Devices. If a particular school(s) in the district require the Bonjour gateway, you can provide the per school deployment at that particular school(s) and utilize the centralized controller for all others to gain efficiencies.

Per school controller deployment

With this deployment option a controller is deployed at each school and controls/manages only the AP's at that school. Thus this controller can be sized/licensed to support only the number of AP's at the school. Controller options include the 5508 and 2500 controllers. We strongly recommend the 5508 controller. It has a much higher performance threshold than the 2500 and can support up to 500 APs.

Note that we only mention the 2500 controller as a possible option for smaller schools with smaller numbers of AP's and relatively low bandwidth requirements. The 2500 is limited to75 APs and support of approximately 500 wireless clients. The 2500 might be an option at a small elementary school but is not recommended for a middle or high school.

Centralized controller deployment

With this deployment option one or more controllers are deployed at a central location, such as the school district central office data center. These controllers control and manage all of the AP's in the school district. Normally in this mode the APs are deployed using FlexConnect. FlexConnect mode is particularly beneficial in a centralized controller deployment because it does not require all wireless client traffic to be tunneled across the WAN back to the central controllers. In other words, with FlexConnect direct wireless client access at a school to any service located at that school is possible. FlexConnect mode is available on the 5508, Flex 7500, 8500, and WISM2 controllers. Cisco recommends the controllers listed below along with the supported max AP count for the centralized deployment:

- 5508 – 500 APs
- WISM2 – 1000 APs
- Flex 7500 – 2000 APs
- 8500 – 6000 APs

Although the Flex 7500 and 8500 controllers support the same number of AP's the 8500 has a much higher performance threshold in terms of bandwidth. The WISM2 is blade that is housed in a Catalyst 6500 switch and would be an option for a school district that has already deployed a Catalyst 6500 in its data center.

Since the centralized controller deployment model implies that the centralized controller(s) will be controlling/managing many AP's, perhaps all the AP's in the school district, high availability is key. Cisco strongly recommends that each centralized controller be deployed along with a 2nd controller that is running in High Availability (HA) mode. If the primary controller fails the HA controller takes over immediately.

Follow this link for more information on the Cisco 5508 Controller: http://www.cisco.com/en/US/products/ps10315/index.html

Follow this link for more information on the Cisco Flex 7500 Controller: http://www.cisco.com/en/US/products/ps11635/index.html

Follow this link for more information on the Cisco 8500 Controller: http://www.cisco.com/en/US/products/ps12722/index.html

Follow this link for more information on the Cisco WISM2 Controller: http://www.cisco.com/en/US/products/ps11634/index.html

Follow this link for more information on the Cisco 2500 Controller: http://www.cisco.com/en/US/products/ps11630/index.html

School LAN Switching Recommendations

Access Switches

For “access” or “wiring closet” switches, which are the switches that wired endpoints such as desktop PC’s, IP phones, and AP’s would connect to we recommend the Cisco Catalyst 2960-S series of switches. These are feature rich layer 2 switches that stackable and come in 24 and 48 port Power Over Ethernet (POE) and non-POE models. POE and Non-POE models can be stacked together. These switches offer 1G SFP or 10G SFP+ uplinks depending on the model.

A cost effective option that helps future proof your network is to purchase the models with the 10G uplinks but initially populate the uplink modules with 1G SFPs. Later as bandwidth requirements grow you can then swap out the 1G SFP’s for 10G SFP+s. For higher availability and uplink bandwidth we recommend using at least 2 uplink connections to the school core switch.

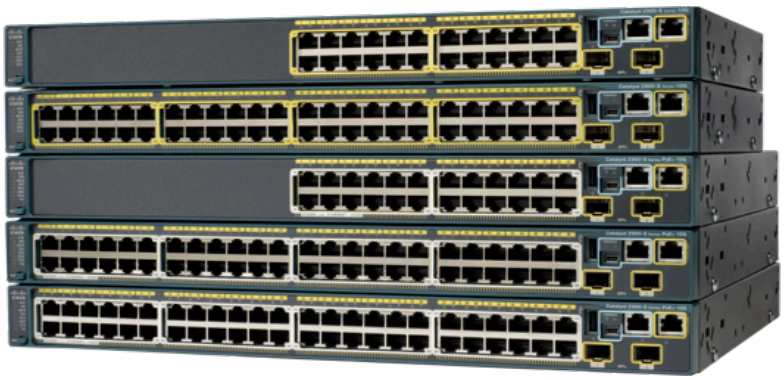


Figure 4 Catalyst 2960-S Switches

Follow this link for more information on the Catalyst 2960-S switches: http://www.cisco.com/en/US/products/ps12200/index.html

School Campus Core Switches

For a campus core switch Cisco recommends either the Catalyst 4500-X switch or the Catalyst 3750-X switch. For the 3750-X we specifically recommend the WS-C3750X-12S or WS-C3750X-24S models due to their fiber fan-out capability to access switches.

The choice between using the 4500-X or the 3750-X essentially revolves around budget and need for 10G links to the access switches. The 4500-X can offer 1G or 10G links to the access switches. The 3750-X can only support 1G links to the access switches. The 4500-X is higher priced than the 3750-X. One option may be to use 3750-X switches as the core switch at elementary schools and 4500-X switches at middle and high schools.

For high availability we recommend deploying 2 core switches at each school. For the 3750-X switches these can be placed in a stack. For the 4500-X switches these can be placed in Virtual Switching System (VSS) mode. In both cases the 2 switches are managed as a single switch.

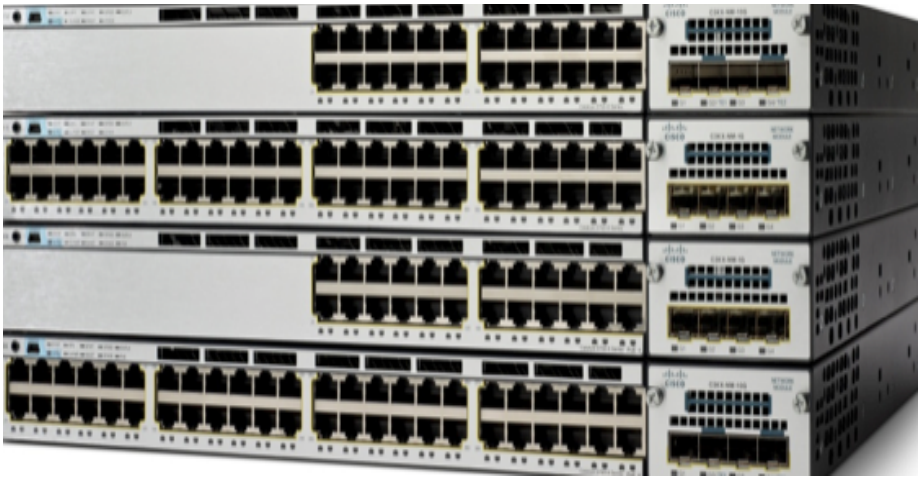


Figure 5 Catalyst 3750-X Switches
Follow this link for more information on the Catalyst 3750-X switches: http://www.cisco.com/en/US/products/ps10745/index.html

Figure 6 Catalyst 4500-X Switches

Follow this link for more information on the Catalyst 4500-X switches: http://www.cisco.com/en/US/products/ps12332/index.html

Network Management
An optional component, but one we strongly recommend, is the Cisco Prime Infrastructure network management system. A single Prime Infrastructure system would be deployed for management of the entire school district wireless and wired Cisco infrastructure. This system can be deployed as a virtual machine and is primarily priced based on the number of devices, such as AP's and switches, it manages.
Follow this link for more information on the Cisco Prime Infrastructure: http://www.cisco.com/en/US/products/ps12239/index.html

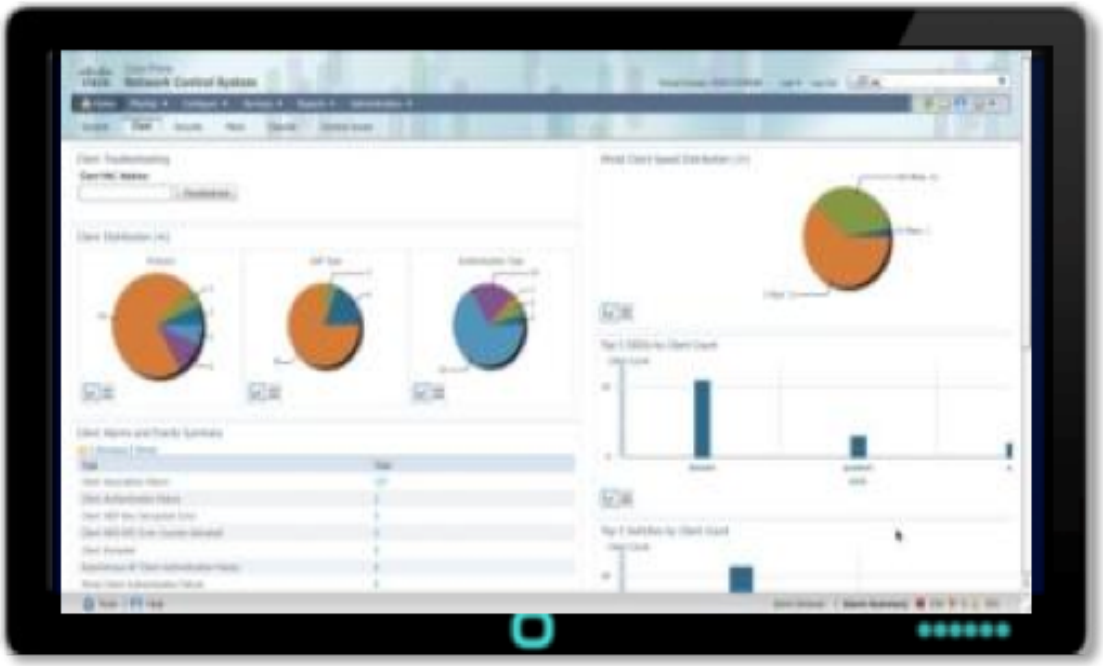


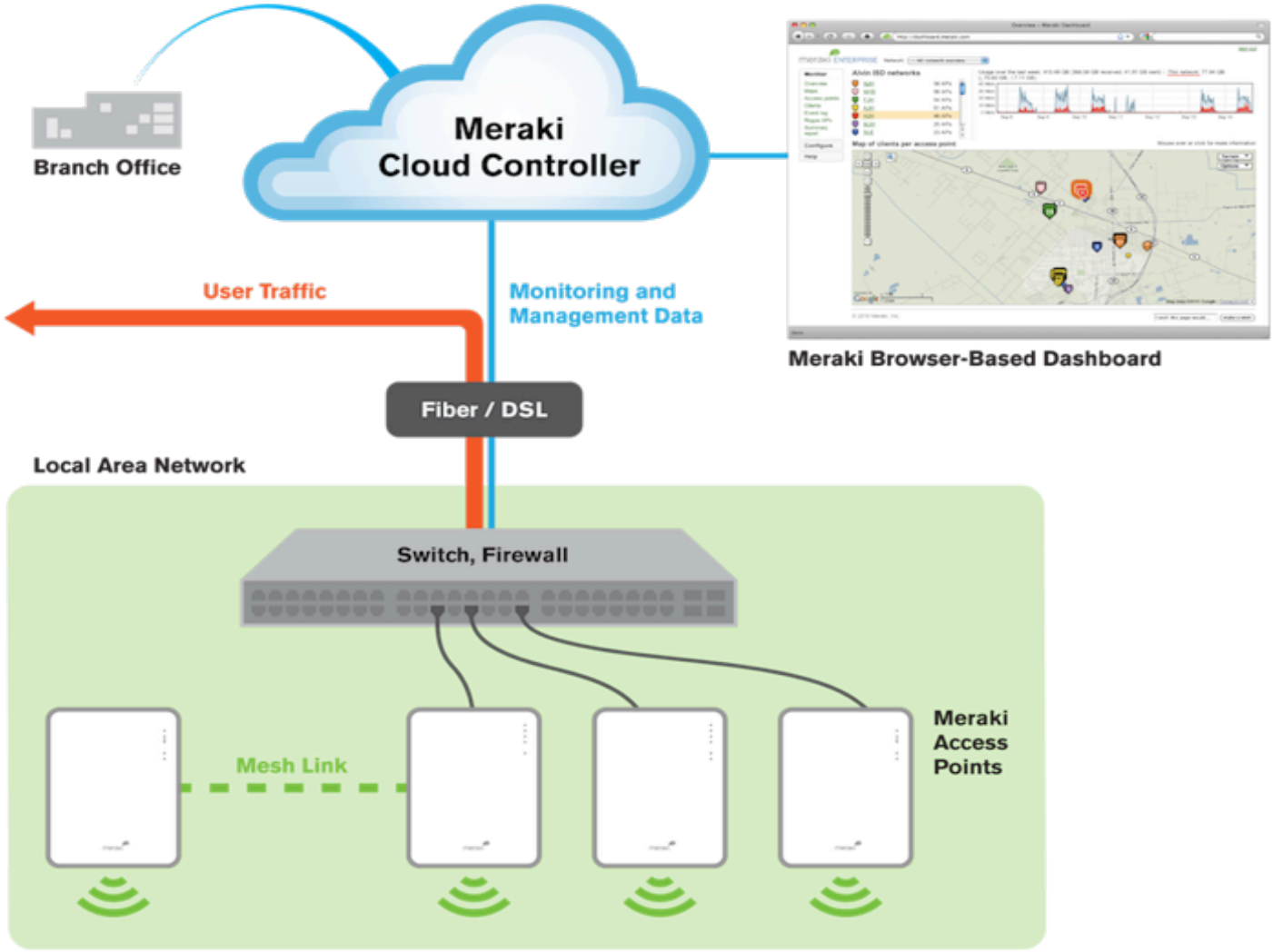
Figure 7 Cisco Prime Infrastructure

Recommendations for a Cloud Based Controller Solution.
Access Points
Cisco recommends the followings 802.11n APs:

- Cisco Meraki MR16
- Cisco Meraki MR24

Both of these AP's are ideal for high density, high bandwidth environments as are typical in the K-12 arena. These AP's have 2.4Ghz and 5Ghz radios and internal antennas. The Cisco Meraki APs standout with such features as

- Cisco Meraki Air Marshal
- Cisco Meraki Auto-Mesh
- Cisco Meraki Layer 7 Visibility and Firewall
- Cisco Meraki Traffic Shaping



The cloud based Cisco Meraki solution is based on two access points: the MR16 and the MR24. The MR16 provides dual-radio, 802.11n coverage and is a 2x2 MIMO 802.11n access point that supports 1:1 and BYOD initiatives. In high usage or particularly high user counts areas (like cafeterias, libraries, and gymnasiums, for example), Cisco recommends the MR24. The MR24 is a triple-stream 3x3 MIMO 802.11n access point that is designed specifically for high-density areas. Because of its third spatial stream, it is capable of delivering 50% higher throughput and increased coverage when compared to traditional 2x2 MIMO access points.

For more information on Cisco Meraki MR16 access points:
http://www.meraki.com/products/wireless/mr16

For more information on Cisco Meraki MR24 access points:
http://www.meraki.com/products/wireless/mr24

Each AP simply requires an Enterprise Cloud License, which are sold in 1, 3, 5, and 7 year options. The Enterprise Cloud License includes all of the features found in the dashboard, so no additional licensing fees apply, even for our most advanced features like layer 7 firewall, traffic shaping, and wireless intrusion prevention services. The Enterprise Cloud License also includes all software and firmware upgrades at no additional cost. All access points come with a lifetime hardware warranty.

Cisco Meraki Cloud Controllers
Unlike traditional legacy wireless networks, which generally require a hardware controller, Cisco Meraki wireless networks are managed entirely from the cloud. Cisco's Meraki Cloud Controller eliminates the need for on-site wireless LAN controllers. As illustrated above, all user traffic is handled within the LAN and the only traffic that traverses the cloud is monitoring and management data. This traffic represents less than 1 kbps per access point.

The Meraki Cloud Controller is managed from a secure browser-based dashboard, which can be accessed from any web-enabled device anywhere in the world. The dashboard manages a Cisco Meraki wireless network and the only hardware required is the access points themselves. These access points can be powered via Power over Ethernet (PoE) from a standard Ethernet connection to a PoE switch, or they can use either PoE injectors or an AC power supply.

While Meraki's wireless networks are 100% cloud-managed, the networks themselves do not need access to the cloud to function. In the event that the Internet connection is lost for a given school, the wireless network itself continues to function as normal. Users are still able to authenticate and join the wireless network, without any issues. This happens because no user traffic actually traverses the cloud at all; rather, the only traffic that passes between the access points and the cloud is management data – which amounts to roughly 1 kbps per access point. This management data contains information like application usage, client data, and other monitoring data that provides a great deal of analytic information for network administrators. Every access point retains its configuration locally, so even in the event of loss of Internet connectivity, each access point will still enforce all security, traffic shaping, and authentication policies locally.

For more information on the Cisco Meraki Cloud solution:
http://www.meraki.com/products/wireless/enterprise-cloud-management
http://www.meraki.com/trust#oob

School LAN Switching Recommendations

Access Switches

Cisco strongly urges customers to consider the Cisco Catalyst access layer switches listed above due to their inherent ability to integrate Cisco exclusive features (TrustSec, Prime, Auto Smart Port) however, if this isn't an option, we recommend you review the Cisco Meraki access layer switches. For "access" or "wiring closet" switches, which are the switches that wired endpoints such as desktop PC's, IP phones, and AP's would connect to we recommend the Cisco Meraki MS series of switches. These are feature rich layer 2 switches that are stackable and come in 24 and 48 port Power Over Ethernet (POE) and non-POE models. POE and Non-POE models can be stacked together. These switches offer 1G SFP or 10G SFP+ uplinks depending on the model.

A cost effective option that helps future proof your network is to purchase the models with the 10G uplinks but initially populate the uplink modules with 1G SFPs. Later as bandwidth requirements grow you can then swap out the 1G SFP's for 10G SFP+s. For higher availability and uplink bandwidth we recommend using at least 2 uplink connections to the school core switch.

For more information on the Cisco Meraki MS series access switches:
http://www.meraki.com/products/switches

Ordering and Detailed Design

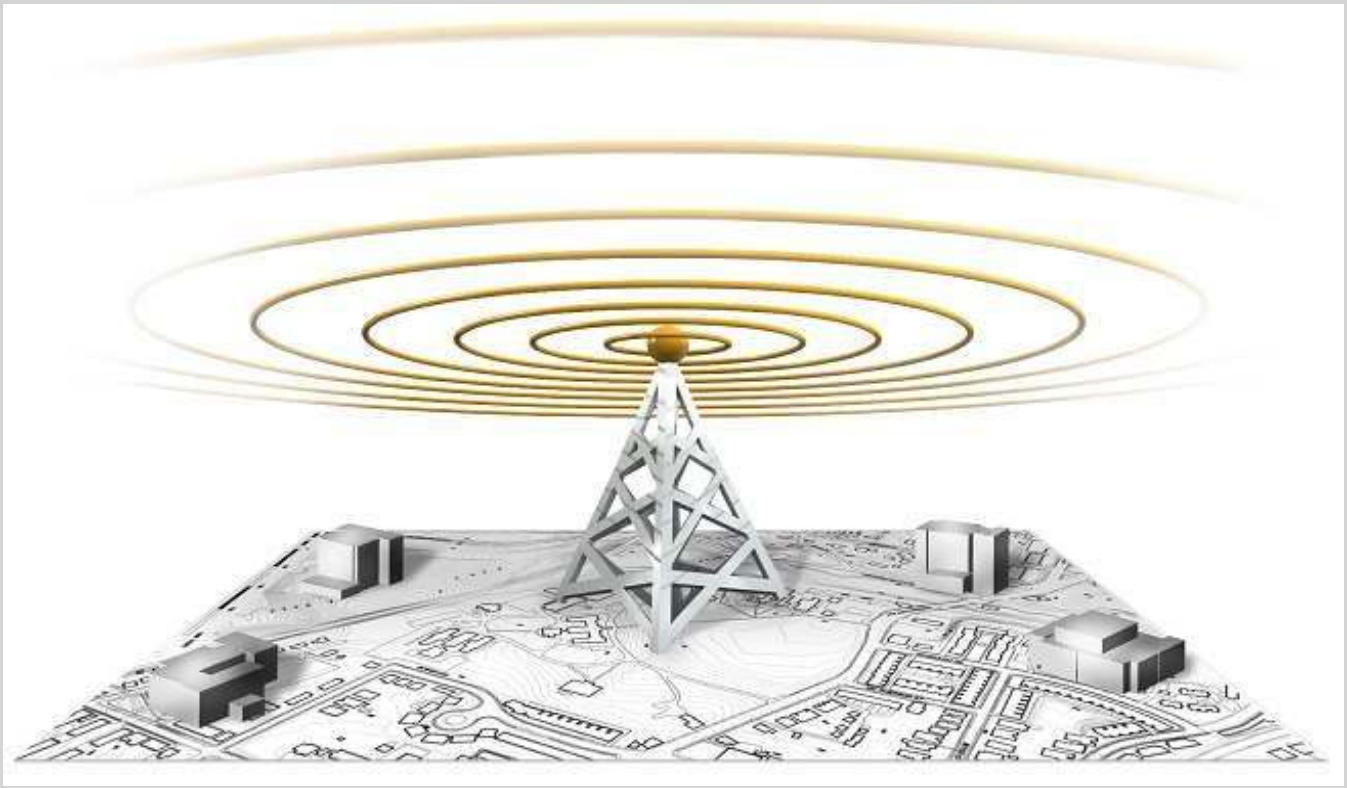
While Cisco can offer general recommendations for design and equipment, customers are directed to Cisco partners for actual price quotations and purchasing. There are numerous Cisco partners offering equipment and services in Louisiana. There is also a state contract that can be used as a purchasing vehicle. This is the Louisiana Western States Contracting Alliance (WSCA) contract for Cisco Systems and several Cisco partners are on this contract. WSCA Contract #409349 is managed by the State of Louisiana, Office of State Purchasing. Most if not all Cisco partner also offer installation services, in addition to installation services directly from Cisco.

A detailed design, and thus a bill of materials (BOM), is going to be specific for each school. Cisco strongly suggests consulting with a Cisco partner or with Cisco directly to ensure an accurate design and BOM. Such consultation would look at characteristics including, but not limited to, the following:

- Student population
- School type (elementary, middle, high school)
- Campus building layout and construction
- User/device densities expected in specific areas (ex: lab that can hold 200 students for PARC online testing).
- Coverage requirements in common areas such as halls
- Outdoor coverage requirements
- WAN characteristics

For any questions feel free to contact the local Louisiana Cisco account teams. This team includes Brett Brock (bbrock@cisco.com), Mike Kling (mikling@cisco.com), David Collins (davicoll@cisco.com), Jeremy Coudrain (jcoudrai@cisco.com), Patrick Cavell (pacavell@cisco.com).

Planner Report



Surveyor: kmurphy

Location:

Time Of Survey: 4/22/2013 12:09:15 PM

Planner Report

Surveyor: kmurphy

Location:

Time of Planning: 4/22/2013 12:09:15 PM

Plan Description:

Report Description: AirMagnet Planner simulates Access Points as well as antenna and building characteristics to predict the number of Access Points needed and their respective locations before an actual WiFi deployment. This report provides real-time Access Point signal coverage for the floor plan and recommends the number of Access Points needed and their locations on a floor plan (marked by numbers in red).

This report also provides detailed information for the Access Points being deployed:

- **Name/ MAC address of the Access Point**
- **Channel/SSID allocated**
- **Planned location co-ordinates for the Access Point**
- **Height of the Access Point/antenna above floor level**
- **Type of the antenna and its specifications**

Contents

This section briefly describes each of the report components.

- **Planner AP List**

  The AP List displays information regarding all placed APs, including their name/MAC address, channel, SSID, antenna type, and more. This effectively provides a 'shopping list' (or bill of materials list) of the equipment required to implement the site plan.

- **Planner AP Location Map**

  The AP Location Map displays a grid overlaid on top of the site map, providing a way to describe the potential locations of placed APs, as shown in the Planner AP List. The APs are displayed numerically and the numbers correspond to the numbers listed in the AP List.

- **Planner Signal Coverage**

  The Signal Coverage map displays a color-coded map that shows the expected WiFi signal coverage (in dBm) at each point in the floor plan. It gives the reader a quick overview of the plan and the projected network's ability to provide adequate signal to all necessary areas. It is important to ensure that there are no coverage holes in areas where WiFi coverage is desired.

- **Channel Interference**

  The Channel Interference page displays the levels of wireless interference detected in the environment.

- **PHY Data Rate Coverage**

  The Predictive PHY Data Rate map provides a heat map of the physical data rate predicted by AirMagnet Planner at each point in the site. Note that since Planner deals with calculated (or predicted) data, this rate is theoretical, and is based on the objects placed by the user in the site plan.

- **Throughput**

  The Throughput map provides a heat map of the overall throughput that should be expected at each point in the site plan. Note that since Planner deals with calculated (or predicted) data, this rate is theoretical, and is based on the objects placed by the user in the site plan.

- **Operating Mode**

  The Operating Mode map provides a heat map of the operating modes present in the wireless environment. The Operating Mode data can vary between three different options: Legacy (802.11a/b/g), Mixed (802.11a/b/g/n), or Greenfield (802.11a/n or 802.11b/g/n).

- **802.11n Channel Width**

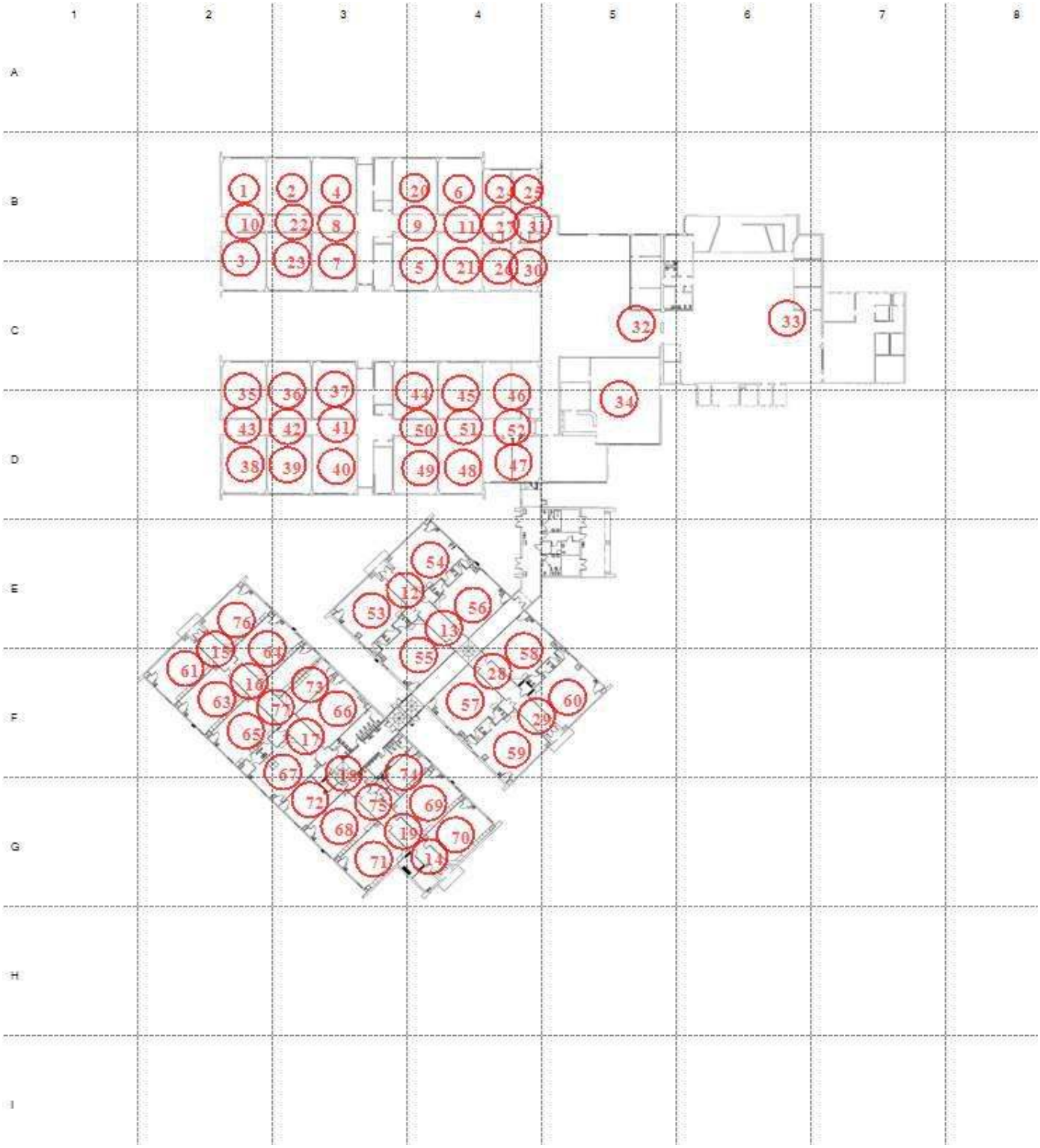
  The Channel Width map provides a heat map of the channel widths present in the wireless environment. The Channel Width data can vary between three different options: 20 MHz (Legacy), 20 MHz (802.11n HT), or 40 MHz (802.11n HT).

- **802.11n Highest MCS Index**

  The Highest MCS Index provides a heat map of the MCS in use by APs detected at each point in the site plan. The MCS Index can range from 0 to 15, with higher numbers corresponding to higher data transfer rates.

• Planner AP Location Map

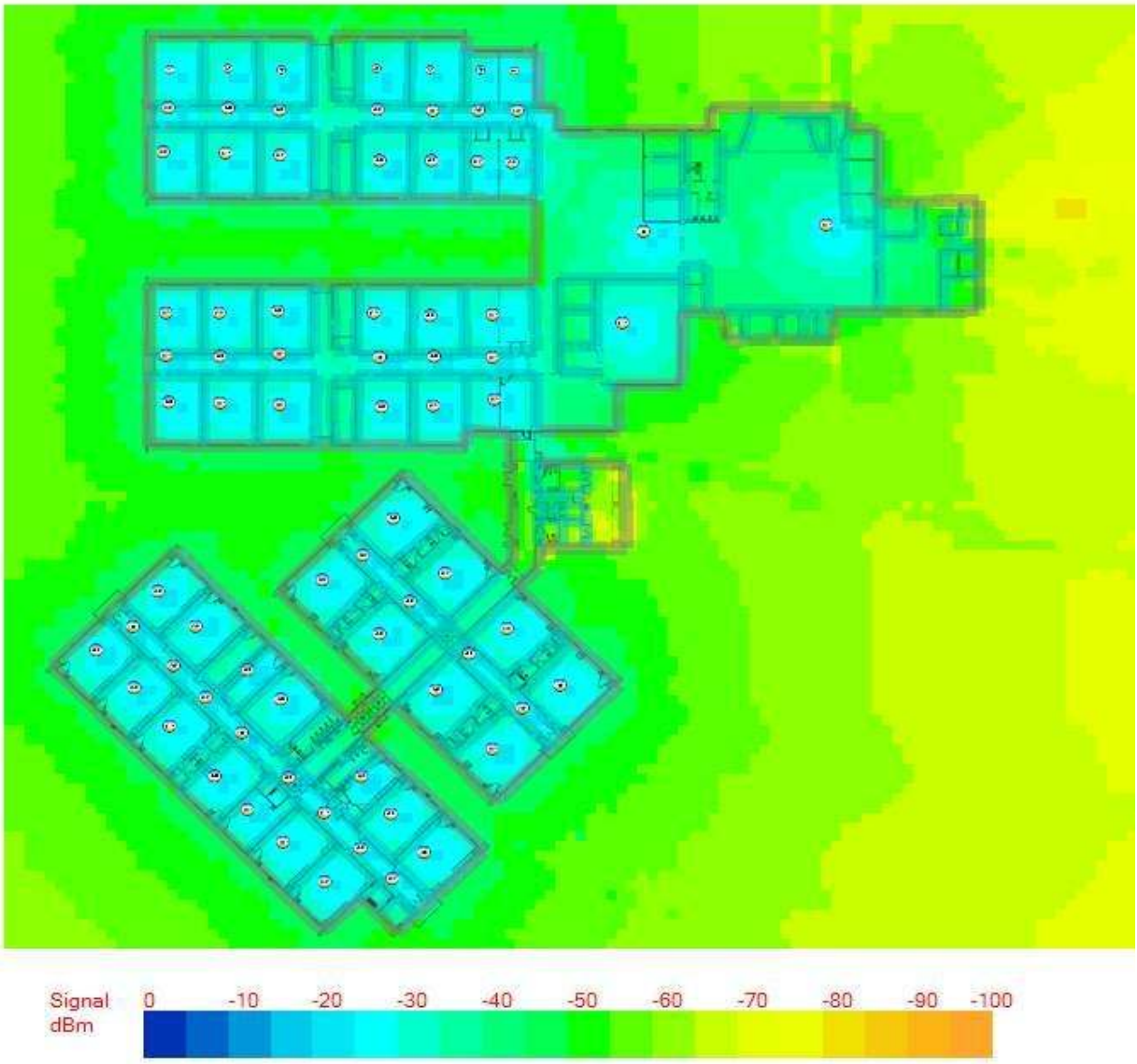
The image below displays the site map with a grid overlay to provide a means of describing each AP's location (for example, an AP placed in the top-left corner of the grid will be described by location "1-A"). The APs are numbered in the sequence that they were placed on the plan; these numbers correspond to the APs listed in the AP List (next page).



• Planner Signal Coverage

The image below displays the signal coverage (in dBm) at each point in the map layout. Refer to the legend below the map for the dBm values corresponding to each color region. As a general rule, regions with signal strengths below -67 dBm provide insufficient coverage for standard use (this value may vary depending on user requirements, service level agreements, applications used, number of users serviced, etc.).
APs are displayed in their planned locations and reflect the specified power and antenna properties. Note that an active WiFi area can incorporate a variety of environmental factors that can vary throughout the day and may adversely affect projected RF coverage.

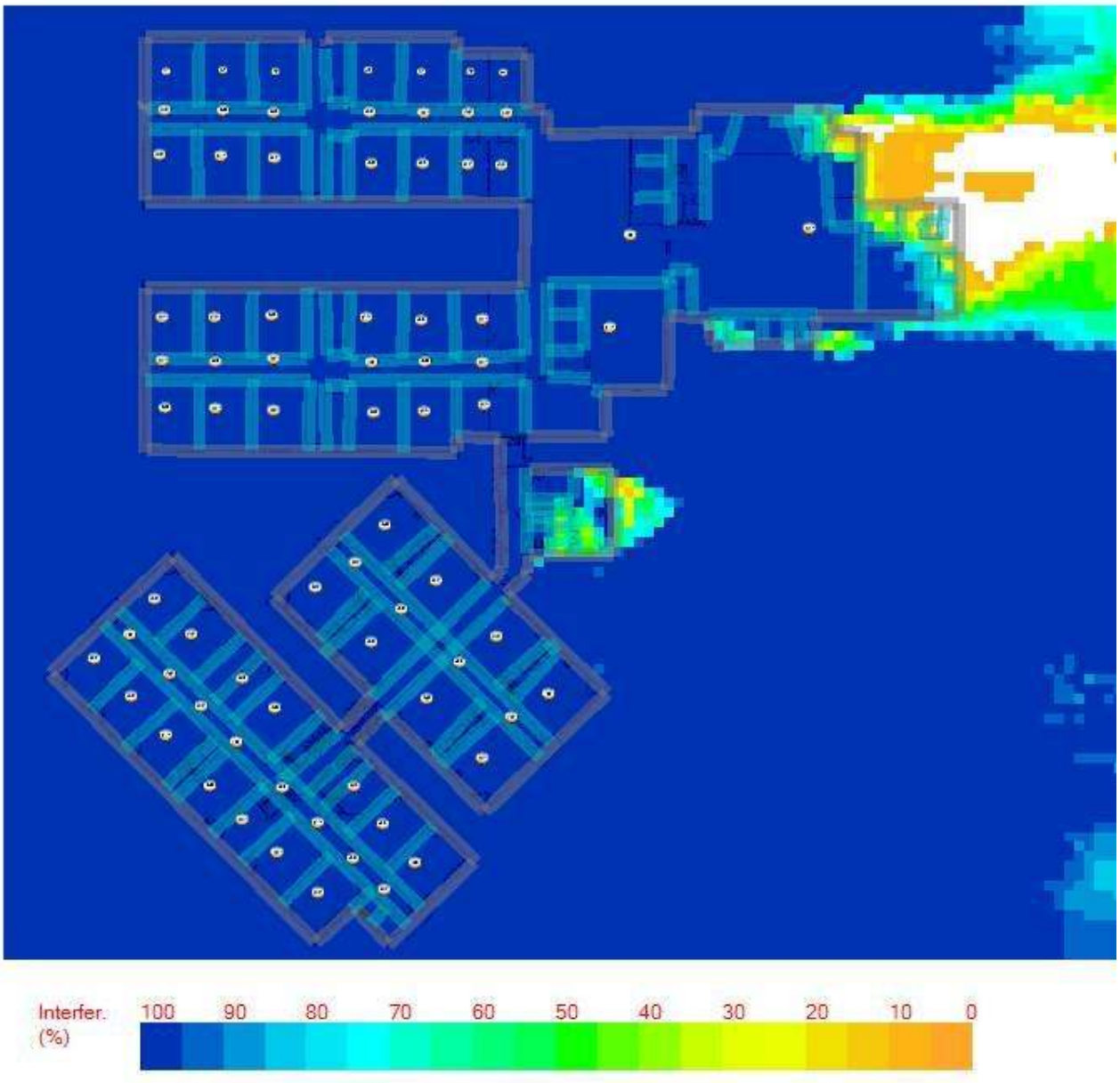
-



Channel Interference

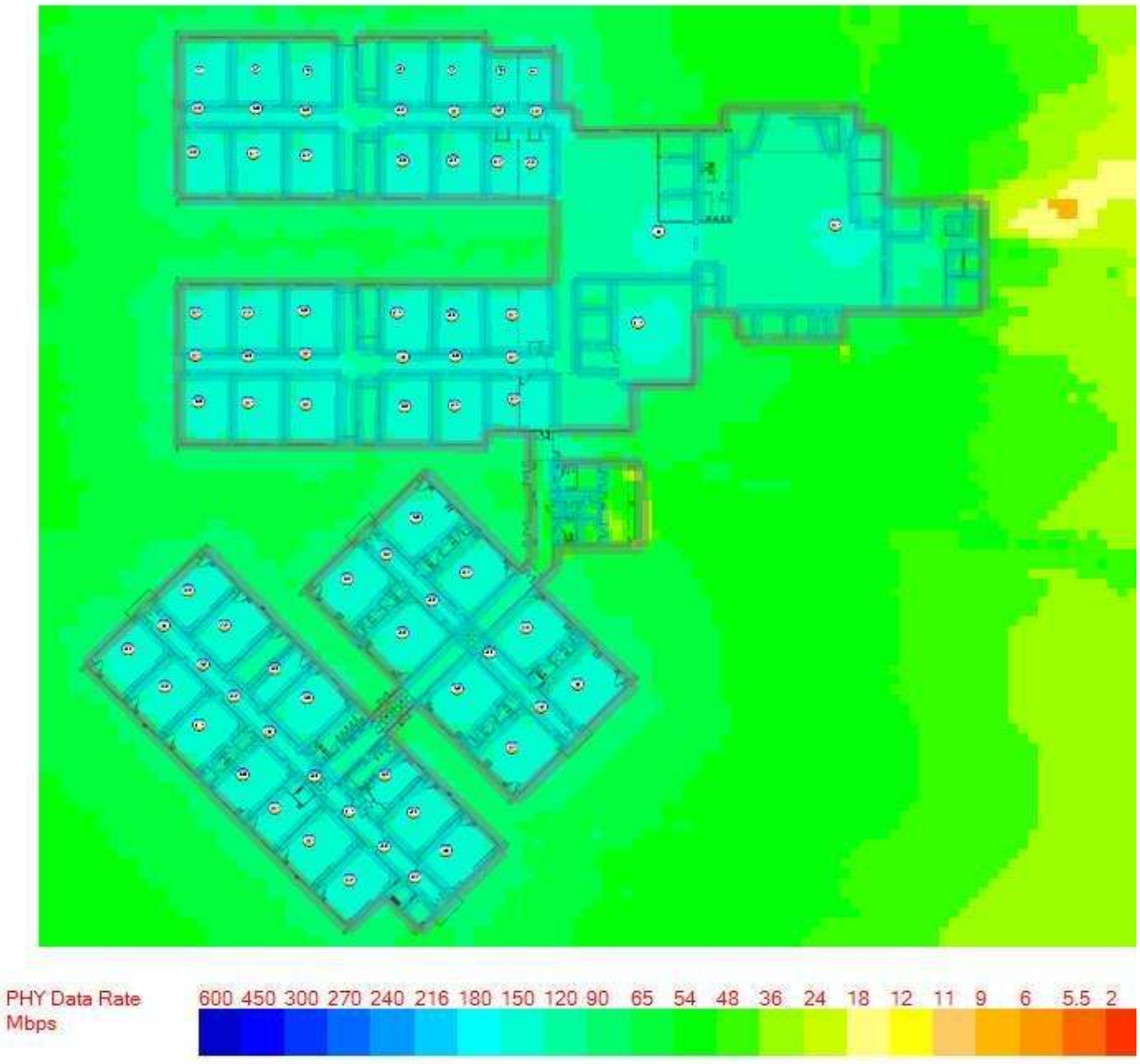
The image below displays the interference level (in percentage) at each point in the map layout. Refer to the legend below the map for the percent values corresponding to each color region.
APs are displayed in their planned locations and reflect the specified power and antenna properties. Note that the interference levels present in the environment can vary depending on several factors, such as the number of APs on a single channel, number of devices present, non-802.11 interferers, etc.

-



PHY Data Rate Coverage

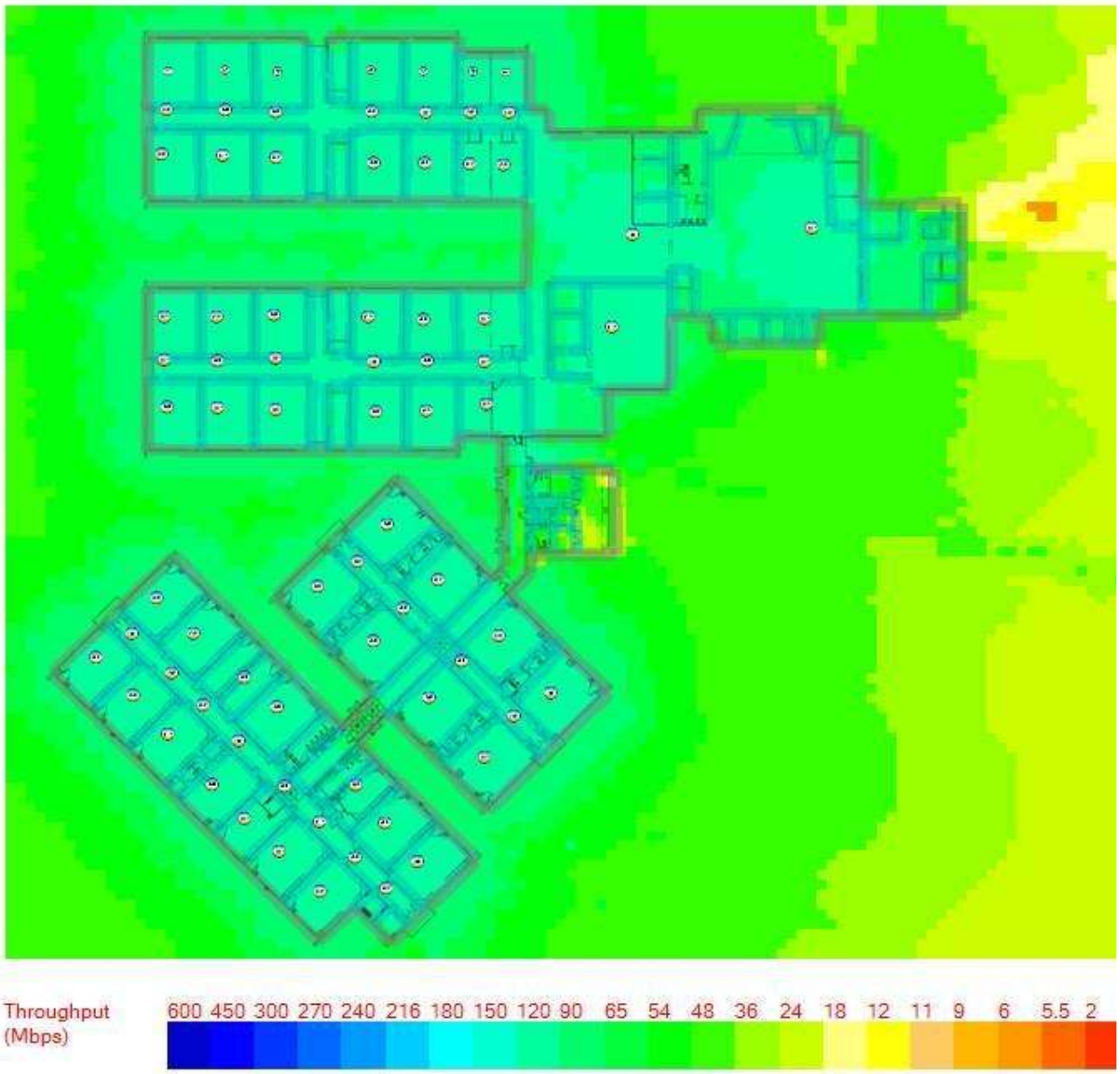
The image below displays the Predictive PHY Data Rate (in dBm) at each point in the map layout. Refer to the legend below the map for the dBm value of the signal corresponding to each color region. Although a higher speed is invariably better for any deployment, implementations designed for VoFi operations should pay particular attention to ensuring a favorable data rate, as low rates can have a far greater affect in terms of jitter, voice delay, and call quality than they would for a standard data deployment.



Throughput

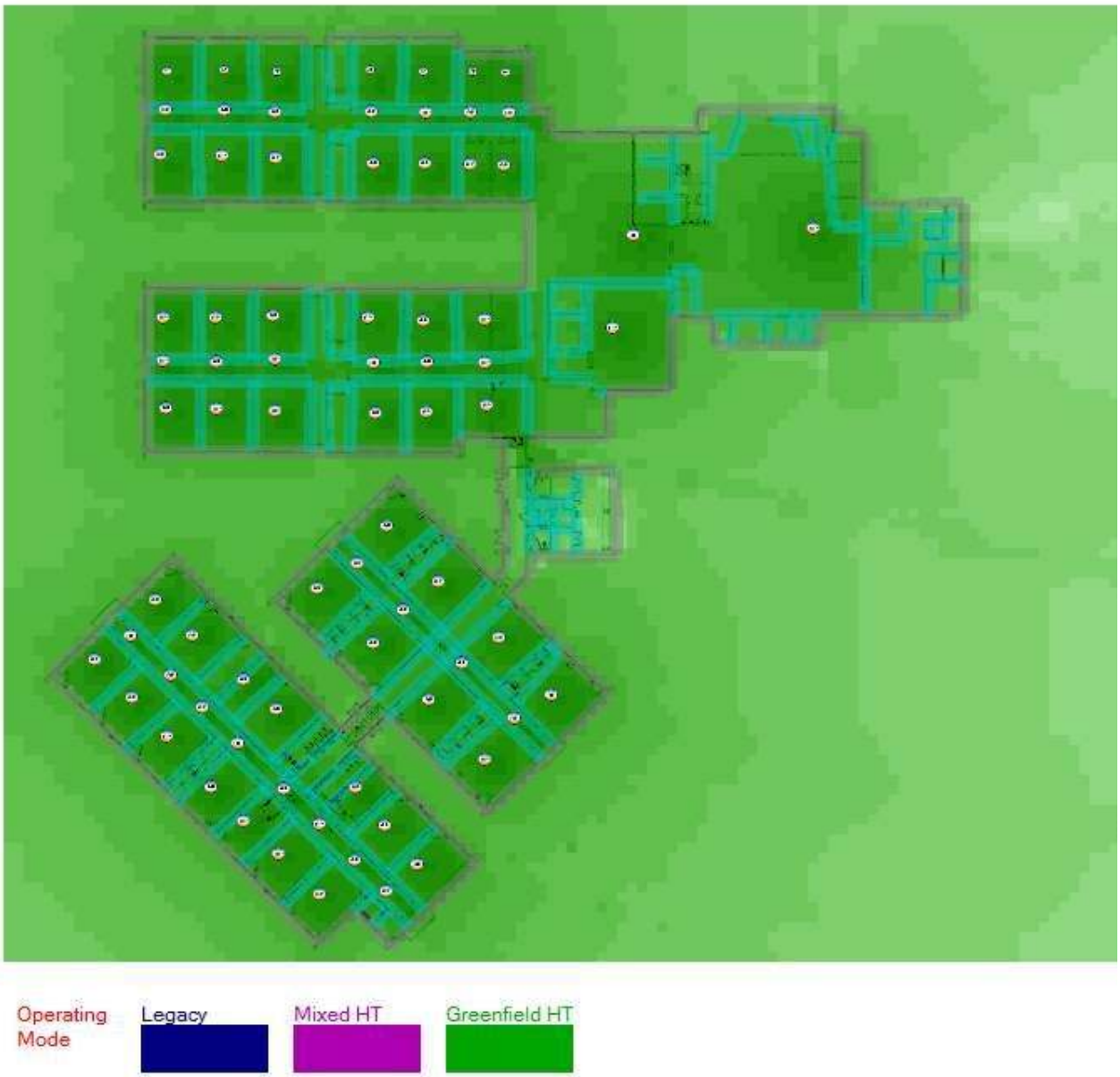
The image below displays the expected Throughput (in Mbps) calculated based on the site's layout. Refer to the legend below the map for the value in Mbps that corresponds to each color region. Although a higher throughput level is invariably better for any deployment, implementations designed for VoFi operations should pay particular attention to ensuring a favorable throughput level, as lower levels can have a far greater affect in terms of jitter, voice delay, and call quality than they would for a standard data deployment.

-



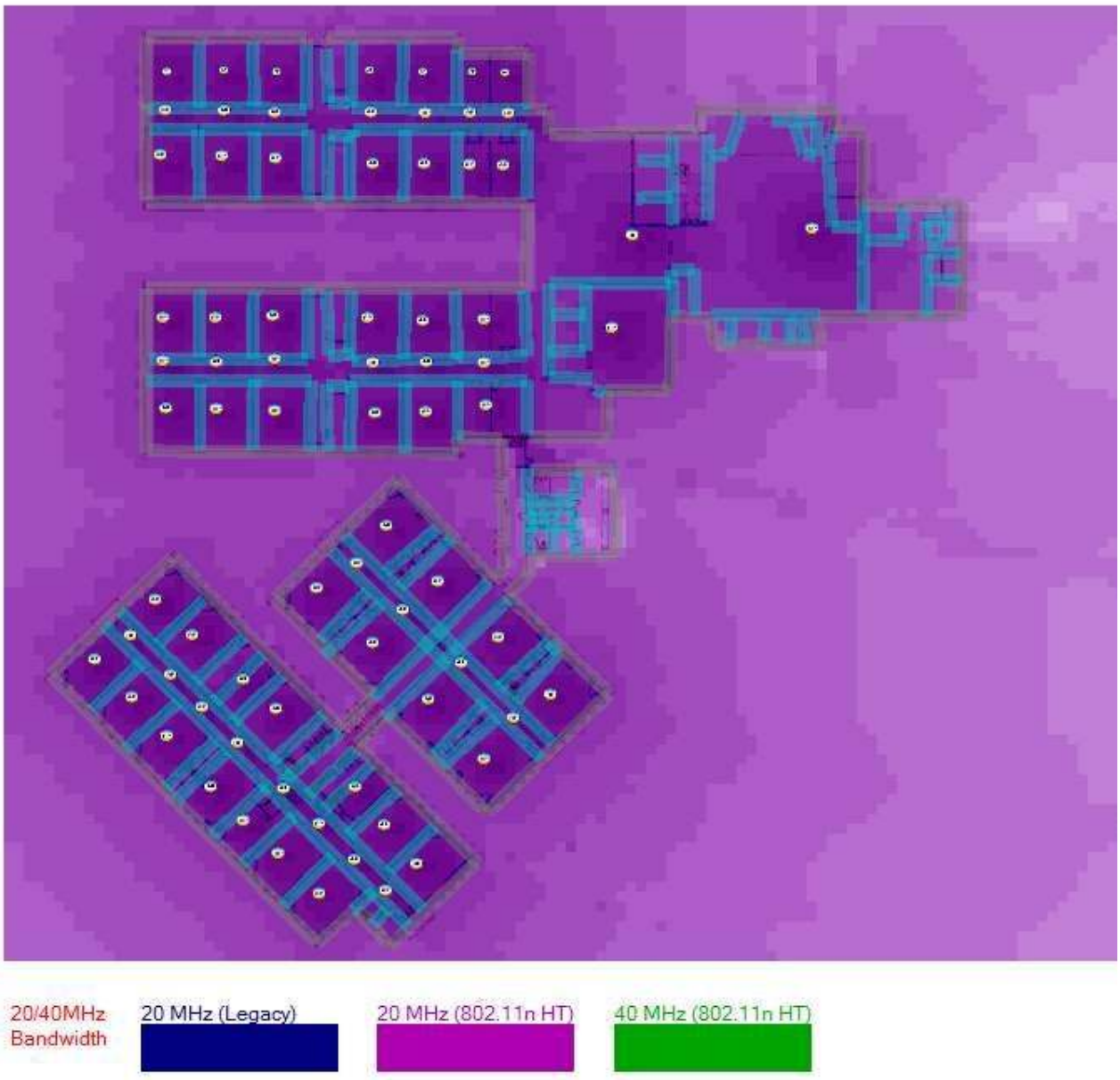
Operating Mode

The image below displays the Operating Modes supported by the APs in the site plan. Refer to the legend below the map for the color that corresponds to each mode (Legacy, Mixed HT, or Greenfield HT). For 802.11n deployments, Greenfield mode is generally best, as it provides the highest throughput and speed levels of the different options. However, Greenfield deployments must use only 802.11n-enabled devices, and as such cannot support legacy connections. Note that the heat map displays the color corresponding to the strongest AP detected at any given point. Therefore, locations shown as Legacy may contain Greenfield data and vice versa, but the strongest AP in that area utilizes a Legacy implementation.



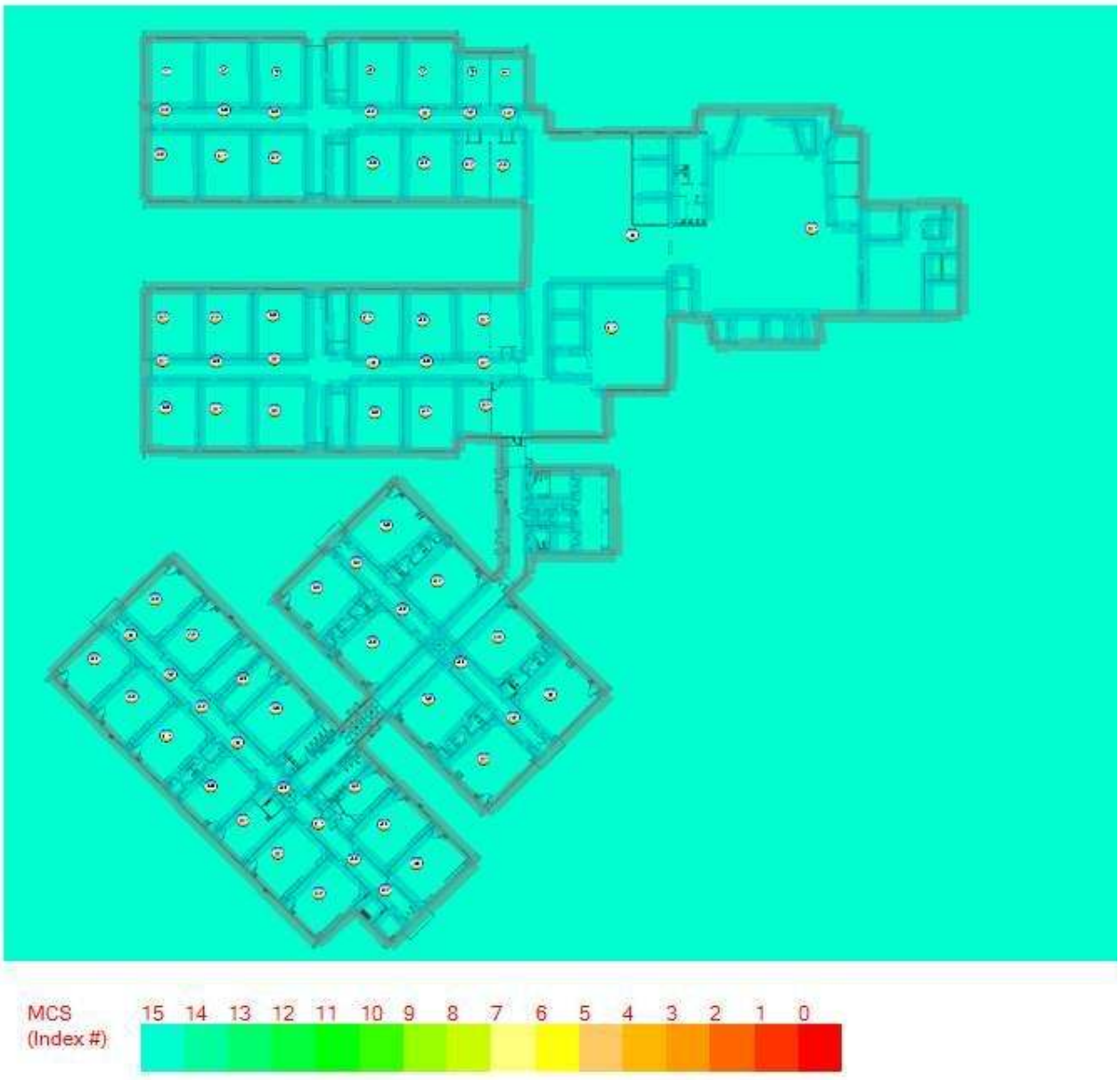
802.11n Channel Width

The image below displays the Channel Width options supported by the APs in the site plan. Refer to the legend below th map for the color that corresponds to each mode (20 MHz, 20 MHz 802.11n HT, or 40 MHz 802.11n HT). The 802.11n-specific 40 MHz HT option transmits wireless data over two legacy channels, providing higher speeds as well as improved network reliability. Note that the heat map displays the color corresponding to the strongest AP detected at any given point. Therefore, locations highlighted in blue (20 MHz) may contain 40 MHz data and vice versa, but the strongest AP in that area utilizes a 20 MHz channel width.



802.11n Highest MCS Index

The image below displays the Highest MCS Index values used by the APs in the site plan. Refer to the legend below the map for the color that corresponds to each value (ranging from 0 to 15). Higher values of MCS generally correspond to higher data transmit speeds.



St Charles Elementry School- 1 to 1 coverage

All items available on State of Louisiana, Office of State Purchasing: Contract # 409430/ T-number 92129 - DELL BN NETWORKING EQUIPMENT

Wireless Nework
Dell Powerconnect AccessPoint W- WIAP135 (Instant AP)

AP's	SKU NUMBER	DESCRIPTION	QUANTITY	UNIT LIST PRICE	LA STATE CONTRACT PRICE	EXTENDED CONTRACT PRICE	
	225-3493	PC W-WIAP135,802.11n,INTERNAL ANTENNAS	77	$1,095.00	$766.50	$78,183.00	
	331-5447	DOCUMENT KIT FOR PCT W-IAP	77	$8.00	$5.60	$571.20	
	936-1687	HW WRTY,PC W-iAP13x,INITIAL YEAR	77	$0.00	$0.00	$0.00	
	989-4471	NBD PARTS,PC W-iAP13x,INITIAL Year	77	$0.00	$0.00	$0.00	
	331-8073	PC WAP13x OPT CEILING MNT V2,RAIL ADPTR	77	$25.00	$17.50	$1,785.00	
							$80,539.20

Dell Powerconnect Controller W-3600. W/ licenses for 102 AP's

Wireless Controller	SKU NUMBER	DESCRIPTION	QUANTITY	UNIT LIST PRICE	LA STATE CONTRACT PRICE	EXTENDED CONTRACT PRICE	
	224-9228	PC W-3600,BASE,ROW	1	$12,995.00	$9,096.50	$9,096.50	
	430-0943	PC W-SFP,1000BASE-SX	1	$395.00	$276.50	$276.50	
	931-7528	HW WRTY,PCW-3600,EXTENDED YEAR	1	$0.00	$0.00	$0.00	
	935-5520	PS NBD OS,PCW-3600,UNY,INITIAL YEAR	1	$0.00	$0.00	$0.00	
	925-3147	HW WRTY + SVC,PCW-3600,UNY,INITIAL TEAR	1	$576.00	$403.20	$403.20	
	421-3461	PC,W-AP,64 AP, LIC	1	$4,320.00	$3,024.00	$3,024.00	
	421-3462	PC,W-AP,8 AP, LIC	1	$600.00	$420.00	$420.00	
	421-3459	PC,W-AP,4 AP, LIC	1	$300.00	$210.00	$210.00	
	421-3454	PC,W-AP,1 AP, LIC	1	$75.00	$52.50	$52.50	
	972-0284	IMPLEMENTATION,WSERIES,MEDIUM EDTITION	1	$11,878.45	$11,878.45	$11,878.45	
							$25,361.15
		WLAN Total/ includes Installation					**$105,900.35**

Main Communication Rack
Dell Powerconnect 8100 Layer 2/ Layer 3 Ethernet Switch

MDF	SKU NUMBER	DESCRIPTION	QUANTITY	UNIT LIST PRICE	LA STATE CONTRACT PRICE	EXTENDED CONTRACT PRICE	
	225-3586	PCT8132F,32 Max Prts,10Gb Swt, Stack	1	$11,095.00	$7,766.50	$7,766.50	
	430-4980	Dell,XCVR,SFP,1000Base-T,Avago	4	$275.00	$192.50	$770.00	
	331-5274	Dell, SFP+, 10GbE, SR	8	$1,000.00	$700.00	$8,000.00	
	967-2444	HW WRTY,PC8132F,INIT	1	$0.00	$0.00	$0.00	
	967-2500	HW WRTY,PC8132F,EXT	1	$0.00	$0.00	$0.00	
	923-2669	REMOTE IMPLEMENTATION,ETH SWITCH,DELL	1	$399.00	$279.30	$279.30	
							$16,815.80

MDF 2	SKU NUMBER	DESCRIPTION	QUANTITY	UNIT LIST PRICE	LA STATE CONTRACT PRICE	EXTENDED CONTRACT PRICE	
	225-0136	PCT7048P,MG,10GbE,STACK,POE+	1	$6,384.00	$4,468.80	$4,468.80	
	331-2445	10GbE UPLINK MOD,SFP+ XCVR	1	$999.00	$699.30	$699.30	
	331-5271	Dell, SFP, 1000BASE-SX, 850	1	$300.00	$210.00	$210.00	
	931-3067	HW WRTY,PC70xx,INITIAL YEAR	1	$0.00	$0.00	$0.00	
	935-7588	HW WRTY,PC70xx,EXTENDED YEAR	1	$0.00	$0.00	$0.00	
	923-2669	REMOTE IMPLEMENTATION,ETH SWITCH,DELL	1	$399.00	$279.30	$279.30	
							$5,657.40

Distribution Communication Closets (IDF)
Dell PowerConnect 7000 Layer 2/ Layer 3 POE+ Ethernet Switches

IDF A	SKU NUMBER	DESCRIPTION	QUANTITY	UNIT LIST PRICE	LA STATE CONTRACT PRICE	EXTENDED CONTRACT PRICE	
	225-0136	PCT7048P,MG,10GbE,STACK,POE+	3	$6,384.00	$4,443.60	$13,330.80	
	331-2445	10GbE UPLINK MOD,SFP+ XCVR	3	$999.00	$699.30	$2,097.90	
	331-5274	Dell, SFP+, 10GbE, SR	6	$1,000.00	$700.00	$4,200.00	
	331-5271	Dell, SFP, 1000BASE-SX, 850	3	$300.00	$210.00	$630.00	
	331-2446	STACKING MODULE,CX-4,64GBPS	3	$349.00	$244.30	$732.90	
	931-3067	HW WRTY,PC70xx,INITIAL YEAR	3	$0.00	$0.00	$0.00	
	935-7588	HW WRTY,PC70xx,EXTENDED YEAR	3	$0.00	$0.00	$0.00	
	938-5498	INST,IMP,AL3,F10,1,S-SRS,SWT,EDT	3	$2,199.00	$1,539.30	$4,617.90	
							$25,609.50

IDF B	SKU NUMBER	DESCRIPTION	QUANTITY	UNIT LIST PRICE	LA STATE CONTRACT PRICE	EXTENDED CONTRACT PRICE	
	225-0136	PCT7048P,MG,10GbE,STACK,POE+	1	$6,384.00	$4,443.60	$4,443.60	
	331-2445	10GbE UPLINK MOD,SFP+ XCVR	1	$999.00	$699.30	$699.30	
	331-5274	Dell, SFP+, 10GbE, SR	1	$1,000.00	$700.00	$700.00	
	331-5271	Dell, SFP, 1000BASE-SX, 850	1	$300.00	$210.00	$210.00	
	931-3067	HW WRTY,PC70xx,INIT	1	$0.00	$0.00	$0.00	
	935-7588	HW WRTY,PC70xx,EXT	1	$0.00	$0.00	$0.00	
	938-5498	INST,IMP,AL3,F10,1,S-SRS,SWT,EDT	1	$2,199.00	$1,539.30	$1,539.30	
							$7,593.20

IDF C	SKU NUMBER	DESCRIPTION	QUANTITY	UNIT LIST PRICE	LA STATE CONTRACT PRICE	EXTENDED CONTRACT PRICE
	225-0133	PCT7024P,MG,10GbE,STACK,POE+	1	$3,884.00	$2,718.80	$2,718.80
	331-2445	10GbE UPLINK MOD,SFP+ XCVR	1	$999.00	$699.30	$699.30
	331-5274	Dell, SFP+, 10GbE, SR	1	$1,000.00	$700.00	$700.00
	331-5271	Dell, SFP, 1000BASE-SX, 850	1	$300.00	$210.00	$210.00
	931-3067	HW WRTY,PC70xx,INITIAL YEAR	1	$0.00	$0.00	$0.00
	935-7588	HW WRTY,PC70xx,EXTENDED YEAR	1	$0.00	$0.00	$0.00
	938-5498	INST,IMP,AL3,F10,1,S-SRS,SWT,EDT	1	$2,199.00	$1,539.30	$1,539.30

$5,867.40

IDF E	SKU NUMBER	DESCRIPTION	QUANTITY	UNIT LIST PRICE	LA STATE CONTRACT PRICE	EXTENDED CONTRACT PRICE	
	225-0136	PCT7048P,MG,10GbE,STACK,POE+	1	$6,384.00	$4,443.60	$4,443.60	
	331-2445	10GbE UPLINK MOD,SFP+ XCVR	1	$999.00	$699.30	$699.30	
	331-5274	Dell, SFP+, 10GbE, SR	1	$1,000.00	$700.00	$700.00	
	331-5271	Dell, SFP, 1000BASE-SX, 850	1	$300.00	$210.00	$210.00	
	931-3067	HW WRTY,PC70xx,INIT	1	$0.00	$0.00	$0.00	
	935-7588	HW WRTY,PC70xx,EXT	1	$0.00	$0.00	$0.00	
	938-5498	INST,IMP,AL3,F10,1,S-SRS,SWT,EDT	1	$2,199.00	$1,539.30	$1,539.30	
							$7,592.20

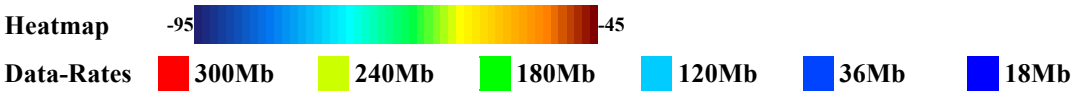
Wired Networking- PoE Switch Total **$69,135.50**

$5,867.40

IDF E	SKU NUMBER	DESCRIPTION	QUANTITY	UNIT LIST PRICE	LA STATE CONTRACT PRICE	EXTENDED CONTRACT PRICE	
	225-0136	PCT7048P,MG,10GbE,STACK,POE+	1	$6,384.00	$4,443.60	$4,443.60	
	331-2445	10GbE UPLINK MOD,SFP+ XCVR	1	$999.00	$699.30	$699.30	
	331-5274	Dell, SFP+, 10GbE, SR	1	$1,000.00	$700.00	$700.00	
	331-5271	Dell, SFP, 1000BASE-SX, 850	1	$300.00	$210.00	$210.00	
	931-3067	HW WRTY,PC70xx,INIT	1	$0.00	$0.00	$0.00	
	935-7588	HW WRTY,PC70xx,EXT	1	$0.00	$0.00	$0.00	
	938-5498	INST,IMP,AL3,F10,1,S-SRS,SWT,EDT	1	$2,199.00	$1,539.30	$1,539.30	
							$7,592.20

Wired Networking- PoE Switch Total **$69,135.50**

Bill of Materials Report Apr 22, 2013



Campus: LAHigh

Data Rate:	100.0 Mbps
Client Xmit:	30mW

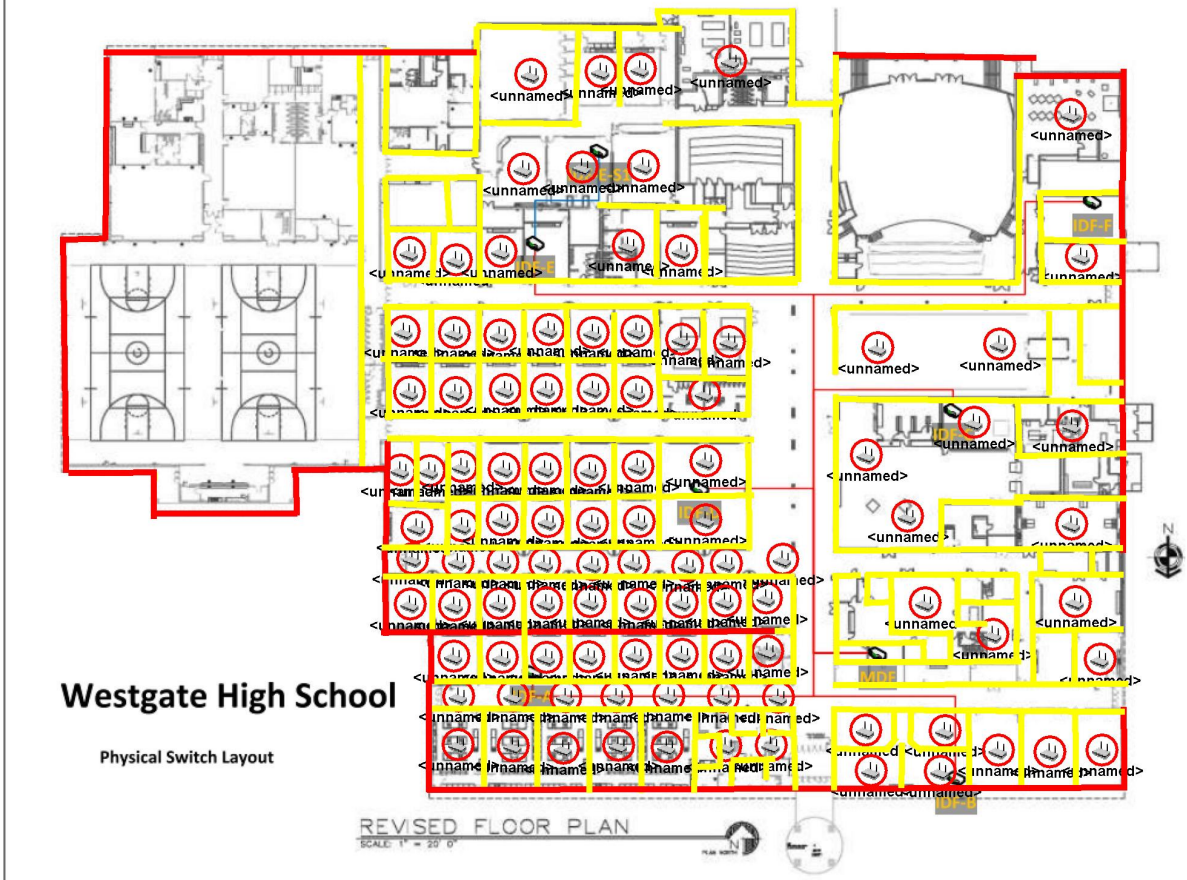
Building: LAHighBuilding1

Address:	unavailable	
Data Rate:	100.0 Mbps	
Client Xmit:	30mW	
Geo Code:	Long: -98.583333	Lat: 39.833333

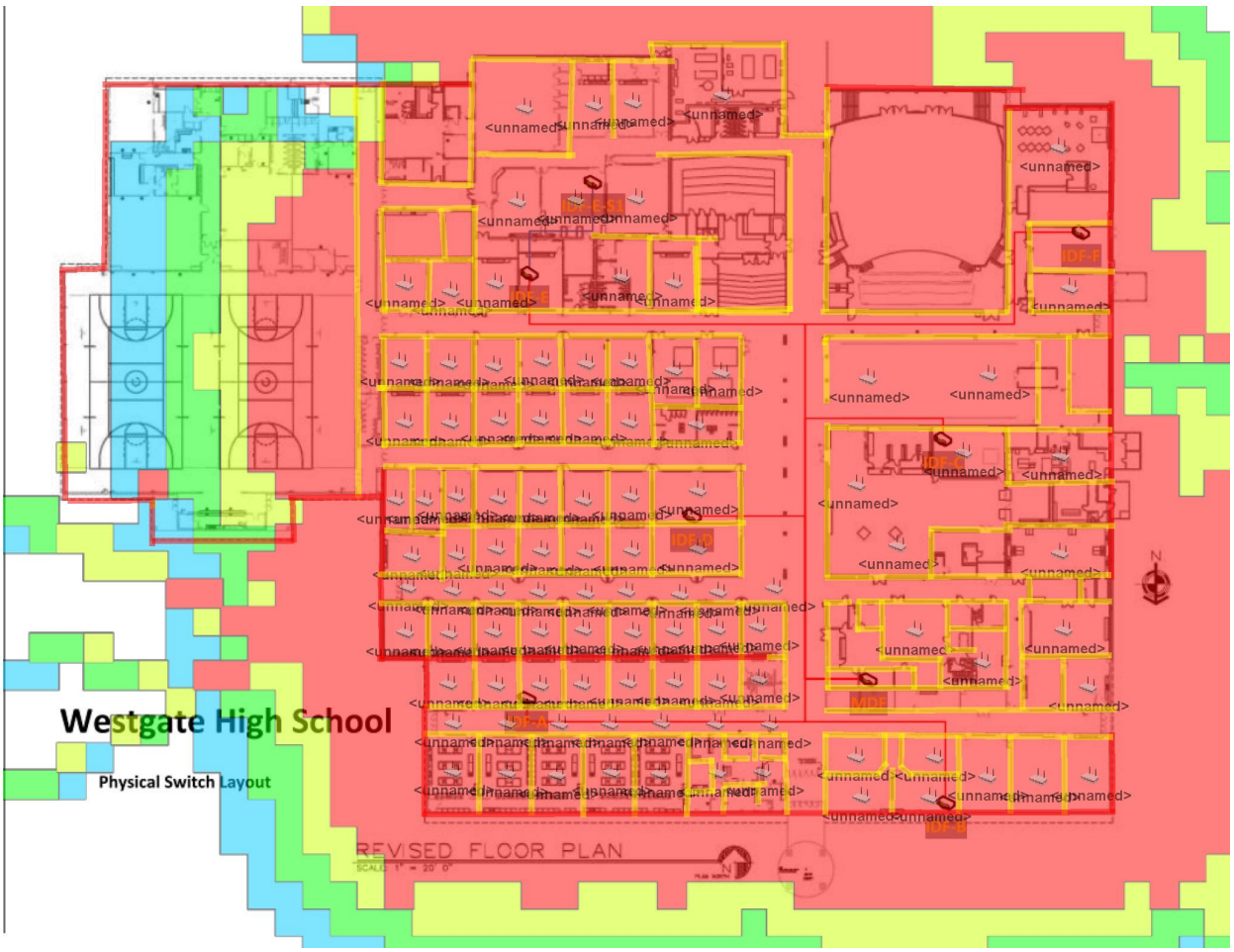
Floor 1.0: Floor1

Environment:	Offices
Data Rate:	100.0 Mbps
Client Xmit:	30mW
Floor Height:	10.00 Feet
Image Area:	348,341 Sq Ft.
Total Controllers:	0
Total IDFs:	0
Total Racks:	0
Total Switches:	0
Total Ports:	0
Total POE Ports:	0
Total APs:	102
Total AMs:	0

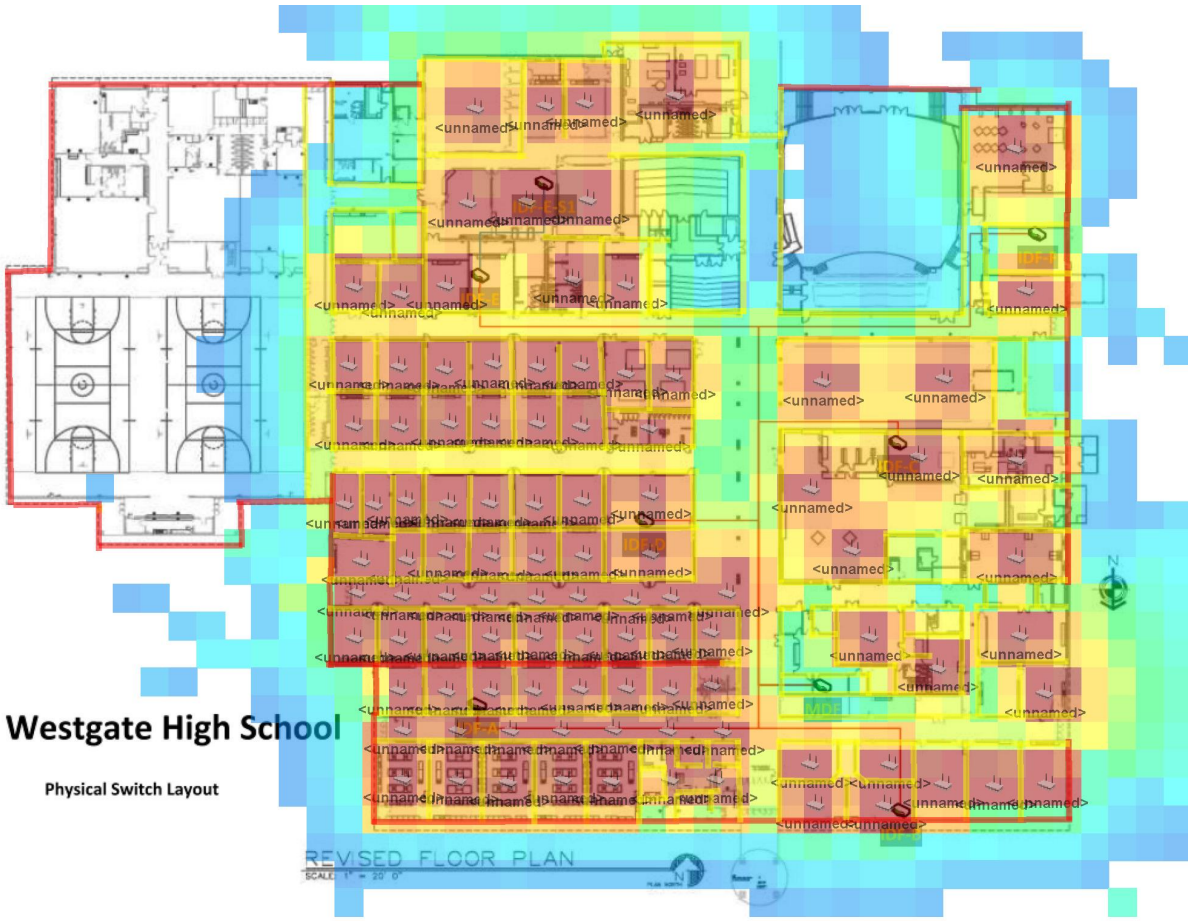
Floor Plan Only View



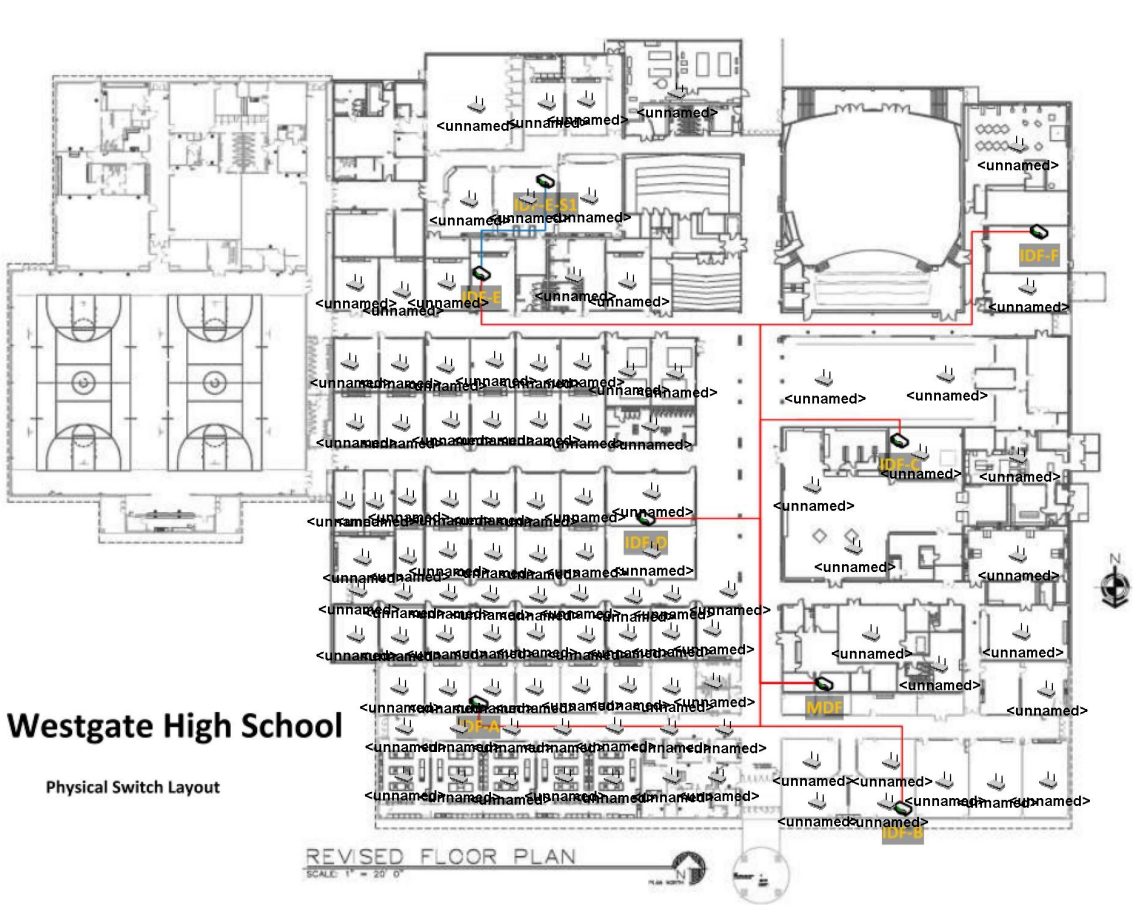
Data Rate View



Heat Map View



Wire Range View



AP Inventory									
Name	**Model**	**Part #**	**PHY**	**Ch**	**Xmit dBm**	**Gain dBi**	**LAN MAC**	**Switch**	**Port**
	Aruba AP 135	AP-135	11N	52	11.0	5.2			
			11n	1	11.0	3.2			
Mounting Kit:		AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit						
	Aruba AP 135	AP-135	11N	52	11.0	5.2			
			11n	1	11.0	3.2			
Mounting Kit:		AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit						
	Aruba AP 135	AP-135	11N	52	11.0	5.2			
			11n	1	11.0	3.2			
Mounting Kit:		AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit						
	Aruba AP 135	AP-135	11N	52	11.0	5.2			
			11n	1	11.0	3.2			
Mounting Kit:		AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit						
	Aruba AP 135	AP-135	11N	44	11.0	5.2			
			11n	11	11.0	3.2			
Mounting Kit:		AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit						
	Aruba AP 135	AP-135	11N	52	11.0	5.2			
			11n	1	11.0	3.2			
Mounting Kit:		AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit						
	Aruba AP 135	AP-135	11N	52	11.0	5.2			
			11n	1	11.0	3.2			
Mounting Kit:		AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit						
	Aruba AP 135	AP-135	11N	52	11.0	5.2			
			11n	1	11.0	3.2			
Mounting Kit:		AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit						
	Aruba AP 135	AP-135	11N	44	11.0	5.2			
			11n	11	11.0	3.2			
Mounting Kit:		AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit						
	Aruba AP 135	AP-135	11N	40	11.0	5.2			
			11n	6	11.0	3.2			
Mounting Kit:		AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit						
	Aruba AP 135	AP-135	11N	52	11.0	5.2			
			11n	1	11.0	3.2			
Mounting Kit:		AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit						
	Aruba AP 135	AP-135	11N	52	11.0	5.2			
			11n	1	11.0	3.2			
Mounting Kit:		AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit						
	Aruba AP 135	AP-135	11N	52	11.0	5.2			
			11n	1	11.0	3.2			
Mounting Kit:		AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit						
	Aruba AP 135	AP-135	11N	52	11.0	5.2			

		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	40	11.0	5.2
		11n	6	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	36	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	40	11.0	5.2
		11n	6	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	44	11.0	5.2

		11n	11	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	11	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	44	11.0	5.2
		11n	11	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	36	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	36	11.0	5.2

		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	36	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	40	11.0	5.2
		11n	6	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	36	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	40	11.0	5.2
		11n	6	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2

		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	40	11.0	5.2
		11n	6	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	44	11.0	5.2
		11n	11	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2

		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	44	11.0	5.2
		11n	11	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	44	11.0	5.2
		11n	11	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	40	11.0	5.2
		11n	6	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	44	11.0	5.2
		11n	11	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	40	11.0	5.2
		11n	6	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2

		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	36	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	6	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	36	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	11	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	36	11.0	5.2
		11n	1	11.0	3.2
Mounting Kit:	AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
Aruba AP 135	AP-135	11N	52	11.0	5.2

			11n	1	11.0	3.2
Mounting Kit:		AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
	Aruba AP 135	AP-135	11N	52	11.0	5.2
			11n	1	11.0	3.2
Mounting Kit:		AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
	Aruba AP 135	AP-135	11N	52	11.0	5.2
			11n	1	11.0	3.2
Mounting Kit:		AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
	Aruba AP 135	AP-135	11N	52	11.0	5.2
			11n	1	11.0	3.2
Mounting Kit:		AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			
	Aruba AP 135	AP-135	11N	56	11.0	5.2
			11n	1	11.0	3.2
Mounting Kit:		AP-135-MNT	AP 135 Wall, Ceiling, Desktop mounting kit			

Wired Inventory							
Name	**Model**	**Part #**	**# POE Ports**	**Total Ports**	**IDF**	**Rack**	**Rack Unit #**

Floor Total			
Part #	**Type**	**Mode**	**Qty**
AP-135	Aruba AP 135	AP	102
		AM	0
AP-135-MNT	Mounting Kit		102

Summary			
Part #	**Type**	**Mode**	**Qty**
AP-135	Aruba AP 135	AP	102
		AM	0
AP-135-MNT	Mounting Kit		102

Westgate High School- 1 to 1 Coverage

All items available on State of Louisiana, Office of State Purchasing: Contract # 409430/ T-number 92129 - DELL BN NETWORKING EQUIPMENT

Wireless Nework
Dell Powerconnect AccessPoint W- WIAP135 (Instant AP)

	SKU NUMBER	DESCRIPTION	QUANTITY	UNIT LIST PRICE	LA STATE CONTRACT PRICE	EXTENDED CONTRACT PRICE	
	225-3493	PC W-WIAP135,802.11n,INTERNAL ANTENNAS	102	$1,095.00	$766.50	$78,183.00	
	331-5447	DOCUMENT KIT FOR PCT W-IAP	102	$8.00	$5.60	$571.20	
	936-1687	HW WRTY,PC W-iAP13x,INITIAL YEAR	102	$0.00	$0.00	$0.00	
	989-4471	NBD PARTS,PC W-iAP13x,INITIAL Year	102	$0.00	$0.00	$0.00	
	331-8073	PC WAP13x OPT CEILING MNT V2,RAIL ADPTR	102	$25.00	$17.50	$1,785.00	
							$80,539.20

Dell Powerconnect Controller W-3600. W/ licenses for 102 AP's

	SKU NUMBER	DESCRIPTION	QUANTITY	UNIT LIST PRICE	LA STATE CONTRACT PRICE	EXTENDED CONTRACT PRICE	
	224-9228	PC W-3600,BASE,ROW	1	$12,995.00	$9,096.50	$9,096.50	
	430-0943	PC W-SFP,1000BASE-SX	1	$395.00	$276.50	$276.50	
	931-7528	HW WRTY,PCW-3600,EXTENDED YEAR	1	$0.00	$0.00	$0.00	
	935-5520	PS NBD OS,PCW-3600,UNY,INITIAL YEAR	1	$0.00	$0.00	$0.00	
	925-3147	HW WRTY + SVC,PCW-3600,UNY,INITIAL TEAR	1	$576.00	$403.20	$403.20	
	421-3461	PC,W-AP,64 AP, LIC	1	$4,320.00	$3,024.00	$3,024.00	
	421-3457	PC,W-AP,32 AP, LIC	1	$2,280.00	$1,596.00	$1,596.00	
	421-3459	PC,W-AP,4 AP, LIC	1	$300.00	$210.00	$210.00	
	421-3456	PC,W-AP,2 AP, LIC	1	$150.00	$105.00	$105.00	
	972-0284	IMPLEMENTATION,WSERIES,MEDIUM EDTITION	1	$11,878.45	$11,878.45	$11,878.45	
							$26,589.65
		WLAN Total/ includes Installation					**$107,128.85**

Main Communication Rack
Dell Powerconnect 8100 Layer 2/ Layer 3 Ethernet Switch

MDF	SKU NUMBER	DESCRIPTION	QUANTITY	UNIT LIST PRICE	LA STATE CONTRACT PRICE	EXTENDED CONTRACT PRICE	
	225-3586	PCT8132F,32 Max Prts,10Gb Swt, Stack	1	$11,095.00	$7,766.50	$7,766.50	
	430-4980	Dell,XCVR,SFP,1000Base-T,Avago	4	$275.00	$192.50	$770.00	
	331-5274	Dell, SFP+, 10GbE, SR	10	$1,000.00	$700.00	$7,000.00	
	967-2444	HW WRTY,PC8132F,INIT	1	$0.00	$0.00	$0.00	
	967-2500	HW WRTY,PC8132F,EXT	1	$0.00	$0.00	$0.00	
	923-2669	REMOTE IMPLEMENTATION,ETH SWITCH,DELL	1	$399.00	$279.30	$279.30	
							$15,815.80

Distribution Communication Closets (IDF)
Dell PowerConnect 7000 Layer 2/ Layer 3 POE+ Ethernet Switches

IDF A	SKU NUMBER	DESCRIPTION	QUANTITY	UNIT LIST PRICE	LA STATE CONTRACT PRICE	EXTENDED CONTRACT PRICE	
	225-0136	PCT7048P,MG,10GbE,STACK,POE+	1	$6,384.00	$4,468.80	$4,468.80	
	331-2445	10GbE UPLINK MOD,SFP+ XCVR	1	$999.00	$699.30	$699.30	
	331-5274	Dell, SFP+, 10GbE, SR	1	$1,000.00	$700.00	$700.00	
	931-3067	HW WRTY,PC70xx,INITIAL YEAR	1	$0.00	$0.00	$0.00	
	935-7588	HW WRTY,PC70xx,EXTENDED YEAR	1	$0.00	$0.00	$0.00	
	923-2669	REMOTE IMPLEMENTATION,ETH SWITCH,DELL	1	$399.00	$279.30	$279.30	
							$6,147.40

IDF B	SKU NUMBER	DESCRIPTION	QUANTITY	UNIT LIST PRICE	LA STATE CONTRACT PRICE	EXTENDED CONTRACT PRICE	
	225-0136	PCT7048P,MG,10GbE,STACK,POE+	1	$6,384.00	$4,468.80	$4,468.80	
	331-2445	10GbE UPLINK MOD,SFP+ XCVR	1	$999.00	$699.30	$699.30	
	331-5274	Dell, SFP+, 10GbE, SR	1	$1,000.00	$700.00	$700.00	
	931-3067	HW WRTY,PC70xx,INITIAL YEAR	1	$0.00	$0.00	$0.00	
	935-7588	HW WRTY,PC70xx,EXTENDED YEAR	1	$0.00	$0.00	$0.00	
	923-2669	REMOTE IMPLEMENTATION,ETH SWITCH,DELL	1	$399.00	$279.30	$279.30	
							$6,147.40

IDF C	SKU NUMBER	DESCRIPTION	QUANTITY	UNIT LIST PRICE	LA STATE CONTRACT PRICE	EXTENDED CONTRACT PRICE	
	225-0136	PCT7048P,MG,10GbE,STACK,POE+	1	$6,384.00	$4,468.80	$4,468.80	
	331-2445	10GbE UPLINK MOD,SFP+ XCVR	1	$999.00	$699.30	$699.30	
	331-5274	Dell, SFP+, 10GbE, SR	1	$1,000.00	$700.00	$700.00	
	931-3067	HW WRTY,PC70xx,INITIAL YEAR	1	$0.00	$0.00	$0.00	
	935-7588	HW WRTY,PC70xx,EXTENDED YEAR	1	$0.00	$0.00	$0.00	
	923-2669	REMOTE IMPLEMENTATION,ETH SWITCH,DELL	1	$399.00	$279.30	$279.30	
							$6,147.40

IDF D	SKU NUMBER	DESCRIPTION	QUANTITY	UNIT LIST PRICE	LA STATE CONTRACT PRICE	EXTENDED CONTRACT PRICE	
	225-0136	PCT7048P,MG,10GbE,STACK,POE+	22	$6,384.00	$4,468.80	$8,937.60	
	331-2445	10GbE UPLINK MOD,SFP+ XCVR	2	$999.00	$699.30	$1,398.60	
	331-5274	Dell, SFP+, 10GbE, SR	2	$1,000.00	$700.00	$1,400.00	
	931-3067	HW WRTY,PC70xx,INITIAL YEAR	2	$0.00	$0.00	$0.00	
	935-7588	HW WRTY,PC70xx,EXTENDED YEAR	2	$0.00	$0.00	$0.00	
	331-2446	STACKING MODULE,CX-4,64GBPS	2	$349.00	$244.30	$488.60	
	923-2669	REMOTE IMPLEMENTATION,ETH SWITCH,DELL	2	$399.00	$279.30	$558.60	
							$12,783.40

IDF E	SKU NUMBER	DESCRIPTION	QUANTITY	UNIT LIST PRICE	LA STATE CONTRACT PRICE	EXTENDED CONTRACT PRICE

	225-0136	PCT7048P,MG,10GbE,STACK,POE+	1	$6,384.00	$4,468.80	$4,468.80	
	331-2445	10GbE UPLINK MOD,SFP+ XCVR	1	$999.00	$699.30	$699.30	
	331-5274	Dell, SFP+, 10GbE, SR	1	$1,000.00	$700.00	$700.00	
	931-3067	HW WRTY,PC70xx,INITIAL YEAR	1	$0.00	$0.00	$0.00	
	935-7588	HW WRTY,PC70xx,EXTENDED YEAR	1	$0.00	$0.00	$0.00	
	923-2669	REMOTE IMPLEMENTATION,ETH SWITCH,DELL	1	$399.00	$279.30	$279.30	
							$6,147.40

IDF F	SKU NUMBER	DESCRIPTION	QUANTITY	UNIT LIST PRICE	LA STATE CONTRACT PRICE	EXTENDED CONTRACT PRICE	
	225-0136	PCT7048P,MG,10GbE,STACK,POE+	1	$6,384.00	$4,468.80	$4,468.80	
	331-2445	10GbE UPLINK MOD,SFP+ XCVR	1	$999.00	$699.30	$699.30	
	331-5274	Dell, SFP+, 10GbE, SR	1	$1,000.00	$700.00	$700.00	
	931-3067	HW WRTY,PC70xx,INITIAL YEAR	1	$0.00	$0.00	$0.00	
	935-7588	HW WRTY,PC70xx,EXTENDED YEAR	1	$0.00	$0.00	$0.00	
	923-2669	REMOTE IMPLEMENTATION,ETH SWITCH,DELL	1	$399.00	$279.30	$279.30	
							$6,147.40
		Wired Networking- PoE Switch Total					**$59,336.20**

	225-0136	PCT7048P,MG,10GbE,STACK,POE+	1	$6,384.00	$4,468.80	$4,468.80	
	331-2445	10GbE UPLINK MOD,SFP+ XCVR	1	$999.00	$699.30	$699.30	
	331-5274	Dell, SFP+, 10GbE, SR	1	$1,000.00	$700.00	$700.00	
	931-3067	HW WRTY,PC70xx,INITIAL YEAR	1	$0.00	$0.00	$0.00	
	935-7588	HW WRTY,PC70xx,EXTENDED YEAR	1	$0.00	$0.00	$0.00	
	923-2669	REMOTE IMPLEMENTATION,ETH SWITCH,DELL	1	$399.00	$279.30	$279.30	
							$6,147.40

IDF F	SKU NUMBER	DESCRIPTION	QUANTITY	UNIT LIST PRICE	LA STATE CONTRACT PRICE	EXTENDED CONTRACT PRICE	
	225-0136	PCT7048P,MG,10GbE,STACK,POE+	1	$6,384.00	$4,468.80	$4,468.80	
	331-2445	10GbE UPLINK MOD,SFP+ XCVR	1	$999.00	$699.30	$699.30	
	331-5274	Dell, SFP+, 10GbE, SR	1	$1,000.00	$700.00	$700.00	
	931-3067	HW WRTY,PC70xx,INITIAL YEAR	1	$0.00	$0.00	$0.00	
	935-7588	HW WRTY,PC70xx,EXTENDED YEAR	1	$0.00	$0.00	$0.00	
	923-2669	REMOTE IMPLEMENTATION,ETH SWITCH,DELL	1	$399.00	$279.30	$279.30	
							$6,147.40
		Wired Networking- PoE Switch Total					**$59,336.20**

Campus LAN switching
Quick Reference Guide

Small business & Campus Edge (Layer 2 switching)

Series	2800 Series				3500 Series				5500 Series			
Overview	Quiet and simple to manage for small offices connecting PCs and peripherals at faster Gigabit speeds.				Entry-level switch connectivity where full management capabilities and PoE are priority over speed.				Advanced Layer 2 switch with 10Gb uplinks and PoE for end-user and workgroup connectivity.			
Models (all sized 1RU)	**2808**	**2816**	**2824**	**2848**	**3524**	**3548**	**3524P**	**3548P**	**5524**	**5548**	**5524P**	**5548P**
Performance												
Switch capacity (Gbps)	16	32	48	96	13	18	13	18	128	176	128	176
Forwarding capacity (Mpps)	12	24	36	71	9	13	9	13	65	100	65	100
Buffer size	128KB				128KB				1.5MB	3MB	1.5MB	3MB
Ports												
10/100/1000 Base-T	8	16	24	48	24 or 48 (10/100 only) & 2 (1000 only)				24	48	24	48
1 GbE (SFP)	-	-	2	4	2				2			
10 GbE	-				-				2 (SFP+)			
Expansion module slots	-				-				-			
Power-over-Ethernet ports	-				-	-	24 PoE	48 PoE	-	-	24 PoE	48 PoE
Power & Cooling												
Power consumption (Watts)	7	9	14	24	15	19	33	38	29	49	380	541
AC power supplies	One				One				One			
Redundant power	N/A				External RPS-600		External EPS-470		External RPS-720		External MPS-600	
Airflow	Fanless		IO Panel to PSU		IO Panel to PSU				IO Panel to PSU			
Features												
Stacking	N/A				up to 8 using SFP port				up to 8 using HDMI port (cable included)			
VLANs	64				256				4094			
VLAN support	Voice VLAN,Private Edge VLAN, GVRP				Voice VLAN,Private Edge VLAN, GVRP				Voice VLAN,Private Edge VLAN, Protocol-based VLANs, Guest VLANs, GVRP, 802.1x Auto VLAN			
Layer 2 & 3	Layer 2 only				Layer 2 only				Layer 2 only			
IPv4/IPv6 & IPv4/IPv6 routing	IPv4 only, no routing				IPv4 only, no routing				IPv4/IPv6, static routes only			
Multicast support	IGMP v2 snooping				IGMP v2 snooping				IGMP v1/2/3, snooping, Querier, Static IP multicast			
Rapid Deployment	N/A				N/A				Yes, you can deploy switch configuration files, stacking commands, and firmware updates by simply inserting a USB device into the port.			
iSCSI optimization	N/A				N/A				iSCSI aware (detect & prioritize iSCSI traffic into pre-defined QoS)			
Management & Security												
Switch security	Switch access password protection. Restricted IP address. RADIUS support, 802.1x Port-based Auth.				Strong Passwords, Password Masking, Management access control - privilege levels. RADIUS and TACACS+ support, 802.1x Port-based Authentication							
SNMP support	SNMPv1/2				SNMPv1/2c/3							
sFlow	N/A				N/A				Yes			
Management	Web managed switch with limited CLI				GUI access via http/https. CLI via console, Telnet, SSH							

Lifetime Warranty

When we say "Lifetime", we mean it.

All PowerConnect fixed-port rack switches are backed by an industry-leading, Lifetime Warranty which guarantees Basic Hardware Service (hardware repair or replacement) for as long as you own the product*.

*Repair or replacement does not include configuration or other advanced service and support provided by Dell ProSupport Services. Details: **dell.com/LifetimeWarranty**

Network Management

As your infrastructure gets larger and more complex, it can be a real headache to keep track of every device in your network. You need to know the status of those devices, how they are performing, and have the ability to manage their configuration for optimal performance. **OpenManage Network Manager** allows you to view complete physical and logical inventories of your network, get detailed connectivity information of each device, and automate network functions. **Try it free. dell.com/networkmanager**

Network Services

Most organizations benefit from additional levels of support to protect their IT investment and maximize productivity. Choose:

- **Consulting Services**
- **Deployment Services**
- **Managed Services**
- **Support Services**

Whether you are seeking basic product support or complete IT outsourcing, Dell can deliver services based on your need. Get a free business consultation at **dell.com/networkconsulting**

	1/10GbE (Layer 2 & 3 switching)											10/40GbE			
Series	6200 Series					7000 Series						8100 Series			
Overview	Flexible Layer 2 & Layer 3 switch with 1/10Gb performance and value for small to medium-sized businesses and office wiring closets.					Advanced 1/10Gb switch with Layer 2 & 3 capabilities designed for enterprise LANs, server aggregation, and wiring closets requiring PoE+.						10/40Gb high-density connectivity for large enterprise campus distribution and small network cores.			
Models (all sized 1RU)	**6224**	**6248**	**6224F**	**6224P**	**6248P**	**7024**	**7048**	**7024F**	**7024P**	**7048P**	**7048R**	**8132**	**8132F**	**8164**	**8164F**
Performance															
Switch capacity (Gbps)	136	184	136	136	184	176	224	176	176	224	224	640 Gbps		1.28 Tbps	
Forwarding capacity (Mpps)	95	131	95	95	131	125	160	125	125	160	160	960			
Buffer size	0.7MB	1.4MB	0.7MB	0.7MB	1.4MB	4MB						9MB			
Ports															
10/100/1000 Base-T	24	48	4 combo	24	48	24	48	4 combo	24	48	48	24 (100/1000)	-	48 (100/1000)	-
1 GbE (SFP)	4 combo	4 combo	24	4 combo	4 combo	4 combo	4 combo	24	4 combo	4 combo	4 combo	-	24	-	48
10 GbE	up to 2 per module, 2 modules available					up to 2 per module, 2 modules available						24 (up to 32 using 2 QSFP ports & cables)		48 (up to 64 using 4 QSFP ports & cables)	
40 GbE (QSFP+)	-					-						2 using module		2 built-in (up to 4 using module)	
Expansion module slots	Two slots with four optional modules: • 2 port SFP+ (SR, LR, LRM) • 2 port 10GBase-T • 2 port 10G CX4 • 2 port stacking module CX4					Two slots with three optional modules: • 2 port SFP+ (SR, LR, LRM) • 2 port 10GBase-T • 2 port stacking module CX4						One slot with three optional modules: • 2 port QSFP+ • 4 port SFP+ (SR, LR, LRM) • 4 port 10GBase-T			
Power-over-Ethernet ports	-			24 PoE	48 PoE	-			24 PoE+	48 PoE+	-	-			
Power & Cooling															
Power consumption (Watts)	70	120	68	477	499	88	114	102	796	930	123	240	176	395	220
AC power supplies	One					One					2 Hot-Swap	2 Hot-Swap			
Redundant power	External RPS-600			External EPS-470		External RPS-720			External MPS-1000		RPS-720	Yes, built-in			
Airflow	IO Panel to PSU					IO Panel to PSU					Rev. fan	IO Panel to PSU			
Features															
Stacking	up to 12, using modules					up to 12, using modules						up to 6 using front-port or module			
VLANs	1024					1000						4000			
VLAN support	Voice VLAN, Private Edge, Protocol & MAC-based, GVRP					Voice VLAN, Private VLAN including Edge, Protocol and MAC-based, GVRP									
Layer 2 & 3	Layer 2 & 3 with RIPv1/v2, OSPFv1/v2/v3, VRRP, LLDP-Med, static routes														
IPv4/IPv6 & IPv4/IPv6 routing	Yes					Yes						Yes			
Multicast support	IGMP snooping v1/v2/v3, IGMP Proxy, IGMP Snooping Querier, DVMRP, PIM-DM, PIM-SM														
Rapid Deployment	N/A					Yes, you can deploy switch configuration files, stacking commands, and firmware updates by simply inserting a USB device into the port.									
iSCSI optimization	iSCSI Aware (detect & prioritize iSCSI traffic into pre-defined QoS); iSCSI Auto-Configuration (switch configuration routine automatically sets up and optimizes performance with Dell EqualLogic and Compellent arrays)														
Mangement & Security															
Switch Security	Same as to the right except no Administrative profiles or AAA support.					DoS Attack Prevention for CPU & Network, Strong Passwords, Password Masking, Administrative Profiles, Management access control - privilege levels, RADIUS, TACACS+ and AAA support, 802.1x port-based authentication									
SNMP support	SNMPv1/2c/3														
sFlow	Yes														
Management	GUI access via http/https. CLI via console, Telnet, SSH														

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SS103N_Dell_Campus_LAN_Switching_Quick_Reference_Guide_2013-02-15

Learn more at dell.com/networking

Dell PowerConnect 7000 Series

Dell™ PowerConnect™ 7000 Gigabit Ethernet switches are Layer 3 scalable enterprise switches that give you the power and flexibility you need for today and the future, offering advanced switching capabilities including high-density, 10 Gigabit Ethernet uplinks, high-performance stacking, high redundancy and availability, scalable from the small business to the campus Edge.

The PowerConnect 7000 series switches are designed to offer secure, fixed-port Gigabit Ethernet switching solutions which deliver full wire-speed switching performance. With 24 or 48 Gigabit Ethernet ports in a 1U form factor, the PowerConnect 7000 series has a total switching capacity of up to 224 Gbps to support demanding network environments. The switches also offer simple management and scalability via a 128Gbps (via two stacking modules) high-availability stacking architecture that allows you to manage up to twelve switches from a single IP address, and share the upgradeable 10GbE ports across the stack for uplinks to the next layer in your network. The switches are designed with power-saving features including Energy Efficient Ethernet (IEEE 802.3az) ports to help reduce per port power consumption while decrease cooling and power costs. Select models offer 24 & 48 ports of PoE+ (IEEE 802.3at), support for high- power WLAN Access Points (WAPs), Voice over IP (VoIP) handsets, video conferencing and security cameras up to 30.8 watts of power.

High-performance and high availability for small cores and enterprise

The PowerConnect 7000 Ethernet Switch family is designed for enterprise applications where high performance, high availability, and energy efficiency are key requirements. Operating at wire speed, the 7000 switches deliver up to 160 Mpps throughput and a data rate of up to 224 Gbps (full duplex) for both Layer 2 and Layer 3 environments.

Switch stacks up to 600 ports can be managed from a single screen using the highly-available (HA) stacking architecture, for high density aggregation with seamless redundant availability and single IP management of an entire rack. Fast stack failover enables sub-50ms failover scenarios. The 7000 family can also stack with the Dell M6348 high density Ethernet blade. The 7048R model enables a resilient HA core switch design with redundant internal power supplies and fans, reversible airflow (back-to-ports and ports-to-back model options) and dual firmware image support.

The switches also support rapid USB auto-configuration so you can rapidly deploy the switches in minutes without setting up complex TFTP configurations or sending technical staff to remote offices.

Robust security

Advanced security features of PowerConnect 7000 series switches help protect the network from accidental or malicious interference. Edge authentication using IEEE 802.1x provides a meaningful security solution which is centralized and easier to manage than standard ACLs, and the monitor mode of the switch allows for easier rollout of 802.1x in new environments. The PowerConnect 7000 series provides password management for increased network security, encrypted management traffic through SSL or SSH and secures SNMP access by filtering hosts based upon IP address. MAC-based port security is designed to prevent unauthorized MAC addresses from accessing the network. RADIUS and TACACS+ support enables centralized, remote authentication of administrative access to the switch. Private VLANs and administrative profiles are also supported.

Other Key Features

- Up to 48 GbE ports of copper or fiber, PoE+ with 10GbE and stacking module options in a 1RU form factor
- Stack up to 576GbE ports for highest-density, demanding HA aggregation/distribution wiring closets/MDFs
- Non-stop forwarding and fast failover in stack configurations
- IPv4 and IPv6 routing, including OSPFv1/2/3 and routing enhancements
- Private VLAN extensions and Private VLAN Edge support
- Unidirectional Link Detection (UDLD) support
- AAA Authorization, TACACS+ Accounting, and RADIUS Support for comprehensive secure access support
- Pre-defined Administrative profiles/roles for switch access to management functions
- USB auto-configuration rapidly deploys the switches in minutes without setting up complex TFTP configurations or sending technical staff to remote offices.
- Manage via a standard command line interface (CLI), embedded Web server, third party SNMP-based management console applications (including Dell OpenManage Network Manager), Telnet, or serial connections.
- Designed to be easy on campus budgets with energy savings from the power cord to the ports
- Energy Efficient Ethernet (IEEE 802.3az) ports reduce per port power consumption when link is idle or if ports are inactive
- Efficient power supplies and multi-speed fan operation help decrease cooling and power costs
- Operation in environments up to 45°C, helps reduce cooling costs in temperature constrained deployments

Lifetime Warranty*

Select PowerConnect switches are backed by an industry-leading, lifetime warranty which guarantees Basic Hardware Service (repair or replacement) for life.
Details at Dell.com/LifetimeWarranty*

Product	Dell™ PowerConnect™ 7024 & 7024P	Dell ™ PowerConnect ™ 7024F	Dell ™ PowerConnect ™ 7048, 7048P & 7048R/RA
Port types	24 10/100/1000BASE-T auto-sensing Gigabit Ethernet switching ports; upgradeable 4x 10GbE/ stacking ports; 4 Combo (SFP or 10/100/1000) Gigabit Ethernet ports; 7024P: Supplies up to 30.8 watts per port (with optional external power supply) on all 24 ports	24 1000-SX or 1000-LX Gigabit Ethernet ports; 4 Combo (SFP or 10/100/1000) Gigabit Ethernet ports; Up to 4 10-Gigabit Ethernet Ports; Distances: 1000BASE-SX:Up to 500m 1000BASE-LX:Up to 10 km	48 10/100/1000BASE-T auto- sensing Gigabit Ethernet switching ports; Upgradeable 4x 10GbE / stacking ports, 4 Combo (SFP or 10/100/1000) Gigabit Ethernet ports; 7048P: Supplies up to 30.8 watts per port (with optional external power supply) on all 48 ports
Performance	Switch Fabric Capacity 176 Gb/s, Forwarding Rate 125 Mpps, Up to 32,000 MAC Addresses		Switch Fabric Capacity 224 Gb/s Forwarding Rate 160 Mpps Up to 32,000 MAC Addresses
Port configuration	Resilient stacking up to 12 systems (with optional module); Auto-negotiation for speed, duplex mode and flow control; Auto MDI/MDIX; Port mirroring; Flow-based port mirroring; Broadcast storm control, Energy Efficient Ethernet (IEEE802.3az) per port settings (1 & 10GbE ports), Port profiles-predefined macros to help automatically configure ports, Up to 12,000 Routes Supported; UDLD		
Management	Web-based management interface, Industry-standard CLI accessible via Telnet, Out-of-Band Ethernet or Local Serial Port; SNMPv1, SNMPv2c and SNMPv3 supported; four RMON groups supported (history, statistics, alarms and events); TFTP transfers of firmware and configuration files; Dual firmware images on-board; Multiple configuration file upload/download supported; Statistics for error monitoring and performance optimization including port summary tables; BootP/DHCP IP address management supported; Syslog remote logging capabilities; LLDP-MED, SNTP, iSCSI Auto Configuration; Pre-defined roles for simplified administration of the switch (Network Admin, Network Security, Router Admin, Multicast Admin, DHCP Admin, Network Operator)		
Quality of service	8 Priority Queues per Port, Layer 2 Trusted Mode (IEEE 802.1p tagging); Layer 3 Trusted Mode (DSCP); Layer 4 Trusted Mode (TCP/UDP); Advanced Mode using Layer 2/3/4 flow-based Policies, including metering/rate limiting, marking and bandwidth guarantees; up to 100 ACLs can be used for QoS flow identification via Class-maps; Adjustable Weighted-Round-Robin (WRR) and Strict Queue Scheduling; Port-based QoS Services Mode; Flow-based QoS Services Mode, IPv4 and IPv6 support		
Security	Switch access password protection, including strong password support, User-definable settings for enabling or disabling Web, SSH, Telnet, SSL management access; Port-based MAC Address alert and lock-down, IP Address filtering for management access via Telnet, HTTP, HTTPS/SSL, SSH and SNMP; RADIUS (RFC 2865) and TACACS+ (RFC 1492) remote authentication for switch management access; SSLv3 and SSHv2 encryption for switch management traffic; Management access filtering via Management Access Profiles; IEEE 802.1x-based edge authentication;802.1x monitor mode to aid in .1x troubleshooting, MAC and IP based ACLs, Time controlled ACLs, Dynamic ARP Inspection, Up to 100 Access Control Lists (ACLs)supported; Up to 1K rules per ACL, 8K rules total (7K Ingress rules, 1K Egress rules); AAA/ TACACS+ per-command authorization; TACACS+ accounting;		
VLAN	IEEE 802.1Q tagging and port-based, up to 1,000 user-configurable VLANs Protocol-based VLANs Dynamic VLANs with GVRP support; Private VLAN and edge extensions		
Layer 2 multicast	IGMP v1/v2/v3 snooping IGMP snooping for IP multicast support IGMP Querier Static IP Multicast		
Other switching features	Link Aggregation with support for up to 72 link aggregation groups (LAGs) per switch and up to 8 member ports per LAG (IEEE 802.3ad) Local preference for LAG; LACP support (IEEE 802.3ad) Port Mirroring Jumbo frame support up to 9K DHCP Server support, DHCP Snooping, DHCP Relay Link Layer Discovery Protocol supported (IEEE 802.1AB)		
Availability	External redundant power support with PowerConnect RPS-720 (sold separately), MPS-1000 (sold eparately) Spanning Tree (IEEE 802.1D) and Rapid Spanning Tree (IEEE 802.1w) with Fast Link Support Multiple spanning trees (IEEE 802.1s) Spanning Tree optional features – STP root guard, BPDU guard, BPDU filtering Dual firmware images Configuration file upload and download (USB supported) Switch Auditing support sFlow; UDLD Supports Virtual Redundant Routing Protocol (VRRP); Cable diagnostics; SFP/SFP+ transceiver diagnostics		
Layer 3 routing protocols	Static Routes; Routing Information Protocol (RIP) v1/v2; Open Shortest Path First (OSPF) v1/v2/v3; Classless Inter-Domain Routing (CIDR); Internet Control Message Protocol (ICMP); ICMP Router Discover Protocol (IRDP); Virtual Redundant Routing Protocol (VRRP); Address Resolution Protocol (ARP); Internet Group Management Protocol (IGMP) v2; Distance-Vector Multicast Routing Protocol (DVMRP)		

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*Select PowerConnect products carry a Lifetime Limited Warranty with Basic Hardware Service (repair or replacement) for life. Repair or replacement does not include troubleshooting, configuration, or other advanced service provided by Dell ProSupport. For more details see dell.com/lifetimewarranty

Learn more at Dell.com/PowerConnect

SS743_Dell_PowerConnect_7000_Series_2012-12-31

Specifications: PowerConnect 7000 high-performance 1/10 GbE Enterprise Switches

Dell SKU description

PowerConnect 7000 Series

PowerConnect 7024, 24x 1GBase-T ports, 4 combo ports and optional dual expansion modules
PowerConnect 7024F, 24x 1GbE SFP+ base ports, 4 combo ports and optional dual expansion modules
PowerConnect 7024P, 24x 1GBase-T PoE+ capable ports, 4 combo ports and optional dual expansion modules
PowerConnect 7048, 48x 1GBase-T ports, 4 combo ports and optional dual expansion modules
PowerConnect 7048P, 48x 1GBase-T PoE+ capable ports, 4 combo ports and optional dual expansion modules
PowerConnect 7048R, 48x 1GBase-T ports, 4 combo ports and optional dual expansion modules, ports-to-back airflow & redundant power supply/fan modules
PowerConnect 7048RA, 48x 1GBase-T ports, 4 combo ports and optional dual expansion modules, back-to-ports airflow & redundant power supply/fan modules

Modules

10GBase-T Module
2-port, Hot Swappable, 2x 10GBase-T ports (RJ45 for Cat6 cables)
SFP+ 10GbE Module
2-port, Hot Swappable, 2x SFP+ ports (optics or direct attach cables required)
CX-4 Stacking Module
2-port, Hot Swap, 64Gbps (0.3m cable included)

Redundant power supplies

Dual AC Power Supplies, Hot swappable (7048R, 7048R-RA only)
MPS1000 - External Modular Power Supply for PoE+ switches: 7024P and 7048P (1000W)
RPS720 - External Redundant Power Supply for non-PoE switches: 7024, 7024F and 7048

Optics

Transceiver, SFP, 1000BASE-SX, 850nm Wavelength, 550m Reach
Transceiver, SFP, 1000BASE-LX, 1310nm Wavelength, 10km Reach
Transceiver, SFP+, 10GbE, SR, Multi-Mode, 300m Reach
Transceiver, SFP+, 10GbE, LR, Single-Mode, 10km Reach
Transceiver, SFP+, 10GbE, LRM, Multi-Mode LC-LC, 220m Reach

Cables

CX4 Stacking Cable, 1m (requires CX4 stacking module)
CX4 Stacking Cable, 3m (requires CX4 stacking module)
PowerConnect SFP+ .5 m TwinAx, connects to PowerConnect
PowerConnect SFP+ 1 m TwinAx, connects to PowerConnect
PowerConnect SFP+ 3 m TwinAx, connects to PowerConnect
PowerConnect SFP+ 5 m TwinAx, connects to PowerConnect
PowerConnect SFP+ 7 m TwinAx, connects to PowerConnect

Physical

7024: 24 line-rate 10/100M/1GBase-T Ethernet ports, 2 module ports
7024F: 24 line-rate 1Gb SFP+ Ethernet ports, 2 module ports
7024P: 24 line-rate 10/100M/1GBase-T Ethernet PoE+ ports, 2 module ports
7048: 48 line-rate 10/100M/1GBase-T Ethernet ports, 2 module ports
7048P: 48 line-rate 10/100M/1GBase-T Ethernet PoE+ ports, 2 module ports
7048R/RA:48 line-rate 10/100M/1GBase-T Ethernet ports, 2 module ports, reversible airflow (configured at factory)
All switches include:
1 RJ45 console/management port with RS232 signaling
1 RJ45 out of band OOB port
1 USB (Type A) port for configuration

Redundancy

Hot swappable redundant power (MPS/RPS or fan/power supply modules in R models)
Hot swappable modules

Performance

MAC addresses:	32K
IPv4 routes:	12K
IPv6 routes:	6K (shared CAM space with IPv4)
Switch fabric capacity:	up to 224Gbps (full-duplex) 112 Gbps (half-duplex)
Forwarding capacity:	up to 160 Mpps
Link aggregation:	8 links per group, 72 groups per stack
Queues per port:	4 queues
Layer 2 VLANs:	1000 simultaneous
Line-rate Layer 2 switching:	all protocols, including IPv4 and IPv6
Line-rate Layer 3 routing:	IPv4 and IPv6
IPv4 Multicast groups	2048 per switch
LAG load balancing:	based on Layer 2, IPv4 or IPv6 headers
Packet buffer memory:	4MB
CPU memory:	1GB

IEEE Compliance

802.1AB	LLDP
802.1D	Bridging, Spanning Tree
802.1p	Ethernet Priority (User Provisioning and Mapping)
802.1Q	VLAN Tagging, Double VLAN Tagging, GVRP
802.1S	Multiple Spanning Tree (MSTP)
802.1v	Protocol-based VLANs
802.1W	Rapid Spanning Tree (RSTP)
802.1X	Network Access Control
802.3	10BASE-T
802.3ab	Gigabit Ethernet (1000BASE-T)
802.3ac	Frame Extensions for VLAN Tagging
802.3ad	Link Aggregation with LACP
802.3ae	10 Gigabit Ethernet (10GBASE-X)
802.3u	Fast Ethernet (100BASE-TX) on mgmt ports
802.3x	Flow Control
802.3z	Gigabit Ethernet (1000BASE-X) ANSI/TIA-1057 LLDP-MED
MTU	9,000 bytes

RFC and I-D Compliance

General Internet Protocols

768	UDP	856	Telnet binary transm.
783	TFTP	858	Telnet suppress option
791	IP	1321	MDA
792	ICMP	1350	TFTP v2
793	TCP	2474	Differentiated Services
854	Telnet	2475	Architecture for DS
855	Telnet option	3164	Syslog

General IPv4 Protocols

791	IPv4	2082	RIP-2 MD5 Authent.
792	ICMP	2030	SNTP v4
826	ARP	2131	DHCP (relay)
894	Transmit IP datagrams	2132	DHCP/BootP Ext.
896	Congestion Control	2328	OSPFv4
951	BootP	2338	VRRP
1027	Proxy ARP	2597	Assured Fwd PHB
1042	Ethernet Transmission	2787	VRRP MIB
1256	ICMP Router Discovery	3046	DHCP BootP Relay
1519	CIDR	3069	Private VLAN
1534	Interop BootP, DHCP	3246	Expedited Fwd PHB
1541	DHCP	3260	DiffServ updates
1542	BootP (relay)	3289	MIB for DiffServ (read)
1765	OSPF Database overflow	3768	VRRP
1812	Routers		

General IPv6 Protocols

1961	Path MTU	3484	Default Address Select
2372	IPv6 Addressing	3493	Basic Socket interface
2460	IPv6	3513	Addressing Arch.
2461	Neighbor Discovery	3542	Advanced sockets API
2462	Stateless Address Autoconfiguration (partial)		
2464	IPv6 over Ethernet	3587	Global Unicast Address
2465	IPv6 MIB	3736	Stateless DHCPv6
2466	ICMPv6 MIB	4213	Basic Transition Mech.
2711	IPv6 Router alert	4291	Addressing Arch
2740	OSPFv3	4443	ICMPv6
3056	Connection to IPv6 Domains via IPv4 Clouds		
3315	DHCPv6		

RIP

1058	RIPv1	2082	MD5
1724	RIPv2 MIB Extension	2453	RIPv2
2080	RIPng		

OSPF

1850	OSPF MIB	3101	NSSA
2328	OSPFv2	3623	Graceful Restart
2370	Opaque LSA Option	5187	v3 Graceful Restart
2740	OSPFv3		

Multicast

1112	IGMPv1	3376	IGMPv3
2236	IGMPv2	3810	MLDv2
2365	Admin scoped IP Mcast	3973	PIM-DM
2710	MLDv1	4541	IGMPv1/v2 Snooping
2932	IPv4 MIB	4601	PIM-SM
2933	IGMP MIB	5060	PIM MIB

Draft-ietf-pim-sm-bsr-05
Draft-ietf-idmr-dvmrp-v3-10 DVMRP
Draft-ietf-magma-igmp-proxy-06.txt IGMP/MLD Proxying
Draft-ietf-magma-igmpv3-and-routing-05.txt
draft-ietf-idmr-dvmrp-mib-11
draft-ietf-magma-mgmd-mib-05
draft-ietf-pim-bsr-mib-06
IEEE 802.1ag draft 8.1 – Connectivity Fault Management (CFM)

Network Management

1155	SMIv1
1157	SNMPv1
1212	Concise MIB Definitions
1213	MIB-II
1215	SNMP Traps
1286	Bridge MIB
1442	SMIv2
1451	Manager-to-Manager MIB
1492	TACACS+
1493	Managed objects for Bridges MIB
1573	Evolution of Interfaces
1612	DNS Resolver MIB Extensions
1643	Etherlike MIB
1757	RMON MIB
1867	HTML/2.0 Forms with file upload extensions
1901	Community-based SNMPv2
1907	SNMPv2 MIB
1908	Coexistence btwn SNMPv1/v2
2011	IP MIB
2012	TCP MIB
2013	UDP MIB
2096	IP Forwarding Table MIB
2233	Interfaces Group using SMIv2
2271	SNMP Framework MIB
2576	Coexistence between SNMPv1/v2/v3
2578	SMIv2
2579	Textual Conventions for SMIv2
2580	Conformance Statements for SMIv2
2613	RMON MIB
2618	RADIUS Authentication MIB
2620	RADIUS Accounting MIB
2665	Ethernet-like Interfaces MIB
2666	Identification of Ethernet chipsets
2674	Extended Bridge MIB
2737	ENTITY MIB
2819	RMON MIB (groups 1, 2, 3, 9)
2863	Interfaces MIB
2865	RADIUS
2866	RADIUS Accounting
2868	RADIUS Attributes for Tunnel Prot.
2869	RADIUS Extensions
3413	SNMP Applications
3416	SNMPv2
3418	SNMP MIB
3580	802.1X with RADIUS

FASTPATH Enterprise MIB supporting Routing features
draft-ietf-hubmib-etherif-mib-v3-00.txt (Obsoletes RFC 2665)
LAG MIB Support for 802.3ad functionality

Chassis

Size: 1 RU, 1.73" H x 17.32" W x 18.1" D (4.4 cm H x 44 cm W x 46 cm D)
Approximate weight: 6.35 kg / 14 lb (7024); 7.62 kg / 16.8 lb (7024P); 6.3 kg / 13.9 lb (7024F); 6.77 kg / 14.92 lb (7048); 8.1 kg / 17.86 lb (7048P); 9.75 kg / 21.49 lb (7048R)
1U, rack-mounting kit included

Environmental

Power supply: 100–240 VAC 50/60 Hz
Power Supply Efficiency 80% or better in all operating modes
Max. thermal output:
7024: 300.5 BTU/hr
7024F: 347.32 BTU/hr
7024P: 298.8 BTU/hr
7048: 389.84 BTU/hr
7048P: 376.87 BTU/hr
7048R/RA: 418.70 BTU/hr
Power Consumption Max (Watts): 88W (7024); 101.8W (7024F); 87.5W (7024P, no PoE+ ports), 796W (7024P, all ports as PoE+); 114.3W (7048); 122.7W (7048R/RA); 114W (7048, no PoE+ ports), 930W (7048P, All ports as PoE+)
Max. Operating specifications:
Operating temperature: 32° to 113°F (0° to 45°C) Operating humidity: 10 to 90% (RH), non-condensing
Max. non-operating specifications:
Storage temperature: –4° to 158°F (–20° to 70°C) Storage humidity: 10 to 95% (RH), non-condensing

Regulatory and environment Compliance

Safety and Emissions

Australia/New Zealand: ACMA or C-Tick Class A
Canada: ICES Class A; SCC
China: CNCA or CCC Class A; NAL
Europe: CE Class A
Japan: VCCI Class A
USA: FCC Class A; NRTL
Product meets EMC and safety standards in many countries inclusive of; USA, Canada, EU, Japan, China. For more country-specific regulatory information, and approvals, please see your Dell representative.

RoHS

Product meets RoHS compliance standards in many countries inclusive of USA, and EU. For more country-specific RoHS compliance information, please see your Dell representative.

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Learn more at Dell.com/Networking

Dell W-Series Quick Reference Guide

Last update: April 27, 2013

TThe Dell Networking W-Series wireless networking portfolio is highly scalable and secure, and offers centralized or controllerless choice. You can provide easily managed WLAN, BYOD and Application delivery optimized for your wireless users. More information at: **[insert new link here]**

Wireless controllers									
Features by model	**W-620**	**W-650**	**W-3200**	**W-3400**	**W-3600**	**W-6000M3 chassis (1-4)modules**	**W-7210**	**W-7220**	**W-7240**
Target Market	Small or Branch Offices		Medium to Large Enterprises			Headquarters /Large Campus	Headquarters, High density Campus or Large Enterprise		
Max LAN-connected APs	8	16	32	64	128	512 / mod. (2,048 Max.)	512	1,024	2,048
Max Remote Access Points	32	64	128	256	512	1,024 / mod. (4,096 Max.)	512	1,024	2,048
Max Users	256	512	2,048	4,096	8,192	8,192 / mod. (32,768 Max.)	16,384	24,576	32,768
Firewall throughput	800 Mbps	2 Gbps	3 Gbps	4 Gbps	4 Gbps	20 Gbps / mod. (80 Gbps Max.)	20 Gbps	40 Gbps	40 Gbps
Maximum VLANs	128	128	128	256	512	1,400 / mod. (5,600 Max.)	4,094	4,094	4,094
GbE Ports (GBIC or SFP)	1	6	4	4	4	10 SFP / 2 XFP (40 SFP / 8 Xfp Max.)			
10/100/1000Base-T Ports (auto-neg)	0	8	4	4	4	0	2 (combo)	2 (combo)	2 (combo)
10GbE Ports	0	0	0	0	0	2 XFP	4 SFP+	4 SFP+	4 SFP+
Power-over-Ethernet ports (802.3af/802.3at)	4	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a
USB ports for 3G/4G failover	1	4	None	None	None	None	None	None	None
Form factor/footprint	Desktop/Rack	Desktop/Rack	1RU	1RU	1RU	4RU	1RU	1RU	1RU
Active firewall sessions	8,192	16,384	128,000	128,000	128,000	524,300 / mod. (2,097,200 Max.)	2,015,291	2,015,291	2,015,291
Concurrent IPSec sessions	256	512	2,048	4,096	4,096	4,096 / mod. (16,384 Max.)	16,384	24,578	32,768
Encrypted throughput (3DES, AES-CBC)	400 Mbps	1.6 Gbps	1.6 Gbps	4 Gbps	8 Gbps	8 Gbps / Mod. (32 Gbps Max.)	10 Gbps	30 Gbps	40 Gbps
Encrypted throughput (AES-CCM)	320 Mbps	800 Mbps	800 Mbps	2 Gbps	4 Gbps	4 Gbps / Mod. (16 Gbps Max.)	6 Gbps	20 Gbps	40 Gbps
Redundant power and fans	n/a	n/a	n/a	n/a	n/a	Yes	Yes	Yes	Yes
Max power consumption	115 W	126 W	35 W	45 W	60 W	130 W / Mod. (1,384 W Max.)	110 watts	125 watts	165 watts
Certifications	802.11 a/b/g/n certified. FIPS/TAA certified products available for government use.								
Optics available	SFP-LX, SFP-SX, SFP-TX, XFP-LR, and XFP-SR								
Encryption types	WEP, TKIP, DES, AES-CCMP, 3DES, AES-CBC, xSec								
Authentication types	WPA-Enterprise, WPA-PSK, WPA2-Enterprise, WPA2-PSK, 802.1X, MAC address, captive portal								
Management	Dell AirWave Management Suite or Dell OpenManage Network Manager. Also supports SNMP, Web, CLI using SSH, Telnet & console port.								
Hardware and software warranty	1 year hardware, 90 day software								
Optional Dell services	Dell offers a variety of services ranging from product support to installation and complete IT outsourcing. Get a free consultation at **dell.com/networkconsulting**								
Optional controller functionality (Optional licenses)	•**Wireless Intrusion Protection (WIP)** - Safeguard against wireless security threats, provide visibility into sources of RF interference, and eliminate the need for separate RF sensors and security appliances. •**Policy Enforcement Firewall (PEF)** - Provide identity-based controls to enforce application-layer security, prioritization, traffic forwarding, and network performance policies for wired and wireless networks. •**Policy Enforcement Firewall with VPN (PEFV)** - Create a secure tunnel and allow your VPN (Virtual Private Network) traffic to enter the controller. •**Advanced Cryptography (ACR)** - Deliver military-grade cryptography and enable secure access to networks that handle classified information.								
Management and VPN	•**AirWave Wireless Management System (AWMS)** - AirWave management software is an intuitive interface that delivers a consolidated view of: the RF environment, controllers, APs, and the infrastructure. AirWave can manage all Dell W-Series products and provide visibility and troubleshooting for your entire network, including support for many third-party devices. •**Virtual Intranet Access (VIA)** - Create a secure Virtual Private Network for remote users that intelligently configures connection settings on their mobile device and transparently authenticates without complicated logins.								

Controller-based Wireless Access Points & Instant Access Points

The Dell W-Series Controller-based Ecosystem is ideal for organizations that seek maximum security, functionality and centralized management features. This architecture can enforce policies and security from one console and meets stringent government and military encryption certifi cations. Controller-based ecosystems can also serve as a termination point for your Virtual Private Network. Dell W-Series Instant Access Points (IAPs) combine enterprise capabilities with entry-level simplicity. These intelligent 802.11n devices have a built-in virtual controller and firewall, and require no additional licenses. IAPs can be setup in minutes: simply configure the first device and the other IAPs automatically form a unified cluster. You can add more capacity by simply plugging in more IAPs. The devices can even migrate to a controller-based ecosystem if you ever decide to expand to a centralized wireless network. The Instant AP portfolio offers several Wired + Wireless IAPs that are ideal for remote APs for teleworker and branches. Easily deploy, configure and grow your network with Dell.

Models		**W-AP134 and W-AP135 W-IAP134 and W-IAP135**	**W-IAP108 and W-IAP109 (Remote IAPs)**	**W-AP175AC, W-AP175P, and W-AP175DC W-IAP175AC and W-IAP175P**	**W-AP104 and W-AP105 W-IAP104 and W-IAP105**	**W-AP92 and W-AP93 W-IAP92 and W-IAP93**	**W-AP93H+**	**W-IAP3WN and W-IAP3WNP**
Description		High performance capacity and very high density and ideal for use with 3x3 client devices with dual radio, dual band functionality. (3x3 MIMO with 3 streams)	High-performance wireless and wired networking for SMBs, branch offices and teleworkers	Ruggedized and weatherproof for outdoor, warehouses and harsh environments. (2x2 MIMO with 2 streams)	Mainstream capacity for high density with dual radio, dual band functionality. (2x2 MIMO with 2 streams)	Entry-level, single radio access point with dual band functionality. (2x2 MIMO with 2 streams)	Access point with four additional Ethernet ports, providing wired and wireless connections in one device. (2x2 MIMO with 2 streams)	Desktop AP with additional Ethernet ports to create a small LAN or connect PoE devices. Ideal for remote offices/teleworkers needing VPN capability.(2x2 MIMO with 2 streams)
Data rate		900Mbps (450Mbps each radio)	300Mbps	600Mbps (300Mbps each radio)	600Mbps (300Mbps each radio)	300Mbps	300Mbps	300Mbps
Radios		Dual Radios - Simultaneous operation in 2.4GHz and 5GHz band. (Concurrent operation of both radios in the same band is not supported.)	Dual-radio, dual-band 802.11n indoor	Dual Radios - 2.4 and 5GHz band	Dual Radios - 2.4 and 5GHz band	Single Radio - 2.4 or 5GHz band	Single Radio - 2.4 or 5GHz band	Single Radio - 2.4 or 5GHz band
Operating Modes		APs operate in the following modes without the need for additional hardware: Campus, Remote, Mesh, Air Monitor, or Spectrum Analysis mode						
Spectrum analysis		Remotely scans the 2.4GHz and 5GHz radio bands to identify sources of RF interference. Monitors 4.9GHz frequency band when in dedicated Air Monitor (AM) mode. Analysis requires controller with ArubaOS 6.0 or higher.					Not available	Not available
Certification		802.11 a/b/g/n certified. Includes TAA/FIPS certification for government use. (Except W-AP93H)						
Operating frequencies		2.4-2.5 GHz, 5.150-5.950 GHz with DFS support. (Dynamic Frequency Selection)	(country-specific restrictions apply): 2.4-2.4835 GHz, 5.150-5.875 GHz			2.4-2.5 GHz	2.4-2.5 GHz	2.4-2.5 GHz
Number of SSIDs per radio		Up to 8	16	Up to 8	Up to 8	Up to 8	Up to 8	Up to 8
Minimum software revision		6.1.1.0	W-AP104: 6.1.3.0, W-AP105: 5.0.2.1	5.0.2.1	W-AP104: 6.1.3.0, W-AP105: 5.0.2.1	5.0.4.2	6.1.3.0	
RF management		Adaptive Radio Management (ARM) provides dynamic, application-aware channel management to maximize network capacity and ensure fairness in bandwidth availability per user.						
Antennas		W-AP134: three RP-SMA for external dual-band antennas W-AP135: six internal omni-directional, dual-band	RAP-108: Two RP-SMA connectors for external dual-band antennas RAP-109: Four integrated omni-directional antennas for 2x2 MIMO with maximum antenna gain of 5.0 dBi in both 2.4 GHz and 5 GHz. Built-in antennas are optimized forvertical orientation	Four N-type interfaces (two per band) for external 2.4GHz and 5GHz antennas	W-AP104: four RP-SMA for external 2.4 & 5 GHz antennas W-AP105: four internal omni-directional, dual-band	W-AP92: two RP-SMA for external dual-band antennas W-AP93 two internal omni-directional, dual-band	Two internal omni-directional, dual-band antennas	Both models have two internal omni-directional, dual-band antennas.
Network interfaces		Two 100/1000BASE-T Ethernet Auto-sensing MDI/MDX. Supports MACSec Encryption, 802.3az	ENET0 (uplink): One 10/100/1000BASE-T Ethernet (RJ-45), auto-sensing link speed and MDI/MDX ENET1 (local): One 10/100BASE-T Ethernet (RJ-45), autosensing link speed and MDI/MDX	One 100/1000BASE-T Ethernet, Auto-sensing MDI/MDX	One 10/100/1000BASE-T Ethernet, Auto-sensing MDI/MDX	One 10/100/1000BASE-T Ethernet, Auto-sensing MDI/MDX	One 10/100/1000BASE-T Ethernet, Auto-sensing MDI/MDX, Four 10/100BASE-T, and One passive RJ-45 pass-through interface (2 ports)	Three RJ45 ports 10/100BASE-T Ethernet, Auto-sensing MDI/MDX and one USB port for connecting a cellular modem
Other interfaces		Console interface (RJ45)	One USB 2.0 port (Type A connector One serial console interface (RJ-45)	Console interface (USB)	Console interface (RJ45)	Console interface (RJ45)	Console interface (RJ45)	Console interface (custom)
Power over Ethernet (PoE) interfaces		48V DC 802.3af or 802.3at or PoE+ interoperable with intellisource PSE sourcing intelligence (both ports)	802.3af (PoE) or 802.3at (PoE+) on uplink Ethernet port Note: When using PoE, the USB port will be enabled only when an 802.3at-compliant source is used	W-AP175P: 802.3at-compatible PoE input (PD) W-AP175AC and W-AP175DC: 802.3af compatible PoE output (PSE)	W-AP175P: 802.3at-compatible PoE input (PD) W-AP175AC and W-AP175DC: 802.3af compatible PoE output (PSE)	48V DC 802.3af-compatible	48V DC 802.3af-compatible	W-IAP3WN: 802.3af PoE (15.4 Watts) on the E2 port
Power interfaces		12 volts DC, 1.25 A	One port for DC power connector (DC Input from AC Power Adapter or POE only)	12-48 volts DC or 100-240V AC	48V DC 802.3af-compatible	12 volts DC, 1.25 A	12 volts DC, 1.25 A	W-IAP3WN: 12 volts DC, 1.25 A W-IAP3WNP: 48 volts DC, 0.75 A W-IAP3WN: 100-240 volts, 0.5 A W-IAP3WNP: 100-240 volts, 0.75 A
Power consumption		15 Watts (maximum)	Without USB device connected: 12.5 watts - With USB device: 15 watts	18 Watts (maximum)	12 volts DC, 1.25 A 12.5 Watts (maximum)	10 Watts (maximum)	9 Watts (maximum)	W-IAP3WN: 4 watts/6.5 watts W-IAP3WNP: 5.5, 8, or 26 watts
Environmental	Class	Indoor, plenum-rated	Indoor	Outdoor	Indoor, plenum-rated	Indoor, plenum-rated	Indoor	Indoor
	Operating temperature	0° C to +50° C (+32° F to +122° F)	Temperature: 0° C to +40° C (+32° F to +104° F) Humidity: 5% to 95% non-condensing	W-IAP175P: -30°C to +60°C (-22°F to +140°F) W-IAP175AC and W-IAP175DC: -40°C to +55°C (-40°F to +131°F)	0° C to +50° C (+32° F to +122° F)	0° C to +50° C (+32° F to +122° F)	0° C to +40° C (+32° F to +104° F)	0° C to +40° C (+32° F to +104° F)
Accessories		Wall mount brackets, ceiling tile rail adapters, AC power adapters and attachable antennas sold separately. (See-Dell PowerConnect W-Series Antenna Matrix)						
Hardware Warranty		Extended Lifetime Warranty	Extended Limited Lifetime	One year parts and labor	One year parts and labor	Extended Lifetime Warranty	Extended Lifetime Warranty	Extended Limited Lifetime

Dell PowerConnect W-3000 Controller Series

The Dell PowerConnect W-3000 Controller Series is a family of three full-featured controllers that addresses a wide range of wireless and wired network mobility, security and remote networking requirements for medium and large regional offices.

The W-3000 Series is easily installed without disrupting the existing wired network and supports up to 8,192 users and performs stateful firewall policy enforcement at speeds up to 4 Gbps.

The W-3000 Series acts as the head-end portion of Dell's wireless LAN architecture, which uses centralized controllers in the data center to manage complex and processing-intensive management and security functions. Edge services are virtualized and implemented in cost-effective PowerConnect W-Series access points (APs) at the network edge, which move user traffic to data center controllers through secure IP tunnels over a public or private transport network.

Powered by W-Series OS Controller Software, the W-3000 Series comes standard with advanced authentication, encryption, wireless radio management, secure enterprise wireless mesh and Layer 2/Layer 3 networking features. Optional software modules deliver additional functionality, including Policy Enforcement Firewall (PEF), Wireless Intrusion Prevention (WIP) and advanced cryptography module.

Controller clustering and centralized management allow large enterprise networks with multiple controllers to be managed and maintained with minimal staff overhead. A designated master controller can manage multiple local controllers while the W-Series AirWave Wireless Management Suite (AWMS) provides unprecedented control for the IT staff through real-time monitoring, historical reporting and troubleshooting.

Scalable, easy to deploy wireless controller with centralized management for enterprise mobility. Supports up to 128 access points.

Specifications

Controller performance and capacity

Feature	3200	3400	3600
LAN-connected APs (max)[1]	32	64	128
Remote Access Points	128	256	512
Users (max)[2]	2,048	4,096	8,192
MAC addresses	64,000	64,000	64,000
Active firewall sessions	128,000	128,000	128,000
Concurrent IPSec tunnels	2,048	4,096	4,096
Firewall throughput	3 Gbps	4 Gbps	4 Gbps
LAN-connected APs (max)[1]	32	64	128
Remote Access Points (max)[1]	128	256	512
Wired Access Points (max)[1]	8	16	32
Users (max)[2]	2,048	4,096	8,192
MAC addresses	64,000	64,000	64,000
VLAN IP interfaces	128	256	512
Number of IPv4 unicast routes	2,048	2,048	2,048
Active firewall sessions	128,000	128,000	128,000
Concurrent IPSec tunnels (max)	2048	4096	4096
System BSSIDs	512	4096	8192
Firewall throughput	3 Gbps	4 Gbps	4 Gbps
Encrypted throughput (3DES, AESCB256)	1.6 Gbps	4 Gbps	8 Gbps
Encrypted throughput (AES-CCM)	0.8 Gbps	2 Gbps	4 Gbps

[1]Capacity determined by AP, PEF, and WIP software licenses
[2]Capacity determined by PEF software licenses

Interfaces

Dual-personality ports:

- 4x Gigabit Ethernet (10/100/1000BASE-T or 1000BASE-X SFP)
- Console (RS-232) RJ-45

Power specifications

W-3200:

- AC input voltage: 90-264 V, Universal Input
- AC input current: 1.5 A
- AC input frequency: 47-63 Hz
- Maximum power consumption: 35 watts

W-3400:

- AC input voltage: 90-264 V, Universal Input
- AC input current : 2.2 A
- AC input frequency: 47-63 Hz
- Maximum power consumption: 45 watts

W-3600:

- AC input voltage: 90-264 V, Universal Input
- AC input current : 2.2 A
- AC input frequency: 47-63 Hz
- Maximum power consumption: 60 watts

Mechanical

- 44 mm x 351 mm x 297 mm (1.75" x 13.8" x 11.7")
- Weight (W-3200): 3.2 kgs (7.1 lbs)
- Weight (W-3400/W-3600): 3.4 kgs (7.4 lbs)

Regulatory and safety compliance

- FCC Part 15 Class B
- EN 55022 Class B
- EN 55024
- IEC/EN 60950
- CE Marking
- cTUVus Marked
- CB Scheme Certified

For a complete list of Country Specific Regulations please speak with your Dell Representative.

Environmental

- Operating:
  - Temp: 0° to 40° C (32° to 104° F)
  - Humidity: 5 to 95% non-condensing
- Storage:
  - Temp: -40° to 70° C (-40° to 158° F)

Warranty

- Hardware: One year
- Software: One year

Minimum OS version

- 5.0.2.0

Certifications/regulatory

- FIPS/TAA certified SKU available

Ordering information	
Part number	Description
W-3200 W-3400 W-3600	Dell PowerConnect W-3000 Series Branch Office Controller, Unrestricted Regulatory Domain
W-3200-US W-3400-US W-3600-US	Dell PowerConnect W-3000 Series-US Branch Office Controller, Restricted Regulatory Domain – US
W-3200-F1 W-3400-F1 W-3600-F1	Dell PowerConnect W-3000 Series Branch Office Controller, Unrestricted Regulatory Domain, FIPS/TAA Compliant
W-3200-US-F1 W-3400-US-F1 W-3600-US-F1	Dell PowerConnect W-3000 Series-US Branch Office Controller, Restricted Regulatory Domain – US. FIPS/TAA Compliant
SFP-TX	W-SFP-1000Base-T, RJ45
SFP-SX	W- SFP - 1000Base-SX, LC connector
SFP-LX	W-SFP – 1000Base-LX, LC connector

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Learn more at Dell.com/Wireless

SS713_Dell_PowerConnect_W_3000_Control_Series_090810_040612

Dell PowerConnect W-AP104 and W-AP105 Access Points

The multifunction Dell PowerConnect W-AP104 and W-AP105 are indoor, dual-radio 802.11n access points (AP) designed for high-density deployments in offices, hospitals, schools and retail stores. These compact, high speed APs delivers wire-like performance at data rates up to 300 Mbps per radio.

The W-AP104 features two 2x2 MIMO dual-band 2.4-GHz/5-GHz radios with the interface to connect external antennas while the W-AP105 features the same configuration with integrated internal antennas. Both are built to provide years of trouble-free operation and are backed by an Extended Lifetime Warranty.

Working with Dell's line of centralized PowerConnect W Series Controllers, the W-AP104 and W-AP105 deliver secure, high-speed wireless network services for user mobility that works seamlessly within enterprise, branch and campus network deployments.

802.11n provides speed and reliability similar to a wired LAN. It also increases performance by utilizing techniques such as channel bonding, block acknowledgement and MIMO radios. Advanced antenna technology also increases range and reliability.

Key to ensuring wire-like performance and reliability is Adaptive Radio Management (ARM) capability, which manages the 2.4-GHz and 5-GHz radio bands to deliver maximum client performance. Adaptive Radio Management enables different 802.11 a, b,g and n wireless clients to operate on the same network at maximum possible performance through the use of band steering, airtime fairness policies between clients, and by managing channel interference that may occur between access points.

The multifunction W-AP104 and W-AP105 can be configured through the controller to provide wireless LAN (WLAN) access with part-time air monitoring, dedicated air monitoring for wireless intrusion protection, Remote AP (RAP) functionality or secure enterprise mesh. The W-AP104 and W-AP105 feature dual 100/1000 BASE-T Ethernet interfaces and operate from standard Power-over-Ethernet (PoE) sources or a 12-volt DC power supply.

Mainstream 600 Mbps 802.11n access point for secure dual-band wireless mobility.

Specifications

Operating modes

- Multiservice concurrent 802.11a/n + b/g/n WLAN
- Can be configured to operate individually or simultaneously as:
  - 802.11a/b/g/n access point
  - Air monitor, spectrum monitor
  - Remote AP
  - Secure enterprise mesh
- Backward compatible with 802.11a/b/g and mixed-mode 11a/b/g/n deployments

Radios

- Multifunction, dual radio capable of 2.4-GHz and 5-GHz operation
- Both 802.11n radios implement 2x2 MIMO with two spatial streams, providing up to 300 Mbps data rate per radio
- Maximal ratio combining (MRC) for improved receiver performance

Wireless radio specifications

- Supported frequency bands (country-specific restrictions apply):
  - 2.400 to 2.4835 GHz
  - 5.150 to 5.250 GHz with Dynamic Frequency Selection (DFS) capability
  - 5.250 to 5.350 GHz with Dynamic Frequency Selection (DFS) capability
  - 5.470 to 5.725 GHz with Dynamic Frequency Selection (DFS) capability
  - 5.725 to 5.850 GHz with Dynamic Frequency Selection (DFS) capability
- Available channels: Controller-managed, dependent upon configured regulatory domain
- Transmit power:
  - 2.4 GHz: Up to 23 dBm (limited by local regulatory requirements)
  - 5 GHz: Up to 23 dBm (limited by local regulatory requirements)
  - Transmit power configurable in increments of 0.5 dBm
- Supported radio technologies:
  - 802.11b: Direct-sequence spread-spectrum (DSSS)
  - 802.11a/g/n: Orthogonal frequency division multiplexing (OFDM)
  - 802.11n: 2x2 MIMO with 2 spatial streams
- Supported modulation types:
  - 802.11b: BPSK, QPSK, CCK
  - 802.11a/g/n: BPSK, QPSK, 16-QAM, 64-QAM
- Association rates (Mbps):
  - 802.11b: 1, 2, 5.5, 11
  - 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54
  - 802.11n: MCS0 - MCS15 (6.5 Mbps to 300 Mbps)
  - 802.11n high-throughput (HT) support: HT 20/40
  - 802.11n packet aggregation: A-MPDU, A-MSDU

Antenna

- W-AP104:
  - 4 x RP-SMA antenna interface connectors for external antenna support. External Antenna selection guide is available from Dell representative or downloadable from Dell.com/wireless
- W-AP105:
  - 4 x integrated, omni-directional antennas.
  - Maximum antenna gain:
  - 2.4GHz/2.5dBi
  - 5GHz /4.0dBi

Interfaces

- Network:
  - 1 x 10/100/1000Base-T Ethernet (RJ45), auto-sensing, MDI/MDX
- Power:
  - 1 x DC power connector
- Other:
  - 1 x RJ45 console interface

Power options

- 48V DC 802.3af PoE or 802.3at PoE+
- External AC power providing 12V DC to AP (adapter sold separately)
- Maximum power consumption: 12.5 watts

Mounting

- Ceiling tile rail (15/16" & 9/16" recessed or non-recessed)
- Desk stand and wall outlet mount plate
- Wall box mount bracket (for US single gang wall mount)
- Solid wall stand-off

Mechanical

- 132 mm x 135 mm x 45 mm (5.2" x 5.3" x 1.8")
- Weight: 300g (10.56 oz)

Certifications/Regulatory

- Wi-Fi certified: 802.11a/b/g/n
- FIPS/TAA certified SKU available

Product meets EMC, safety and wireless standards of over 50 countries inclusive of; USA (FCC), Canada, EU, Japan, Korea, China. For more country-specific regulatory information, and approvals, please see your Dell representative.

Minimum AOS version

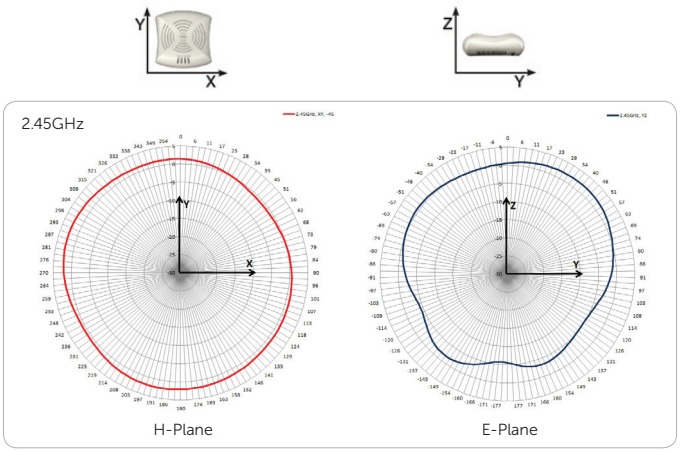
- W-AP104: 6.1.3.0
- W-AP105: 5.0.2.0

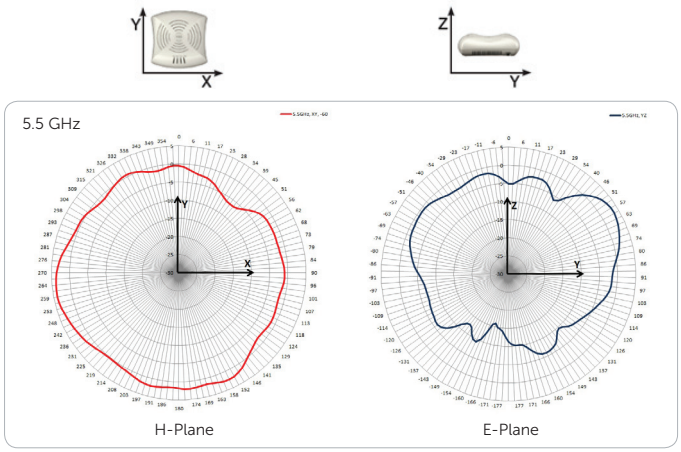
Extended Life Warranty*

W-AP104 and W-AP105 RF Performance Table				
	Max TX power per active TX chain (dBm)	RX Sensitivity (dBm)	Max TX power per active TX chain (dBm)	RX Sensitivity (dBm)
	2.4 GHz		5 GHz	
802.11b				
1Mbps	20	-96	-	-
2Mbps	20	-96	-	-
5.5Mbps	20	-94	-	-
11Mbps	20	-93	-	-
802.11a/g				
6Mbps	20	-96	20	-96
9Mbps	20	-96	20	-96
12Mbps	20	-96	20	-96
18Mbps	20	-95	20	-95
24Mbps	20	-92	20	-91
36Mbps	19	-89	19	-88
48Mbps	18	-85	18	-84
54Mbps	17	-83	17	-83
802.11n HT20				
MCS0	20	-96	20	-96
MCS1	20	-95	20	-94
MCS2	20	-93	20	-92
MCS3	20	-90	20	-89
MCS4	19	-87	19	-86
MCS5	18	-82	18	-82
MCS6	17	-81	17	-80
MCS7	15	-80	15	-79
MCS8	20	-95	20	-95
MCS9	20	-93	20	-92
MCS10	20	-91	20	-90
MCS11	20	-87	20	-87
MCS12	19	-84	19	-84
MCS13	18	-81	18	-80
MCS14	17	-80	17	-78
MCS15	15	-77	15	-77
802.11n HT40				
MCS0	20	-93	20	-92
MCS1	20	-93	20	-92
MCS2	20	-90	20	-89
MCS3	20	-86	20	-86
MCS4	19	-83	19	-83
MCS5	18	-79	18	-80
MCS6	17	-77	17	-77
MCS7	15	-76	15	-76
MCS8	20	-92	20	-92
MCS9	20	-89	20	-90
MCS10	20	-87	20	-87
MCS11	20	-84	20	-84
MCS12	19	-82	19	-81
MCS13	18	-76	18	-77
MCS14	17	-76	17	-75
MCS15	15	-73	15	-73

Maximum capability of the hardware provided. Maximum transmit power will be limited by local regulatory settings.

W-AP105 Antenna Plots





Ordering Information

Part number	Description
W-AP104	Dell PowerConnect W-AP104 AP (802.11a/n and 802.11b/g/n) with the interface to connect external antennas
W-AP105	Dell PowerConnect W-AP105 AP (802.11a/n and 802.11b/g/n) – Integrated Antennas
W-AP104-F1	Dell PowerConnect W-AP104 AP (802.11a/n and 802.11b/g/n) – with the interface to connect external antennas, FIPS/TAA Compliant
W-AP105-F1	Dell PowerConnect W-AP105 AP (802.11a/n and 802.11b/g/n) – Integrated Antennas FIPS/TAA Compliant
W-AP-AC-UN	12 V DC Universal AC Power Adapter Kit - North America, Japan, United Kingdom, Italy, EC (Schuko), Australia, China, India, Korea
AP-DC-CAR	12VDC Car Power Adapter Kit
W-AP105-MNT	W-AP105 Access Point Mounting Kit for flat surfaces or wall boxes (note: covers DC power interface)
W-AP105-MNT-C	W-AP105 Access Point Ceiling Mounting Kit (rail adapters)
W-AP105-MNT-DC	W-AP105 Access Point Mounting Kit for flat surfaces or wall boxes (leaves DC power interface exposed)
W-AP-ANT-xx	Detachable antennas (for use with W-AP104 only) – Please refer to W-Series Antenna Selection matrix and Antenna plots.

*Select PowerConnect products carry an Extended Life Warranty with Basic Hardware Service. Warranty covers repair or replacement of the product for as long as it remains in use by the customer. In the event of discontinuance of product manufacture, Dell Extended Life Warranty extends until five (5) years after end of product model sales. Warranty limits any power supply, antennae or accessories to one (1) year from date of purchase. Warranty does not include troubleshooting, configuration, or other advanced service provided by Dell ProSupport. The Extended Life Limited Hardware Warranty is not transferrable. For more information see dell.com/warranty.

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Learn more at Dell.com/Wireless

Dell PowerConnect W-AP134/135 Access Point

Dell PowerConnect W-Series W-AP134 and W-AP135 indoor 802.11n access points (APs) are designed to maximize performance for mobile devices in high density Wi-Fi environments and ensure strong threat protection using integrated MACSec security.

These multifunctional APs deliver wire-like performance at data rates up to 450 Mbps per radio. Taking advantage of 802.11n technology, the W-AP134 and W-AP135 employ three spatial streams to deliver 50% more data throughput in high-density environments compared to previous-generation W-Series APs like AP124.

The W-AP134 and W-AP135 feature two 3x3 MIMO dual-band 2.4-GHz/5-GHz radios. The W-AP134 has external antenna interfaces, while the W-AP135 features the same radios with internal antennas. Both are built to provide years of trouble-free operation and are backed by an Extended Lifetime Warranty.

The W-AP134 and W-AP135 feature dual 10/100/1000BASE-T Ethernet interfaces and are capable of operation from standard 802.3af and 802.3at power-over-Ethernet (PoE) sources. The secondary Ethernet interface (active only when supplying 802.3 at PoE or DC power to the access point) enables secure authorized backhaul for wired network-attached devices.

Working with Dell's line of centralized PowerConnect W Series Controllers, the W-AP134 and W-AP135 deliver secure, high-speed wireless network services for user mobility that works seamlessly within enterprise,branch office and campus network deployments.

802.11n enables the use of wireless as a primary connection with speed and reliability comparable to a wired LAN. It also increases performance by utilizing techniques such as channel bonding, block acknowledgement and MIMO radios. Advanced antenna technology also increases range and reliability.

Key to ensuring wire-like performance and reliability is the W-Series Adaptive Radio Management (ARM), which manages the 2.4-GHz and 5-GHz radio bands to deliver maximum client performance. Adaptive Radio Management enables different 802.11 a, b,g and n wireless clients to operate on the same network at maximum possible performance through the use of band steering, airtime fairness policies between clients, and by managing channel interference that may occur between access points.

The multifunction W-AP134 and W-AP135 can be configured through the controller to provide WLAN access with part-time air monitoring, dedicated air monitoring for wireless IPS, Remote AP (RAP) functionality or secure enterprise mesh.

Ultra high performance 900Mbps 802.11n access point for secure dual-band wireless mobility.

Specifications

Operating mode

- Multiservice concurrent 802.11a/n + b/g/n
- Backward compatible with 802.11a/b/g and mixed mode 802.11a/b/g/n deployments
- Can be configured to operate individually or simultaneously as:
  - 802.11a/b/g/n access point
  - Air monitor, spectrum monitor
  - Remote AP
  - Secure enterprise mesh

Radios

- Multifunction, dual radio capable of 2.4-GHz and 5-GHz operation
- Both 802.11n radios implement 3x3 MIMO with up to three spatial streams, providing up to 450Mbps data rate per radio
- Maximum ratio combining (MRC) for improved receiver performance

Wireless radio specifications

- AP type: Dual-radio, dual-band 802.11n indoor
- Supported Frequency Bands (country-specific restrictions apply):
  - 2.400 - 2.4835 GHz
  - 5.150 - 5.250 GHz/5.250 - 5.350 GHz/5.470 - 5.725 GHz/5.725 - 5.850 GHz with Dynamic Frequency Selection (DFS) capability
- Available Channels: Controller-managed, dependent upon configured regulatory domain Supported Radio Technologies:
  - 802.11b: Direct-sequence spread-spectrum (DSSS)
  - 802.11a/g/n: Orthogonal frequency division multiplexing (OFDM)
  - 802.11n: 3x3 MIMO with up to three spatial streams
- Supported Modulation Types:
  - 802.11b: BPSK, QPSK, CCK
  - 802.11a/g/n: BPSK, QPSK, 16-QAM, 64-QAM
- Maximum Transmit Power (aggregated for three active transmit chains):
  - 2.4 GHz: up to 23 dBm (limited by local regulatory requirements)
  - 5 GHz: up to 23 dBm (limited by local regulatory requirements)
- Association Rates (Mbps):
  - 802.11b: 1, 2, 5.5, 11
  - 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54
  - 802.11n: MCS0 – MCS23 (6.5 Mbps to 450 Mbps)
- 802.11n High-Throughput (HT) Support: HT 20/40
- 802.11n Packet Aggregation: A-MPDU, A-MSDU

Antenna

- AP-134: Three RP-SMA antenna interfaces for external dual-band antennas. (External antenna selection guide is available from Dell representative or downloadable from Dell.com/wireless).
- AP-135: Six internal downtilt omni-directional antennas; three per frequency band
  - 2.4 to 2.5 GHz/3.5 dBi
  - 5.150 to 5.875 GHz/4.5 dBi

Power

- 48 V DC 802.3af PoE or 802.3at PoE+
- 12 V DC external AC supplied power (adapter sold separately)
- Maximum power consumption: 15 watts

Interfaces

- Network:
  - 2 x 10/100/1000Base-T Ethernet (RJ45), auto-sensing, MDI/MDX
- Power:
  - 1 x DC power connector
- Other:
  - 1 x RJ45 console interface

Mounting

- Standard:
  - Wall mounting using built-in mount features
  - Recessed ceiling-tile rail mounting using one of two adapters supplied with the AP (9/16" and 15/16" rails)

Mechanical

- Dimensions/Weight:
  - 170 mm x 170 mm x 45 mm (6.69" x 6.69" x 1.77")
  - Unit: 760 g (1.68lb)

Environmental

- Operating:
  - Temp: 0° C to +50° C (+32° F to +122° F)
  - Relative humidity: 5 to 95% non-condensing
- Storage and Transportation Temperature Range:
  - Temp: -40° C to +70° C (-40° F to +158° F)

Certifications/Regulatory

- Wi-Fi certified: 802.11a/b/g/n
- FIPS/TAA certified SKU available

Product meets EMC, safety and wireless standards of over 50 countries inclusive of; USA (FCC), Canada, EU, Japan, Korea, China. For more country-specific regulatory information, and approvals, please see your Dell representative.

Minimum AOS version

- 6.1.1.0

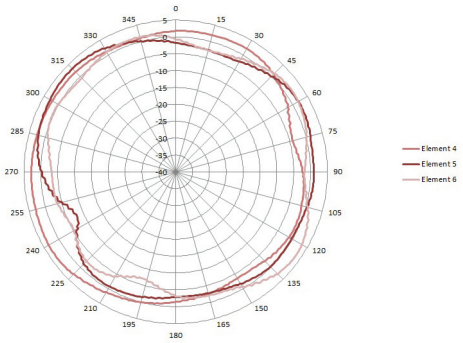
Extended Life Warranty*

W-AP135 RF Performance Table				
	Max TX power per active TX chain (dBm)	RX Sensitivity (dBm)	Max TX power per active TX chain (dBm)	RX Sensitivity (dBm)
	2.4 GHz		5 GHz	
802.11b				
1Mbps	18	-97	-	-
11Mbps	18	-92	-	-
802.11a/g				
6Mbps	18	-94	18	-94
54Mbps	16	-81	16	-82
802.11n HT20				
MCS0/8/16	17	-94	17	-94
MCS7/15/23	12	-78	12	-78
802.11n HT40				
MCS0/8/16	17	-92	17	-92
MCS7/15/23	11	-75	11	-74

RF performance numbers for AP-134 slightly lower due to additional internal RF circuitry.

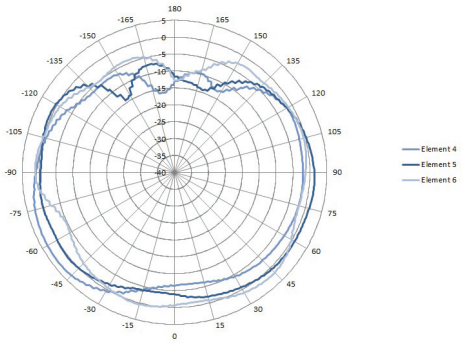
W-AP135 Antenna Plots

2.450 GHz, H-Plane, 20 degrees down-tilt



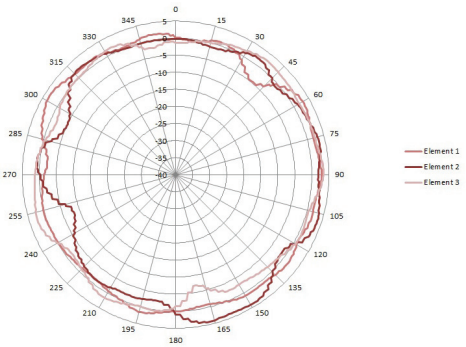
H-plane

2.450 GHz, E-Plane, AP facing down



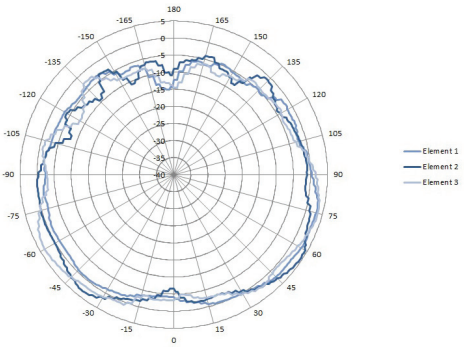
E-plane

5.500 GHz, H-Plane, 20 degrees down-tilt



H-plane

5.500 GHz, E-Plane, AP facing down



E-plane

Ordering Information	
Part number	Description
W-AP134	Dell PowerConnect W-AP134 AP (802.11a/n and 802.11b/g/n) – Antenna Connectors
W-AP135	Dell PowerConnect W-AP135 AP (802.11a/n and 802.11b/g/n) – Integrated Antennas
W-AP134-F1	Dell PowerConnect W-AP134 AP (802.11a/n and 802.11b/g/n) – Integrated Antennas. FIPS/TAA Compliant
W-AP135-F1	Dell PowerConnect W-AP135 AP (802.11a/n and 802.11b/g/n) – Integrated Antennas. FIPS/TAA Compliant
W-AP-AC-UN	12 V DC Universal AC Power Adapter Kit - North America, Japan, United Kingdom, Italy, EC (Schuko), Australia, China, India, Korea
AP-DC-CAR	12VDC Car Power Adapter Kit
W-AP130-MNT	W-AP130 Access Point Mounting Kit for flat surfaces

*Select PowerConnect products carry an Extended Life Warranty with Basic Hardware Service. Warranty covers repair or replacement of the product for as long as it remains in use by the customer. In the event of discontinuance of product manufacture, Dell Extended Life Warranty extends until five (5) years after end of product model sales. Warranty limits any power supply, antennae or accessories to one (1) year from date of purchase. Warranty does not include troubleshooting, configuration, or other advanced service provided by Dell ProSupport. The Extended Life Limited Hardware Warranty is not transferable. For more information see dell.com/warranty.

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Learn more at Dell.com/Wireless

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SS759_Dell PowerConnect_WAP134_135_072011_031512

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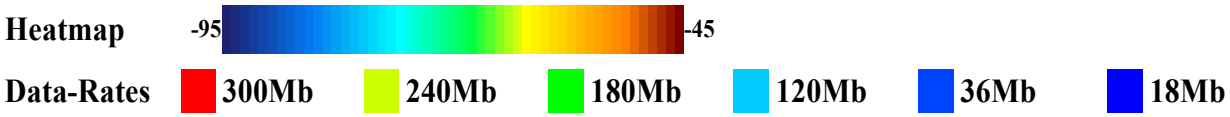
Bill of Materials Report Apr 15, 2013



Campus: Iberia

Data Rate:	36.0 Mbps
Client Xmit:	30mW

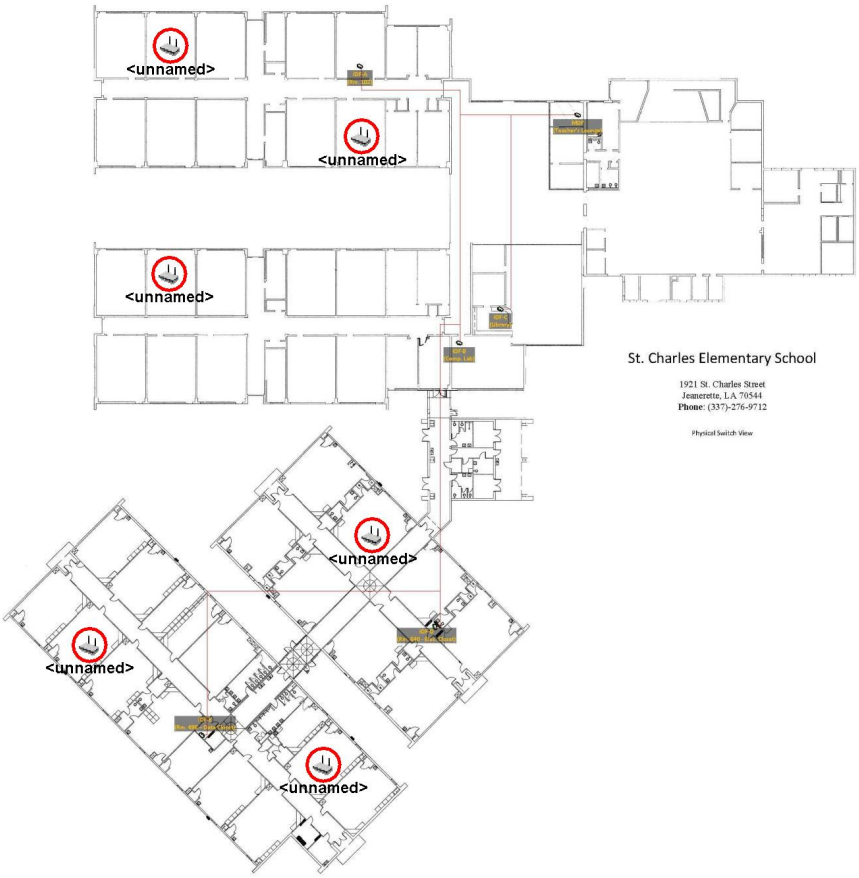
Building: StCharlesElem

Address:	unavailable	
Data Rate:	36.0 Mbps	
Client Xmit:	30mW	
Geo Code:	Long: -98.583333	Lat: 39.833333
Area:	304,808 Sq Ft.	
Total Controllers:	0	
Total IDFs:	0	
Total Racks:	0	
Total Switches:	0	
Total Ports:	0	
Total POE Ports:	0	
Total APs:	6	
Total AMs:	0	

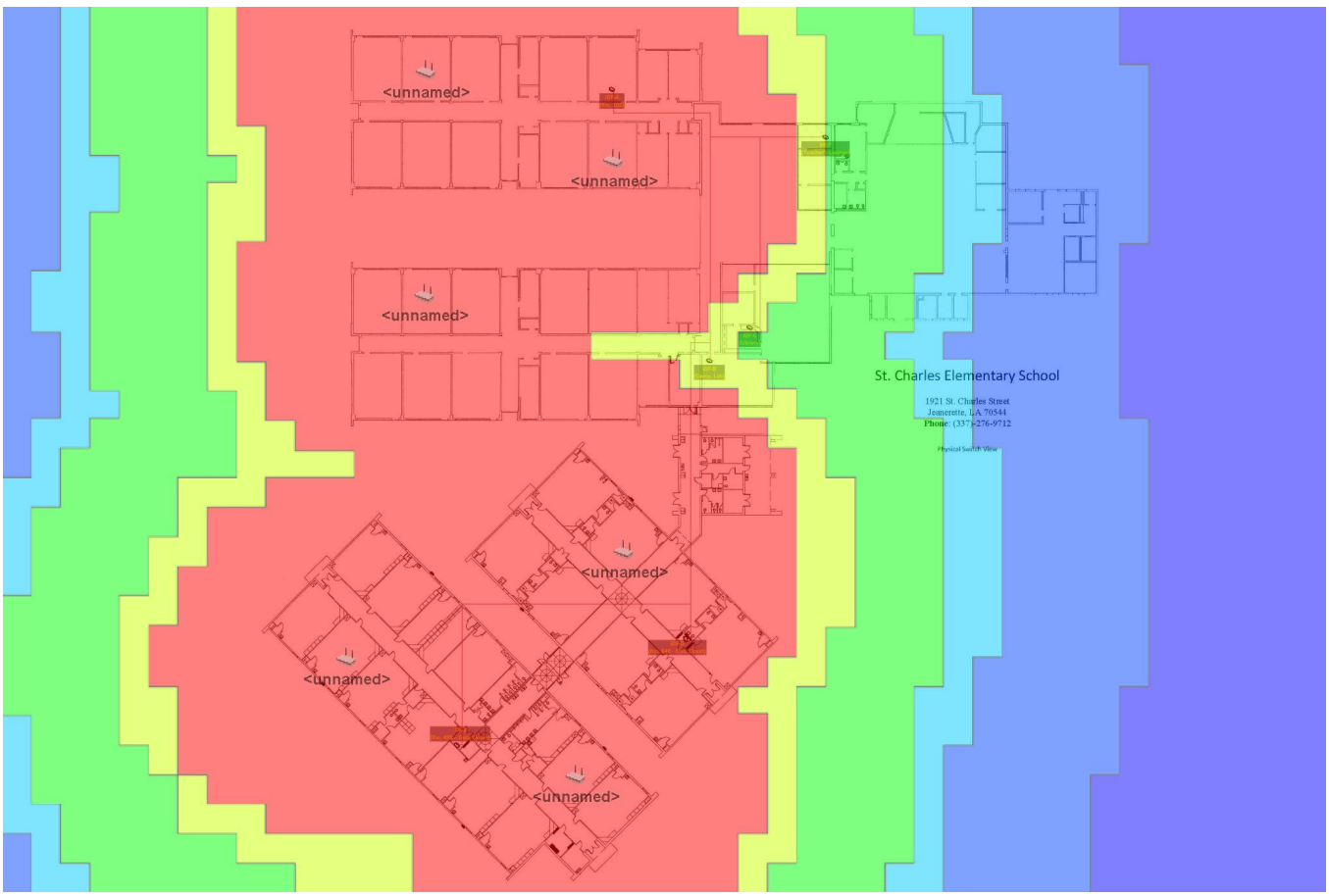
Floor 1.0: Floor1

Environment:	Offices
Data Rate:	36.0 Mbps
Client Xmit:	30mW
Floor Height:	10.00 Feet
Image Area:	304,808 Sq Ft.
Total Controllers:	0
Total IDFs:	0
Total Racks:	0
Total Switches:	0
Total Ports:	0
Total POE Ports:	0
Total APs:	6
Total AMs:	0

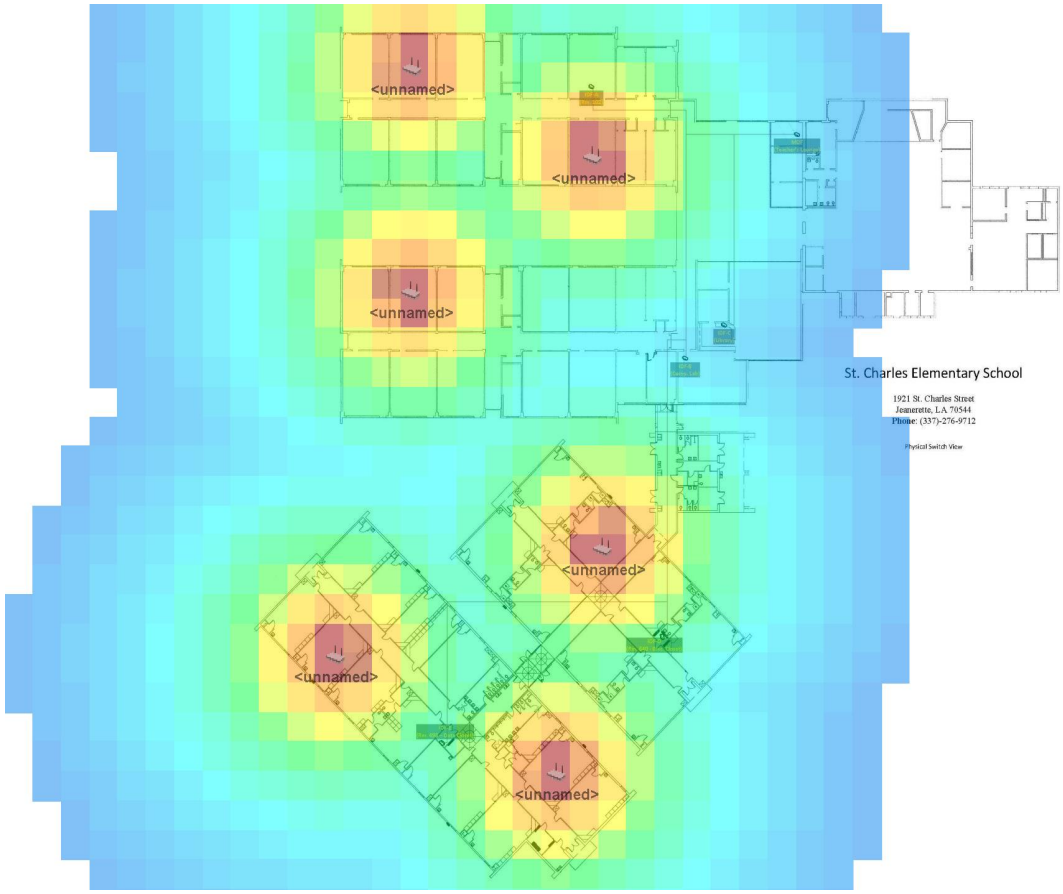
Floor Plan Only View



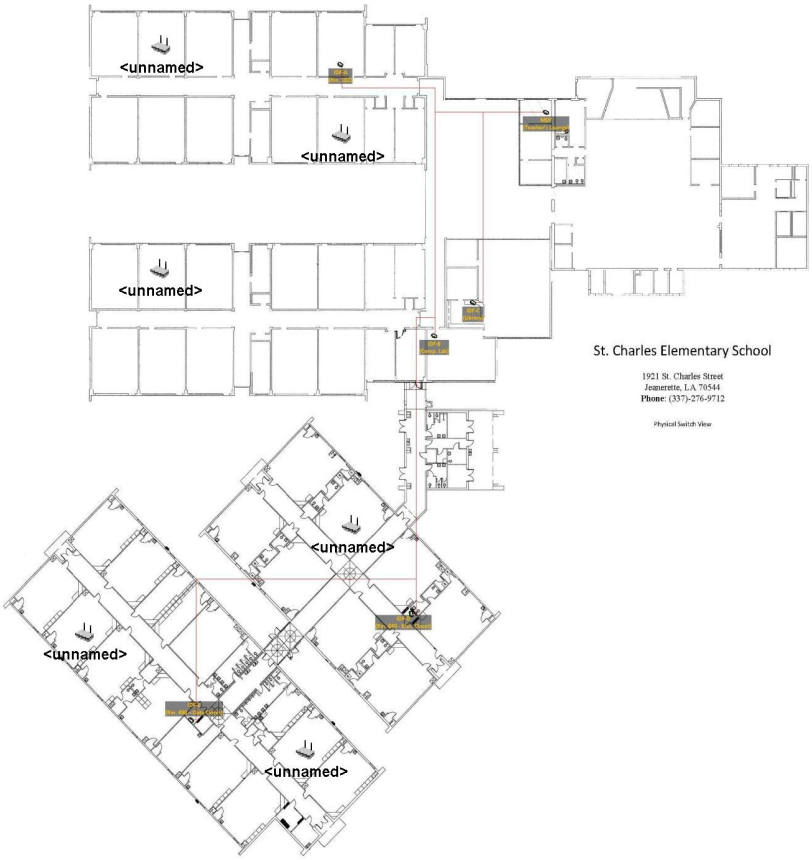
Data Rate View



Heat Map View



Wire Range View



AP Inventory									
Name	**Model**	**Part #**	**PHY**	**Ch**	**Xmit dBm**	**Gain dBi**	**LAN MAC**	**Switch**	**Port**
	Aruba AP 105	AP-105	11N	52	12.0	4.0			
			11n	1	12.0	2.5			
	Aruba AP 105	AP-105	11N	52	12.0	4.0			
			11n	1	12.0	2.5			
	Aruba AP 105	AP-105	11N	52	12.0	4.0			
			11n	1	12.0	2.5			
	Aruba AP 105	AP-105	11N	52	12.0	4.0			
			11n	1	12.0	2.5			
	Aruba AP 105	AP-105	11N	52	12.0	4.0			
			11n	1	12.0	2.5			
	Aruba AP 105	AP-105	11N	52	12.0	4.0			
			11n	1	12.0	2.5			

Wired Inventory							
Name	**Model**	**Part #**	**# POE Ports**	**Total Ports**	**IDF**	**Rack**	**Rack Unit #**

Floor Total			
Part #	**Type**	**Mode**	**Qty**
AP-105	Aruba AP 105	AP	6
		AM	0

Building Total			
Part #	**Type**	**Mode**	**Qty**
AP-105	Aruba AP 105	AP	6
		AM	0

Summary			
Part #	**Type**	**Mode**	**Qty**
AP-105	Aruba AP 105	AP	6
		AM	0

DETEL©

Quote

Date	Quote #
4/17/2013	5092

Detel Wireless, LLC
P.O. Box 147
Hessmer, LA 71341

Name / Address
Sample Quote

Phone #	Fax #
318.597.0303	318.597.3707

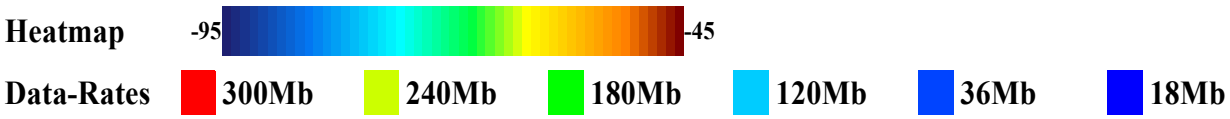
Description	Qty	Cost	Total
Job Site: St. Charles Elem. - Lab Scenario State Contract #409463 State VIN#71-0905220-00 Commodity Code for all items listed below: 204-64-120756		0.00	0.00
Item/Product Number: DW-IAP-105-US Description: Detel Instant 105 Wireless Access Point (Dual Radio) Category 2, Line 00003 Retail: $695.00; Disc 28%	6	500.40	3,002.40
Item/Product Number: DW-AP-105-MNT-C Description: Detel 105 Access Point Ceiling Mounting Kit Category 2, Line 00003 Retail: 15.00; Disc 28%	6	10.80	64.80
Item/Product Number: DW-PD-3501G-AC Description: 1 Port PowerDsine PoE Midspan 10/100/1000 15.4W Category 2, Line 00003 Retail: $95.00; Disc 28%	6	68.40	410.40
Item/Product Number: Detel Installation Description: Unpacking, Inventory, Assembly of Components, Rack Mounting of Chassis, Patch Cord/Cross Connects and Powering Up of Equipment Line No. 00021 *DETEL's Labor rate is $125/hr. Hours vary depending on installation.*	1	125.00	125.00
Sales Tax		5.25%	0.00

Thank you for your business!

Total $3,602.60

Signature _____

Bill of Materials Report Apr 15, 2013



Campus: Iberia

Data Rate:	36.0 Mbps
Client Xmit:	30mW

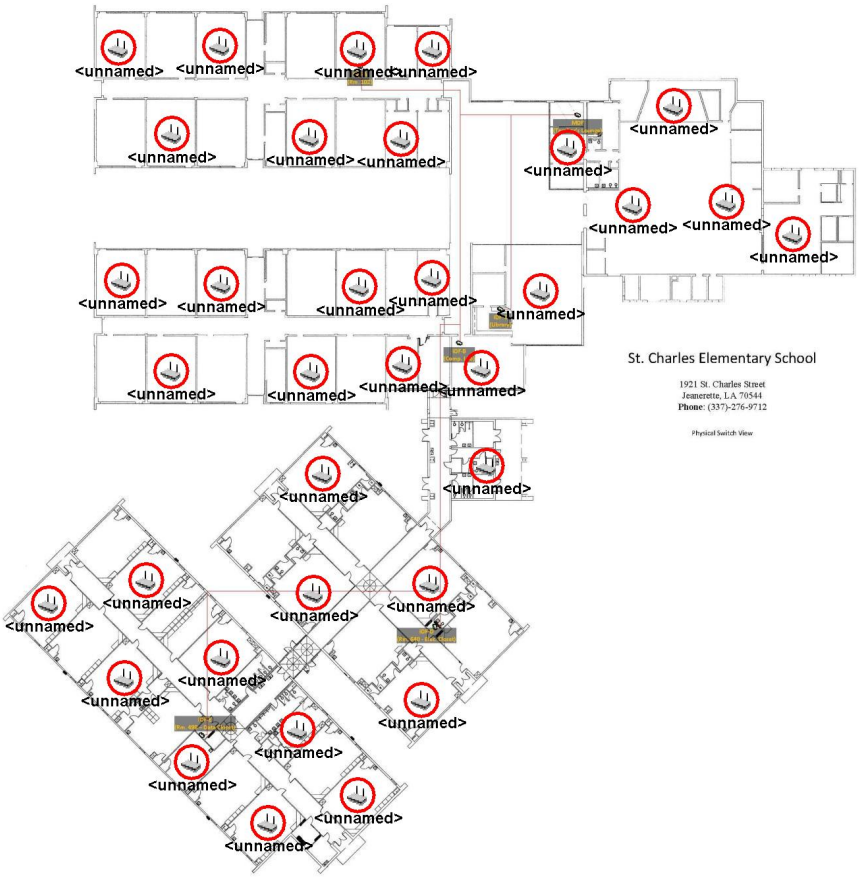
Building: StCharlesElem

Address:	unavailable	
Data Rate:	36.0 Mbps	
Client Xmit:	30mW	
Geo Code:	Long: -98.583333	Lat: 39.833333
Area:	304,808 Sq Ft.	
Total Controllers:	0	
Total IDFs:	0	
Total Racks:	0	
Total Switches:	0	
Total Ports:	0	
Total POE Ports:	0	
Total APs:	34	
Total AMs:	0	

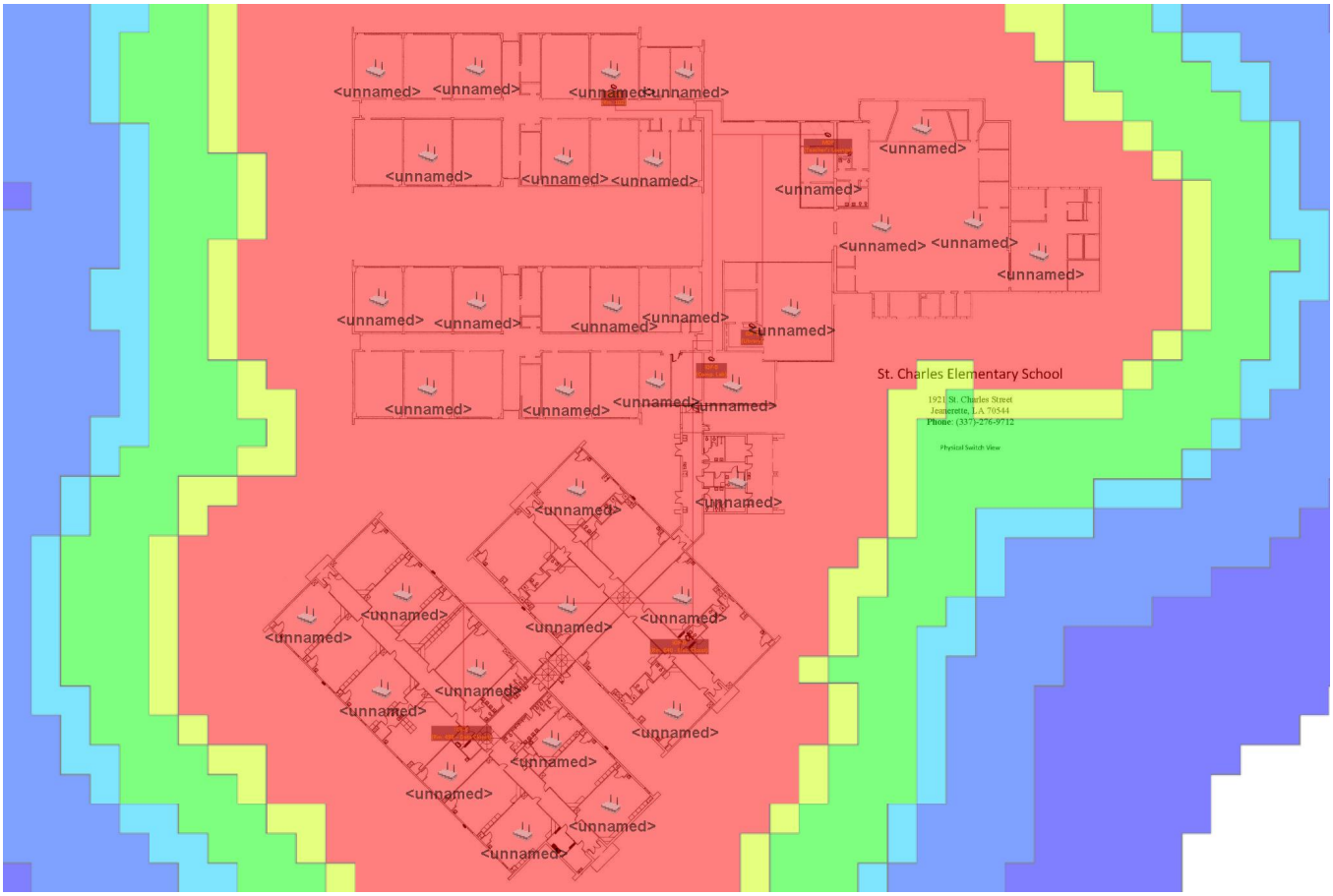
Floor 1.0: Floor1

Environment:	Concrete
Data Rate:	300.0 Mbps
Client Xmit:	30mW
Floor Height:	10.00 Feet
Image Area:	304,808 Sq Ft.
Total Controllers:	0
Total IDFs:	0
Total Racks:	0
Total Switches:	0
Total Ports:	0
Total POE Ports:	0
Total APs:	34
Total AMs:	0

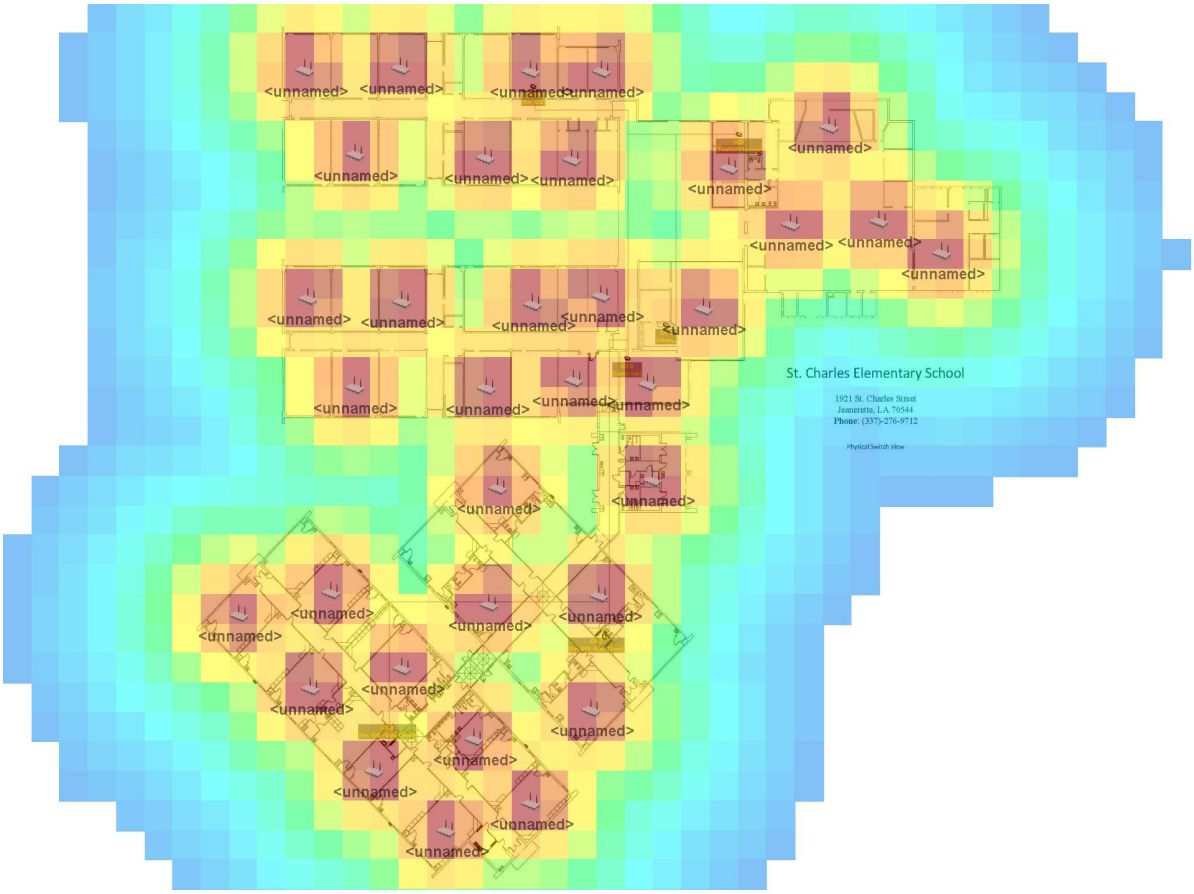
Floor Plan Only View



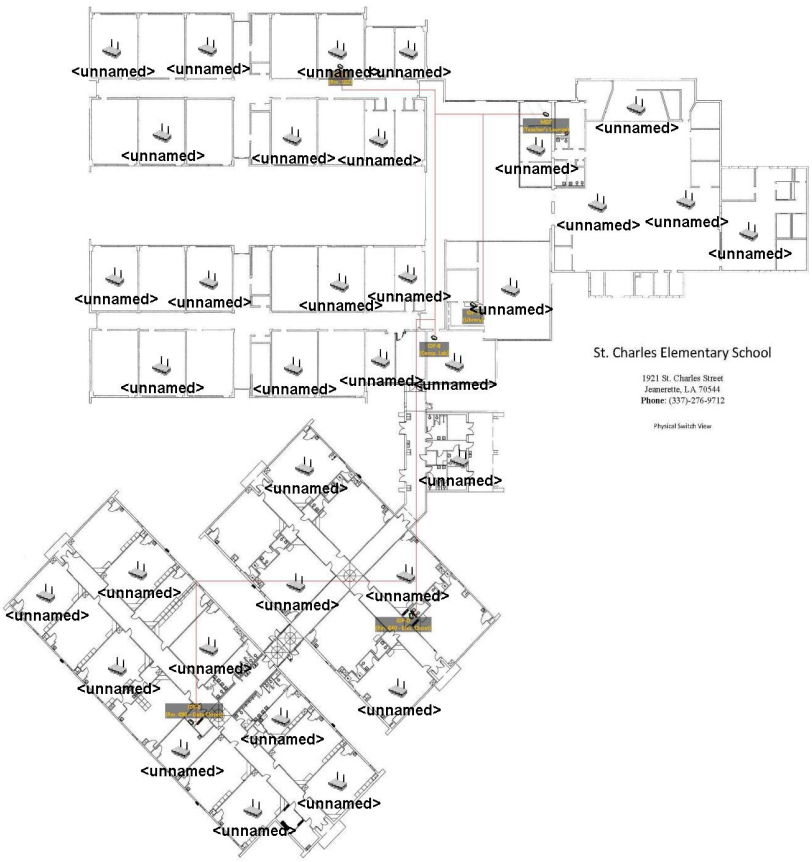
Data Rate View



Heat Map View



Wire Range View



AP Inventory									
Name	**Model**	**Part #**	**PHY**	**Ch**	**Xmit dBm**	**Gain dBi**	**LAN MAC**	**Switch**	**Port**
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			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
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			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
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			11N	52	12.0	4.0			

	Aruba AP 105	AP-105	11n	1	12.0	2.5	
			11N	52	12.0	4.0	
	Aruba AP 105	AP-105	11n	1	12.0	2.5	
			11N	52	12.0	4.0	
	Aruba AP 105	AP-105	11n	1	12.0	2.5	
			11N	52	12.0	4.0	
	Aruba AP 105	AP-105	11n	1	12.0	2.5	
			11N	52	12.0	4.0	
	Aruba AP 105	AP-105	11n	1	12.0	2.5	
			11N	52	12.0	4.0	
	Aruba AP 105	AP-105	11n	1	12.0	2.5	
			11N	52	12.0	4.0	
	Aruba AP 105	AP-105	11n	1	12.0	2.5	
			11N	52	12.0	4.0	
	Aruba AP 105	AP-105	11n	1	12.0	2.5	
			11N	52	12.0	4.0	
	Aruba AP 105	AP-105	11n	1	12.0	2.5	
			11N	52	12.0	4.0	
	Aruba AP 105	AP-105	11n	1	12.0	2.5	
			11N	52	12.0	4.0	

Wired Inventory							
Name	**Model**	**Part #**	**# POE Ports**	**Total Ports**	**IDF**	**Rack**	**Rack Unit #**

Floor Total			
Part #	**Type**	**Mode**	**Qty**
AP-105	Aruba AP 105	AP	34
		AM	0

Building Total			
Part #	**Type**	**Mode**	**Qty**
AP-105	Aruba AP 105	AP	34
		AM	0

Summary			
Part #	**Type**	**Mode**	**Qty**
AP-105	Aruba AP 105	AP	34
		AM	0

DETEL©

Quote

Date	Quote #
4/17/2013	5093

Detel Wireless, LLC
P.O. Box 147
Hessmer, LA 71341

Name / Address
Sample Quote

Phone #	Fax #
318.597.0303	318.597.3707

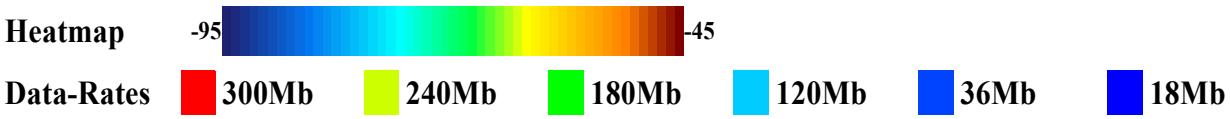
Description	Qty	Cost	Total
Job Site: St. Charles Elementary - 1 to 1 Scenario State Contract #409463 State VIN#71-0905220-00 Commodity Code for all items listed below: 204-64-120756		0.00	0.00
Item/Product Number: DW-IAP-105-US Description: Detel Instant 105 Wireless Access Point (Dual Radio) Category 2, Line 00003 Retail: $695.00; Disc 28%	34	500.40	17,013.60
Item/Product Number: DW-AP-105-MNT-C Description: Detel 105 Access Point Ceiling Mounting Kit Category 2, Line 00003 Retail: 15.00; Disc 28%	34	10.80	367.20
Item/Product Number: DW-ICX6430-24P Description: 24-port 1G Switch PoE+ 390W, 4 x 1G SFP Uplink/Stacking Ports Category: 2 Line No: 00003 Retail Price: $2,295.00; Disc 28%	5	1,652.40	8,262.00
Item/Product Number: Detel Installation Description: Unpacking, Inventory, Assembly of Components, Rack Mounting of Chassis, Patch Cord/Cross Connects and Powering Up of Equipment Line No. 00021 *DETEL's Labor rate is $125/hr. Hours vary depending on installation.*	1	125.00	125.00
Sales Tax		5.25%	0.00

Thank you for your business!

Total $25,767.80

Signature _____

Bill of Materials Report Apr 15, 2013



Campus: Iberia

Data Rate:	36.0 Mbps
Client Xmit:	30mW

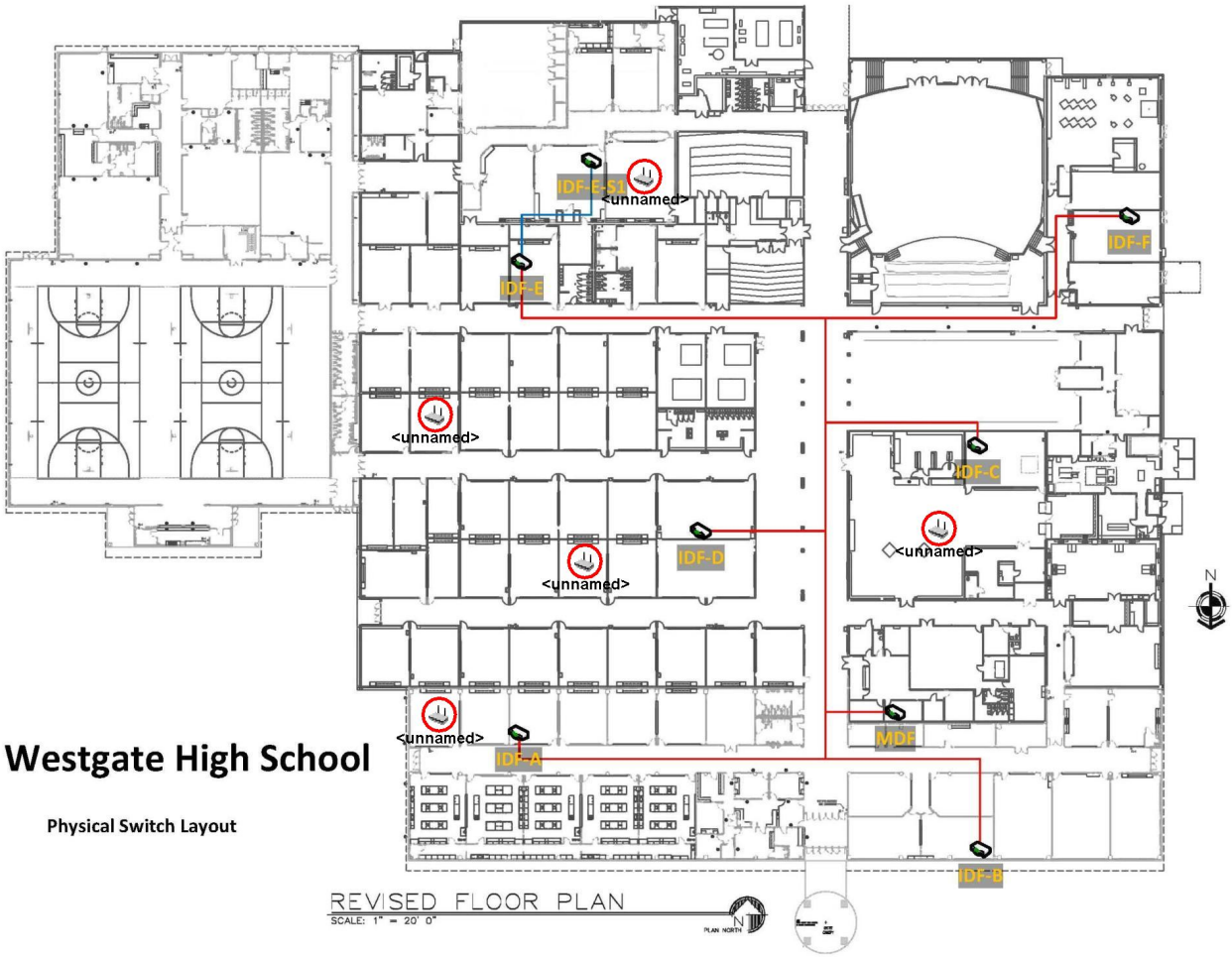
Building: WestgateHigh

Address:	unavailable	
Data Rate:	36.0 Mbps	
Client Xmit:	30mW	
Geo Code:	Long: -98.583333	Lat: 39.833333
Area:	347,021 Sq Ft.	
Total Controllers:	0	
Total IDFs:	0	
Total Racks:	0	
Total Switches:	0	
Total Ports:	0	
Total POE Ports:	0	
Total APs:	5	
Total AMs:	0	

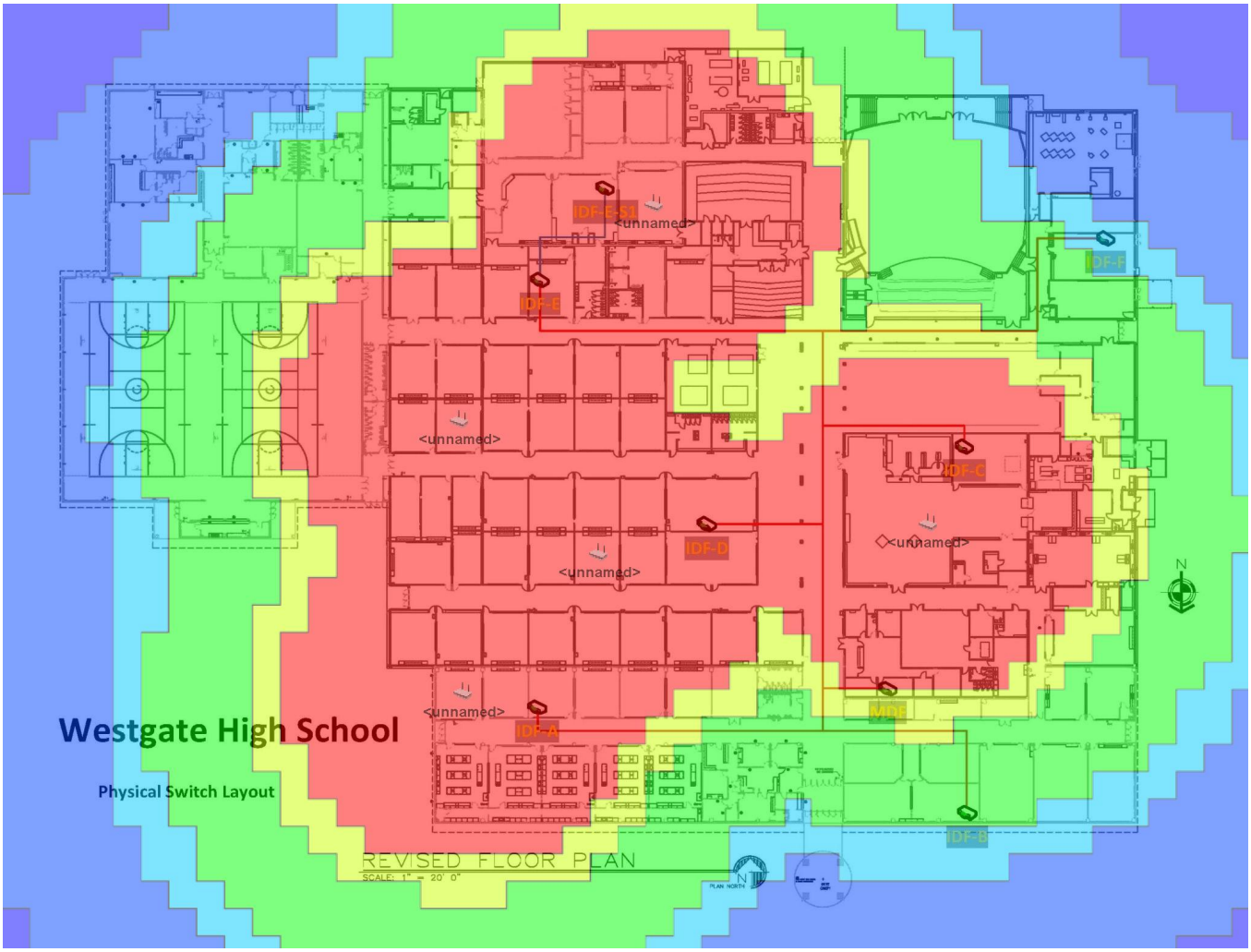
Floor 1.0: Floor1

Environment:	Offices
Data Rate:	36.0 Mbps
Client Xmit:	30mW
Floor Height:	10.00 Feet
Image Area:	347,021 Sq Ft.
Total Controllers:	0
Total IDFs:	0
Total Racks:	0
Total Switches:	0
Total Ports:	0
Total POE Ports:	0
Total APs:	5
Total AMs:	0

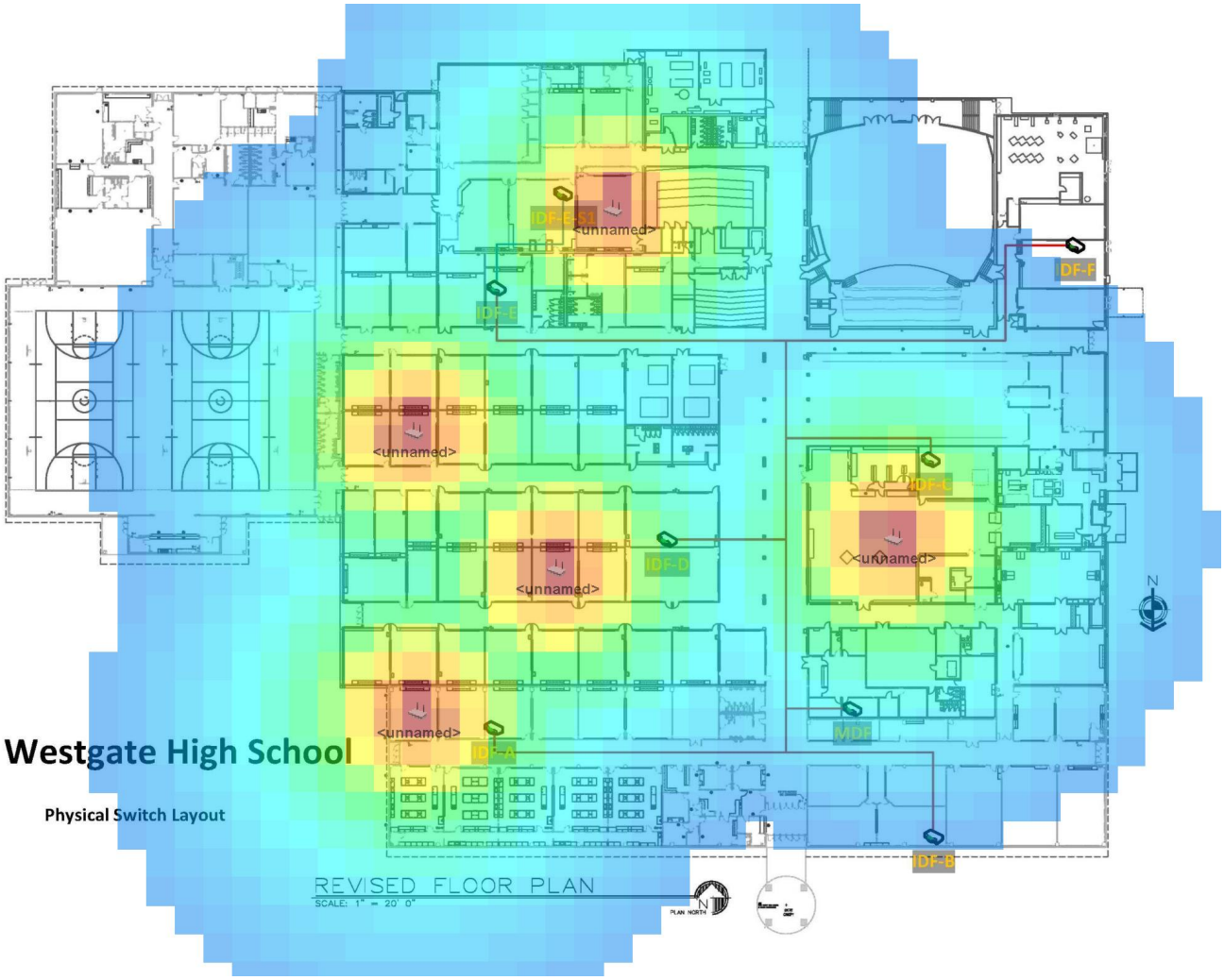
Floor Plan Only View



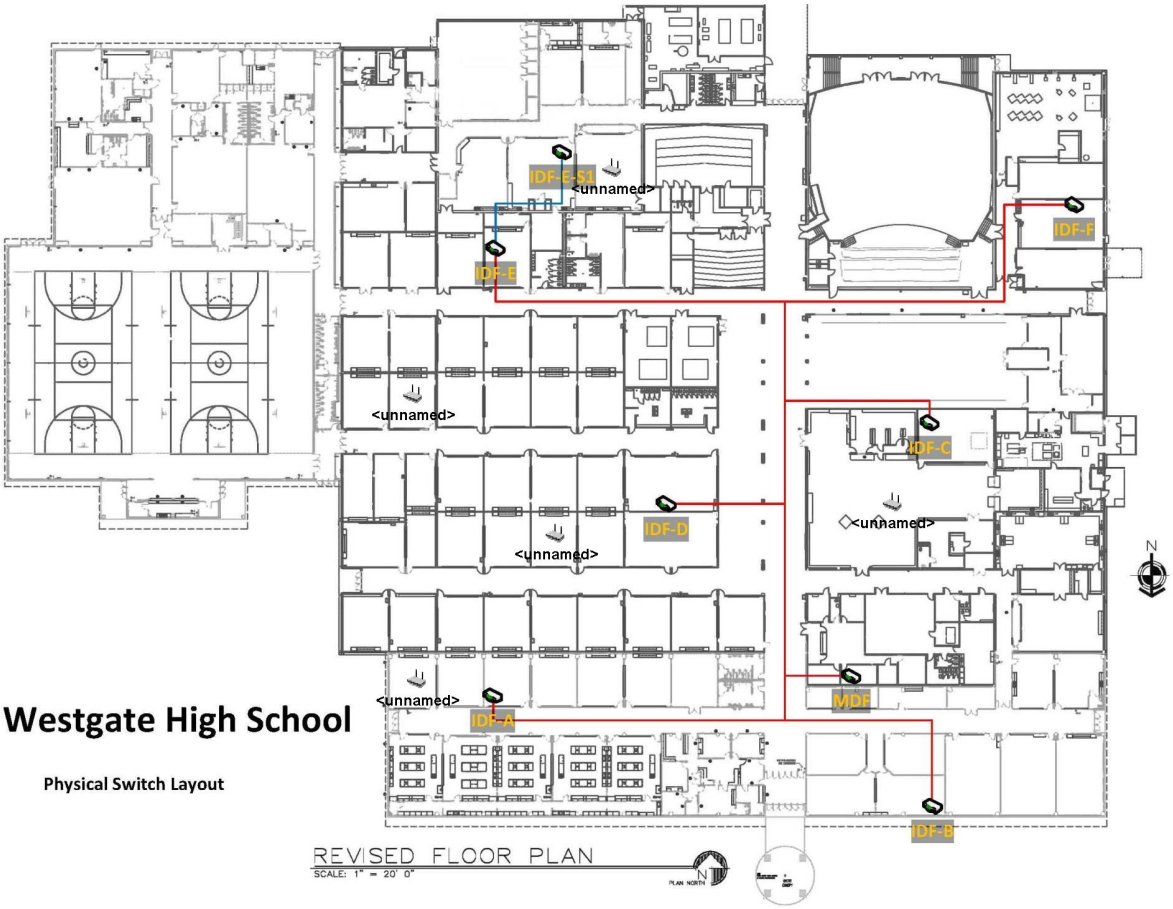
Data Rate View



Heat Map View



Wire Range View



AP Inventory									
Name	**Model**	**Part #**	**PHY**	**Ch**	**Xmit dBm**	**Gain dBi**	**LAN MAC**	**Switch**	**Port**
	Aruba AP 105	AP-105	11N	52	12.0	4.0			
			11n	1	12.0	2.5			
	Aruba AP 105	AP-105	11N	52	12.0	4.0			
			11n	1	12.0	2.5			
	Aruba AP 105	AP-105	11N	52	12.0	4.0			
			11n	1	12.0	2.5			
	Aruba AP 105	AP-105	11N	52	12.0	4.0			
			11n	1	12.0	2.5			
	Aruba AP 105	AP-105	11N	52	12.0	4.0			
			11n	1	12.0	2.5			

Wired Inventory							
Name	**Model**	**Part #**	**# POE Ports**	**Total Ports**	**IDF**	**Rack**	**Rack Unit #**

Floor Total			
Part #	**Type**	**Mode**	**Qty**
AP-105	Aruba AP 105	AP	5
		AM	0

Building Total			
Part #	**Type**	**Mode**	**Qty**
AP-105	Aruba AP 105	AP	5
		AM	0

Summary			
Part #	**Type**	**Mode**	**Qty**
AP-105	Aruba AP 105	AP	5
		AM	0

DETEL©

Quote

Date	Quote #
4/17/2013	5094

Detel Wireless, LLC
P.O. Box 147
Hessmer, LA 71341

Name / Address
Sample Quote

Phone #	Fax #
318.597.0303	318.597.3707

Description	Qty	Cost	Total
Job Site: Westgate High - Lab Scenario State Contract #409463 State VIN#71-0905220-00 Commodity Code for all items listed below: 204-64-120756		0.00	0.00
Item/Product Number: DW-IAP-105-US Description: Detel Instant 105 Wireless Access Point (Dual Radio) Category 2, Line 00003 Retail: $695.00; Disc 28%	5	500.40	2,502.00
Item/Product Number: DW-AP-105-MNT-C Description: Detel 105 Access Point Ceiling Mounting Kit Category 2, Line 00003 Retail: 15.00; Disc 28%	5	10.80	54.00
Item/Product Number: DW-PD-3501G-AC Description: 1 Port PowerDsine PoE Midspan 10/100/1000 15.4W Category 2, Line 00003 Retail: $95.00; Disc 28%	5	68.40	342.00
Item/Product Number: Detel Installation Description: Unpacking, Inventory, Assembly of Components, Rack Mounting of Chassis, Patch Cord/Cross Connects and Powering Up of Equipment Line No. 00021 *DETEL's Labor rate is $125/hr. Hours vary depending on installation.*	1	125.00	125.00
Sales Tax		5.25%	0.00

Thank you for your business!

Total $3,023.00

Signature _____

Bill of Materials Report Apr 15, 2013

Data-Rates 300Mb 240Mb 180Mb 120Mb 36Mb 18Mb

Campus: Iberia

Data Rate:	36.0 Mbps
Client Xmit:	30mW

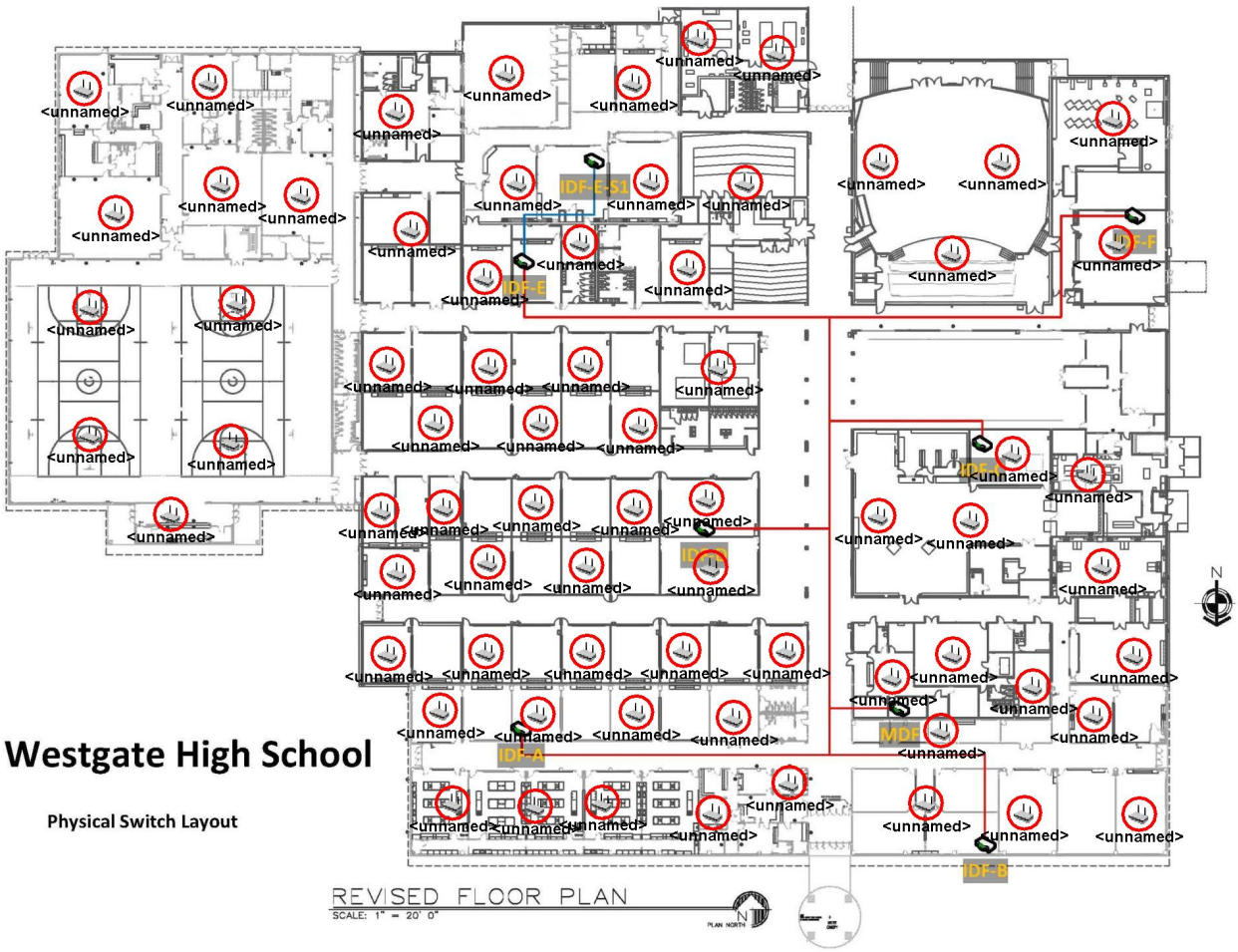
Building: WestgateHigh

Address:	unavailable	
Data Rate:	36.0 Mbps	
Client Xmit:	30mW	
Geo Code:	Long: -98.583333	Lat: 39.833333
Area:	347,021 Sq Ft.	
Total Controllers:	0	
Total IDFs:	0	
Total Racks:	0	
Total Switches:	0	
Total Ports:	0	
Total POE Ports:	0	
Total APs:	71	
Total AMs:	0	

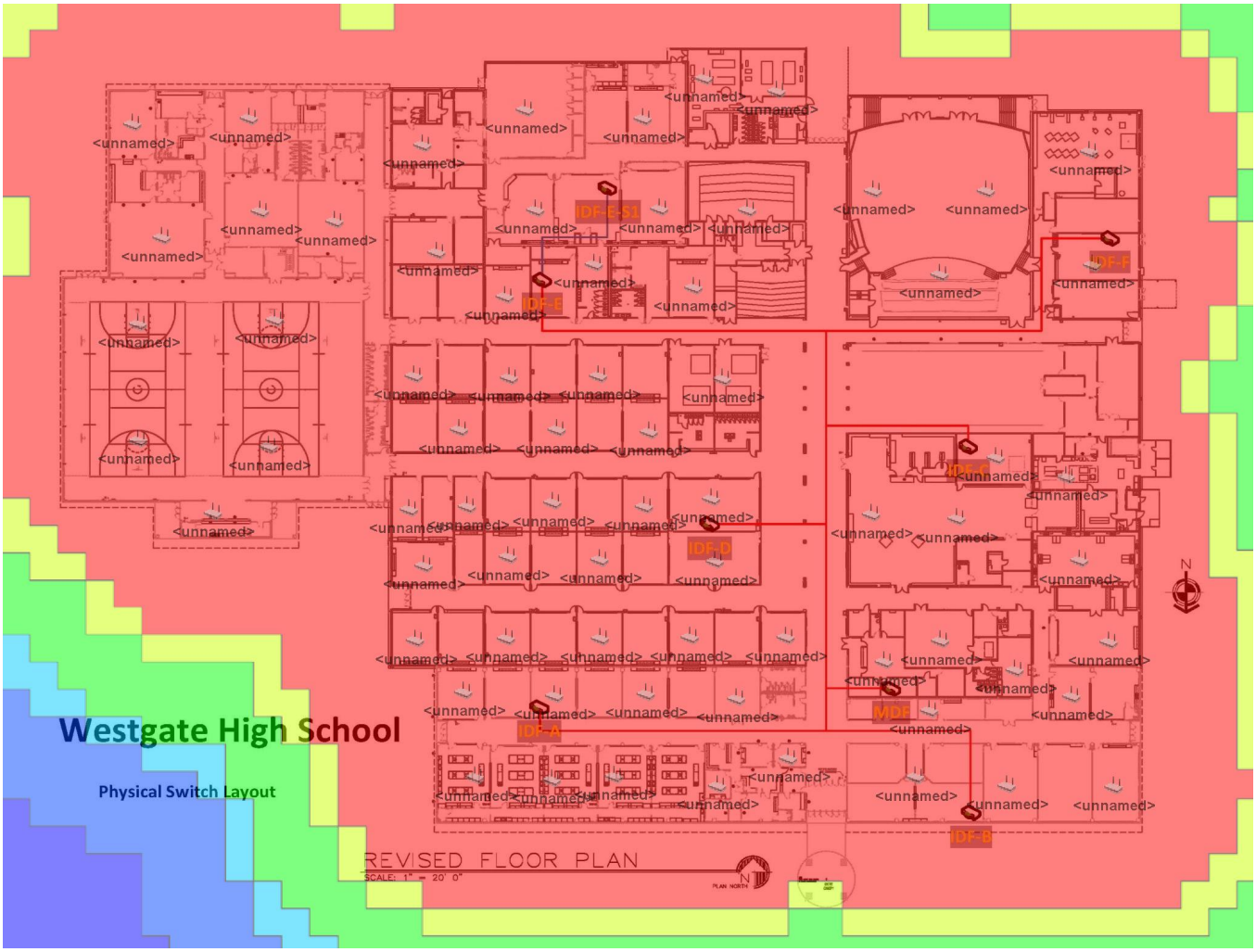
Floor 1.0: Floor1

Environment:	Concrete
Data Rate:	300.0 Mbps
Client Xmit:	30mW
Floor Height:	10.00 Feet
Image Area:	347,021 Sq Ft.
Total Controllers:	0
Total IDFs:	0
Total Racks:	0
Total Switches:	0
Total Ports:	0
Total POE Ports:	0
Total APs:	71
Total AMs:	0

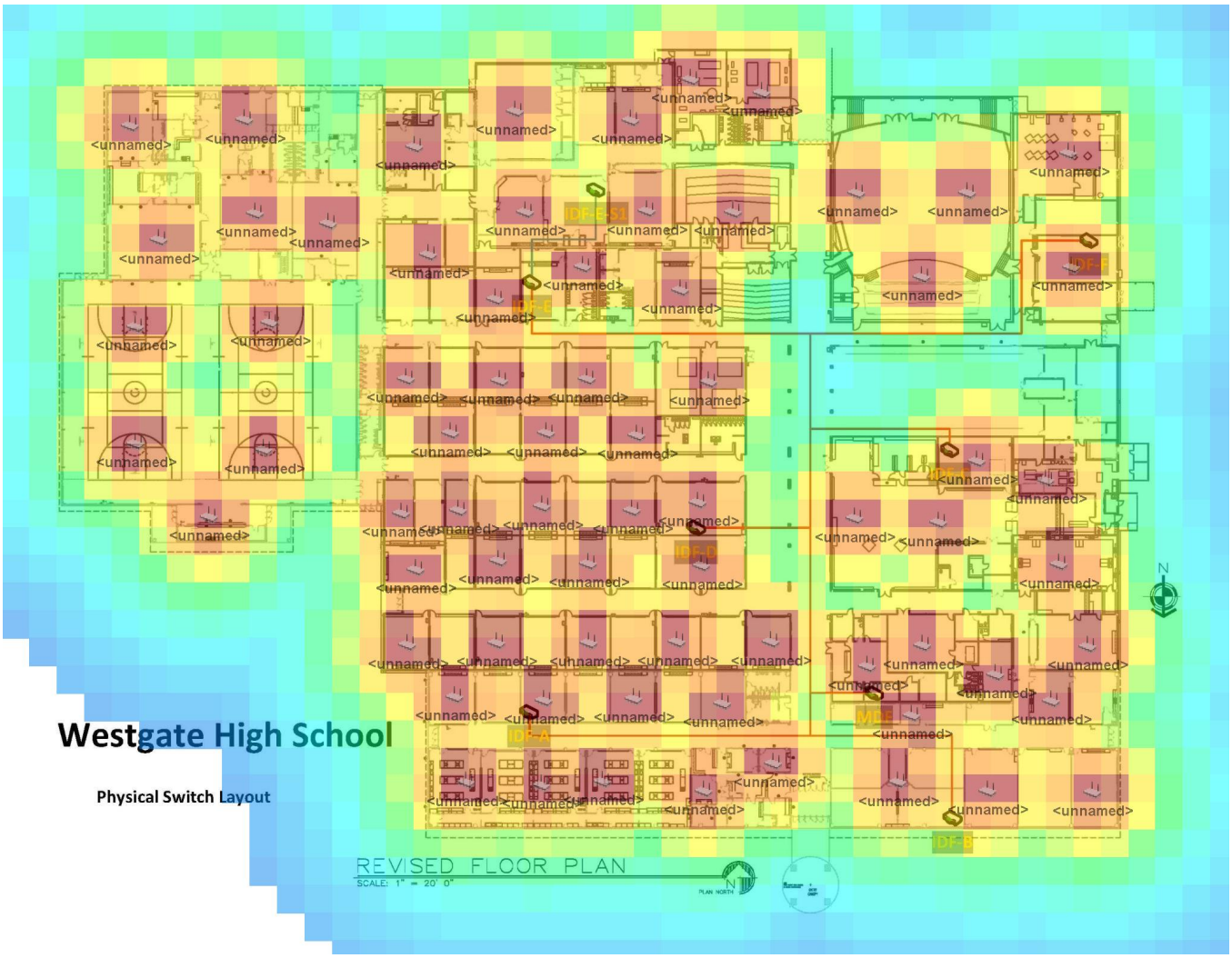
Floor Plan Only View



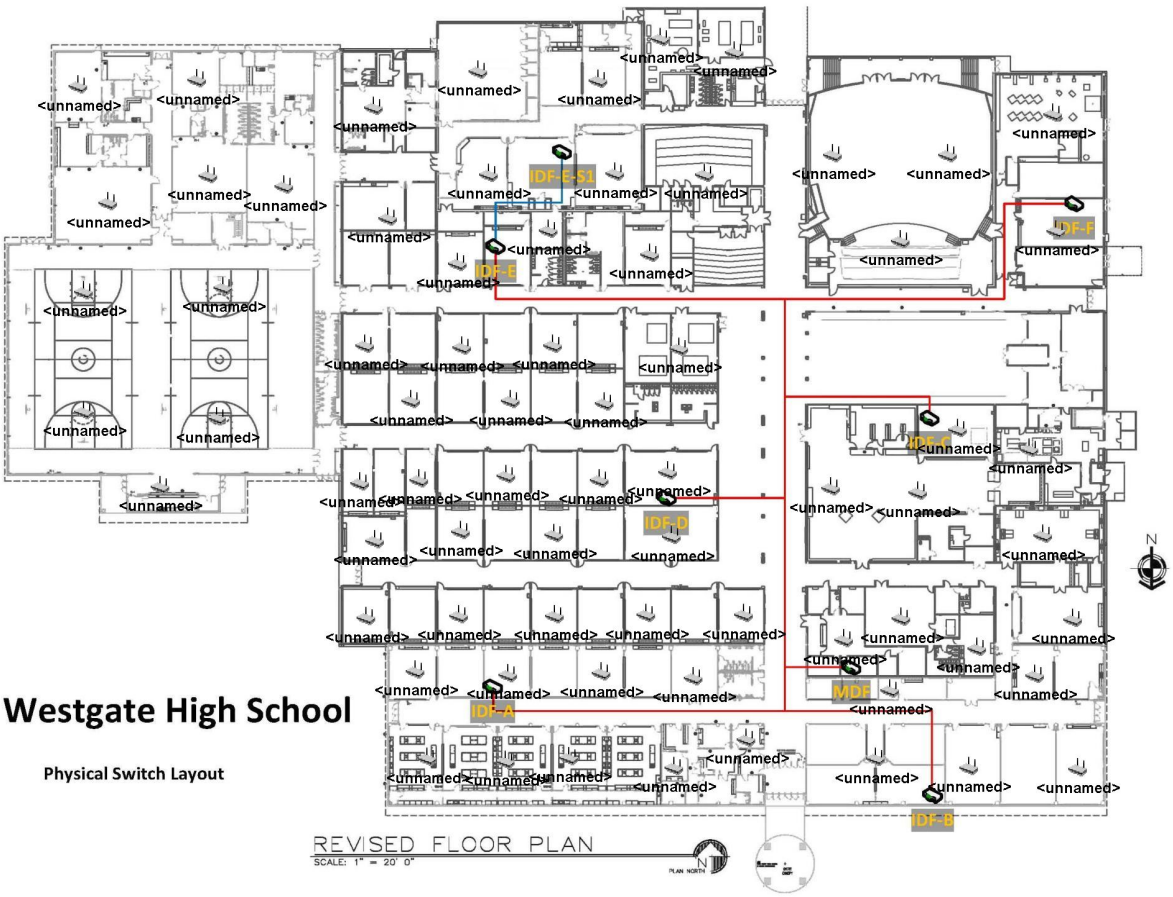
Data Rate View



Heat Map View



Wire Range View



AP Inventory									
Name	**Model**	**Part #**	**PHY**	**Ch**	**Xmit dBm**	**Gain dBi**	**LAN MAC**	**Switch**	**Port**
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			
	Aruba AP 105	AP-105	11n	1	12.0	2.5			
			11N	52	12.0	4.0			

Aruba AP 105	AP-105	11n	1	12.0	2.5
		11N	52	12.0	4.0

		11N	52	12.0	4.0
Aruba AP 105	AP-105	11n	1	12.0	2.5
		11N	52	12.0	4.0
Aruba AP 105	AP-105	11n	1	12.0	2.5
		11N	52	12.0	4.0
Aruba AP 105	AP-105	11n	1	12.0	2.5
		11N	52	12.0	4.0
Aruba AP 105	AP-105	11n	1	12.0	2.5
		11N	52	12.0	4.0
Aruba AP 105	AP-105	11n	1	12.0	2.5
		11N	52	12.0	4.0
Aruba AP 105	AP-105	11n	1	12.0	2.5
		11N	52	12.0	4.0
Aruba AP 105	AP-105	11n	1	12.0	2.5
		11N	52	12.0	4.0
Aruba AP 105	AP-105	11n	1	12.0	2.5
		11N	52	12.0	4.0
Aruba AP 105	AP-105	11n	1	12.0	2.5
		11N	52	12.0	4.0
Aruba AP 105	AP-105	11n	1	12.0	2.5
		11N	52	12.0	4.0
Aruba AP 105	AP-105	11n	1	12.0	2.5
		11N	52	12.0	4.0
Aruba AP 105	AP-105	11n	1	12.0	2.5
		11N	52	12.0	4.0
Aruba AP 105	AP-105	11n	1	12.0	2.5
		11N	52	12.0	4.0
Aruba AP 105	AP-105	11n	1	12.0	2.5
		11N	52	12.0	4.0
Aruba AP 105	AP-105	11n	1	12.0	2.5
		11N	52	12.0	4.0
Aruba AP 105	AP-105	11n	1	12.0	2.5
		11N	52	12.0	4.0
Aruba AP 105	AP-105	11n	1	12.0	2.5
		11N	52	12.0	4.0
Aruba AP 105	AP-105	11n	1	12.0	2.5
		11N	52	12.0	4.0
Aruba AP 105	AP-105	11n	1	12.0	2.5
		11N	52	12.0	4.0
Aruba AP 105	AP-105	11n	1	12.0	2.5
		11N	52	12.0	4.0
Aruba AP 105	AP-105	11n	1	12.0	2.5
		11N	52	12.0	4.0
Aruba AP 105	AP-105	11n	1	12.0	2.5
		11N	52	12.0	4.0
Aruba AP 105	AP-105	11n	1	12.0	2.5
		11N	52	12.0	4.0
Aruba AP 105	AP-105	11n	1	12.0	2.5
		11N	52	12.0	4.0
Aruba AP 105	AP-105	11n	1	12.0	2.5
		11N	52	12.0	4.0
Aruba AP 105	AP-105	11n	1	12.0	2.5
		11N	52	12.0	4.0

Wired Inventory							
Name	**Model**	**Part #**	**# POE Ports**	**Total Ports**	**IDF**	**Rack**	**Rack Unit #**

Floor Total			
Part #	**Type**	**Mode**	**Qty**
AP-105	Aruba AP 105	AP	71
		AM	0

Building Total			
Part #	**Type**	**Mode**	**Qty**
AP-105	Aruba AP 105	AP	71
		AM	0

Summary			
Part #	**Type**	**Mode**	**Qty**
AP-105	Aruba AP 105	AP	71
		AM	0

DETEL©

Quote

Date	Quote #
4/17/2013	5095

Detel Wireless, LLC
P.O. Box 147
Hessmer, LA 71341

Name / Address
Sample Quote

Phone #	Fax #
318.597.0303	318.597.3707

Description	Qty	Cost	Total
Job Site: Westgate High - 1 to 1 Scenario State Contract #409463 State VIN#71-0905220-00 Commodity Code for all items listed below: 204-64-120756		0.00	0.00
Item/Product Number: DW-IAP-105-US Description: Detel Instant 105 Wireless Access Point (Dual Radio) Category 2, Line 00003 Retail: $695.00; Disc 28%	71	500.40	35,528.40
Item/Product Number: DW-AP-105-MNT-C Description: Detel 105 Access Point Ceiling Mounting Kit Category 2, Line 00003 Retail: 15.00; Disc 28%	71	10.80	766.80
Item/Product Number: DW-ICX6430-24P Description: 24-port 1G Switch PoE+ 390W, 4 x 1G SFP Uplink/Stacking Ports Category: 2 Line No: 00003 Retail Price: $2,295.00; Disc 28%	7	1,652.40	11,566.80
Item/Product Number: Detel Installation Description: Unpacking, Inventory, Assembly of Components, Rack Mounting of Chassis, Patch Cord/Cross Connects and Powering Up of Equipment Line No. 00021 *DETEL's Labor rate is $125/hr. Hours vary depending on installation.*	1	125.00	125.00
Sales Tax		5.25%	0.00

Thank you for your business!

Total $47,987.00

Signature _____

BROCADE ICX 6430 AND 6450 SWITCHES

DESIGNED FOR EDUCATION

Enterprise-Class Stackable Switching at an Entry-Level Price

BROCADE® ICX® 6430/6450 SWITCH HIGHLIGHTS

- Available in 12-, 24-, and 48-port models with stacking capabilities that allow for "Mix-and-Match" POE, POE+ and Non-POE
- Supports high availability "hitless" failover
- Open standards management, including an industry-standard command line interface (CLI) and support Secure Shell (SSHv2), Secure Copy (SCP), and SNMPv3
- Up to 384 1-Gigabit Ethernet ports per stack (192/ICX6430, 384/ICX6450)
- Compact switch solutions with fanless operation for deployment outside the wiring closet, ideal for classrooms and offices
- Plug-and-Play capabilities for IP devices
- Best in class support including lifetime next-business-day replacement warranty, lifetime software and maintenance updates, and three- year Brocade TAC support.
- External hot-swappable power supply option for redundancy or additional PoE power
- Layer 3 capability
- 1-Gigabit ports upgradeable to 10-gigabit (ICX6450)
- sFlow-based "Always-On" network monitoring (ICX6450)

IN LOUISIANA

Detel
Travis Franks
318-597-0303
travis@detel.com

DETEL®

BROCADE

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ARUBA 100 SERIES ACCESS POINTS

For high-density Wi-Fi client environments

PARCC READY & CERTIFIED

Multifunctional and affordable 100 series wireless access points (APs) deliver enterprise-grade Wi-Fi to high-density client environments

These high-performance 802.11n APs deliver wireless data rates up to 300 and 450 Mbps per radio and ensure peak performance by utilizing channel bonding, block acknowledgement and MIMO radios. Advanced antenna technology also increases RF signal range and reliability.

The 105 series of APs features two dual-band 2.4-GHz and 5-GHz radios with 2x2 MIMO and four integrated omni-directional downtilt antennas, making it ideal for warehouses and high-ceiling deployments. The 135 Series of APs feature two dual-band 2.4-GHz and 5-GHz radios with 3x3 MIMI ideal for super high density

BEST-IN-CLASS RF MANAGEMENT

All Aruba APs include Adaptive Radio Management™ technology, which is essential to creating the most reliable, high-performance WLANs. ARM™ manages the 2.4-GHz and 5-GHz radio bands to optimize Wi-Fi client performance and ensures that APs stay clear of RF interference.

Up to 70% reduction in access network TCO. Affordable, enterprise-grade Wi-Fi doesn't only foster learning and productivity, but can result in cost savings too.

CHOOSE YOUR OPERATING MODE

The 100 series of APs offers a choice of operating modes to meet your unique management and deployment requirements.

- Controller-managed mode. When managed by Aruba Mobility Controllers, 100 series APs offer centralized configuration, data encryption, policy enforcement and network services, as well as distributed and centralized traffic forwarding. Please refer to the
- Aruba Instant™ mode. In Aruba Instant mode, a single AP automatically distributes the network configuration to other Instant APs in the WLAN. Simply power-up one Instant AP, configure it over the air, and plug in the other APs – the entire process takes about five minutes.

For large installations across multiple sites, the Aruba Activate™ service significantly reduces deployment time by automating device provisioning, firmware upgrades, and inventory management. With Aruba Activate, Instant APs are factory-shipped to any site and configure themselves when powered up.11

ADVANCED FEATURES

- Spectrum Analysis:
  - Spectrum analyzer remotely scans the 2.4-GHz and 5-GHz radio bands to identify sources of RF interference.
- Security:
  - With an OpenDNS service subscription, Aruba Instant delivers integrated web filtering, malware and botnet protection to every device connected to the WLAN
  - Integrated Trusted Platform Module (TPM) for secure storage of credentials and keys
  - SecureJack-capable for secure tunneling of wired Ethernet traffic

OPERATING MODES

- 802.11a/b/g/n Aruba Instant AP
- 802.11a/b/g/n Mobility Controller-managed AP
- Air monitor (AM)
- Secure enterprise mesh
- Remote AP (RAP) when used with a Mobility Controller

WIRELESS RADIO SPECIFICATIONS

- AP type: Dual-radio, dual-band 802.11n indoor
- Software-configurable dual radio supports 2.4 GHz and 5 GHz
- 2x2 MIMO 802.11n with two spatial streams and up to 300 Mbps per radio (IAP-105)
- 3x3 MIM 802.11n with 3 spatial streams and up to 450 Mbps per radio (IAP-135)

Louisiana
Contact: Travis Franks
318-597-0303
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DETEL

WEB FILTERING INFORMATION

With the advent of the Child Internet Protection Act (CIPA) and the requirements it placed on all districts to protect children from exposure to inappropriate content on the Internet, it became necessary for districts to monitor and filter the information that their students were exposed to. This led to the rise of web filtering systems that monitor web requests and block inapproriate sites and material.

Because of the need for this important system in every school and district, we have added a new section to the catalog which contains information on web filtering options that are available to districts. Many districts are looking for guidance and information which will help them make the best decision on web filtering for their students and faculty. To assist in that process, we have asked a number of vendors to provide special pricing for web filtering.

FOR MORE INFORMATION

LOUISIANA DEPARTMENT OF EDUCATION
Information Technology
www.louisianaschools.net

Contact: EdTech@la.gov for more information

Network Security That Goes Beyond the Obvious

As a Next-Generation Firewall for emerging large organizations, the Dell™ SonicWALL™ Network Security Appliance (NSA) 6600 delivers security and performance without compromise. Coupled with Dell's patented[1] Reassembly-Free Deep Packet Inspection® (RFDPI) single-pass threat prevention engine, Dell SonicWALL Next-Generation Firewalls provide industry leading protection, performance, and scalability with the highest number of concurrent connections, lowest latency, no file size limitations and superior connections per second in their class.

Content Filtering

Dell™ SonicWALL™ Content Filtering Service (CFS) helps organizations and educational institutions enforce their productivity and protection policies and block inappropriate, illegal and dangerous Web content. Featuring a dynamic rating and caching architecture, Dell SonicWALL CFS blocks multiple categories of objectionable Web content and provides the ideal combination of control and flexibility to ensure the highest levels of productivity and protection. Data is forwarded directly to the Dell SonicWALL ViewPoint™ reporting package, delivering a high level of network visibility through graphs, charts and data search functionality. And as an added benefit, Dell SonicWALL content filtering is configured and controlled from the appliance, eliminating the need for a costly, dedicated filtering server.

- ✓ Easily Manage Solution
  Dell SonicWALL CFS combines application-based policy enforcement with comprehensive content filtering, in a cost-effective, easy-to-manage solution. URLs, IP addresses and domain ratings are locally on the firewall, reducing response time to frequently visited sites to a fraction of a second. Administrators can control bandwidth based upon Content Filtering Service rating, as well as specific IP addresses, sites—or even applications when combined with Dell SonicWALL Application Intelligence and Control.

- ✓ Ideal for Small to Large Organizations
  Dell SonicWALL CFS is deployed in a wide variety of organizations, including business enterprises, universities, libraries and government agencies, as well as distributed public Internet "hotspots." Ease of management, scalability and superior performance make CFS an ideal solution for larger enterprises with complex configuration requirements.

- ✓ Mitigating Risks of Unrestricted Access
  Dell SonicWALL CFS helps reduce the risks incurred by not restricting employees, students, or other users from accessing websites that are inappropriate or offensive, especially when there is a legal responsibility and obligation to keep the workplace free from offensive material. In addition, unrestricted access drains productivity by promoting wasteful Web surfing. Unrestricted access often leads to infection by viruses, spyware and malware, since many of the sites that are contained in blocked categories are common sources of malicious attacks. Installing a content filtering solution can eliminate these and other problems.

- ✓ Flexibility and Policy Enforcement
  Administrators are free to create local or enterprise-wide policies that are specifically designed to meet their own requirements and legislative mandates. The dynamic rating architecture can be used to block up to 56 categories of objectionable or inappropriate Web content, providing a high level of transparent control, ease of administration and granular policy enforcement. The local URL filtering feature adds flexibility by letting administrators go beyond categories to block or allow specific domains or hosts. Policies can be applied to individuals or defined groups (e.g., students and faculty) and set to block automatically downloadable files or apply filtering by time of day.

- ✓ Caching and Performance
  Dell SonicWALL CFS is built around a website caching and rating architecture that allows administrators to block sites automatically by category for easier administration. The caching feature stores URL ratings locally on the Dell SonicWALL firewall, so response time is only a fraction of a second. In addition to filtering offensive Web content, CFS helps enhance performance by filtering out download sites for MP3s, streaming media, freeware and other files that consume tremendous amounts of bandwidth and are often the source of spyware and other malware.

Compliance and Regulations

A number of legislated regulations contain content filtering requirements that can be met using Dell SonicWALL CFS. For example, the Children's Internet Protection Act (CIPA) requires all schools and libraries that receive eRate funding to install content filtering. The flexibility of CFS, and the ability to set custom policies for different groups or different times of day, makes it ideal for educational settings. In addition, the reporting necessary to comply with these mandates can be fulfilled by Dell SonicWALL's Global Management System (GMS) and ViewPoint reporting package.

In addition to external regulation compliance, CFS is an integral part of internal compliance programs designed to reduce the liabilities that may incur when inappropriate content is allowed into the network. When Web access is unrestricted, not only is the result counter-productive, it can also result in costly lawsuits.

Visibility and Reporting

Dell SonicWALL ViewPoint reporting software along with Dell SonicWALL CFS can allow customers to run granular reports summarizing Web access details. Both real-time and historical reports can be easily customized and delivered in a variety of formats. In addition to comprehensive graphical reports, users also can take advantage of "at-a-glance" reporting.

How It Works

Dell SonicWALL CFS is based on a rating architecture that relies on a dynamic database to block objectionable or inappropriate websites. CFS cross-references all websites as they are requested against a vast and highly accurate database of URLs, IP addresses and domains. The Dell SonicWALL appliance then receives a rating in real time, and compares that rating to the local policy setting. The appliance will then either allow or deny the request, based on locally configured policy.

Dell SonicWALL CFS has categorized over 20 million URLs, IP addresses and domains in a continuously updated, dynamically rated database, with thousands more added daily. Because the ratings are determined both by artificial intelligence and human observation, the database is highly accurate and the instance of false positives is minimized. The policy-based system allows the administrator to block all pre-defined categories or any combination of categories, and to apply these policies on a granular level. For example, if one group of users requires access to sites typically found within one category, this level of access can be granted while still denying access to other users.

Categories range from offensive types of content such as "Violence," which would include anti-social websites that advocate use of weapons or explosives, to sites that may not be offensive but would otherwise cause a potential risk to the network in terms of bandwidth usage, such as "Software downloads" or "Streaming Media/MP3."

Performance

Feature	Value
Stateful Throughput	12 Gbps
DPI Performance	3.0 Gbps
Gateway Anti-Virus Throughput	3.0 Gbps
Intrusion Prevention Throughput	4.5 Gbps
IMIX Performance	3.5 Gbps
3DES/AES VPN Throughput	5.0 Gbps
Maximum Connections	1000000
Maximum UTM Connections	600000
New Connections per Second	90000

Web filtering license is not based on # of users but more on Throughput

SonicWALL has devices that scale from 10MBPS to 40+ GBPS

Product

Product Description	SonicWALL Sku	Price*
Dell SonicWALL NSA 6600	01-SSC-3820	$19,995.00
Comprehensive Gateway Security Suite 3yr.**	01-SSC-4212	$23,034.00

***For your specific discounts, scope or quote, please contact your local Dell SonicWALL representative.**

***List Price above is a reference only. No subscriptions or per user pricing on the HDWR platform.**

****Includes Gateway Anti-Virus, Intrusion Prevention, Application Intelligence Control, Content Filtering, and 24x7 Support.**

Hosted Web Filtering Solution will be available in 2014.

NSA 6600 Features

The NSA 6600 appliance offers an extensive array of advanced security and networking features in an accessible and affordable platform that is easy to deploy and manage in a wide variety of environments.

- ✓ Next-Generation Firewall

  The NSA 6600 provides intrusion prevention, application control, gateway anti-malware, SSL decryption and inspection and URL filtering on a high performance platform through its comprehensive and intuitive management interface. This powerful combination ensures state-of-the-art security at a low total cost of ownership.

- ✓ Application Intelligence

  Dell SonicWALL provides real-time insight and control of network traffic broken down by applications, users and content through intuitive on-board visualization. The ability to prioritize important applications, throttle down unproductive applications and block unwanted application components ensures an efficient and safe network.

- ✓ WAN Acceleration

  The WAN Acceleration Appliance (WXA) Series provides WAN Acceleration to reduce application latency, conserve bandwidth and significantly optimize WAN performance. The WXA Series appliances are provisioned, managed and controlled by existing Dell SonicWALL SuperMassive™ 9000 Series and E-Class Network Security Appliance (NSA), NSA and TZ Series appliances for optimal ease of use and simplified deployment.

- ✓ Gateway Anti-Malware

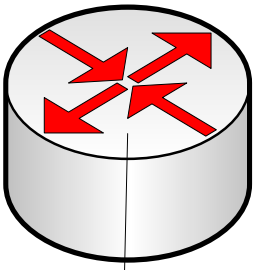
  Gateway anti-virus and anti-spyware provide high performance protection against millions of unique pieces of malware with near zero latency and no file size limitation. This provides a first layer of defense and stops malware before it can reach systems on your network.

- ✓ Intrusion Prevention

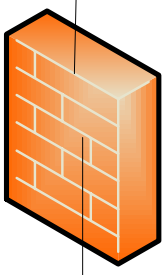
  Tightly integrated, signature based network intrusion prevention protects against a comprehensive array of network and application layer threats by scanning packet payloads for attacks and exploits that attack critical internal systems.

- ✓ SonicWALL Mobile Connect™

  SonicWALL Mobile Connect, a single unified client app for Apple® iOS and Google® Android™, provides smartphone and tablet users superior network-level access to corporate and academic resources over encrypted SSL VPN connections.



Router – ISP connection



Perimeter Firewall

DELL SECURITY APPLIANCE – NSA 6600

*** Web Filtering**

*Firewall

*Intrusion Prevention

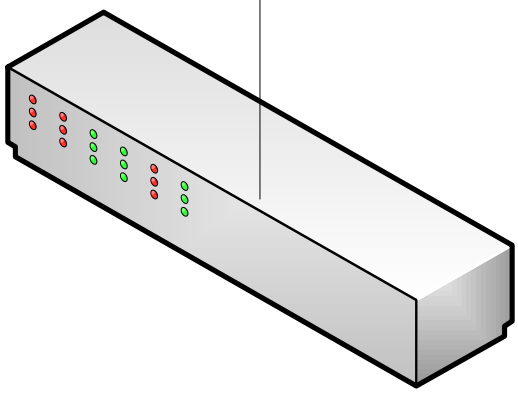
*Gateway Anti-Virus

*Anti-Spyware

*Botnet

*Geo Filter

*DPI-SSL



Enterprise Core Switch

Dell SonicWALL Contact-
SonicWALL Sales- 888-557-6642
sales@sonicwall.com

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FEATURE MATRIX

Passive & Proxy Web Filter Solutions

Desktop, BYOD & Mobile Device Filtering

- Over 100 Categories of URLs, P2P, Protocols, Malware and Spyware
- HTTP, HTTPS, SSL Validation, and Web 2.0
- Anonymous Proxy Servers elimination
- User-defined categories with import and export
- Protocol Detection: Remote Access, VoIP, Skype, Streaming Media, Chat
- Policy enforcement by day, time with alternate policies
- Policy Reminder with Acceptance Tracking
- Network Abuse Detection with real-time email notification
- Domain, IP Address, URL overrides by group & user with expiration
- File Extension, Search Terms blocking
- "Safe Search" and YouTube for Schools Enforcement

- Extend real-time filtering policies to every mobile device on or off the network
- On-network mobile device filtering:
  - Independent of OS, web browser or device
  - No proprietary browser necessary
  - Zero-touch pooling for policy grouping
  - Built-in auto-recognition
- On- and Off- Network Devices
  - Compatible with all Windows OS & Mac OS
  - Mobile Browser App for iOS Devices
- Global Proxy integration

Networking

- Authentication by LDAP, NTLM, Keberos, Logon Agent and Portal
- Remote Agent filtering and reporting for mobile & home offices
- Remote Agent integration with Windows, Mac & iOS devices
- Wi-Fi Access Point Radius integration
- LDAP Synchronization to Active Directory, eDirectory, Mac OS X Server

Web Proxy Edition

- Traffic Shaping by configurable priority classes
- Automatic Proxy Configuration with Alternate & Bypass proxy rules
- IPV6 Support for External Hostnames

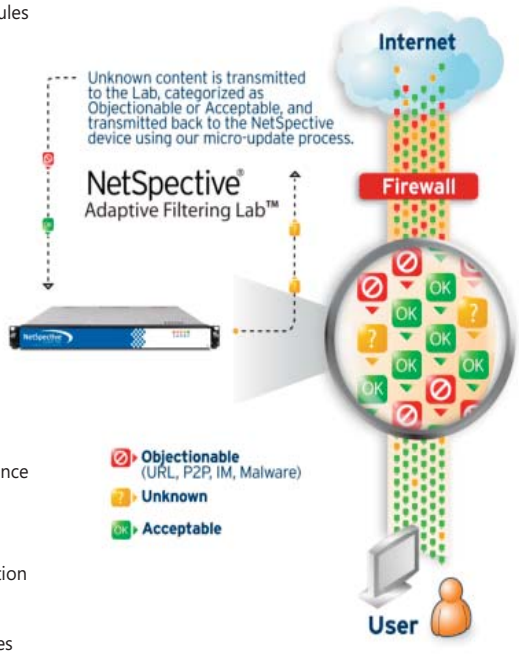
Reporting & Auditing

20+ On-Box Real-time Reports with Drill Down Navigation

- Recent Activity - Detail & Summary
- Summary by Category, Group, User, Protocol, Blocked Sites
- Recent and Popular Internet Searches
- Block Page Override Audit
- LDAP & Local Managers Audit
- Current & Previously Locked Users
- Remote Agent Activity
- Access & Block Summary
- Proxy Overview
- Cluster Status
- Connection Detail
- DNS Cache Entries

Automated Detail, Summary, and Historical Reports

- Exportable to XLS, PDF, HTML, CSV
- Inclusive & Exclusive Filters by User, Group, Category, Protocol
- Summary by accesses or volume with Web Proxy products
- Filters by Blocked, Allowed, Remote, Overridden, Policy Acceptance



System

- Scalable from 250 users to unlimited users
- One-Button Software Upgrades
- Centralized Management with Policy, Group, and Settings replication
- Automated System Backup
- Micro-updates identification of unknown traffic
- Customizable Block Pages, Policy Reminders, and Portal web pages
- Detail & historical web-based reporting suite with automatic delivery
- Full hardware warranty during subscription period

Models

Model	Model 12D	Model 12Q	Model 12H
Processor	Dual Core	Quad Core	Hex Core

Solutions

Passive

Model	Model 12D	Model 12Q	Model 12H
Bandwidth (Mbps)	<1000	1000+	1000+
Concurrent Users	<5000	Unlimited	Unlimited

Web Proxy

Model	Model 12D	Model 12Q	Model 12H	Clustered
Bandwidth (Mbps)	<250	<500	<1000	Unlimited
Concurrent Users	1000	2500	5000	Unlimited

FEATURE MATRIX

Network Monitoring Software

Flexible Report Management

- Real-time dashboards
- On-demand reporting and automated distribution
- Distribution by e-mail, SMTP, FTP profile and web publishing
- Inclusive, exclusive and expression-based filters
- Report templates with object-level control
- Export formats include PDF, Excel, HTML, RTF and Delimited
- Point-and-Click Custom Report Designer

Trend-Based Alarming & Notification

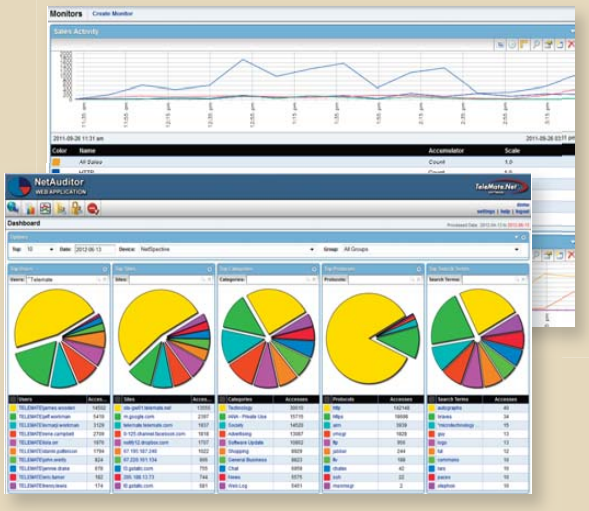
- Unlimited graphical monitors
- Monitors support multiple object types
- Real-time inspection
- User-defined thresholds
- Notification by email, SMS Text, HTTP POST / GET & report execution

Simplified Workflow

- Automatic synchronization with NetSpective
- Anywhere, anytime access to all reports
- HTTPS web security with customizable profiles
- Access control by feature, group and report
- Unlimited data retention of summary, detail activity
- Installs in minutes
- Includes SysLog Server for real-time collection & SSL relay
- No client application required; web-enabled user interface
- "Set-it-and-forget-it" maintenance
- Lowest total cost of ownership

NetAuditor, The Complete Solution:

- **Automatic synchronization** with NetSpective Content Filter, enabling ease-of-management and install-to-service availability in minutes
- **Real-time collection and historical archiving** of all activity across a single appliance or multiple
- **Granular reporting controls not found in other solutions**, including executive-level reporting with object-level control, selectable levels of detail, expression-based filtering, and maximum filtering flexibility on all fields in every report
- **Enhanced monitoring and alarming** with user-defined, trend-based network triggers to help administrators and management take immediate action
- **Supports all popular firewalls, including:**
  - Cisco PIX/ASA
  - NetFlow
  - Symantec Enterprise Firewall
  - Microsoft Forefront TMG/ISA Server
  - Juniper/NetScreen
  - Novell Border Manager
  - FortiNet
  - Checkpoint



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NetSpective Content Filter®
Powered by TeleMate.Net

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NSNA_0913

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318.597.3707 Fax

Product or Reference #	Manuf.	Short Description	Unit Price	Unit	Long Description CAT 4 (5%)	MSRP
			Hardware			
DW-NWHP2P250	Netspective	P2PFilter Appliance 1Y Subscription 250 User	$2,636.25	Each	P2PFilter Appliance 1Y Subscription 250 User	$2,775.00
DW-NWHP2P500	Netspective	P2PFilter Appliance 1Y Subscription 500 User	$3,301.25	Each	P2PFilter Appliance 1Y Subscription 500 User	$3,475.00
DW-NWHP2P10C	Netspective	P2PFilter Appliance 1Y Subscription 1000 User	$5,011.25	Each	P2PFilter Appliance 1Y Subscription 1000 User	$5,275.00
DW-NWHP2P25C	Netspective	P2PFilter Appliance 1Y Subscription 2500 User	$8,336.25	Each	P2PFilter Appliance 1Y Subscription 2500 User	$8,775.00
DW-NWHP2P50C	Netspective	P2PFilter Appliance 1Y Subscription 5000 User	$14,226.25	Each	P2PFilter Appliance 1Y Subscription 5000 User	$14,975.00
DW-NWHP2P10K	Netspective	P2PFilter Appliance 1Y Subscription 10000 User	$22,776.25	Each	P2PFilter Appliance 1Y Subscription 10000 User	$23,975.00
DW-NWHP2PULM	Netspective	P2PFilter Appliance 1Y Subscription Unlimited User	$36,456.25	Each	P2PFilter Appliance 1Y Subscription Unlimited User	$38,375.00
DW-NWH1B250	Netspective	WebFilter Appliance 1Y Subscription 250 User	$3,966.25	Each	WebFilter Appliance 1Y Subscription 250 User	$4,175.00
DW-NWH1B500	Netspective	WebFilter Appliance 1Y Subscription 500 User	$5,201.25	Each	WebFilter Appliance 1Y Subscription 500 User	$5,475.00
DW-NWH1B10C	Netspective	WebFilter Appliance 1Y Subscription 1000 User	$8,621.25	Each	WebFilter Appliance 1Y Subscription 1000 User	$9,075.00
DW-NWH1B25C	Netspective	WebFilter Appliance 1Y Subscription 2500 User	$15,271.25	Each	WebFilter Appliance 1Y Subscription 2500 User	$16,075.00
DW-NWH1B50C	Netspective	WebFilter Appliance 1Y Subscription 5000 User	$27,051.25	Each	WebFilter Appliance 1Y Subscription 5000 User	$28,475.00
DW-NWH1B10K	Netspective	WebFilter Appliance 1Y Subscription 10000 User	$44,151.25	Each	WebFilter Appliance 1Y Subscription 10000 User	$46,475.00
DW-NWHWNP250	Netspective	Content Filter URL/P2P Appliance 1Y Subscription 250 User	$5,201.25	Each	Content Filter URL/P2P Appliance 1Y Subscription 250 User	$5,475.00
DW-NWHWNP500	Netspective	Content Filter URL/P2P Appliance 1Y Subscription 500 User	$7,101.25	Each	Content Filter URL/P2P Appliance 1Y Subscription 500 User	$7,475.00
DW-NWHWNP10C	Netspective	Content Filter URL/P2P Appliance 1Y Subscription 1000 User	$12,231.25	Each	Content Filter URL/P2P Appliance 1Y Subscription 1000 User	$12,875.00
DW-NWHWNP25C	Netspective	Content Filter URL/P2P Appliance 1Y Subscription 2500 User	$22,301.25	Each	Content Filter URL/P2P Appliance 1Y Subscription 2500 User	$23,475.00
DW-NWHWNP50C	Netspective	Content Filter URL/P2P Appliance 1Y Subscription 5000 User	$39,876.25	Each	Content Filter URL/P2P Appliance 1Y Subscription 5000 User	$41,975.00
DW-NWHWNP10K	Netspective	Content Filter URL/P2P Appliance 1Y Subscription 10000 User	$65,526.25	Each	Content Filter URL/P2P Appliance 1Y Subscription 10000 User	$68,975.00
DW-NWH1BREPL	Netspective	Filtering Appliance Hardware Replacement	$2,446.25	Each	Filtering Appliance Hardware Replacement	$2,575.00
DW-NWH1BHOT	Netspective	Filtering Appliance Hardware HOT SPARE	$2,446.25	Each	Filtering Appliance Hardware HOT SPARE	$2,575.00

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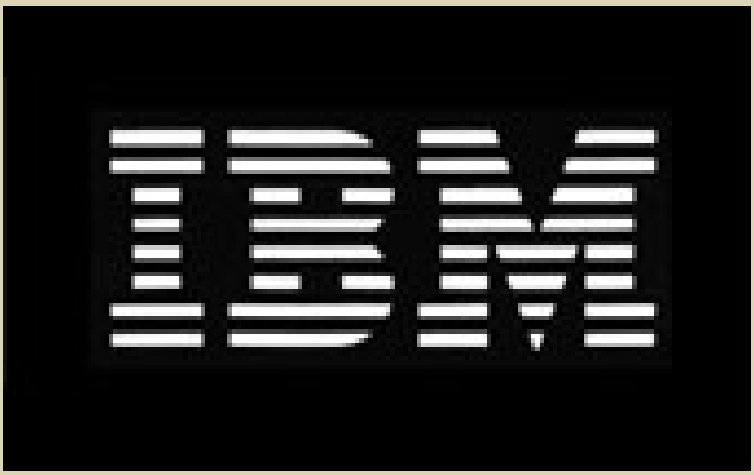
Product or Reference #	Manuf.	Short Description	Unit Price	Unit	Long Description CAT 4 (5%)	MSRP
			Software			
DW-NWHP2P250-R	Netspective	P2PFilter Appliance 1Y Subscription Renewal 250 User	$1,330.00	Each	P2PFilter Appliance 1Y Subscription Renewal 250 User	$1,400.00
DW-NWHP2P500-R	Netspective	P2PFilter Appliance 1Y Subscription Renewal 500 User	$1,615.00	Each	P2PFilter Appliance 1Y Subscription Renewal 500 User	$1,700.00
DW-NWHP2P10C-R	Netspective	P2PFilter Appliance 1Y Subscription Renewal 1000 User	$2,470.00	Each	P2PFilter Appliance 1Y Subscription Renewal 1000 User	$2,600.00
DW-NWHP2P25C-R	Netspective	P2PFilter Appliance 1Y Subscription Renewal 2500 User	$4,085.00	Each	P2PFilter Appliance 1Y Subscription Renewal 2500 User	$4,300.00
DW-NWHP2P50C-R	Netspective	P2PFilter Appliance 1Y Subscription Renewal 5000 User	$7,030.00	Each	P2PFilter Appliance 1Y Subscription Renewal 5000 User	$7,400.00
DW-NWHP2P10K-R	Netspective	P2PFilter Appliance 1Y Subscription Renewal 10000 User	$11,305.00	Each	P2PFilter Appliance 1Y Subscription Renewal 10000 User	$11,900.00
DW-NWHP2PULM-R	Netspective	P2PFilter Appliance 1Y Subscription Renewal Unlimited User	$18,145.00	Each	P2PFilter Appliance 1Y Subscription Renewal Unlimited User	$19,100.00
DW-NWH1B250-R	Netspective	WebFilter Appliance 1Y Subscription Renewal 250 User	$1,900.00	Each	WebFilter Appliance 1Y Subscription Renewal 250 User	$2,000.00
DW-NWH1B500-R	Netspective	WebFilter Appliance 1Y Subscription Renewal 500 User	$2,565.00	Each	WebFilter Appliance 1Y Subscription Renewal 500 User	$2,700.00
DW-NWH1B10C-R	Netspective	WebFilter Appliance 1Y Subscription Renewal 1000 User	$4,275.00	Each	WebFilter Appliance 1Y Subscription Renewal 1000 User	$4,500.00
DW-NWH1B25C-R	Netspective	WebFilter Appliance 1Y Subscription Renewal 2500 User	$7,600.00	Each	WebFilter Appliance 1Y Subscription Renewal 2500 User	$8,000.00
DW-NWH1B50C-R	Netspective	WebFilter Appliance 1Y Subscription Renewal 5000 User	$13,490.00	Each	WebFilter Appliance 1Y Subscription Renewal 5000 User	$14,200.00
DW-NWH1B10K-R	Netspective	WebFilter Appliance 1Y Subscription Renewal 10000 User	$22,040.00	Each	WebFilter Appliance 1Y Subscription Renewal 10000 User	$23,200.00
DW-NWH1BULM-R	Netspective	WebFilter Appliance 1Y Subscription Renewal Unlimited User	$3,572.00	Each	WebFilter Appliance 1Y Subscription Renewal Unlimited User	$3,760.00
DW-NWHWNP250-R	Netspective	Content Filter URL/P2P Appliance 1Y Subscription Renewal 250 User	$2,565.00	Each	Content Filter URL/P2P Appliance 1Y Subscription Renewal 250 User	$2,700.00
DW-NWHWNP500-R	Netspective	Content Filter URL/P2P Appliance 1Y Subscription Renewal 500 User	$3,515.00	Each	Content Filter URL/P2P Appliance 1Y Subscription Renewal 500 User	$3,700.00
DW-NWHWNP10C-R	Netspective	Content Filter URL/P2P Appliance 1Y Subscription Renewal 1000 User	$6,080.00	Each	Content Filter URL/P2P Appliance 1Y Subscription Renewal 1000 User	$6,400.00
DW-NWHWNP25C-R	Netspective	Content Filter URL/P2P Appliance 1Y Subscription Renewal 2500 User	$11,115.00	Each	Content Filter URL/P2P Appliance 1Y Subscription Renewal 2500 User	$11,700.00
DW-NWHWNP50C-R	Netspective	Content Filter URL/P2P Appliance 1Y Subscription Renewal 5000 User	$19,855.00	Each	Content Filter URL/P2P Appliance 1Y Subscription Renewal 5000 User	$20,900.00
DW-NWHWNP10K-R	Netspective	Content Filter URL/P2P Appliance 1Y Subscription Renewal 10000 User	$32,680.00	Each	Content Filter URL/P2P Appliance 1Y Subscription Renewal 10000 User	$34,400.00
DW-NWSP2PUP500-R	Netspective	P2PFilter 500-User License Increment 1Y Subscription Renewal 500 User	$593.75	Each	P2PFilter 500-User License Increment 1Y Subscription Renewal 500 User	$625.00

DW-NWS1WUP500-R	Netspective	WebFilter 500-User License Increment 1Y Subscription Renewal 500 User	$1.187.50	Each	WebFilter 500-User License Increment 1Y Subscription Renewal 500 User	$1.250.00
DW-NWSWNPUP500-R	Netspective	Content Filter 500-User License Increment 1Y Subscription Renewal 500 User	$1.781.25	Each	Content Filter 500-User License Increment 1Y Subscription Renewal 500 User	$1.875.00
DW-NWSP2PUP500	Netspective	P2PFilter 500-User License Increment 1Y Subscription 500 User	$1.187.50	Each	P2PFilter 500-User License Increment 1Y Subscription 500 User	$1.250.00
DW-NWS1WUP500	Netspective	WebFilter 500-User License Increment 1Y Subscription 500 User	$2.375.00	Each	WebFilter 500-User License Increment 1Y Subscription 500 User	$2.500.00
DW-NWSWNPUP500	Netspective	Content Filter 500-User License Increment 1Y Subscription 500 User	$3.562.50	Each	Content Filter 500-User License Increment 1Y Subscription 500 User	$3.750.00


IBM

Security Intelligence.
Think Integrated.

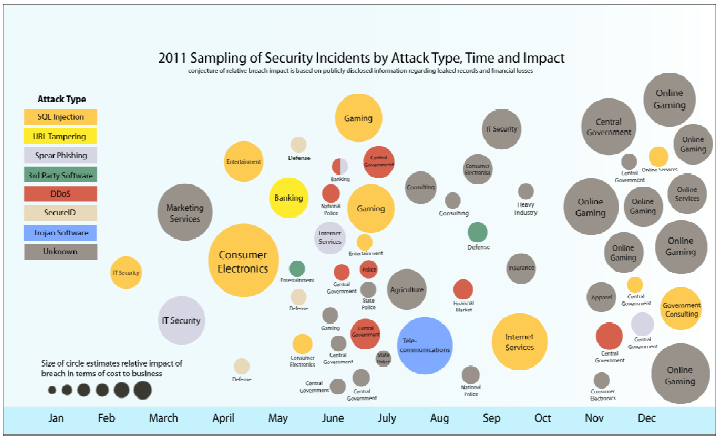
IBM Security

Intelligence, Integration, Expertise

The most advanced portfolio of enterprise security products and services.

A Hyper-connected Business World

The era of Big Data has arrived – an explosion of digital business information – accessed from, and stored on, virtualized cloud and social platforms and on mobile devices that are part consumer, part business. Everything is everywhere. The complexity is overwhelming; the possible points of attack near limitless.



2011: "The Year of the Security Breach"

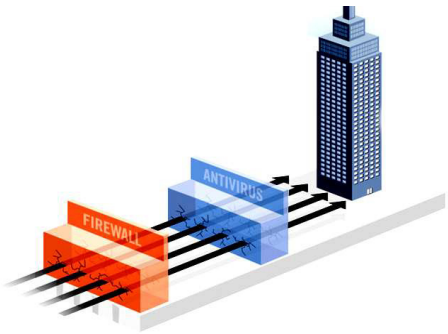
By traditional metrics, the IT security industry has recently shown a lot of improvement in the fight to secure this environment. But the attacks have recently grown in sophistication, severity and occurrence – leading to 2011 being declared "The Year of the Security Breach" by IBM's renowned X-Force® Research and Development team. From cyber crime to state sponsored to terror inspired motivations, no one is immune. And in a world where business is increasingly becoming a company's online presence, today's threats are directly aimed at the business, not the technology.

Traditional Defenses Bypassed

Designed to gain continuous access to critical business information, Advanced Persistent Threats are the new name of the game. These attacks utilize cutting-edge methodologies, can last indefinitely, and are specifically targeted. These methods have eroded the effectiveness of traditional IT defenses including firewalls and antivirus – even bypassing these controls completely in some cases. A fundamentally different security approach is needed to secure today's enterprise, not only with effective technology, but with rigorous processes, attitude and organization. Siloed point products protecting only the perimeter are no longer enough.

"Enterprise security is no longer about technology alone. It has clearly become a strategic business priority for the board of directors."

Brendan Hannigan
GM - IBM Security Systems Division



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Security Intelligence.
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Introducing IBM's new Security Systems Division

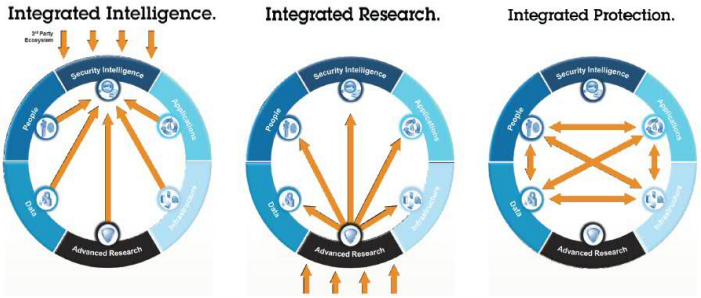
At the beginning of 2012, IBM formed the Security Systems Division to develop the integrated strategy and roadmap needed in today's world of ever-increasing security complexity. Addressing the overwhelming need for true enterprise protection in today's hyper-connected, Big Data, everything-is-everywhere business world, IBM based this division on three main tenets – Intelligence, Integration, and Expertise. IBM's solution "plugs the holes" of competitive approaches:

Intelligence – Leveraging IBM's deep expertise in analytics, the first tenet is Security Intelligence: millions of events are processed and analyzed in real-time to ***detect, predict, and remediate breaches that no other system can***.

Integration – The second tenet is the integration of IBM's comprehensive portfolio of Security Intelligence, X-Force® Research, and core protection assets. This collapses data silos for easier compliance reporting and improved Security Intelligence, reduces complexity, and lowers the cost of maintaining a strong security posture.

More detailed benefits:

- Provides full external and internal contextual information for breach detection, prediction, and remediation.
- Automates updates for devices and software for researched vulnerabilities.
- Links authentication and authorization with suspicious database activity.
- Automates compliance and risk assessment activities.
- And much more.



Expertise – With more than 15,000 researchers, developers and subject matter experts engaged in security initiatives, IBM operates the world's broadest enterprise security research and development and delivery organization. This is comprised of the award winning X-Force® Research and Development team with the largest vulnerability database in the industry, nine security operations centers, nine IBM Research centers, eleven software security development labs, and an

IBM's World Wide Security Presence

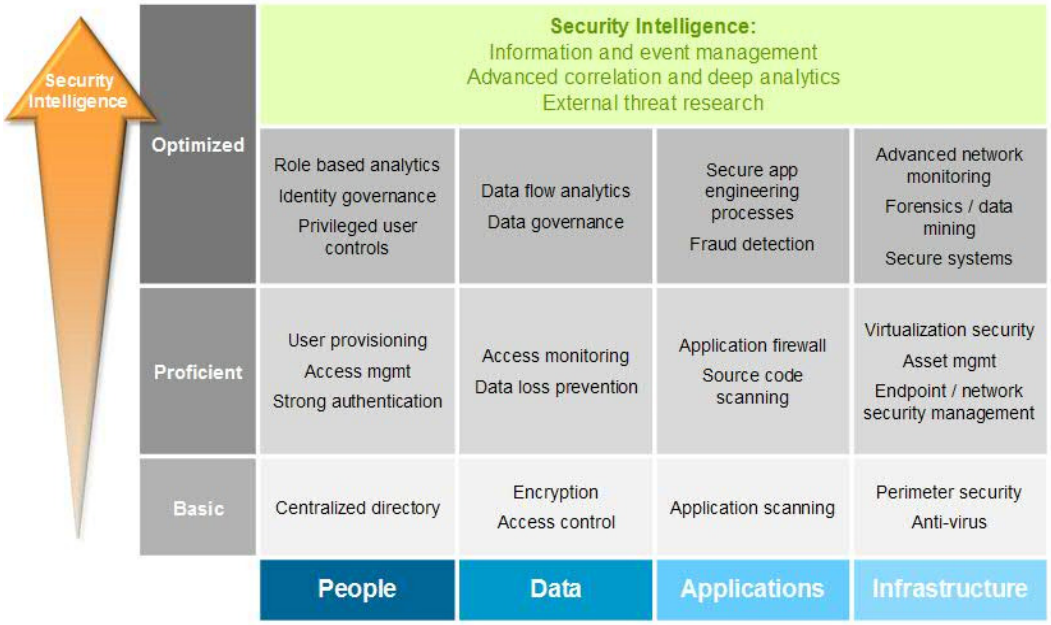
www.ibm.com/security

Security Intelligence.
Think Integrated.

Institute for Advanced Security with chapters in the United States, Europe and Asia Pacific. IBM currently monitors over 13 billion security events per day for its clients in more than 130 countries. Only IBM has the consultants and expertise to help any company move toward optimized, integrated security controls with Security Intelligence.

Cloud to Mobile to Big Data to Social: A Security Framework for Any Environment

Today's cutting edge environments bring tremendous opportunity as well as risk. IBM's integrated, comprehensive approach to security, across all aspects of People, Data, Applications and Infrastructure, provides the core structure for an adaptive approach when implementing new technologies, now or with unknown futures. IBM is the only company in the world today that offers such a broad portfolio of leading enterprise security products and services.



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IBM Security Network Intrusion Prevention System

Comprehensive protection from today's evolving threats

Highlights

- Unmatched levels of performance without compromising breadth and depth of security
- Protection for business-critical assets such as networks, servers, endpoints and applications from malicious threats
- Reduced cost and complexity by consolidating point solutions and integrating with other security tools
- Evolving protection powered by IBM X-FORCE® research to stay ahead of the threat

IBM Security Network Intrusion Prevention System solutions are designed to stop Internet threats before they impact your business. Preemptive protection—protection that works ahead of the threat—is available from IBM through its proprietary combination of line-speed performance, security intelligence and a modular protection engine that enables security convergence. By consolidating network demands for data security and protection for web applications, IBM Security Network Intrusion Prevention System solutions serve as security platforms that can reduce the cost and complexity of deploying and managing point solutions.

When evaluating intrusion prevention technology, organizations often struggle to balance and optimize the following six key areas: performance, security, reliability, deployment, management and confidence.

IBM Security Network Intrusion Prevention System solutions deliver on all six counts, with industry-leading performance, preemptive threat protection powered by X-FORCE research, high levels of availability, simplified deployment and management, and the confidence that comes with world-class IBM customer support. Organizations that want to transfer the burden of protecting their network to a trusted security partner can rely on IBM to manage their security infrastructure for them. IBM clients also benefit from a wide range of complementary consulting services for assessment, design, deployment, management and education.

Delivering superior performance without compromise

Security should enhance network performance, not detract from it. Purpose-built IBM Security Network Intrusion Prevention System solutions offer high throughput, low latency and maximum availability to maintain efficient network operations. This includes the ability to utilize the full spectrum of security protection and eliminates the need to choose between the highest levels of security and the performance required to maintain service levels for business-critical applications. By offering industry-leading performance beyond 20 Gbps of inspected throughput, IBM Security Network Intrusion Prevention System solutions provide the performance you need, while delivering high levels of security.

Consolidating network security with preemptive protection

Designed with a modular product architecture, IBM Security Network Intrusion Prevention System solutions drive security convergence by adding entirely new modules of protection as threats evolve. This addresses a wide spectrum of security risks, from worms and botnets to web application and data security issues. It also enables IBM Security Network Intrusion Prevention System solutions to deliver the protection demanded for business continuity, data security and compliance.

The X-FORCE research and development team designed the IBM Protocol Analysis Module and provides the content updates that maintain ahead-of-the-threat protection. Specific protection modules include:

- **IBM Virtual Patch® technology**—Shields vulnerabilities from exploitation, independent of a software patch
- **Client-side application protection**—Protects end users against attacks targeting applications used every day, such as Microsoft Office files, Adobe PDF files, multimedia files and web browsers

Protocol Analysis Module (PAM) technology

The IBM Protocol Analysis Module drives security convergence to deliver network protection that goes beyond traditional intrusion prevention systems, including client-side application protection, data security, web application protection and application control.

- **Advanced network protection**—Provides advanced intrusion prevention, including Domain Name System (DNS) protection
- **Data security**—Monitors and identifies unencrypted personally identifiable information and other confidential data
- **Web application security**—Protects web applications, Web 2.0 and databases with the same level of protection as web application firewalls
- **Application control**—Reclaims bandwidth and blocks Skype, peer-to-peer networks and tunneling

These modules enable IBM Security Network Intrusion Prevention System solutions to protect organizations from a wide range of threats, including:

- Malware, including worms and spyware
- Attacks launched by botnets
- Instant messaging and peer-to-peer related risks, such as network abuse and data loss
- Denial of service (DoS) and distributed denial of service (DDoS) attacks

- Targeted attacks against web applications, such as cross-site scripting and SQL injection
- Data loss related to proprietary or sensitive data
- Buffer overflow attacks
- Client-side attacks, such as those targeting web browsers

The X-FORCE research and development team tracks Internet threat levels around the world from its Global Threat Operations Center to enhance and update the protection in IBM Security Network Intrusion Prevention System solutions. In addition, IBM Security Network Intrusion Prevention System appliances include hybrid protection capabilities by combining the preemptive, zero-day protection of the Protocol Analysis Module with the ability to create, share and deploy signatures in the open standards SNORT format, in parallel.

Delivering high levels of availability

Devices placed in the flow of network traffic must be extremely reliable. IBM Security Network Intrusion Prevention System solutions offer the highest levels of reliability and availability through high-availability configurations (active/active or active/passive), hot-swappable redundant power supplies and hot-swappable redundant hard drives. In addition, the geographic high-availability option can use the management port to share quarantine-blocking decisions to ensure secure failover to a geographically remote standby device, if needed.

Providing ease of deployment

Each IBM Security Network Intrusion Prevention System comes preconfigured with the proven X-FORCE default security policy, which provides immediate security protection out of the box and is closely verified by X-FORCE researchers to ensure the highest levels of accuracy. It also features a Layer-2 architecture that does not require network reconfiguration. Network and security administrators can easily choose one of three operating modes: active protection (intrusion prevention mode), passive detection (intrusion detection mode) and inline simulation (simulates inline prevention).

Centralizing security management

IBM Security Network Intrusion Prevention System appliances are centrally managed by the IBM Security SiteProtector™ system. The IBM Security SiteProtector System provides simple, powerful configuration and control of IBM agents, along with robust reporting, event correlation and comprehensive alerting. Also included is IPv6 management support of IBM Security Network Intrusion Prevention System appliances, including the ability to display IPv6 events and IPv6 source/destination IP addresses.

Why IBM?

IBM understands the threats to your network and the critical balance between performance and protection. As a result, IBM has enabled its world-class, vulnerability-based security technology to stop Internet threats before they impact your business. With a comprehensive line of high-performance models, the IBM Security Network Intrusion Prevention System is designed to deliver uncompromising protection for every layer of the network, protecting your organization from both internal and external threats.

IBM Network Intrusion Prevention System at a glance

Model	GX4004-200	GX4004	GX5008	GX5108	GX5208	GX7412-5	GX7412-10	GX7412	GX7800
Performance characteristics*									
Inspected throughput	Up to 200 Mbps	Up to 800 Mbps	Up to 1.5 Gbps	Up to 2.5 Gbps	Up to 4 Gbps	Up to 5 Gbps	Up to 10 Gbps	Up to 15 Gbps	Up to 20 Gbps+
Average latency	<150 µs	<150 µs	<150 µs	<150 µs	<150 µs	<75 µs	<75 µs	<75 µs	<50 µs
Connections per second	35,000	35,000	37,000	42,500	50,000	525,000	525,000	525,000	650,000
Concurrent sessions (max rated)	1,300,000	1,300,000	1,500,000	1,800,000	2,200,000	12,500,000	12,500,000	12,500,000	21,000,000
Performance characteristics* (with hybrid protection)									
Inspected throughput	Up to 200 Mbps	Up to 800 Mbps	Up to 1.5 Gbps	Up to 2.5 Gbps	Up to 3.2 Gbps	Up to 5 Gbps	Up to 10 Gbps	Up to 12.5 Gbps	Up to 18 Gbps+
Average latency	<150 µs	<150 µs	<150 µs	<150 µs	<150 µs	<75 µs	<75 µs	<75 µs	<50 µs
Connections per second	35,000	35,000	32,000	37,500	40,000	500,000	500,000	500,000	600,000
Concurrent sessions (max rated)	1,300,000	1,300,000	1,500,000	1,600,000	1,900,000	12,500,000	12,500,000	12,500,000	18,000,000
Physical characteristics									
Form factor	1U	1U	2U	2U	2U	3U	3U	3U	3U
Height (in./mm)	1.75/44	1.75/44	3.5/88	3.5/88	3.5/88	5.25/133	5.25/133	5.25/133	5.25/133
Width (in./mm)	16.9/429	16.9/429	16.9/429	16.9/429	16.9/429	Front: 18.85/479 Rear: 17.28/439	Front: 18.85/479 Rear: 17.28/439	Front: 18.85/479 Rear: 17.28/439	Front: 18.85/479 Rear: 17.28/439
Depth (in./mm)	15.5/394	15.5/394	21.5/546	21.5/546	21.5/546	26/662	26/662	26/662	26/662
Weight (lb/kg)	24.5/11.1	24.5/11.1	40.0/18	40.0/18	40.0/18	55/25	55/25	55/25	55/25
Management interface	10/100/1000 (IPv6 supported)	10/100/1000 (IPv6 supported)	10/100/1000 (IPv6 supported)	10/100/1000 (IPv6 supported)	10/100/1000 (IPv6 supported)	10/100/1000 (IPv6 supported)	10/100/1000 (IPv6 supported)	10/100/1000 (IPv6 supported)	10/100/1000 (IPv6 supported)
Inline protected network segments	(2) 1 GbE	(2) 1 GbE	(4) 1 GbE	(4) 1 GbE	(4) 1 GbE	(2) 10/1 GbE + (6) 1 GbE	(2) 10/1 GbE + (6) 1 GbE	(2) 10/1 GbE + (6) 1 GbE	(4) 10/1 GbE

IBM Network Intrusion Prevention System at a glance									
Monitoring interfaces	4×1GbE	4×1GbE	8×1GbE	8×1GbE	8×1GbE	4×10GbE (SFP+) + 12×1GbE (SFP)	4×10GbE (SFP+) + 12×1GbE (SFP)	4×10GbE (SFP+) + 12×1GbE (SFP)	8×10GbE (SFP+)
Supported physical media types	RJ-45	RJ-45	RJ-45 or SFP/ mini-GBIC (1000 TX/ SX/LX)	RJ-45 or SFP/ mini-GBIC (1000 TX/ SX/LX)	RJ-45 or SFP/ mini-GBIC (1000 TX/ SX/LX)	Direct-attach Copper, RJ-45, fiber (SX/LX), 10G fiber (SR/LR)	Direct-attach Copper, RJ-45, fiber (SX/LX), 10G fiber (SR/LR)	Direct-attach Copper, RJ-45, fiber (SX/LX), 10G fiber (SR/LR)	Direct-attach Copper, RJ-45, fiber (SX/LX), 10G fiber (SR/LR)
Redundant power supplies	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Redundant storage	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
High availability	Integrated hardware-level bypass	Integrated hardware-level bypass	Active/ active; active/ passive;geo-dispersed HA; external hardware-level bypass (optional)	Active/ active; active/ passive;geo-dispersed HA; external hardware-level bypass (optional)	Active/ active; active/ passive;geo-dispersed HA; external hardware-level bypass (optional)	Active/ active; active/ passive;geo-dispersed HA; external hardware-level bypass (optional)	Active/ active; active/ passive;geo-dispersed HA; external hardware-level bypass (optional)	Active/ active; active/ passive;geo-dispersed HA; external hardware-level bypass (optional)	Active/ active; active/ passive;geo-dispersed HA; external hardware-level bypass (optional)

Electrical and environment parameters			
Voltage and input range	100 – 240 V, full range; 50/60 Hz		
Input current rating	5-3 A	8-4 A	10-5 A
Operating temperature:	0°C - 40°C (32°F - 104°F)		5°C - 35°C (41°F - 95°F)
Relative humidity:	5% - 85% at 40°C (104°F)		8% - 80% at 28°C (82°F)
Safety certification/ declaration	UL 60950-1, CAN/CSA C22.2 No. 60950-1, EN 60950-1 (CE Mark), IEC 60950-1, GB4943, GOST, UL-AR		
Electromagnetic compatibility (EMC) certification/ declaration	FCC Class A, Industry Canada Class A, AS/NZS CISPR 22 Class A, EN 55022 Class A (CE Mark), EN 61000-3-2 (CE Mark), EN 61000-3-3 (CE Mark), EN 55024 (CE Mark), VCCI Class A, KCC Class A, GOST Class A, GB9254 Class A, GB17625.1		
Environmental declaration	Reduction of Hazardous Substances (RoHS), Waste Electric and Electronic Equipment (WEEE) and Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)		

For more information

To learn more about IBM Security Network Intrusion Prevention System solutions, please contact your IBM representative or IBM Business Partner, or visit: **ibm.com**/software/tivoli/products/security-network-intrusion-prevention/

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* Performance data quoted for the IBM Security Network Intrusion Protection System is based on testing with mixed TCP/UDP traffic that is intended to be reflective of typical live traffic. Environmental factors such as protocol mix and average packet size will vary in each network, and measured performance results will vary accordingly. IBM Security Network Intrusion Prevention System throughput was determined by pushing mixed-protocol traffic through the appliance and measuring how much throughput was achieved with zero packet loss. For the benchmark testing, GX7 series appliances were deployed in default inline protection mode with "Trust X-FORCE" policy; Spirent Avalanche 3100 test gear, firmware 3.50 (or later); traffic mix: HTTP=41%, HTTPS=17%, SMTP=10%, POP3=5%, FTP=9%, DNS=15%, SNMP=3%; HTTP/HTTPS traffic with 44Kb object size with standard HTTP/S 1.1 GET requests; DNS standard A record lookup; FTP GET requests of 15,000 bytes in 2 ms bursts, POP3 traffic with 100 KB objects between two "user" mailboxes, SMTP simple connections with no object transfer, SNMP status query and response. Testing for "Hybrid Protection" was based on SNORT version 2.9.2 and the "emerging threats" rule set.

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Produced in the United States of America
July 2012

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IBM Security Network Protection

Integrated security, visibility and control for next-generation network protection

Highlights

- Deliver superior zero-day threat protection and security intelligence powered by IBM® X-Force®
- Provide critical insight and visibility into network activity, including encrypted traffic
- Integrate with IBM QRadar® Security Intelligence Platform
- Enable granular control of both web and non-web applications by users and groups
- Reduce cost and complexity through consolidation; reduce bandwidth consumption

IBM Security Network Protection is designed to protect your business-critical network infrastructure through a unique combination of threat protection, visibility and control. IBM extends the abilities of traditional intrusion prevention systems by offering a next-generation solution that provides network security professionals with complete security, visibility and control over their network. IBM Security Network Protection helps reduce cost and complexity by consolidating point solutions into a single, extensible network security platform. And by controlling and eliminating non-critical, high-bandwidth activity, organizations can achieve additional cost savings within the infrastructure.

While organizations do require increasingly sophisticated security measures to address today's security threats, reducing management complexity and containing administration costs are also top priorities. IBM Security Network Protection is an integrated solution that can help you accomplish all of these tasks. By combining several advanced capabilities, this solution can help prevent threats, provide critical insight into network activities and enable granular application control, helping to establish a new level of integrated, simplified security.

Protection against evolving threats

Security threats today are continually evolving. With the rapid growth of cutting-edge web applications and increased file-sharing, activities that may have been considered harmless in the past could become potential

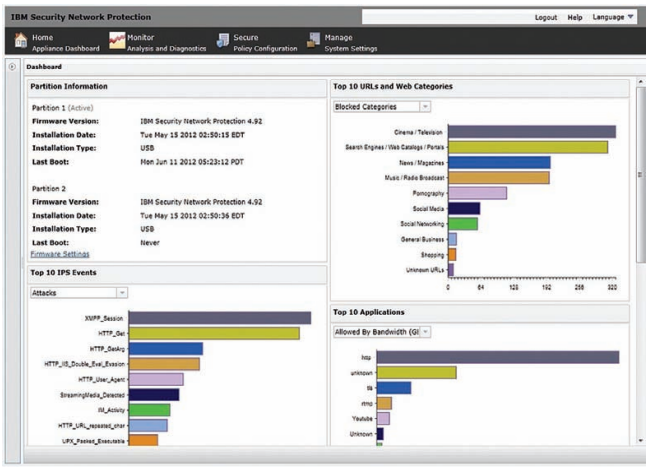
openings for attackers. Traditional security means, such as anti-malware software and firewalls, have become easier to bypass. The need for more advanced, proactive threat protection is critical—protection that can help to ensure productivity, data security and compliance. IBM Security Network Protection provides comprehensive security against new and emerging threats through web application protection, the ability to detect embedded shell-code threats and many other advanced features.

Organizations can rely on IBM Security Network Protection for preemptive threat protection. The IBM Protocol Analysis Module—designed by the IBM X-Force research and development team—is a key element that provides continual content updates to help security professionals stay ahead of emerging threats. The Protocol Analysis Module includes protection for several key areas including client-side and web application protection, advanced network protection and data security.

Content for these security updates is provided by the X-Force research and development team, which maintains one of the world's most comprehensive threat databases. The X-Force team tracks Internet threat levels around the world from its Global Threat Operations Center to compile this database, which is used to update IBM Security solutions with the latest threat protection. The combination of the Protocol Analysis Module and the X-Force database helps to drive higher protection against zero-day exploits and has the ability to accurately identify a wide range of security risks such as malware, botnets, peer-to-peer activity and many others.

Critical insight and visibility

By combining several key security capabilities, IBM Security Network Protection is able to go beyond basic threat protection and provide critical insight and visibility into network activity,



The IBM Security Network Protection dashboard provides critical insight and visibility into network activity for higher levels of security.

such as which applications are being used, which websites are being visited and who is visiting them. To maintain security, organizations need to know exactly what is going on within their networks—applications, instant messaging, video and audio streams, and file sharing all need to be identified and monitored. These activities can create opportunities for attacks, which can cause data loss, violate corporate policies or introduce compliance issues. IBM Security Network Protection can provide insight into these types of activities—providing visibility into bandwidth usage to help identify non-business-critical activities that could be putting the organization at risk and consuming high amounts of bandwidth and resources.

Granular control over network activity

Building upon high levels of threat-protection and network visibility, IBM Security Network Protection includes granular control functionality, which enables users to act on newly acquired insight into the network. Designed to reduce potential attack vectors and exposure to threats, these capabilities provide granular control over common attack delivery methods such as social media sites to prevent emerging attacks such as spear phishing and other advanced threats targeting users. Having the ability to create granular control policies allows organizations to reduce overall risk, as well as the bandwidth costs related to non-business use of the network.

To provide maximum application coverage, IBM Security Network Protection includes support for more than 2,000 applications and individual actions, and leverages a database of more than 20 billion URLs. To ensure the highest levels of accuracy, IBM web-crawling technology continually categorizes and re-categorizes URLs as they change. This ensures IBM Security Network Protection appliances are constantly updated in order to maximize the effectiveness of use policies and protect against the latest Internet threats.

Seamless deployment and integration

IBM Security Network Protection can be seamlessly deployed into a wide variety of environments, integrating with other security technologies such as QRadar Security Intelligence Platform. This family of products includes flexible features such as interchangeable network interface modules (NIMs) to support a wide variety of networking standards and configurations as they change over time. It also provides flexible performance licensing to allow performance upgrades without hardware changes. Immediate security protection is available out-of-the-box through a preconfigured X-Force default policy and ongoing security updates. IBM Security Network Protection appliances can be quickly deployed and centrally managed across a large number of sites using IBM Security SiteProtector™ System.

The IBM Security Network Protection XGS 5100 appliance can be configured with two network interface modules.

Through a unique integration with QRadar Security Intelligence Platform, IBM Security Network Protection appliances can send Internet Protocol Flow Information Export (IPFIX) data to provide a constant data feed for more sophisticated analysis and correlation.

Why IBM?

Taking a smarter approach to network security, IBM offers a comprehensive solution for threat protection, visibility and control. IBM Security Network Protection provides next-generation intrusion prevention system capabilities for advanced protection against evolving security threats. It enables administrators to have more control over their networks, resulting in optimal security, improved bandwidth efficiency and reduced costs. Leveraging the IBM X-Force threat database and a vast URL database, the solution ensures up-to-date, preemptive protection against emerging threats. By integrating several key security features into a single offering, IBM Security Network Protection provides a comprehensive, cost-efficient answer to the challenges faced by organizations today.

IBM Security Network Protection XGS 5100 at a glance	
Performance characteristics*	
Inspected throughput	Up to 5 Gbps
Inspected throughput (with SSL)	Up to 2.5 Gbps
Average latency	<150 µs
Connections per second	50,000
Concurrent sessions (max rated)	2,000,000
Physical characteristics	
Form factor	1U
Height	44.2 mm/1.75 in.
Width	430 mm/16.9 in.
Depth	500 mm/19.7 in.
Weight	10 kg/22 lb
Management interfaces	2 x 1GbE, RJ-45 (IPv6 supported)
Fixed monitoring interfaces	4 x 1GbE, RJ-45 (integrated bypass)
Inline protected segments	Up to 10
Maximum monitoring interfaces (10GbE)	Up to 4
Maximum monitoring interfaces (1GbE)	Up to 20
Supported physical media types	Direct-attach copper, RJ-45, Fibre (SX/LX), 10G Fibre (SR/LR), SFP, SFP+
Number of network interface modules (NIMs)	Up to 2

IBM Security Network Protection XGS 5100 at a glance	
Network interface modules (NIMs)	8 x 1GbE fixed TX (integrated bypass) 4 x 1GbE fixed SX (integrated bypass) 4 x 1GbE fixed LX (integrated bypass) 2 x 10GbE fixed SR (integrated bypass) 2 x 10GbE fixed LR (integrated bypass) 4 x 1GbE SFP 2 x 10GbE SFP+
High-availability support	Support for active/active and active/passive environments
Redundant power supplies	Yes
Storage type/MTBF rating	Solid-state drive/2.5 million hours
Electrical and environmental parameters	
AC input rating	100 V – 127 V @ 5.6A/200 V – 240 V @ 2.8A
Power supply rating/ average power consumption	460 W/194 W
Operating temperature/ relative humidity	0°C – 40°C (32°F – 104°F)/5% – 85% @ 40°C (104°F)
Safety certification/declaration	UL 60950-1, CAN/CSA C22.2 no. 60950-1, EN 60950-1 (CE Mark), IEC 60950-1, GB4943, GOST, UL-AR
Electromagnetic compatibility certification/declaration	FCC Class A, Industry Canada Class A, AS/NZS CISPR 22 Class A, EN 55022 Class A (CE Mark), EN 61000-3-2 (CE Mark), EN 61000-3-3 (CE Mark), EN 55024 (CE Mark), VCCI Class A, KCC Class A, GOST Class A, GB9254 Class A, GB17625.1
Environmental declaration	Restriction of Hazardous Substances (RoHS)

* Performance data quoted for IBM Security Network Protection is based on testing with mixed TCP/UDP traffic that is intended to be reflective of typical live traffic. Environmental factors such as protocol mix and average packet size will vary in each network, and measured performance results will vary accordingly. IBM Security Network Protection throughput was determined by sending uncompressed mixed-protocol traffic through the appliance and measuring how much throughput was achieved with zero packet loss. For the benchmark testing, XGS series appliances were deployed using two populated 10G Network Interface Modules in default inline protection mode with "Trust X-Force" policy, in drop unanalyzed mode; Spirent Avalanche and Spirent TestCenter testing equipment running firmware v4.03 (or later); traffic mix: HTTP=69%, HTTPS=20%, SMTP=5%, FTP=5%, DNS=1%; where HTTP/HTTPS traffic is uncompressed using a 44 Kb object size with standard HTTP/S 1.1 GET requests; SMTP simple connections with no object transfer, FTP GET requests of 15,000 bytes in 2 ms bursts, and DNS standard A record lookup. SSL Inspection rates were measured by enabling SSL Decryption Policy.

For more information

To learn more about IBM Security Network Protection, contact your IBM representative or IBM Business Partner, or visit: **ibm.com**/security

Statement of Good Security Practices: IT system security involves protecting systems and information through prevention, detection and response to improper access from within and outside your enterprise. Improper access can result in information being altered, destroyed or misappropriated or can result in damage to or misuse of your systems, including to attack others. No IT system or product should be considered completely secure and no single product or security measure can be completely effective in preventing improper access. IBM systems and products are designed to be part of a comprehensive security approach, which will necessarily involve additional operational procedures, and may require other systems, products or services to be most effective. IBM does not warrant that systems and products are immune from the malicious or illegal conduct of any party.

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Produced in the United States of America
September 2013

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WGD03017-USEN-01

Product Type	Product Description	Long Description	List Price	State Contract Price
GX4004C-V2	(ROHS) Proventia GX4004C-V2 Intrusion Prevention Appliance	Proventia Network IPS GX4004C-V2 (Fail Open, 4 TX-Copper Protected Interfaces)	$15,995.00	$11,996.25
GX4004C-V2	Proventia G Maintenance	IBM ISS 1st Year Maintenance & Maintenance Renewal	$3,518.90	$2,639.18
GX5008C-V2	(ROHS) Proventia GX5008C-V2 Intrusion Prevention Appliance	Proventia Network IPS GX5008C-V2 (Fail Closed, 8 Copper Interfaces)	$39,995.00	$29,996.25
GX5008C-V2	Proventia G Maintenance	IBM ISS 1st Year Maintenance & Maintenance Renewal	$8,798.90	$6,599.18
GX5008SFP-V2	(ROHS) Proventia GX5008SFP-V2 Intrusion Prevention Appliance	Proventia Network IPS GX5008SFP-V2 (Fail Closed, 8 SFP Interfaces)	$39,995.00	$29,996.25
GX5008SFP-V2	Proventia G Maintenance	IBM ISS 1st Year Maintenance & Maintenance Renewal	$8,798.90	$6,599.18
GX5108C-V2	(ROHS) Proventia GX5108C-V2 Intrusion Prevention Appliance	Proventia Network IPS GX5108C-V2 (Fail Closed, 8 Copper Interfaces)	$58,995.00	$44,246.25
GX5108C-V2	Proventia G Maintenance	IBM ISS 1st Year Maintenance & Maintenance Renewal	$12,978.90	$9,734.18
GX5108SFP-V2	(ROHS) Proventia GX5108SFP-V2 Intrusion Prevention Appliance	Proventia Network IPS GX5108SFP-V2 (Fail Closed, 8 SFP Interfaces)	$58,995.00	$44,246.25
GX5108SFP-V2	Proventia G Maintenance	IBM ISS 1st Year Maintenance & Maintenance Renewal	$12,978.90	$9,734.18
GX4004C-V2-200	(ROHS) Proventia GX4004C-V2-200 4 port IPS for 200Mb of protection	This is a 200Mb version of the GX 4004C-V2 (Fail Open, 4 TX-Copper Protected Interfaces)	$10,995.00	$8,246.25
GX4004C-V2-200	Proventia G Maintenance	IBM ISS 1st Year Maintenance & Maintenance Renewal	$2,418.90	$1,814.18
XGS 5100	IBM Security Network Protection XGS5100 - Primary Appliance Install Appliance + Subscription and Support 12 Months		$43,000.00	$32,250.00

SOFTWARE LICENSING INFORMATION

Due to the requirements of PARCC and the need to upgrade to at least Windows 7 on all Windows-based PCs, districts are being challenged with how to get the most out of their existing machines in the most cost effective manner. One way is by upgrading current machines that are capable of running Windows 7 to this operating system, but even doing this, without the need for hardware purchases can be an expensive proposition.

To assist with this, the Louisiana Deprtment of Education has a Microsoft Enrolement for Educational Sevices (EES) agreement in place, allowing districts and schools to purchase Microsoft products and licenses at a discounted rate based not on student count but on Full-Time Emploee (FTE) counts. This program is easilly accesible and a cost effective way for districts to upgrade desktops and laptops.

FOR MORE INFORMATION

LOUISIANA DEPARTMENT OF EDUCATION
Information Technology
www.louisianaschools.net

Contact: EdTech@la.gov for more information

Microsoft®

Microsoft Volume Licensing Enrollment for Education Solutions

The Enrollment for Education Solutions (EES) is an easy, cost-effective licensing offer that provides academic institutions with assured coverage for desktop platform products with one annual employee count, the flexibility to add products in any quantity and simplified asset management—all under a single, subscription agreement.

EES provides participating institutions the benefits of:

- **Easy Compliance:** Through the simplicity and predictability of counting FTE employees just once per year you can be confident you are fully covered for the desktop platform products you've selected regardless of yearly fluctuations in employees or devices.
- **Customized Solutions:** Easily add additional products organization-wide, department-wide, or for individual licenses at any time during your subscription term so you can deliver the right mix of technology and services to your faculty, staff, and students.
- **Simplified Asset Management:** Self-service tools such as the Volume Licensing Service Center enable you to easily track and manage your software assets and Software Assurance benefits from one convenient, online location.
- **Cloud on Your Terms:** Free* access to Office 365 Plan 2, plus the ability to subscribe to additional Microsoft Online Services through your EES (for large customers purchasing through a LAR) means you have the flexibility to move users back and forth between on-premises software and cloud services, match and adjust online service plans to meet your users' needs, and add and adjust Online Services as needed so you can transition to the cloud on at your pace.
- **Low Administration:** Subscription licensing eliminates the need to track licenses for the selected desktop platform products on every PC which enables your IT staff to be more productive as they no longer have to track multiple licenses across the institution.
- **Lower Total Cost of Ownership:** Realize the maximum value from your licensing investment with included benefits such as access to current technology, Work at Home Rights for faculty and staff, product evaluation rights, Software Assurance for Microsoft Volume Licensing and Microsoft Office 365 Plan A2.

Acquiring EES Coverage

Depending upon the size of your organization, you may acquire EES subscription licenses one of two ways:

- **Customers with as few as five (5) Full-time Equivalent (FTE) employees can license through an Authorized Education Reseller (AER) by signing the simplified Open Value Subscription Agreement for Education Solutions, online e-agreement.**
- **Larger customers with a minimum of 1,000 FTE employees may also license through a Large Account Reseller (LAR) by signing the Campus and School Agreement and the Enrollment for Education Solutions.**

For large customers purchasing through a LAR, EES offers the ability to subscribe to Microsoft Online Services—such as Microsoft Office 365, Microsoft Dynamics CRM Online, and Windows Intune—directly through your EES, so you have the flexibility to move to the cloud on your terms.

These resellers are authorized to sell Microsoft academic edition products and volume licenses to qualified education users. To participate in EES or any of our other academic Volume Licensing programs, or to obtain current pricing, please contact an AER or LAR.

To find an AER or LAR in the United States or Canada, visit **http://www.microsoft.com/education/en-us/buy/licensing/Pages/resellers.aspx**.

For other regions, visit your regional Microsoft Volume Licensing Web site. To locate your regional Microsoft Volume Licensing Web site, go to **http://www.microsoft.com/licensing/worldwide.aspx**.

Learn More

Find details and the latest updates about EES and other Academic Volume Licensing programs at www.microsoft.com/licensing/licensing-options/for-industries.aspx.

Microsoft Statewide EES Agreement for Louisiana Academic Organizations special promotion:

1. Minimum requirement lowerd to 5 FTE.
2. Receive level B pricing on Microsoft platform products.
3. Must license the full FTE count for the district.

If you have questions contact

Patrick Jones
Microsoft Education Territory Manager
pajones@microsoft.com
469-775-2097

Or for a quote contact Dell

Jerell Clark
Dell Microsoft Software Solutions Specialist, Public EDU
Jerell_Clark@Dell.com
224-543-5349
Toll Free: 1-888-239-0292

* No license fee; doesn't include deployment or support costs associated with the service.

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Microsoft Enrollment for Education Solutions Agreement (EES) Products Parts List
Not all Microsoft licensing is represented here, please contact your Microsoft Account Manager or Reseller for more information
Licensing based on FTE count covers all district owned/leased devices (classrooms, labs, adminstration devices etc..). Does not cover Student 1:1 devices or Student BYOD devices (see student option)

Platform Products

EES requires an organization to license at least one Platform product based on the organizations full Faculty/Staff count (FTE Count) FTE Count= Full Time Faculty + Full Time Staff + Part Time Faculty/3 + Part Time Staff/2

Part Number	Product Description	Agreement Type	Offering	Level	Term	Academic	Estimated Price	Notes
2FJ-00001	**Office Professional Plus**	EES	Faculty	B	1 Year	Academic	$ 25.00	Platform Product
FQC-02425	**Windows OS Upgrade 7/8 Professional/Enterprise**	EES	Faculty	B	1 Year	Academic	$ 19.00	Platform Product
2UJ-00001	**Desktop Core**	EES	Faculty	B	1 Year	Academic	$ 53.00	Platform Product
Includes	Windows OS Upgrade 7/8 Professional/Enterprise Office Professional Plus Windows Server Client Access License Exchange Server Client Access License Standard SharePoint Server Client Access License Standard Lync Server Client Access License Standard System Center Configuration Manager Client Management License System Center Endpoint Protection (Antivirus Software) System Center Virtual Machine Manager Client							
2UJ-00055	**Desktop Core with Microsoft Desktop Optimization Pack**	EES	Faculty	B	1 Year	Academic	$ 57.00	Platform Product
Includes	Windows OS Upgrade 7/8 Professional/Enterprise Office Professional Plus Windows Server Client Access License Exchange Server Client Access License Standard SharePoint Server Client Access License Standard Lync Server Client Access License Standard System Center Configuration Manager Client Management License Orchestrator Sysem Center Virtual Machine Manager Client System Center Endpoint Protection (Antivirus Software) Microsoft Application Virtualization (App-V) Microsoft User Experience Virtualization (UE-V) Microsoft Enterprise Desktop Virtualization (MED-V) Microsoft Advanced Group Policy Management (AGPM) Microsoft BitLocker Adminstration and Monitoring (MBAM) Microsoft Diagnostics and Recovery Tookkit (DaRT)							
2UJ-00003	**Desktop Enterprise**	EES	Faculty	B	1 Year	Academic	$ 63.00	Platform Product
Includes	Windows OS Upgrade 7/8 Professional/Enterprise Office Professional Plus Windows Server Client Access License Windows Rights Management Services Client Access Licenses Exchange Server Client Access License Standard Exchange Server Client Access License Enterprise Exchange Online Archiving Exchange Online Protection SharePoint Server Client Access License Standard SharePoint Server Client Access License Enterprise Lync Server Client Access License Standard Lync Server Client Access License Enterprise System Center Configuration Manager Client Management License System Center Virtual Machine Manager Client System Center Operations Manager Client Management License System Center Service Manager Client Management License System Center Data Protection Manager Client Management License Orchestrator System Center Endpoint Protection (Antivirus Software)							
2UJ-00081	**Desktop Enterprise with Microsoft Desktop Optimization Pack**	EES	Faculty	B	1 Year	Academic	$ 67.00	Platform Product
Includes	Windows OS Upgrade 7/8 Professional/Enterprise Office Professional Plus Windows Server Client Access License Windows Rights Management Services Client Access Licenses Exchange Server Client Access License Standard Exchange Server Client Access License Enterprise Exchange Online Archiving Exchange Online Protection SharePoint Server Client Access License Standard SharePoint Server Client Access License Enterprise Lync Server Client Access License Standard Lync Server Client Access License Enterprise System Center Configuration Manager Client Management License System Center Virtual Machine Manager Client System Center Operations Manager Client Management License System Center Service Manager Client Management License System Center Data Protection Manager Client Management License Orchestrator System Center Endpoint Protection (Antivirus Software) Microsoft Application Virtualization (App-V) Microsoft User Experience Virtualization (UE-V) Microsoft Enterprise Desktop Virtualization (MED-V) Microsoft Advanced Group Policy Management (AGPM) Microsoft BitLocker Adminstration and Monitoring (MBAM) Microsoft Diagnostics and Recovery Tookkit (DaRT)							
W06-00022	**Core CAL Package**	EES	Faculty	B	1 Year	Academic	$ 12.00	Platform Product
Includes	Windows Server Client Access License Exchange Server Client Access License Standard SharePoint Server Client Access License Standard Lync Server Client Access License Standard System Center Configuration Manager Client Management License System Center Endpoint Protection (Antivirus Software) System Center Virtual Machine Manager Client							
76A-00025	**Enterprise CAL Package**	EES	Faculty	B	1 Year	Academic	$ 23.00	Platform Product
Includes	Windows Server Client Access License Windows Rights Management Services Client Access Licenses Exchange Server Client Access License Standard Exchange Server Client Access License Enterprise							

Exchange Online Archiving
Exchange Online Protection
SharePoint Server Client Access License Standard
SharePoint Server Client Access License Enterprise
Lync Server Client Access License Standard
Lync Server Client Access License Enterprise
System Center Configuration Manager Client Management License
System Center Virtual Machine Manager Client
System Center Operations Manager Client Management License
System Center Service Manager Client Management License
System Center Data Protection Manager Client Management License
Orchestrator
System Center Endpoint Protection (Antivirus Software)

Servers								
P71-07280	Windows Server Datacenter (2 Processor Pack)	EES	Additional Product		1 Year	Academic	$ 284.00	License for Servers running more than 2 virtual servers: Allows unlimited number of virtual servers per licensed server: Licensed per physical processor: Comes in a 2 processor pack
P73-05897	Windows Server Standard (2 Processor Pack)	EES	Additional Product		1 Year	Academic	$ 52.00	License for Servers running less than 2 or no virtual servers: Licensed per physical processor: Comes in a 2 processor pack
228-04437	SQL Server Standard	EES	Additional Product		1 Year	Academic	$ 89.00	License per server you plan to run SQL/Requires SQL Server Client Access Licenses
7NQ-00302	SQL Server Standard Core (2 Core License Pack)	EES	Additional Product		1 Year	Academic	$ 353.00	License per physical Cores on the server: Comes in a 2 Core pack: Requires a minimum of 4 core licenses per server: Does not require SQL Server Client Access Licenses
7JQ-00341	SQL Server Enteprise Core (2 Core License Pack)	EES	Additional Product		1 Year	Academic	$ 1,352.00	License per physical Cores on the server: Comes in a 2 Core pack: Requires a minimum of 4 core licenses per server: Does not require SQL Server Client Access Licenses: Allows you to run SQL in unlimited number of virtual servers on the licensed server.
H04-00232	SharePoint Server	EES	Additional Product		1 Year	Academic	$ 533.00	License per server you run SharePoint
5HU-00215	Lync Server	EES	Additional Product		1 Year	Academic	$ 359.00	License per server you run Lync
312-02177	Exchange Server Standard	EES	Additional Product		1 Year	Academic	$ 70.00	License per server you run Exchange
395-02412	Exchange Server Enterprise	EES	Additional Product		1 Year	Academic	$ 399.00	License per server you run Exchange
V7J-00430	Windows Multipoint Server Premium	EES	Additional Product		1 Year	Academic	$ 43.00	License per server you run Multipoint Server
Server Management								
T6L-00237	System Center Datacenter (2 Processor Pack)	EES	Additional Product		1 Year	Academic	$ 237.00	License per server you want to manage with the following: System Center Configuration Manager, Operations Manager, Data Protection Manager, Service Manager and Virtual Machine Manager (Server). License for servers running more than 2 virtual servers. License by number of physical processors on the server, comes in a two processor pack.
T9L-00222	System Center Standard (2 Processor Pack)	EES	Additional Product		1 Year	Academic	$ 87.00	License per server you want to manage with the following: System Center Configuration Manager, Operations Manager, Data Protection Manager, Service Manager and Virtual Machine Manager (Server). License for servers running less than 2 or no virtual servers. License by number of physical processors on the server, comes in a two processor pack.
Additional Products								
359-00765	SQL Client Access Licenses (Faculty)	EES	Faculty		1 Year	Academic	$ 7.00	License by FTE count: Allows all organization devices/faculty/staff to access SQL
359-00765	SQL Client Access Licenses	EES	Additional Product		1 Year	Academic	$ 20.00	License by number of device or user accessing SQL
6VC-01251	Windows Remote Desktop Services Client Access Licenses (Faculty)	EES	Faculty		1 Year	Academic	$ 6.00	License by FTE count: Allows all organization devices/faculty/staff to access Remote Desktop Services
6VC-01251	Windows Remote Desktop Services Client Access Licenses	EES	Additional Product		1 Year	Academic	$ 9.00	License by number of device or user accessing Remote Desktop Services
EJF-00358	MultiPoint Server Client Access Licenses	EES	Additional Product		1 Year	Academic	$ 8.00	License by number of device accessing Multipoint Server
EJF-00358	MultiPoint Server Client Access Licenses (Faculty)	EES	Faculty		1 Year	Academic	$ 6.00	License by FTE count: Allows all organization devices/faculty/staff to access Multipoint Server
EJF-00431	MultiPoint Server Client Access Licenses with Windows Server Client Access License (Faculty)	EES	Faculty		1 Year	Academic	$ 8.00	License by FTE count: Allows all organization devices/faculty/staff to access Multipoint Server/Windows Server
EJF-00431	MultiPoint Server Client Access Licenses with Windows Server Client Access License	EES	Additional Product		1 Year	Academic	$ 11.00	License by number of device accessing Multipoint Server/Windows Server
U7U-00001	Windows Intune Add on to System Center Configuration Manager	EES	Additional Product		1 Month(s)	Academic	$ 2.20	License by number Users being managed by Windows Intune
Developer Solutions								
D87-01057	Visio Professional	Campus 3	Additional Product		1 Year	Academic	$ 56.00	License per user or device
D87-01057	Visio Professional (Faculty)	Campus 3	Faculty		1 Year	Academic	$ 6.00	License by FTE count: Allows all organization devices/faculty/staff to use Visio
9ED-00071	Visual Studio Premium with MSDN	Campus 3	Additional Product		1 Year	Academic	$ 304.00	License per user or device
77D-00110	Visual Studio Professional with MSDN	Campus 3	Additional Product		1 Year	Academic	$ 65.00	License per user or device
125-00110	Visual Studio Team Foundation Server	Campus 3	Additional Product		1 Year	Academic	$ 39.00	License per user or device
126-00156	Visual Studio Team Foundation Server Client Access License	Campus 3	Additional Product		1 Year	Academic	$ 39.00	License per user or device
L5D-00161	Visual Studio Test Professional with MSDN	Campus 3	Additional Product		1 Year	Academic	$ 112.00	License per user or device
9JD-00050	Visual Studio Ultimate with MSDN	Campus 3	Additional Product		1 Year	Academic	$ 662.00	License per user or device
Office 365								
M6K-00001	Office 365 Plan A2	Campus 3	Faculty		1 Month(s)	Academic	$ -	License Per User/Free
M7K-00001	Office 365 Plan A3	Campus 3	Faculty		1 Month(s)	Academic	$ 4.50	License per User: Price is per user per month
M9K-00001	Office 365 Plan A4	Campus 3	Faculty		1 Month(s)	Academic	$ 6.00	License per User: Price is per user per month
5XS-00001	Office 365 Professinal Plus	Campus 3	Faculty		1 Month(s)	Academic	$ 2.00	License per User: Price is per user per month
M7K-00020	Office 365 Plan A3: Add on From Core CAL/Enterprise CAL	Campus 3	Additional Product		1 Month(s)	Academic	$ 3.85	License per User: Price is per user per month: Requires Core or Enterprise CAL platform product
M7K-00018	Office 365 Plan A3: Add on From Desktop Core CAL/Desktop Enterprise CAL	Campus 3	Additional Product		1 Month(s)	Academic	$ 2.20	License per User: Price is per user per month: Requires Desktop Core or Desktop Enterprise CAL platform product
M7K-00019	Office 365 Plan A3: Add on From Office Professional Plus	Campus 3	Additional Product		1 Month(s)	Academic	$ 2.75	License per User: Price is per user per month: Requires Office Professional Plus platform product
M9K-00020	Office 365 Plan A4: Add on From Core CAL/Enterprise CAL	Campus 3	Additional Product		1 Month(s)	Academic	$ 6.00	License per User: Price is per user per month: Requires Core or Enterprise CAL platform product
M9K-00021	Office 365 Plan A4: Add on From Desktop Core CAL/Desktop Enterprise CAL	Campus 3	Additional Product		1 Month(s)	Academic	$ 3.85	License per User: Price is per user per month: Requires Desktop Core or Desktop Enterprise CAL platform product
M9K-00019	Office 365 Plan A4: Add on From Office Professional Plus	Campus 3	Additional Product		1 Month(s)	Academic	$ 4.40	License per User: Price is per user per month: Requires Office Professional Plus platform product

Student Option: Platform Product Options
License student option to cover the following devices: Student 1:1 device (Devices assigned to a student for exclusive use by the district), Student owned devices: Home devices
License by student count
Requires at least one Platform Product

2FJ-00001	**Office Professional Plus/Office Standard for MAC**	Campus 3	Student	B	1 Year	Academic	$ 17.00

FQC-02425	**Windows OS Upgrade 7/8 Professional/Enterprise**	Campus 3	Student	B	1 Year	Academic	$ 13.00

2UJ-00001	**Desktop Core**	Campus 3	Student	B	1 Year	Academic	$ 20.00
Includes	Windows OS Upgrade 7/8 Professional/Enterprise						
	Office Professional Plus/Office Standard for MAC						
	Windows Server Client Access License						
	Exchange Server Client Access License Standard						
	SharePoint Server Client Access License Standard						
	Lync Server Client Access License Standard						
	System Center Configuration Manager Client Management License						
	System Center Endpoint Protection (Antivirus Software)						
	System Center Virtual Machine Manager Client						

2UJ-00055	**Desktop Core with Microsoft Desktop Optimization Pack**	Campus 3	Student	B	1 Year	Academic	$ 24.00
Includes	Windows OS Upgrade 7/8 Professional/Enterprise						
	Office Professional Plus/Office Standard for MAC						
	Windows Server Client Access License						
	Exchange Server Client Access License Standard						
	SharePoint Server Client Access License Standard						
	Lync Server Client Access License Standard						
	System Center Configuration Manager Client Management License						
	Orchestrator						
	Sysem Center Virtual Machine Manager Client						
	System Center Endpoint Protection (Antivirus Software)						
	Microsoft Application Virtualization (App-V)						
	Microsoft User Experience Virtualization (UE-V)						
	Microsoft Enterprise Desktop Virtualization (MED-V)						
	Microsoft Advanced Group Policy Management (AGPM)						
	Microsoft BitLocker Adminstration and Monitoring (MBAM)						
	Microsoft Diagnostices and Recovery Tookkit (DaRT)						

2UJ-00003	**Desktop Enterprise**	Campus 3	Student	B	1 Year	Academic	$ 31.00
Includes	Windows OS Upgrade 7/8 Professional/Enterprise						
	Office Professional Plus/Office Standard for MAC						
	Windows Server Client Access License						
	Windows Rights Management Services Client Access Licenses						
	Exchange Server Client Access License Standard						
	Exchange Server Client Access License Enterprise						
	Exchange Online Archiving						
	Exchange Online Protection						
	SharePoint Server Client Access License Standard						
	SharePoint Server Client Access License Enterprise						
	Lync Server Client Access License Standard						
	Lync Server Client Access License Enterprise						
	System Center Configuration Manager Client Management License						
	System Center Virtual Machine Manager Client						
	System Center Operations Manager Client Management License						
	System Center Service Manager Client Management License						
	System Center Data Protection Manager Client Management License						
	Orchestrator						
	System Center Endpoint Protection (Antivirus Software)						

2UJ-00081	**Desktop Enterprise with Microsoft Desktop Optimization Pack**	Campus 3	Student	B	1 Year	Academic	$ 34.00
Includes	Windows OS Upgrade 7/8 Professional/Enterprise						
	Office Professional Plus/Office Standard for MAC						
	Windows Server Client Access License						
	Windows Rights Management Services Client Access Licenses						
	Exchange Server Client Access License Standard						
	Exchange Server Client Access License Enterprise						
	Exchange Online Archiving						
	Exchange Online Protection						
	SharePoint Server Client Access License Standard						
	SharePoint Server Client Access License Enterprise						
	Lync Server Client Access License Standard						
	Lync Server Client Access License Enterprise						
	System Center Configuration Manager Client Management License						
	System Center Virtual Machine Manager Client						

System Center Operations Manager Client Management License
System Center Service Manager Client Management License
System Center Data Protection Manager Client Management License
Orchestrator
System Center Endpoint Protection (Antivirus Software)
Microsoft Application Virtualization (App-V)
Microsoft User Experience Virtualization (UE-V)
Microsoft Enterprise Desktop Virtualization (MED-V)
Microsoft Advanced Group Policy Management (AGPM)
Microsoft BitLocker Adminstration and Monitoring (MBAM)
Microsoft Diagnostices and Recovery Tookkit (DaRT)

W06-00022	**Core CAL Package**	Campus 3	Student	B	1 Year	Academic	$	1.90
Includes	Windows Server Client Access License							
	Exchange Server Client Access License Standard							
	SharePoint Server Client Access License Standard							
	Lync Server Client Access License Standard							
	System Center Configuration Manager Client Management License							
	System Center Endpoint Protection (Antivirus Software)							
	System Center Virtual Machine Manager Client							

76A-00025	**Enterprise CAL Package**	Campus 3	Student	B	1 Year	Academic	$	14.00
Includes	Windows Server Client Access License							
	Windows Rights Management Services Client Access Licenses							
	Exchange Server Client Access License Standard							
	Exchange Server Client Access License Enterprise							
	Exchange Online Archiving							
	Exchange Online Protection							
	SharePoint Server Client Access License Standard							
	SharePoint Server Client Access License Enterprise							
	Lync Server Client Access License Standard							
	Lync Server Client Access License Enterprise							
	System Center Configuration Manager Client Management License							
	System Center Virtual Machine Manager Client							
	System Center Operations Manager Client Management License							
	System Center Service Manager Client Management License							
	System Center Data Protection Manager Client Management License							
	Orchestrator							
	System Center Endpoint Protection (Antivirus Software)							

Office 365: Student Option

M6K-00001	Office 365 Plan A2	Campus 3	Student		1 Month(s)	Academic	$	-	Free
M7K-00001	Office 365 Plan A3	Campus 3	Student		1 Month(s)	Academic	$	2.50	Per User Per Month
M9K-00001	Office 365 Plan A4	Campus 3	Student		1 Month(s)	Academic	$	3.00	Per User Per Month
5XS-00001	Office 365 Professinal Plus	Campus 3	Student		1 Month(s)	Academic	$	1.50	Per User Per Month
M7K-00020	Office 365 Plan A3: Add on From Core CAL/Enterprise CAL	Campus 3	Student		1 Month(s)	Academic	$	2.20	Per User Per Month: Requires Student Platform Product Core CAL/Enterprise CAL
M7K-00018	Office 365 Plan A3: Add on From Desktop Core CAL/Desktop Enterprise CAL	Campus 3	Student		1 Month(s)	Academic	$	1.10	Per User Per Month: Requires Student Platform Product Desktop Core CAL/Desktop Enterprise CAL
M7K-00019	Office 365 Plan A3: Add on From Office Professional Plus	Campus 3	Student		1 Month(s)	Academic	$	1.10	Per User Per Month: Requires Student Platform Product Office Professional Plus
M9K-00020	Office 365 Plan A4: Add on From Core CAL/Enterprise CAL	Campus 3	Student		1 Month(s)	Academic	$	2.75	Per User Per Month: Requires Student Platform Product Core CAL/Enterprise CAL
M9K-00021	Office 365 Plan A4: Add on From Desktop Core CAL/Desktop Enterprise CAL	Campus 3	Student		1 Month(s)	Academic	$	1.65	Per User Per Month: Requires Student Platform Product Desktop Core CAL/Desktop Enterprise Package
M9K-00019	Office 365 Plan A4: Add on From Office Professional Plus	Campus 3	Student		1 Month(s)	Academic	$	2.20	Per User Per Month: Requires Student Platform Product Office Professional Plus

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