



Response to Request for Proposal

Network Infrastructure Upgrades

Submitted to:

St. Charles Parish Public Schools

13855 River Rd.
Luling, LA 70070

Submitted by:

DETEL

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Contact:

Travis Franks, Sales Representative
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Table of Contents

SECTION 1 – INTRODUCTION (COVER LETTER)	2
Introduction	3
Overview	3
Scope of Work	3
Term	3
1.0 COSTS	4
2.0 TECHNICAL RESPONSE	7
2.1 Wireless	8
2.2 Network Switches	12
2.3 Cabling	15
3.0 IMPLEMENTATION PROCESS & TIMELINES	20
4.0 MAINTENANCE & SUPPORT	24
5.0 COMPANY QUALIFICATIONS AND EXPERIENCE	29
5.1 Qualifications	30
5.2 Prior Experience	33
ATTACHMENTS	37



March 7, 2016

St. Charles Parish Public Schools
13855 River Rd.
Luling, LA 70070

To whom this may concern:

On behalf of DETEL, I am pleased to present our proposal for Internal Connections to St. Charles Parish Public Schools.

DETEL dedicates itself to providing school systems, medical centers, technical colleges and parish library systems quality services available at the best prices. Customer service is our cornerstone, and we will bring this same level of commitment to St. Charles Parish Public Schools.

I am the project manager for your district, and my contact information is as follows:

Travis Franks
Office: 318-597-0303
Mobile: 318-447-8888
Email: travis@detel.com

As an experienced vendor, we are excited about the possibility of providing service to your school system.

Please accept this proposal on behalf of DETEL and the whole DETEL team. We look forward to working with you and providing customer satisfaction as we build a long and lasting business relationship.

Sincerely,

Travis Franks

Travis Franks
Sales Representative

Introduction

DETEL provides technology products, services and solutions to a diverse array of industries, including K12 Education, Higher Education, Local Municipalities, Federal Government, Health Care and Enterprise. Through our strong partnerships with industry leading technology partners, DETEL provides total technology solutions from custom-built computers and 21st Century classroom technology to wide area network (WAN) infrastructures. With over ten years in business, we have built a reputation for providing industry-leading technology solutions, exceptional service after the sale, and professional development from an experienced staff at competitive prices.

Overview

DETEL would like to provide St. Charles Parish Public Schools with a complete LAN Solution for Internal Connections 2016-2017 E-Rate Season. We have the knowledge, experience, and expertise to complete the project to specification and within the time frame set by St. Charles Parish Public Schools. Our support and technical staff has advanced training many years of experience in configuration of switches, controllers and access points, complete cabling solutions, and customer support. We have completed many projects of this scope and look forward to providing your district with the same level of expertise that we have provided other school districts in the past. **DETEL will comply with all terms and conditions set forth in St. Charles Parish Public Schools' RFP.**

Scope of Work

The scope of work for this Internal Connections project includes all the planning, design, implementation, and training activities required to upgrade the Wireless and Inside Plant Infrastructure for St. Charles Parish Public Schools' at each school.

Term

The proposal is valid for a time period of one (1) year from the date of submission.

1.0 Costs

- 1.1 Supply a narrative of the costs associated with your proposal.
For the wireless portion of this project, DETEL is bidding Aruba Networks IAP-315-US Access Point which meets all of the below criteria along with the management software, Airwave, as an additional Option. The total cost of this proposal is \$508,669.70. The ineligible portion of the wireless bid is \$3,262.70. DETEL is also bidding Brocade ICX7250 Switches for the Networking Switches option, as well as Brocade Network Advisor for the management software. The total cost of this proposal is \$448,401.60. The ineligible portion of the networking switches bid is \$2,770.00. For the cabling portion of the bid, DETEL is providing pricing for our team to install fiber runs and Cat6 Drops throughout St. Charles Parish Public Schools. The total cost of this proposal is \$425,875.65. There is no ineligible portion.
- 1.2 Eligible and ineligible costs must be identified in the narrative referenced in requirement 1.1. WILL COMPLY
- 1.3 Complete the cost sheet(s) associated with each category in the 2.0 Technical Response Section for which you are responding. See attachments submitted "SCPPS 2.1 Wireless Cost Sheet", "SCPPS 2.2 Network Switches Cost Sheet", & "SCPPS 2.3 Cabling Cost Sheet".
- 1.4 Installation costs should include all expenses required. WILL COMPLY – Installation prices include all expenses required. No additional charges will be incurred.
- 1.5 During the term of an agreed upon contract, the vendor must make available to SCPPS all similar contracts utilizing like services, equipment, and volumes, and terms and conditions that are made available to other customers in the state of Louisiana. WILL COMPLY
- 1.6 Vendors must provide SCPPS with lowest corresponding prices for all proposed equipment/services. Lowest corresponding price (LCP) is defined as the lowest price that a service provider charges to nonresidential customers who are similarly situated to a particular applicant (school, library, or consortium) for similar services. WILL COMPLY
- 1.7 Unit costs provided in cost sheet(s) submitted per the 2.0 Technical Response section must be independent of funding source (E-rate vs. non E- rate funds). WILL COMPLY
- 1.8 Unit costs provided in cost sheet(s) submitted per the 2.0 Technical Response section must be independent of quantity. Proposed costs cannot change due to changes in quantities needed for project completion. WILL COMPLY
- 1.9 Unit costs must be available to SCPPS for additional purchases for 12 months after completion of work agreed to within contract(s) awarded for this RFP. WILL COMPLY
- 1.10 The awarded vendor(s) must separate invoices for materials/services that will be E-rate eligible based on Category 2 school budgets from all other materials/services. WILL COMPLY

- 1.11 Any service necessary to implement the proposed solution must be clearly defined. The total cost(s) of these services must also be clearly stated, and specified as eligible or non-eligible for E-rate funding. If the cost is a recurring cost, include the anticipated payment schedule. WILL COMPLY
- 1.12 SCPPS will not be responsible for any costs that were not specified in the vendor's proposal. WILL COMPLY

SCPPS 2.1 Wireless Cost Sheet

This pricing sheet should reflect ALL costs of equipment and services for wireless access as described in the Network Infrastructure Upgrades RFP.

Vendor: DETEL

Vendor E-rate Spin: 143026277

Site	AP Brand/Model	AP Quantity	AP Cost Per Unit	Install Cost Per Unit ¹	Other Costs Per Unit *	Other Non-Unit Costs **	Total Cost
ACM	ARUBA/IAP-315-US	48	\$547.50	\$50.00			\$28,680.00
DHS	ARUBA/IAP-315-US	123	\$547.50	\$50.00			\$73,492.50
EJL	ARUBA/IAP-315-US	0	\$547.50	\$50.00			\$0.00
ESE	ARUBA/IAP-315-US	40	\$547.50	\$50.00			\$23,900.00
HHS	ARUBA/IAP-315-US	128	\$547.50	\$50.00			\$76,480.00
HHM	ARUBA/IAP-315-US	47	\$547.50	\$50.00			\$28,082.50
JBM	ARUBA/IAP-315-US	67	\$547.50	\$50.00			\$40,032.50
LWE	ARUBA/IAP-315-US	57	\$547.50	\$50.00			\$34,057.50
LES	ARUBA/IAP-315-US	78	\$547.50	\$50.00			\$46,605.00
NES	ARUBA/IAP-315-US	68	\$547.50	\$50.00			\$40,630.00
RJV	ARUBA/IAP-315-US	35	\$547.50	\$50.00			\$20,912.50
RKS	ARUBA/IAP-315-US	41	\$547.50	\$50.00			\$24,497.50
SAT	ARUBA/IAP-315-US	14	\$547.50	\$50.00			\$8,365.00
SRE	ARUBA/IAP-315-US	66	\$547.50	\$50.00			\$39,435.00

¹ Installation will require unpackaging, assembling, asset tagging, software/firmware upgrades, configuration, mounting, testing, etc.

* Use this space to explain **Other Per Unit Costs** as listed above.

** Use this space to explain **Other Non-Unit Costs** per site as listed above.

List any additional costs here. This may include costs for controllers, licensing, managment console, external antennas, high density, etc. Clearly identify any cost that is not E-Rate eligible.

Aruba/AW-K12-1 AirWave software license to manage a single device (AP, controller, switch, etc.). K-12 license includes Master Console and Failover. = $\$24.50 \times 826 = \$20,237.00$

Not E-Rate Eligible under Category 2: Can file for under Basic maintenance

Aruba/EN1-AW-K12-1 AIRWAVESUPPORT FOR AW-K12-1 (1 YEAR). $\$3.95 \times 826 = \$3,262.70$

Project Grand Total: **\$508,669.70**

Travis Franks

Signature of Authorized Representative

 3/4/2016

Date

 Travis Franks

Printed Name of Authorized Representative

SCPPS 2.2 Network Switches Cost Sheet

This pricing sheet should reflect ALL costs of equipment and services for network switch upgrades as described in the Network Infrastructure Upgrades RFP.

Vendor: DETEL Vendor E-rate Spin: 143026277

		ACM	DHS	EJL	ESE	HHS	HHM	JBM	LWE	LES	NES	RJV	RKS	SAT	SRE	Totals
Layer 3 Power Over Ethernet+ Network Switch ¹	Brand/ Model	Brocade/ICX7250-48P-2X10G	Brocade/ICX7250-48P-2X10G	Brocade/ICX7250-48P-2X10G	Brocade/ICX7250-48P-2X10G	Brocade/ICX7250-48P-2X10G	Brocade/ICX7250-48P-2X10G	Brocade/ICX7250-48P-2X10G	Brocade/ICX7250-48P-2X10G	Brocade/ICX7250-48P-2X10G	Brocade/ICX7250-48P-2X10G	Brocade/ICX7250-48P-2X10G	Brocade/ICX7250-48P-2X10G	Brocade/ICX7250-48P-2X10G	Brocade/ICX7250-48P-2X10G	
	Quantity	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
	Unit Cost	\$2,120.00	\$2,120.00	\$2,120.00	\$2,120.00	\$2,120.00	\$2,120.00	\$2,120.00	\$2,120.00	\$2,120.00	\$2,120.00	\$2,120.00	\$2,120.00	\$2,120.00	\$2,120.00	
	Total Cost	\$ 2,120.00	\$ 2,120.00	\$ 2,120.00	\$ 2,120.00	\$ 2,120.00	\$ 2,120.00	\$ 2,120.00	\$ 2,120.00	\$ 2,120.00	\$ 2,120.00	\$ 2,120.00	\$ 2,120.00	\$ 2,120.00	\$ 2,120.00	\$ 29,680.00
Layer 2 Power Over Ethernet+ Network Switch ¹	Brand/ Model	Brocade/ICX7250-48P-2X10G	Brocade/ICX7250-48P-2X10G	Brocade/ICX7250-48P-2X10G	Brocade/ICX7250-48P-2X10G	Brocade/ICX7250-48P-2X10G	Brocade/ICX7250-48P-2X10G	Brocade/ICX7250-48P-2X10G	Brocade/ICX7250-48P-2X10G	Brocade/ICX7250-48P-2X10G	Brocade/ICX7250-48P-2X10G	Brocade/ICX7250-48P-2X10G	Brocade/ICX7250-48P-2X10G	Brocade/ICX7250-48P-2X10G	Brocade/ICX7250-48P-2X10G	
	Quantity	4	16	1	2	19	6	7	7	9	6	1	4	2	5	89
	Unit Cost	\$2,120.00	\$2,120.00	\$2,120.00	\$2,120.00	\$2,120.00	\$2,120.00	\$2,120.00	\$2,120.00	\$2,120.00	\$2,120.00	\$2,120.00	\$2,120.00	\$2,120.00	\$2,120.00	
	Total Cost	\$ 8,480.00	\$ 33,920.00	\$ 2,120.00	\$ 4,240.00	\$ 40,280.00	\$ 12,720.00	\$ 14,840.00	\$ 14,840.00	\$ 19,080.00	\$ 12,720.00	\$ 2,120.00	\$ 8,480.00	\$ 4,240.00	\$ 10,600.00	\$ 188,680.00
Non Power Over Ethernet Network Switch ¹	Brand/ Model	Brocade/ICICX7250-48-2X10G	Brocade/ICICX7250-48-2X10G	Brocade/ICICX7250-48-2X10G	Brocade/ICICX7250-48-2X10G	Brocade/ICICX7250-48-2X10G	Brocade/ICICX7250-48-2X10G	Brocade/ICICX7250-48-2X10G	Brocade/ICICX7250-48-2X10G	Brocade/ICICX7250-48-2X10G	Brocade/ICICX7250-48-2X10G	Brocade/ICICX7250-48-2X10G	Brocade/ICICX7250-48-2X10G	Brocade/ICICX7250-48-2X10G	Brocade/ICICX7250-48-2X10G	
	Quantity	5	20	2	4	22	8	8	8	6	8	4	3	1	1	100
	Unit Cost	\$1,560.00	\$1,560.00	\$1,560.00	\$1,560.00	\$1,560.00	\$1,560.00	\$1,560.00	\$1,560.00	\$1,560.00	\$1,560.00	\$1,560.00	\$1,560.00	\$1,560.00	\$1,560.00	
	Total Cost	\$ 7,800.00	\$ 31,200.00	\$ 3,120.00	\$ 6,240.00	\$ 34,320.00	\$ 12,480.00	\$ 12,480.00	\$ 12,480.00	\$ 9,360.00	\$ 12,480.00	\$ 6,240.00	\$ 4,680.00	\$ 1,560.00	\$ 1,560.00	\$ 156,000.00
Switch Installation Cost ²	Quantity	10	37	4	7	42	15	16	16	16	15	6	8	4	7	203
	Unit Cost	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	
	Total Cost	\$ 1,250.00	\$ 4,625.00	\$ 500.00	\$ 875.00	\$ 5,250.00	\$ 1,875.00	\$ 2,000.00	\$ 2,000.00	\$ 2,000.00	\$ 1,875.00	\$ 750.00	\$ 1,000.00	\$ 500.00	\$ 875.00	\$ 25,375.00
SFP+ (Small Form-Factor Pluggable) ³	Brand/ Model	DETEL/10G-SFPP-LR	DETEL/10G-SFPP-LR	DETEL/10G-SFPP-LR	DETEL/10G-SFPP-LR	DETEL/10G-SFPP-LR	DETEL/10G-SFPP-LR	DETEL/10G-SFPP-LR	DETEL/10G-SFPP-LR	DETEL/10G-SFPP-LR	DETEL/10G-SFPP-LR	DETEL/10G-SFPP-LR	DETEL/10G-SFPP-LR	DETEL/10G-SFPP-LR	DETEL/10G-SFPP-LR	
	Quantity	9	35	3	5	39	13	15	15	19	15	3	9	5	11	196
	Unit Cost	\$97.60	\$97.60	\$97.60	\$97.60	\$97.60	\$97.60	\$97.60	\$97.60	\$97.60	\$97.60	\$97.60	\$97.60	\$97.60	\$97.60	
	Total Cost	\$ 878.40	\$ 3,416.00	\$ 292.80	\$ 488.00	\$ 3,806.40	\$ 1,268.80	\$ 1,464.00	\$ 1,464.00	\$ 1,854.40	\$ 1,464.00	\$ 292.80	\$ 878.40	\$ 488.00	\$ 1,073.60	\$ 19,129.60
SFP+ Installation Cost ²	Unit Cost	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Total Cost	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Other Costs *		\$1,282.00	\$3,928.00	\$694.00	\$988.00	\$4,418.00	\$1,772.00	\$1,870.00	\$1,870.00	\$1,870.00	\$1,772.00	\$890.00	\$1,086.00	\$694.00	\$988.00	
Additional Cost - BNA																\$2,770.00
Total Cost		\$ 1,282.00	\$ 3,928.00	\$ 694.00	\$ 988.00	\$ 4,418.00	\$ 1,772.00	\$ 1,870.00	\$ 1,870.00	\$ 1,870.00	\$ 1,772.00	\$ 890.00	\$ 1,086.00	\$ 694.00	\$ 988.00	\$ 26,892.00

¹ All switches must have 48 ports.
² Installation will require unpackaging, assembling, asset tagging, software/firmware upgrades, configuration, mounting, testing, etc.
³ SFP+ must be 10 Gb single mode LC.

* Use this space to explain **Other Costs** as listed above. This may include costs for licensing, managment console, etc.

Eligible:
Layer 3 Switches require Brocade/ICX7250-PREM-LIC for each switch at a rate of \$400.00 ea.
Layer 2 and Non PoE Switches require 1 stacking cable DETEL/10G-SFPP-TWX-0101 per switched at a cost of \$98.00 ea.

Ineligible:
Brocade Network Advisor -
BR-NTWADV-IP-BASE/IP Management SW License For Up To 50 Devices; Required for Initial Purchase - \$550.00
BR-NTWADV-IP-100/Adds - \$220 x 2 = \$440.00
BNALB-SVL-SW-1/SW Maintenance - \$990.00
BNALC-SVL-SW-1/SW Maintenance - \$395.00 x 2 = \$790.00

Central Office Core Brand/Model: Brocade/ICX7250-48P-2X10G

Central Office Core Cost: \$2,645.00

Project Grand Total: \$448,401.60

Travis Franks
Signature of Authorized Representative

Travis Franks
Printed Name of Authorized Representative

3/4/2016
Date

This pricing sheet should reflect ALL costs of equipment and services for cabling as described in the Network Infrastructure Upgrades RFP.

Vendor E-rate Spin: 143026277

[illegible]

	Total Cost	\$870.00	\$3,045.00	\$435.00	\$652.50	\$3,262.50	\$1,305.00	\$1,522.50	\$1,305.00	\$1,522.50	\$1,522.50	\$435.00	\$870.00	\$652.50	\$870.00	\$18,270.00
1" EMT Conduit for Fiber Cable	# Feet	230	680	0	0	220	150	520	410	680	150	70	0	0	120	3,230
	Cost/Foot	\$1.49	\$1.49	\$1.49	\$1.49	\$1.49	\$1.49	\$1.49	\$1.49	\$1.49	\$1.49	\$1.49	\$1.49	\$1.49	\$1.49	
	Total Cost	\$341.55	\$1,009.80	\$0.00	\$0.00	\$326.70	\$222.75	\$772.20	\$608.85	\$1,009.80	\$222.75	\$103.95	\$0.00	\$0.00	\$178.20	\$4,796.55
Fiber/Conduit installation Cost		\$4,776.00	\$16,716.00	\$2,388.00	\$3,582.00	\$17,910.00	\$7,164.00	\$8,358.00	\$7,164.00	\$8,358.00	\$8,358.00	\$2,388.00	\$4,776.00	\$3,582.00	\$4,776.00	\$100,296.00
Cat 6 (Drops) ¹	# Drops	78	340	15	40	398	47	67	57	78	68	60	41	14	66	1,369
	Cost/Drop	\$180.00	\$180.00	\$180.00	\$180.00	\$180.00	\$180.00	\$180.00	\$180.00	\$180.00	\$180.00	\$180.00	\$180.00	\$180.00	\$180.00	
	Total Cost	\$ 14,040.00	\$ 61,200.00	\$ 2,700.00	\$ 7,200.00	\$ 71,640.00	\$ 8,460.00	\$ 12,060.00	\$ 10,260.00	\$ 14,040.00	\$ 12,240.00	\$ 10,800.00	\$ 7,380.00	\$ 2,520.00	\$ 11,880.00	\$246,420.00
Cat 6 (1 Foot Patch Cables)	# Units	78	340	15	40	398	47	67	57	78	68	60	41	14	66	1,369
	Cost/Unit	\$0.90	\$0.90	\$0.90	\$0.90	\$0.90	\$0.90	\$0.90	\$0.90	\$0.90	\$0.90	\$0.90	\$0.90	\$0.90	\$0.90	
	Total Cost	\$70.20	\$306.00	\$13.50	\$36.00	\$358.20	\$42.30	\$60.30	\$51.30	\$70.20	\$61.20	\$54.00	\$36.90	\$12.60	\$59.40	\$1,232.10
Cat 6 (3 Foot Patch Cables) ²	# Units	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Cost/Unit	\$1.20	\$1.20	\$1.20	\$1.20	\$1.20	\$1.20	\$1.20	\$1.20	\$1.20	\$1.20	\$1.20	\$1.20	\$1.20	\$1.20	
24 Port Cat 6 Patch Panel	# Units	5	21	2	3	23	8	8	8	10	9	2	5	3	6	113
	Cost/Unit	\$23.25	\$23.25	\$23.25	\$23.25	\$23.25	\$23.25	\$23.25	\$23.25	\$23.25	\$23.25	\$23.25	\$23.25	\$23.25	\$23.25	
	Total Cost	\$116.25	\$488.25	\$46.50	\$69.75	\$534.75	\$186.00	\$186.00	\$186.00	\$232.50	\$209.25	\$46.50	\$116.25	\$69.75	\$139.50	\$2,627.25
Additional Costs * Interduct 1" Orange		\$ 0.41														
Additional Costs * LC-LC Fiber Patch Cables		\$ 4.99														

¹ Cost must include materials, installation, termination, certifying, etc.

² Even though the requested quantity is 0, include unit cost for 3 foot patch cables.

Total \$425,875.65

Interduct is priced per foot. Footage will be determined upon walkthrough if awarded. LC-LC Patch cables are 3 meter Single Mode cables. 2 will be needed per fiber run.

Project Grand Total: \$425,875.65

Travis Franks

Signature of Authorized Representative

3/4/2016

Date

Travis Franks

Printed Name of Authorized Representative

2.0 Technical Response

2.1 Wireless

2.1.1 Vendor must review the SCPPS_Site_Maps to propose a network design and access point models/quantities for indoor wireless coverage at each site. Vendor must complete and submit proposed quantities, brands, and models, along with costs, on the SCPPS 2.1 Wireless Cost Sheet. The following table represents an estimated quantity of access points needed per location. The quantities in no way bind SCPPS to purchasing the amounts indicated. These counts are based on one access point per classroom/administrative area. Quantities may change based on vendor's evaluation and network design. The network design for access point placement must be agreed upon by SCPPS before any ordering/purchasing is done.

Site	Estimated Access Points
Albert Cammon Middle School	48
Destrehan High School	123
E.J. Landry Alternative Center	0
Ethel Schoeffner Elementary School	40
Hahnville High School	128
Harry Hurst Middle School	47
J.B. Martin Middle School	67
Lakewood Elementary School	57
Luling Elementary School	78
Norco Elementary School	68
R.J. Vial Elementary School	35
R.K. Smith Middle School	41
Satellite Center	14
St. Rose Elementary School	66

2.1.2 The solution being proposed must satisfy all of the requirements listed below.

Vendors must state compliance in their response. If there is an exception to the listed requirements, the vendor must provide a detailed explanation of the proposed alternate.

2.1.2.1 Access points must be based on 802.11ac and 802.11ac wave 2 radio technology. YES

2.1.2.2 Access points must be able to provide connectivity for at least 35 devices (35:1 ratio) simultaneously. YES

2.1.2.3 Access points must support multi-user MIMO with three spatial streams and/on SU-MIMO with four spatial streams. YES

2.1.2.4 Access points must support up to 16 BSSIDs per radio. YES

2.1.2.5 Access points must be backwards compatible to support 802.11 a/b/g/n. YES

2.1.2.6 Access points must include radios for both 2.4 GHz and 5 GHz. YES

2.1.2.7 If controller-based solution is proposed it must support high availability allowing a second controller to take over duties with minimal disruption. YES

2.1.2.8 If controller-based solution is proposed it must support client connectivity in the event that a WAN outage disrupts communication between the access point and the controller. DETEL is not bidding a controller based solution.

2.1.2.9 Solution must offer access points with internal and external antenna options.

DETEL is bidding the IAP-315-US for this project which is an access point that includes internal antennas. The IAP-310 Series does include an option for the IAP-314-US which is the model that would require external antennas. Antennas required are dependent on user configuration.

2.1.2.10 Solution must offer the ability to manage all access points as one wireless network via a single management platform. YES

2.1.2.11 Solution must support QoS capabilities and policy enforcements. YES

2.1.2.12 Solution must support technology to automatically configure RF settings such as channel assignment and transmit power. YES

2.1.2.13 Solution must support technology that optimizes overall network capacity in mixed-client environments by helping ensure that 802.11 a/g/n and 802.11 ac clients operate at the best possible rate. YES

2.1.2.14 Solution must support technology to steer dual band capable clients from 2.4 GHz to 5 GHz. YES

2.1.2.15 Solution must provide the capability of client moving from one access point to another without noticeable loss of connectivity. YES

2.1.2.16 Solution must provide a guest portal on a separate Vlan to allow unauthenticated user access to the Internet, yet still utilize the District's web filter. YES

2.1.2.17 Access points must be able to be mounted to drop ceilings or walls without loss of coverage area. YES

2.1.2.18 Solution must minimize interference from 3G/4G cellular network and distributed antenna systems. YES

2.1.2.19 Solution must offer wireless intrusion protection, rogue detection, and containment.
YES

2.1.2.20 Vendor must describe warranty included with each brand/model of equipment proposed.

Hardware Limited Lifetime Warranty (LLW)

Aruba's Hardware Limited Lifetime Warranty is applicable to a subset of Aruba hardware products, detailed at www.arubanetworks.com/assets/faq/FAQ_product_warranty.pdf. "Lifetime" is defined as the period beginning on the Aruba shipment date and ending five years following Aruba's hardware end-of-sale date. Aruba warrants to its end users that for the Lifetime of the covered hardware product purchased by such end user, the hardware product will substantially conform to Aruba's published technical documentation as provided by Aruba with the hardware product. Except as otherwise proscribed by applicable law, in the event of a breach of this Hardware Limited Lifetime Warranty, the sole and exclusive remedy, and Aruba's sole and exclusive liability, will be for Aruba to use commercially reasonable efforts to repair or replace the hardware product that caused the breach of this warranty. If Aruba cannot, or determines that it is not practical to, repair or replace the returned hardware product, then the sole and exclusive remedy and the limit of Aruba's obligation will be to refund the amount received by Aruba for such hardware product. The Hardware Limited Lifetime Warranty is provided to the original end user only and is not transferrable. For additional information, please refer to the Aruba Product Warranty Frequently Asked Questions (FAQ) document located at: www.arubanetworks.com/assets/faq/FAQ_product_warranty.pdf.

2.1.3 Vendor must describe their installation and testing procedures for the proposed wireless solution, and must include/address all requirements below.

DETEL's project management techniques are backed by a methodology developed after years of project management experience in the private and public sector including:

- Developing detailed project plans
- Identifying and defining detailed project tasks, their duration, and dependencies
- Establishing checkpoints to assess changes in the initial scope of the project
- Establishing and employing quality assurance checkpoints
- Managing project issue resolution
- Communicating and coordinating project activities with all customer vendors involved in the implementation project management effort
- Providing periodic status reporting to the customer project team members and technical staff

Communication with our customers is of the upmost importance when implementing our projects, and we consider this aspect a key component of designing and executing a successful wireless LAN. Below is our wireless LAN project process which takes into account many aspects of a job to ensure all activities are accounted for and performed properly resulting in a successful application:

Project Planning

- Project planning commencement
- Define the scope of the project
- Define roles and responsibilities of project personnel
- Develop project plan requirements

Wireless LAN Application Planning

- Communicate with end user on project expectations
- Conduct site survey
- Identify all sites where equipment is to be located
- Determine product requirements for each location
- Organize a list of all sites and product configurations

Wireless LAN Implementation

- Order Equipment
- Develop a firm project installation timeframe and communicate that to end user
- Receive and configure equipment
- Run necessary cabling and conduit for successful network implementation
- Install equipment
- Disconnect from old equipment and turnover to new equipment
- End user to receive phase updates from DETEL Support throughout the length of the project

Wireless LAN Completion

- Review overall project effort
- Review any issues that occurred
- Support to send project completion notice to customer via email

2.1.3.1 Vendor will be responsible for un-boxing, asset tagging, and logging each piece of equipment in an asset tracking spreadsheet provided by SCPPS, in an area designated by SCPPS. WILL COMPLY

2.1.3.2 Any trash resulting from the un-boxing process must be disposed of by the vendor. WILL COMPLY

2.1.3.3 Vendor will be responsible for installing any necessary software and firmware updates. WILL COMPLY

2.1.3.4 Vendor will be responsible for configuration of access points. WILL COMPLY

2.1.3.5 Vendor will be responsible for mounting access points in designated areas as specified in agreed upon network design, and connecting access point to the network drop provided for that area. WILL COMPLY

2.1.3.6 Vendor will be responsible for testing every access point installed. Wireless coverage must meet specifications in the network design. WILL COMPLY

2.1.3.7 The installation of any access point model which will require more than one network drop must be clearly communicated as such to SCPPS in your installation response. WILL COMPLY

2.2 Network Switches

2.2.1 The solution being proposed must satisfy all of the requirements listed below. Vendors must state compliance in their response. If there is an exception to the listed requirements, the vendor must provide a detailed explanation of the proposed alternate. Anticipated quantities needed are designated in the SCPPS 2.2 Network Switches Cost Sheet. Vendor must complete and submit proposed brands and models, along with costs, on the SCPPS 2.2 Network Switches Cost Sheet. SCPPS reserves the right to adjust quantities based on needs assessed throughout the project.

2.2.1.1 Layer 3 and Layer 2 switches functionally equivalent to, or better than, Avaya ERS 3549GTS-PWR+ YES

2.2.1.2 Solution must offer SFP+. YES

2.2.1.3 Must support both 1 Gb/ 10 Gb speeds on each SFP port. YES

2.2.1.4 Must support multiple Vlans. YES

2.2.1.5 Must provide at least 48 ports capable of auto-negotiating 100 Mbs or 1 Gbs. YES

2.2.1.6 Must support Spanning Tree Protocol. YES

2.2.1.7 Must support IPv4 routing protocols (static, RIPv2, OSPF,EIGRP). YES

2.2.1.8 Must support Internet Group Management Protocol (IGMP) Snooping for IPv4 for multicast forwarding. YES

2.2.1.9 Must support IGMP filtering. YES

2.2.1.10 Must support telnet and SSH for remote management. YES

2.2.1.11 Must support QoS capabilities. YES

2.2.1.12 Must support stacking capabilities. YES

2.2.1.13 Must support POE+ and non POE options. YES

2.2.1.14 Must offer solution for management of multiple switches. YES, Brocade Network Advisor

2.2.1.15 Vendor must describe warranty included with each brand/model of equipment proposed.

Brocade Assurance Limited Lifetime Warranty

For select products, Brocade provides a limited lifetime warranty beginning on the Start Date and continuing for as long as the original End User continues to own and use the Brocade branded equipment, as set forth below.

Hardware

Brocade warrants that the Brocade branded hardware will be free from defects in material and workmanship under normal use. End User's sole and exclusive remedy and the entire liability of Brocade and its suppliers under this limited warranty will be replacement of such product hardware next business day, provided the request is received before 2PM local time.* Defective hardware must be received by Brocade within 30 days of End User's receipt of replacement Product. This warranty excludes removable optics and LEDs. In the event of discontinuance of product manufacture, the warranty is limited to five (5) years from the announced product end of life date. *Response times are based on local standard business days and working hours and commercially reasonable efforts. Response times commence when Brocade is informed of the warranty failure via web request. In some countries and regions and under certain supplier constraints, actual response times may vary. If your location is outside the customary service area, your response time may be longer. Please contact Brocade's Support Team for response time availability in your area. Where applicable, for shipments to locations outside the US,

Customer or Customer's assigned agent will act as Importer of Record for shipments of repaired/replacement units and will be responsible for payment of any import duties, taxes and fees. See other Warranty Limitations and Restrictions below.

Software (embedded in Brocade product)

Brocade warrants (a) that the media on which the software is delivered will be free of defects in material and workmanship, and (b) the software will operate substantially as set forth in the applicable Brocade Documentation when used in accordance with the terms of the Brocade software license. End User's exclusive remedy and the entire liability of Brocade and its suppliers under this limited warranty will be replacement of the software media. In addition, End User may download defect repairs from Brocade.com for the firmware release current at time of purchase or any previous release and may also access Brocade's Knowledge Portal. On certain products (as indicated in the table above) End User may also download software maintenance updates through the product end of support date. Except for the foregoing, the software is provided AS IS. This limited warranty extends only to the End User as the original licensee. See other Warranty Limitations and Restrictions below.

Warranty Limitations and Restrictions

Brocade warranties as set forth herein ("Warranty") are contingent on proper use of the Brocade branded hardware and software ("Products") and do not apply if (a) the Products have been modified without the written approval of Brocade, (b) the Products' serial number label is removed, (c) the Product has been damaged or subjected to abnormal physical or electrical stress, abnormal environmental conditions, misuse, negligence, or accident, or (d) the Product is licensed for beta, evaluation, testing or demonstration purposes. In order to ensure proper operation of Brocade products, it is required that all Brocade systems utilize only Brocade supplied optical transceiver components. Brocade reserves the right to void warranty and service support offerings if optical transceiver components other than those supplied by Brocade are used in the operation of Brocade products. The terms of the Warranty are limited to the remedies as set forth in this Warranty. THIS WARRANTY IS PROVIDED IN LIEU OF ALL OTHER RIGHTS, CONDITIONS AND WARRANTIES. BROCADE MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE SOFTWARE, HARDWARE, PRODUCTS, DOCUMENTATION OR BROCADE SUPPORT, INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT OF THIRD PARTY RIGHTS. BROCADE DOES NOT WARRANT THAT ANY PRODUCTS WILL BE ERROR-FREE, OR THAT ANY DEFECTS THAT MAY EXIST IN ITS PRODUCTS CAN BE CORRECTED. IN NO

EVENT SHALL BROCADE BE LIABLE FOR COST OF PROCUREMENT OF SUBSTITUTE GOODS, LOST PROFITS OR ANY OTHER SPECIAL, INDIRECT, CONSEQUENTIAL OR INCIDENTAL DAMAGES (INCLUDING BUT NOT LIMITED TO LOST DATA), HOWEVER CAUSED WHETHER OR NOT BROCADE HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. SOME JURISDICTIONS DO NOT ALLOW LIMITATION OR EXCLUSION OF LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES, SO THAT LIMITATION OR EXCLUSION MAY NOT APPLY.

2.2.2 Vendor must describe their installation and testing procedures for the proposed network switch solution, and must include/address all requirements below: See section 2.1.3.

2.1.2.1 Vendor will be responsible for un-boxing, asset tagging, and logging each piece of equipment in an asset tracking spreadsheet provided by SCPPS, in an area designated by SCPPS. WILL COMPLY

2.1.2.2 Any trash resulting from the un-boxing process must be disposed of by the vendor. WILL COMPLY

2.1.2.3 Vendor will be responsible for configuration of network switches. WILL COMPLY

2.1.2.4 Vendor will be responsible for placing and securing network switches in the designated racks, and connecting cabling to the network switches. Cable management within rack must be agreed upon with SCPPS prior to installation of network switches. WILL COMPLY

2.1.2.5 Existing network switches being replaced must be removed by vendor and placed in an area designated by SCPPS. WILL COMPLY

2.1.2.6 Vendor will be responsible for testing every network switch installed. WILL COMPLY

2.3 Cabling

2.3.1 The solution being proposed must satisfy all of the requirements listed below. Vendors must state compliance in their response. If there is an exception to the listed requirements, the vendor must provide a detailed explanation of the proposed alternate. Estimated quantities needed are designated in the SCPPS 2.3 Cabling Cost Sheet. Vendor should reference the SCPPS_Site_Maps for location of fiber placement. Vendor must complete and submit proposed costs on the SCPPS 2.3 Cabling Cost Sheet. SCPPS reserves the right to adjust quantities based on needs assessed throughout the project.

2.3.1.1 Vendor (or proposed subcontractor) must have all applicable state licensing and be able to provide any additional statutory requirements (such as bonds or permits) as applicable for installing wired telecommunication services. Provide the name and license number of the company providing the wiring. DETEL Wireless, LLC – License# 47346

2.3.1.2 The contractor must be certified to install and terminate both copper and fiber. We are certified to install and terminate both copper and fiber.

2.3.1.3 All cable must meet the requirements of the National Electrical Code (NEC) except where other authorities or codes impose a more stringent requirement or practice. WILL COMPLY

2.3.1.4 Cabling must meet all local building codes and nationally recognized cabling standards, including BICSI, ANSI/TIA/EIA, and IEEE 802.3. WILL COMPLY

2.3.1.5 Singlemode fiber should meet or exceed the loss characteristics defined by either ITU or TIA standards. WILL COMPLY

2.3.1.6 All fiber should be indoor/outdoor rated, distribution style, singlemode fiber cable. WILL COMPLY

2.3.1.7 Plenum rated cable is NOT required. ACKNOWLEDGED

2.3.1.8 Fiber connections must include termination on both ends of all strands into a mounted, 12/24-port, fiber optic enclosure (LIU) at each end and two fiber patch cables (2 meter, LC to LC). WILL COMPLY

2.3.1.9 Fiber must be terminated so that it is compatible with devices at each end. WILL COMPLY

2.3.1.10 Underground cabling (fiber) shall include the cost of trenching or boring as needed, appropriate PVC pipe, transition from PVC to EMT (up to 8 feet EMT included), building entry, and interduct (orange flex tubing). Where existing conduit is a viable solution, vendor and SCPPS must agree on a final solution. WILL COMPLY

2.3.1.11 No outdoor cabling shall be exposed. All outside tubing shall be watertight. For outside conduit, EMT conduit should be used above ground and PVC conduit underground. All tubing shall meet building and recognized cabling specifications. WILL COMPLY

2.3.1.12 No indoor cabling shall be exposed except in attics, above ceiling tiles, as patch cords, or unless approved in advance by SCPPS. However, fiber in attics must be in orange flex tubing (interduct) or conduit. WILL COMPLY

2.3.1.13 The cable installer must provide clean and legible as-built cable drawings and records in both hard and soft copy as part of system installation. These drawings must, at a minimum, show the location and type of all communication rooms, communication closets, all distributing cable runs, and all outlets. Cable records must include information necessary to correlate cable runs and terminating locations. Vendor may utilize the SCPPS_Site_Maps to assist in final drawings. WILL COMPLY

2.3.1.14 Category 6 drops shall include all needed supplies (i.e. Cat6 cable, jacks, etc.) and termination into patch panel and into jack. In some instances, other supplies might be required on certain drops like wall caddy, wall box and raceway. No Cat 6 drop will exceed 300 feet. This should be accounted for in vendor responses. WILL COMPLY

2.3.1.15 Cable accessories (ie. Jacks, Connectors, etc.) must include at least a 3 year warranty. SCPPS currently uses Panduit cabling accessories. WILL COMPLY

2.3.1.16 Vendor proposals shall address cabling services and cabling materials.

- * Copper cabling for Category 5e, 6, 6a Augmented
- * 10 Gig UTP Cabling
- * Data Center cabling for data, voice, video, & security
- * Fiber cabling for multi-mode and single mode
- * Splicing, Directional Boring, and Cable audits
- * Full surveillance and wireless access point cabling

Service and Maintenance Guaranteed

At DETEL, our wide range of networking experience allows us to take pride in our ability to manage, maintain and service a wide variety of infrastructures. We offer full service and maintenance on our cabling installation and solutions. And we back our work with 24/7/365 customer service and on-site technical support so that our clients experience as little downtime as possible.

If and when your organization needs to move, add, change or delete an aspect of your cabling or wiring infrastructure, DETEL is here to help you get back on track. Whether it's DETEL-installed cabling or your existing cabling, DETEL will accurately identify your issues, diagnose the situation and provide the most appropriate solution in a timely and cost-effective manner. Our engineers, installers, and testers are well-trained and highly skilled so they're fully capable of handling all your cabling and wiring needs.

DETEL offers customizable service contracts for our cabling solutions clients that keep their organizations operational with minimal downtime and help them control and reduce costs. We'll work with your organization to eliminate unnecessary cabling maintenance expenditures and gain a greater return for each dollar invested in your DETEL-maintained cabling solution. Contact DETEL now to find out how to get the most out of your cabling and wiring solution!

DETEL is capable of supplying, installing and maintaining the following cabling and equipment:

COPPER CABLE

- CAT 3, CAT 5, CAT 5E, CAT 6
- UTP, STP
- High Pair Count – 25, 50, 100

FIBER CABLE

- Multimode & Singlemode
- Patch Cords
- High Pair Count

COAXIAL CABLE

- RG58, RG59, RG62
- RG6, RG11
- Twin Ax

RELAY RACKS & CABINETS

- Floor Mount & Wall Mount
- Overhead Wire Races

PATCH PANELS

- CAT 3, CAT 5, CAT 5E, CAT 6
- 110 & Modular
- Telco
- Fiber
- Wall Mount & Rack Mount

WORKSTATION OUTLETS

- RJ45 Jacks
- RJ11 Jacks
- Fiber
- Video

CABLE MANAGEMENT

- Horizontal & Vertical
- Raceway
- Ladder Racks
- Cable Trays

2.3.1.17 All cables, patch panels, and faceplates must be labeled using a permanent marking system. Handwritten labels are not acceptable. WILL COMPLY

2.3.1.18 All cables must be installed at least one foot from any fluorescent lighting unless contained in separate conduit, and four feet from other sources of electrical interference such as motors and generators unless otherwise agreed upon by vendor and SCPPS. WILL COMPLY

2.3.1.19 Cat 6 cables for access points must be purple, all other drops must be blue. Corresponding patch cables must match the color of the run. WILL COMPLY

2.3.1.20 Cat 6 drops should be pulled to the closest data rack. WILL COMPLY

2.3.1.21 All cable runs must be continuous from end to end. Cable splicing to achieve greater cable length is not allowed. WILL COMPLY

2.3.1.22 All data drops must be tested and certified. Certification reports must be provided to SCPPS. WILL COMPLY

2.3.1.23 Vendor must supply 1ft – 3ft patch cables as needed to connect from patch panel to switch. WILL COMPLY

2.3.1.24 Vendor must include the cost of racks and patch panels in the proposal. However, SCPPS may eliminate these items if there is space in the existing rack. WILL COMPLY

2.3.1.25 Cabling replaced by this project must be removed without interruption of service. If removal is not possible SCPPS must be notified. WILL COMPLY

2.3.1.26 To support access point placement, each drop run for an access point must be 10ft. longer than anticipated placement. WILL COMPLY

3.0 Implementation Process & Timelines

Provide a response to this section for each category in the 2.0 Technical Response section for which you are responding. A detailed response must be provided for each requirement below.

3.1 All installations must be in place and operational on September 30, 2017.

We will be able to meet this deadline for Networking Switch, Access Point and Wiring installation.

3.2 During school hours (7:00 am – 3:30 pm), there must be no disruption of service, and no degradation in transport speed or capacity without the prior approval of SCPPS. Vendor will plan with SCPPS to schedule network outages in order to replace equipment.

DETEL Support will contact the SCPPS technical coordinator before any possible service disruptions are made for network switch installation, access point installation and wiring.

3.3 Vendor will work with SCPPS to take advantage of school holidays, after-school hours, and weekends for project implementation. Vendor will be responsible for all costs associated with work performed during these times.

DETEL will work to schedule installation dates and times that work best for SCPPS for project implementation during school holidays, after-hours, and weekends. DETEL will be responsible for costs associated with work performed pertaining to the networking project including network switches, access points and wiring.

3.4 Describe the various resources within your company that will assist in executing this network upgrade.

DETEL's wireless LAN management team has more than 100 years of combined experience in the implementation of complete package solutions including the installation and configuration of network switches, routers, controllers, and access points. Our key installation staff has been certified and trained on all aspects of the equipment that DETEL will be providing to LaSalle Parish School Board.

NAME	TITLE	YEARS OF EXPERIENCE
Daryl A. Deshotel	Chief Executive Officer	16
Thad Roy	Corporate Development	40
Travis Franks	Sales	16
Joshua Roy	Network Maintenance	16
John Normand	Network Admin	15
Dustin Brooks	Network Engineer	16
Johnny Bonaventure	Inside Plant Manager	16
Chris Juneau	Sales Engineer	16

3.5 Describe all of the implementation steps that will take place and provide timelines, stated in number of days, for each phase of the process for which you are responding, resulting in the implementation being complete by September 30, 2017.

These projects include three phases:

Phase 1 – Conduit and cabling installation

Phase 2 – Includes hardware (switches & access point installation)

Phase 3 – Configuration and Testing of cabling and equipment

PROJECT TIMELINE		
ACTIVITY	START	END
Albert Cammon Middle	8/1/2016	8/3/2016
Destrehan High	8/1/2016	8/3/2016
E.J. Landry Alternative	8/4/2016	8/8/2016
Ethel Schoeffner Elementary	8/4/2016	8/8/2016
Hahnville High	8/9/2016	8/11/2016
Harry Hurst Middle	8/9/2016	8/11/2016
J.B. Martin Middle	8/12/2016	8/16/2016
Lakewood Elementary	8/12/2016	8/16/2016
Luling Elementary	8/17/2016	8/19/2016
Norco Elementary	8/22/2016	8/24/2016
R.J. Vial Elementary	8/22/2016	8/24/2016
R.K. Smith Middle	8/25/2016	8/29/2016
Satellite Center	8/25/2016	8/29/2016
St. Rose Elementary	8/30/2016	09/01/2016
*Phase 1, 2, & 3 will be completed during the stated timeline for each school		

3.6 Vendor must provide a representative to act as project manager and liaison with identified SCPPS contact. Representative must meet regularly with identified SCPPS contact to provide an update in regards to project status and timelines and must be available via email and/or phone for questions/discussions and project status requests during project work time.

Your project management contact will be:

Chris Juneau

Office: 318-597-0303

Cell: 337-207-2886

Email: chris.juneau@detel.com

3.7 Describe the method and frequency in which status updates will be provided to SCPPS during the implementation process.

DETEL will provide bi-weekly updates via email to the dedicated contact at SCPPS for networking, wireless, and structured cabling.

3.8 Vendor will be liable for any damages caused to work sites. If damages occur, vendor will be held responsible for all repairs and/or costs associated with repairs.

DETEL acknowledges this requirement and will take full responsibility for any damages that occur as a result of the work performed by DETEL.

3.9 Vendor may not make physical changes to any SCPPS structures without written permission from SCPPS. This includes any cutting, drilling, boring, or physical alterations of any kind.

DETEL will contact the dedicated contact for SCPPS for any physical changes that may be required for installation of networking switches, access points, and structured cabling before work is performed.

3.10 Vendor will keep the work area free from accumulation of waste materials and debris caused by installation and maintenance that are part of this project. Vendor is responsible for the disposal of all waste material.

DETEL acknowledges this requirement and will take full responsibility for any waste materials that occur as a result of the work performed by DETEL for this project.

3.11 Implementation of all facets of the proposed solution must be completed in a safe and professional manner.

All facets of the proposed solution will be completed in a safe and professional manner by DETEL.

3.12 Joint inspections by SCPPS and the vendor representative will be made throughout implementation and before acceptance of the work by SCPPS.

DETEL will participate in joint inspections with SCPPS throughout implementation and before acceptance of the work by SCPPS.

4.0 Maintenance & Support

Provide a response to this section addressing each category in the 2.0 Technical Response section for which you are responding. A detailed response must be provided for each requirement below.

4.1 Indicate the local resources available to provide support to the district, including but not limited to the number of local technicians available for network and equipment installation, troubleshooting, and repair.

DETEL will have 3 local technicians available in your area for network and equipment installation, troubleshooting and repair.

4.2 Provide information regarding your company's service assurance. Include your service level agreements and response time per service level. See Below



TROUBLE REPORTING PROCEDURE

To report any network instabilities or outages, please contact
our Help Desk at:

1-866-338-3511 / 318-597-0303

or

support@detel.com

Please have the following information available:

Name and Organization

Contact Information

Brief description of the problem

Intrusive testing allowed (Y/N).

A ticket number will be issued, and a DETEL Representative will
respond shortly.

Contact regarding outages reported by our monitoring system
will be made within 45 minutes during normal operating hours.

Emergency situations causing mass outages are addressed at
all times through our 365/24/7 NOC.



Network Operations Escalation

To report any network instabilities or outages, please utilize the following Escalation list.

Level	Name/Email	Number
First Level Of Escalation	DETEL NOC Email Contact: support@detel.com	318-597-0303
Second Level of Escalation	Engineer On-call (After hours) Option #2	318-597-0303
Third Level of Escalation Service & Support Supervisor	Megan Doucet Email Contact: megan@detel.com	(318) 597-0303 ext. 1004
Fourth Level of Escalation Senior Network Engineer	Dustin Brooks Email Contact: dustin@detel.com	(318) 597-0303 ext. 1031
Fifth Level of Escalation Network Administrator	Josh Roy Email Contact: josh@detel.com	(318) 597-0303 ext. 1005
Sixth Level of Escalation Network Administrator Assistant	Daniel Worrell Email Contact: daniel@detel.com	(318) 597-0303 ext. 1016
Seventh Level of Escalation Network Representative	Brady Veade Email Contact: brady@detel.com	(318) 597-0303

*Office Hours are 7:30 A.M to 4:30 P.M CST.

All maintenance notifications require at least 72 hour notice prior to the occurrence. Please email all maintenance notifications to support@detel.com.

4.3 Describe your repair/replacement process which includes the steps taken for submitting, escalating, and tracking troubles toward resolution. See 4.2 Response

4.4 Describe the schedule during which real time support will be available to SCPPS. See 4.2 Response

4.5 Describe the mechanism in which SCPPS will contact the vendor to request support. See 4.2 Response

4.6 Vendor must provide knowledge transfer and training on installed equipment/software at the time of project completion.

Detel will provide knowledge transfer and training on installed equipment/software at the time of project complete for proposed Aruba and Brocade equipment and software.

5.0 Company Qualifications and Experience

5.1 Qualifications

5.1.1 Provide information on the expertise and certifications of your company and employees to design, implement, and maintain the equipment and services proposed.

DETEL's primary business is wireless LAN solutions, wide area connectivity, fiber optics installation, internet service, video conferencing, and VoIP phone systems. For over ten years, we have been able to provide many schools districts with the opportunity to implement wireless LAN solutions throughout their districts such as the one requested in this RFP.

DETEL is a State licensed contractor in Telecommunications, Building Construction, and Electrical license. Certificate of Responsibility # 18914-MC. SPIN# 143026277. DETEL is certified Life Safety F321. DETEL is a "Green Light" company in good standing and will immediately notify the LaSalle Parish School Board in writing if at any time during the bid process or contract period the status should change to "red light." Also, DETEL will accept complete responsibility for the installation, acceptance testing, and certification of the System.

DETEL performs a large amount of troubleshooting and fault isolation remotely. A field technician is on call 24x7. Customer support personnel are on duty during normal office hours, and someone is always on standby after hours.

DETEL has two certified Wireless Access Experts and one Certified Wireless Network Administrator (CWNA). These highly qualified employees received vendor neutral WLAN training and certifications created by leading industry experts. In addition to these Vendor neutral certifications, DETEL also employs two Aruba Certified Wireless Engineers and two CCNA's.

In terms of DETEL's Aruba partner status:

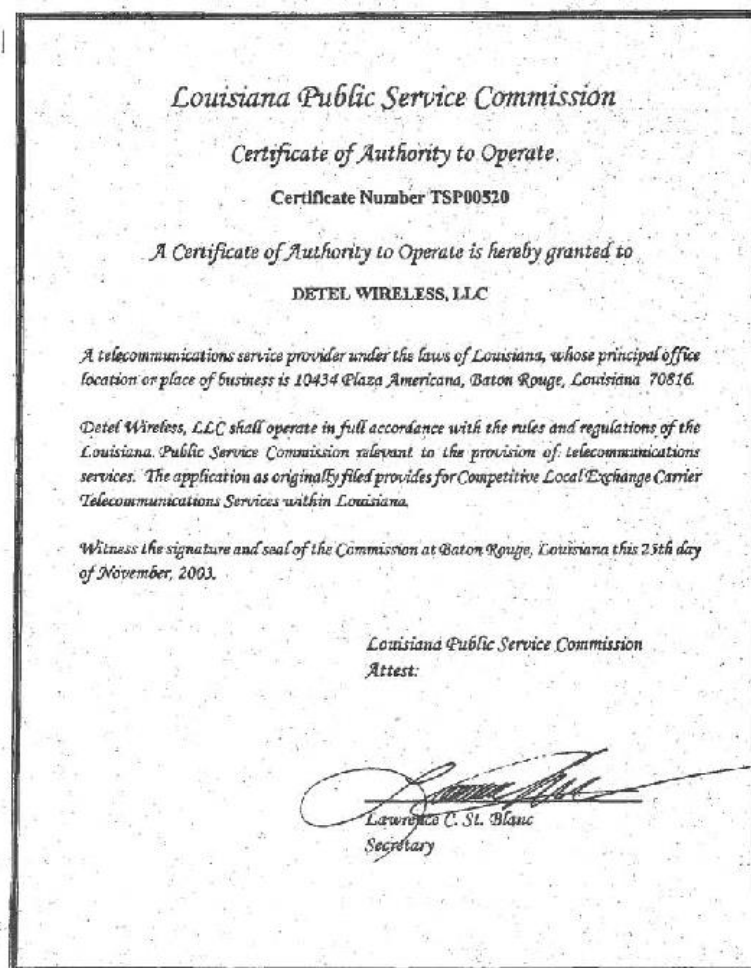
- 1) DETEL has been an authorized Aruba partner for six years
- 2) DETEL is a "Gold" level Aruba partner
- 3) DETEL is the most technically advanced Aruba partner in the SouthCentral Region
- 4) DETEL was awarded Aruba's "Partner of the Year" for 2010

Should LaSalle Parish School Board need any assurances regarding DETEL's competence on Brocade and Aruba products, please call our representatives below:

Mark Rittner
Brocade Regional Sales Manager
(228) 547-3355

Kyle Poulsen
Aruba Territory Manager: Louisiana
(985) 869-2980

5.1.2 Provide a copy of your Certification to operate as a Telecommunication Service Provider in the State of Louisiana. See attachments sections



5.1.3 Provide the E-rate SPIN number(s) that your company uses in Louisiana.

DETEL's SPIN 143026277

5.1.4 Contractors must meet and affirm compliance with all requirements stated in the document titled "Contractor Contractual and Insurance Requirements Revised 042910".



CERTIFICATE OF LIABILITY INSURANCE

CONTULT-01 CHOUDHARYSS

DATE (MM/DD/YYYY)
3/4/2016

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Willis of North Carolina, Inc. c/o 26 Century Blvd P.O. Box 30519 Nashville, TN 37230-5191	CONTACT NAME: Willis Towers Watson Certificate Center PHONE (A/C No, Ext): (877) 945-7378 FAX (A/C, No): (888) 467-2378 E-MAIL ADDRESS: certificates@willis.com
INSURED Detel Wireless, LLC PO Box 147 Hessmer, LA 71341	INSURER(S) AFFORDING COVERAGE INSURER A: National Fire Insurance Company of Hartford 20478 INSURER B: Continental Casualty Company 20443 INSURER C: Valley Forge Insurance Company 20508 INSURER D: INSURER E: INSURER F:

COVERAGES CERTIFICATE NUMBER: REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSURER	TYPE OF INSURANCE	ADDL. SUBR. INFO	POLICY NUMBER	POLICY EFF. DATE (MM/DD/YYYY)	POLICY EXP. DATE (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PRO-JECT <input checked="" type="checkbox"/> LOC <input type="checkbox"/> OTHER:		6014406533	09/10/2015	09/10/2016	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 1,000,000 MED EXP (Any one person) \$ 15,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COM/OP AGG \$ 2,000,000
A	<input checked="" type="checkbox"/> AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> NON-OWNED AUTOS		6014406547	09/10/2015	09/10/2016	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$
B	<input checked="" type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED. <input checked="" type="checkbox"/> RETENTION \$ 10,000		6014406516	09/10/2015	09/10/2016	EACH OCCURRENCE \$ 15,000,000 AGGREGATE \$ 15,000,000
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/OWNER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N N/A	6014406550	09/10/2015	09/10/2016	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTHER E.L. EACH ACCIDENT \$ 1,000,000 E.L. DISEASE - EA EMPLOYER \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000
C	Workers Comp CA		6014406502	09/10/2015	09/10/2016	See Attached

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

CERTIFICATE HOLDER St. Charles Parish Public Schools 13855 River Rd. Luling, LA 70070	CANCELLATION SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE <i>Thermon H. Goff</i>
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ACORD 25 (2014/01)

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5.1.5 The vendor must include all subcontractors as insurers under its policies or shall insure that all subcontractors satisfy the same insurance requirements affirmed to in requirement 5.1.4.

DETEL does not utilize subcontractors for the work requested in this RFP.

5.1.6 Any subcontractor used on this project is bound by all terms and conditions of the contractor to which the contract is awarded. The primary vendor into which SCPPS enters an agreement will assume total responsibility for any actions of subcontractors used to fulfill the agreement.

DETEL does not utilize subcontractors for the work requested in this RFP.

5.2 Prior Experience

5.2.1 Provide at least 3 references of projects similar in scope to this project and any other pertinent information on your experience in working with school districts on large scale projects of the same scope.

Although we are always here to receive a phone call, DETEL primarily provides hands on service and support. This includes installers, sales associates, and service technicians that have worked with districts similar to LaSalle Parish School Board.

Four 2015-2016 E-Rate projects we chose to highlight in this proposal:

St. Mary Parish School Board

DETEL deployed 670 Aruba Instant AP's across 23 sites with Airwave to manage their Wi-Fi for Category 2 during last year's E-Rate Season. We also implemented 235 Brocade ICX6450 switches, 670 Cat-6 Drops, and 60 Fiber Drops into the solution.

Acadia Parish School Board

DETEL deployed 880 Aruba Instant AP's across 28 sites with Airwave and an Aruba 7220 Controller to manage their Wi-Fi for Category 2 during last year's E-Rate Season. We also implemented 32 Brocade ICX7450 & 330 Brocade ICX6450 switches, 940 Cat-6 Drops, and 120 Fiber Drops into the solution.

Iberia Parish School Board

DETEL deployed 1000 Aruba Instant AP's across 28 sites with Airwave to manage their Wi-Fi for Category 2 during last year's E-Rate Season. We also implemented 115 Brocade ICX6430/6450 switches, 1,075 Cat-6 Drops, and 65 Fiber Drops into the solution.

Lafayette Parish School Board

DETEL is deploying 1,220 Aruba Instant AP's across 43 sites for Category 2 for last year's E-Rate Season. We are also implementing 3,025 Brocade ICX6430/6450 switches, 1,385 Cat-6 Drops, and 315 Fiber Drops into the solution.

Five additional projects we chose to highlight in this proposal:

(These solutions have been in place for more than one year)

Richland Parish School Board

DETEL has deployed 475 Aruba AP's with 13 Aruba controllers to give access to RPSB Wi-Fi.

Evangeline Parish School Board

DETEL has deployed 380 Aruba AP's with 10 Aruba controllers for complete campus wide Wi-Fi. We also implemented 55 Brocade FWS648G-POE switches into the solution.

Red River Parish School Board

DETEL has deployed 300 Aruba AP's with 7 Aruba controllers for complete campus wide Wi-Fi.

LSU Health and Science-Shreveport

DETEL has deployed 450 Aruba AP's and one Aruba 6000 series controller for mission critical hospital Wi-Fi access. We have since received another purchase order for 250 AP's to extend coverage.

Avoyelles Parish School Board

DETEL has deployed 550 Aruba AP's, 12 Aruba Controllers, 70 Brocade FCX-648GPOE Switches, and 55 Brocade FWS-648GPOE Switches.

In the case that you would like to speak to some of these customers, we would be happy for you to contact them and learn of their experience with Aruba and DETEL. LaSalle Parish School Board will have the confidence that the requirements of this proposal are not unusual to DETEL.



The below customers have agreed to answer any questions potential customers may have about our services. These customers are able to address not only their satisfaction with our products, but other factors such as courtesy, professionalism, and commitment to customer service. Updated contact information is included for your convenience. Please do not hesitate to use this information.

School District	Contact	Address	Phone
St. Mary Parish School Board	Kevin Derise	Centerville, LA	337-836-6045
Iberia Parish School Board	Dianne Leblanc	New Iberia, LA	337-365-2341
Avoyelles Parish School Board	Irma Andress	Marksville, LA	318-240-0216
Evangeline Parish School Board	Connie Bertrand	Ville Platte, LA	337-363-6651

Red River Parish School Board	Carey Prosperie	Coushatta, LA	318-932-4081
Acadia Parish School Board	Tina Atkinson	Crowley, LA	337-783-3664

In addition to the above installations that have been in operation for over a year we are also actively involved in the following projects concerning Aruba and Brocade products:

Allen Parish School Board – 300 AP's, 75 Brocade FWS-648GPOE switches, 5 Controllers

University of Louisiana at Lafayette – 500 AP's, 6000 Series Controller. Deployment will exceed 2000 AP's by 2013.

Southeastern University – 100 AP's, 6000 Series Controller. Deployment will exceed 2000 AP's by 2013.

Lafayette Parish School Board – 6000 Series Controller with 50 AP's- Customer will go district wide with 2400 AP's to cover 42 schools.

Lafourche Parish School Board – 3600 Series Controller with 60 AP's for lab connectivity. To be used mainly for end of Course testing.

Monroe City School Board – 60 Aruba Instant AP's

City of Monroe – 950 AP's with one 6000 Series Controller

Iberia Parish School Board – 1400 AP's with 25 Controllers

5.2.2 Include all Louisiana school districts in your reference list where you have completed similar projects. See Response to 5.3.1

5.2.3 State your experience in providing equipment and/or services which were E- rate funded in the telecommunications category in Louisiana.

DETEL has been providing E-Rate Services for K-12 Education in the telecommunications category for over 10 years. Detel provides a professionally trained staff to assist applicants in all facets of the E-Rate cycle, including assistance with E-Rate forms and filing guidance. The E-Rate and Regulatory Managers stay current with all rules issued by USAC, the Schools and Libraries Division, the Federal Communications Commission, Federal Courts and Congress. DETEL will provide discounted billing as needed for our E-Rate customers. Listed above are just a few of our Category 2 E-Rate projects that we completed in the 2015-2016 E-Rate Season. DETEL was awarded 10 school districts and 4 private

schools' Category 2 projects with a total of around 179 sites. Our experience in this arena speaks for itself as we are experts in all facets of the Category 1 & 2 processes and procedures from quoting, ordering, installation, and billing.

ATTACHMENTS



State Licensing Board for Contractors

This is to Certify that:

DETEL WIRELESS, LLC
PO Box 147
Hessmer, LA 71341

is duly licensed and entitled to practice the following classifications

BUILDING CONSTRUCTION; ELECTRICAL WORK (STATEWIDE); HIGHWAY, STREET AND BRIDGE CONSTRUCTION; SPECIALTY: SIGNS, SCOREBOARDS, DISPLAYS, BILLBOARDS (ELECTRICAL & NON-ELECTRICAL); SPECIALTY: TELECOMMUNICATIONS; SPECIALTY: TOWER CONSTRUCTION



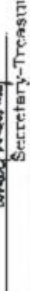
Expiration Date: March 15, 2018

License No: 47346

Witness our hand and seal of the Board dated,
Baton Rouge, LA 16th day of March 2015

 Director

 Chairman

 Secretary-Treasurer

This License Is Not Transferable

Reference
SPIN and BEAR Contact Search Results

Guidance on determining if a company is eligible to provide telecommunications services:

Form 499 Filer column indicates "Y":

- This service provider has successfully filed a Form 499 with USAC. Telecommunications providers with a "Y" are eligible to provide Telecommunications Services and Internet service providers with a "Y" are eligible to provide Interconnected Voice over Internet Protocol (VoIP) services.

All other designations:

- Some service providers that do not have a "Y" designation are eligible to provide Telecommunications Services because they meet [certain conditions](#) and are exempt from filing a [Form 499](#). You can [contact the Client Service Bureau](#) to determine if the company has met those conditions.

Form 499 Filer column indicates "X":

- This service provider has been researched by USAC and is **not** eligible to provide Telecommunications Services.

Form 499 Filer column indicates "Z":

- This service provider is currently being researched by USAC to determine if it is eligible to provide Telecommunications Services.

Form 499 Filer column is blank:

- This service provider has not been researched and its status is unverified.

Applicants are reminded that they should confirm this and all other information with the service provider.

Page 1 of 1
 Results 1 - 1 of 1

SPIN	Service Provider Name	Doing Business As	Contact Name	Contact Address	Contact Phone	Form 499 Filer	SPAC Filed
143026277	Detel Wireless	Detel Wireless	Sonia M Roussel	2028 Highway 115 Mansura, LA 71350	318567-0303	Y	2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015

New Search Done

Questions about the SLD Program? Call our Client Service Bureau at (888) 203-8100.

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DATA SHEET

AIRWAVE™

Comprehensive management for wireless, wired and remote networks

AirWave is a powerful and easy-to-use network operations system that manages Aruba wireless, wired and remote access networks, as well as wired and wireless infrastructures from a wide range of third-party manufacturers.

Offering unprecedented clarity and centralized control to effectively manage global enterprise infrastructures, AirWave lets service desk personnel triage connectivity issues so that IT engineers can focus on proactively optimizing network performance.

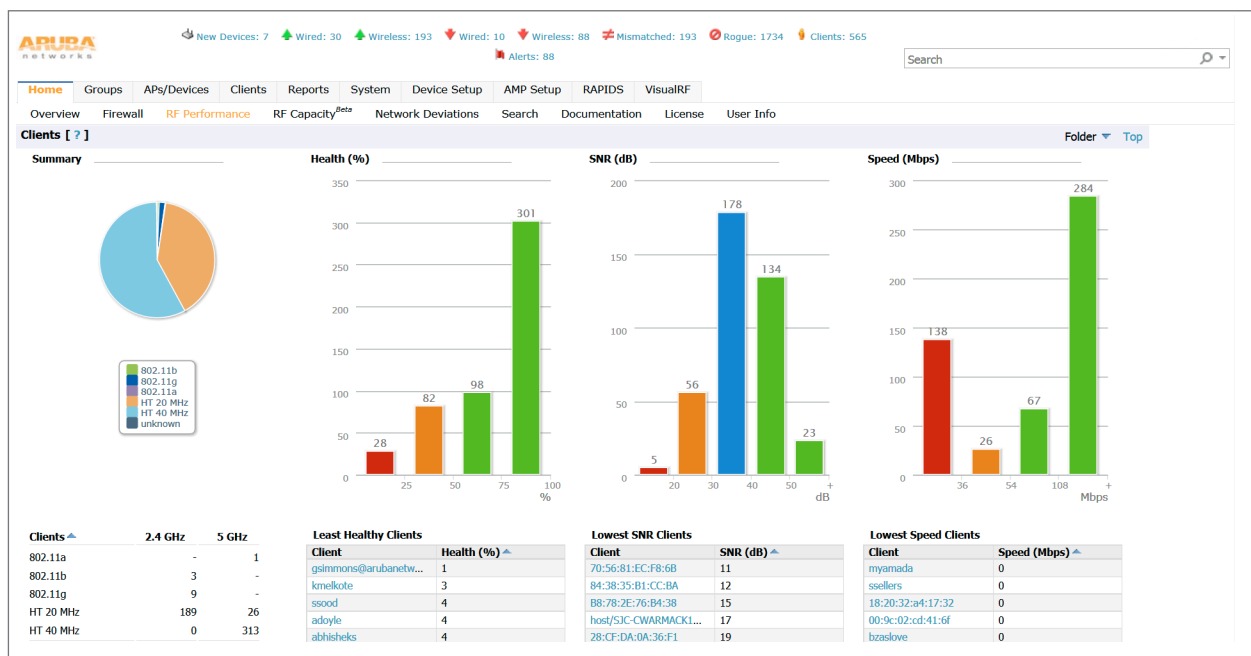
Through a centralized and intuitive user interface, AirWave provides real-time monitoring, proactive alerts, historical reporting, and fast, efficient troubleshooting. It also offers various dashboard views for quickly diagnosing and troubleshooting potential problems with RF coverage, unified communications and collaboration (UCC) traffic, and application performance to strengthen wireless security and demonstrate regulatory compliance.

AirWave VisualRF™ location and mapping offers network-wide views of the entire RF environment. Maps of Wi-Fi coverage and the underlying wired topology show a clear and accurate picture of who is on the network, their location and how the network is performing. Additionally, AirWave offers overlays on client health and application performance to quickly diagnose issues specific to a client, a floor plan or specific location.

The AirWave RAPIDS™ rogue detection works with the RFProtect™ wireless intrusion protection software module available in ArubaOS™ to collect rogue AP, rogue client and wireless intrusion events as well as mitigate rogue activity across wired and wireless infrastructures.

The wireless data collected by RAPIDS is correlated with wired network data to identify the most significant and relevant threats, while greatly reducing false-positives and strengthening network security.

Available as software or a combined hardware and software appliance, AirWave reduces cost and complexity, improves service quality, and enables IT to make intelligent, well-informed decisions about network design.



AirWave delivers identity-based monitoring and comprehensive management to multivendor wireless, wired and remote enterprise networks.

EASY-TO-USE WEB INTERFACE

- Role-based access, viewing rights and administrative privileges tailored to job responsibilities.
- Custom graphs of key information allow for pan and zoom for visibility into specific periods of time.
- Identify and search for users by user name.
- Client overview summarizes the types of clients attached to the network and provides visibility into watched or VIP clients.
- Multiple dashboard views provide visibility into every aspect of the wireless network.

DEVICE DISCOVERY

- Automatically discovers WLAN infrastructure devices.
- Operates in any network environment, including large distributed networks with multiple locations.

TROUBLESHOOTING AND DIAGNOSTICS

- Collects and displays client device data from ArubaOS, Aruba Instant and Aruba ClearPass Policy Manager including device type, operating system, operating system details, manufacturer and model.
- Searching for clients by user name or MAC address provides a diagnostic view of device and network statistics along with indicators to evaluate overall health and performance.
- Overlay the client health on a floor plan to diagnose issues specific to the client or to an area on a floor plan.
- Advanced RF troubleshooting to easily diagnose RF issues in the network.

REAL-TIME MONITORING AND VISIBILITY

- Automatically tracks every user and device – wireless and remote – on the network.
- Visibility into the wired infrastructure that connects wireless controllers and APs.
- Visibility into clients associated to network including location, SNR, connection speed and more
- Logs and displays radio and RADIUS errors, including noise floor and channel utilization information, frequent causes of connectivity problems.
- Provides rapid drill-down from network-wide to device-level monitoring views.
- Dashboards to track RF performance, capacity and application-level statistics as well as network deviations over a 40-week period.

ROOT CAUSE ANALYSIS AND EVENT CORRELATION

- Maps upstream relationships between APs, controllers and switches to identify the root cause of downtime and performance problems.
- Correlates performance and downtime issues to send only a single alert in the event of an upstream device failure.

AUTOMATED CONFIGURATION MANAGEMENT

- Automatically configures APs, controllers, Aruba Instant, and Aruba Mobility Access Switches.
- Configuration policies are defined through a web user interface or by importing a known-good configuration from an existing device.
- Enhanced configuration for the Aruba Instant family to provision large number of branch locations with ease. With tools like adding notes, and overrides, as well as multi-edit and context-sensitivity support make it easy to manage configurations across multiple locations.
- Efficient remote software distribution eliminates time-consuming and error-prone manual updates.
- Support for advanced firmware image upgrade features such as enforcing certified versions by group, splitting-up image downloads and reboot processes, as well as support for scheduling of firmware upgrades or change configurations to occur during off hours.
- Archives device configurations for auditing and version control. Additionally, archives device configurations and flash backups to restore previous state and configuration of Aruba controllers.
- Maintains detailed audit logs of changes made by all AirWave operators.

BETTER NETWORK PLANNING AND PROVISIONING

- VisualRF and the offline VisualRF Plan tool allow quick planning of RF and wired coverage for new sites.

MANAGE THE LATEST TECHNOLOGIES, ARCHITECTURES AND PRODUCTS

- A single management interface for multiple generations of devices.
- Supports autonomous, controller-managed and mesh APs, including outdoor Aruba AirMesh.
- Monitors Aruba Mobility Access Switches and other edge devices using standard MIB data.
- Generates reports on wired port utilization for capacity planning.
- Supports latest ArubaOS management capabilities.

- Supports WLAN products from leading vendors like Cisco, Motorola and Hewlett-Packard.
- Supports the latest Aruba WLAN products including 7200 series Mobility Controllers and AP-220 series 802.11ac access points.

OPEN ARCHITECTURE

- XML API enables cost-effective integration of valuable location data with other applications.
- Much of the data that is visible in AirWave is accessible via the XML API.

PLATFORM DATA

- Centralized network operations center requires no local agents.
- Runs on standard PC hardware/standard Linux operating system.
- Device communication through SSH, Telnet, SNMP v1/v2c/v3, HTTPS.
- Supports up to 100,000+ managed devices.

VISUALRF FEATURES

Real-Time Visualization

- Voice overlay displays coverage for voice handsets, including a radio count heat map.
- Displays Aruba Mobility Access Switches and other wiring closet devices for a comprehensive view of the network edge.
- Simulate failure feature enables analysis of what-if scenarios for proactive RF coverage planning.
- All AirWave real-time visualizations are HTML5-based, supporting a wider variety of browsers and devices."

Effective Site Planning for Precise Deployment

- Determines the right quantity and placement of APs, controllers, Aruba Mobility Access Switches and other edge devices based on RF coverage goals.
- Incorporates Aruba Mobility Access Switches, other wiring closet devices and outdoor Aruba AirMesh products into the network design.
- Automatically generates bill of material reports.

Standalone VisualRF Plan Tool

- Runs on Windows laptops and workstations.
- Uses the same RF planning and visualization algorithms as the integrated VisualRF module.
- Export offline plans to the integrated VisualRF module and export plans from the integrated VisualRF module to the standalone VisualRF tool.

Integrated Location Tracking and RF Visualization

- Quickly locate users and wireless devices as well as track application and UCC performance for troubleshooting, planning and asset tracking.
- Playback location history of individual users over the past day to aid in troubleshooting and recovery of lost devices.
- Last known location of each tracked device is stored indefinitely to find lost and stolen devices.

RAPIDS FEATURES

Rapids Highlights

- Flexible rules-based determination of what a rogue AP means to the existing environment.
- Correlates data gathered from wired and wireless infrastructures to reduce false positives.
- Central management console for RFProtect software module monitors intrusion detection and prevention activity, while identifying and neutralizing rogue APs.
- Utilizes location data from VisualRF.
- Compliance reporting, including the payment card industry (PCI) data security standard.

Rogue Device And Client Visualization

- Integrates with VisualRF to display the location of each rogue device and client on a building floor plan.

Intrusion Detection System Events

- Aggregates, correlates, alerts and logs wireless attacks that are detected and reported on the network, providing a comprehensive picture of infrastructure security.

Strong Enterprise-Grade Security

- View locations of rogue APs discovered by AirWave RAPIDS for faster investigation and threat removal.
- Plan the precise locations to deploy dedicated Wi-Fi sensors, such as Aruba air monitors, to ensure complete coverage.
- Compares wired and wireless scanning results to eliminate duplicates and refine threat assessment.

Rules-Based Threat Classification

- Classify potential threats based on customized rules that define the characteristics of rogue devices.
- Reduce false-positives and enable the network security staff to focus on the most significant threats.

Automated Alerts and Reports

- Predefined, customizable reports address common security, compliance and client needs, such as rogue device tracking, PCI compliance, and client session reporting.
- Supports syslog and SNMP traps from other networked devices, allowing administrators to search for these devices, set triggers to alert on device issues, and use device context for additional troubleshooting.
- Reports exportable to an external server in PDF, HTM and CSV formats

Automatic and Manual Containment

- Manual and automated rogue AP containment with Aruba and Cisco controllers.
- Customize and define rules-based classification to determine when to automatically contain devices.
- Coordinate with the ArubaOS RFProtect software to notify administrators which switch ports have rogue APs attached to them.

ORDERING INFORMATION

Part Number	Description
AW-25	AirWave software to manage up to 25 devices (including controllers, APs, Aruba Mobility Access Switches and third-party switches)
AW-50	AirWave software to manage up to 50 devices
AW-100	AirWave software to manage up to 100 devices
AW-200	AirWave software to manage up to 200 devices
AW-500	AirWave software to manage up to 500 devices
AW-1000	AirWave software to manage up to 1,000 devices
AW-2500	AirWave software to manage up to 2,500 devices
AW-EXP1-50	AirWave expansion license for one additional AP/device for systems with 50 or greater existing device licenses
AW-EXP1-2500	AirWave expansion license for one additional AP/device for systems with 2,500 or greater existing device licenses
AW-MASTER	AirWave software license to manage multiple AirWave servers from a single console
AW-25-FR	AirWave failover software license for 25 devices
AW-50-FR	AirWave failover software license for 50 devices
AW-100-FR	AirWave failover software license for 100 devices
AW-200-FR	AirWave failover software license for 200 devices
AW-500-FR	AirWave failover software license for 500 devices
AW-1000-FR	AirWave failover software license for 1,000 devices
AW-2500-FR	AirWave failover software license for 2,500 devices
AW-EXF1-50	AirWave failover expansion license for one additional AP/device for systems with 50 or greater existing device licenses
AW-EXF1-2500	AirWave failover expansion license for one additional AP/device for systems with 2,500 or greater existing device licenses



1344 CROSSMAN AVE | SUNNYVALE, CA 94089

1.866.55.ARUBA | T: 1.408.227.4500 | FAX: 1.408.227.4550 | INFO@ARUBANETWORKS.COM

AOS 6.5.0: 310 Series Access Points: Mid-range 11ac Wave 2

- Delivering the full value of 802.11ac Wave 2 at an aggressive price
 - Same 5GHz radio capabilities as flagship 330 Series
 - Single (Gb) Ethernet port, 2x2:2SS 2.4GHz radio
- 802.11ac 4x4:4SS MU-MIMO
 - 1,733Mbps peak data rate, and up to 3 MU-MIMO client devices
- Dual radio, 802.11ac 4x4:4SS VHT160 and integrated BLE
 - 5GHz: 1,733Mbps max (with 4SS/VHT80 or 2SS/VHT160 clients)
 - 2.4GHz: 400Mbps max (2SS/VHT40)
 - More realistic for 2.4GHz: 300Mbps at 2SS/VHT40 and 144Mbps at 2SS/VHT20
 - Support for additional 5GHz bands (anticipating these being opened by FCC)
 - Integrated BLE radio: locationing, wireless console access
 - 100/1000 Gb Ethernet network interface
 - MU-MIMO, TxBF, ACC, USB, console, reset
 - 802.3af/at POE / 12Vdc, 21W max (includes power delivered to USB device)
 - Intelligent Power Monitoring (IPM) to monitor and optimize power consumption
- Size: smaller than AP-325, similar to AP-215
 - 182mm x 180mm x 48mm



Minimum SW versions:

AOS: 6.5.0
Instant: 4.3.0

Brocade ICX 7250 Switch



HIGHLIGHTS

- Offers enterprise-class stackable switching at an entry-level price, allowing organizations to buy what they need now and easily scale as demand grows and new technologies emerge
- Future-proofs campus networks via flexible stacking, software licensing of 1 GbE to 10 GbE ports, Brocade Campus Fabric technology*, and future upgrades to OpenFlow support in true hybrid port mode, enabling Software-Defined Networking (SDN) for programmatic network control
- Enables enterprise-class manageability with up to 8×10 GbE ports for stacking or uplinks
- Delivers market-leading stacking scalability with up to 12 switches per stack, 80 Gbps of stacking bandwidth, and long-distance stacking using open standards
- Offers full Power over Ethernet (PoE+) to power wireless access points, video surveillance and video conferencing equipment, VDI terminals, and HD displays directly from the switch
- Includes the Brocade Assurance Limited Lifetime Warranty and three years of technical support

Entry-Level, Enterprise-Class Stackable Switch with Future-Proof Expandability

The Brocade® ICX® 7250 Switch delivers the performance, flexibility, and scalability required for enterprise Gigabit Ethernet (GbE) access deployment. It raises the bar with up to 8×10 GbE ports for uplinks or stacking and market-leading stacking density with up to 12 switches (576×1 GbE) per stack. In addition, the Brocade ICX 7250 combines enterprise-class features, manageability, performance, and reliability with the flexibility, cost-effectiveness, and “pay as you grow” scalability of a stackable solution.

Premium Performance in an Entry-Level Switch

The Brocade ICX 7250 Switch provides enterprise-class stackable LAN switching solutions to meet the growing demands of campus networks. Designed for small to medium-size enterprises, branch offices, and distributed campuses, these intelligent, scalable edge switches deliver enterprise-class functionality at an affordable price—without compromising performance and reliability. The Brocade ICX 7250 delivers wire-speed, non-blocking performance across all ports to support latency-sensitive applications, such as real-time voice/video streaming and Virtual Desktop Infrastructure (VDI). The Brocade ICX 7250 is available in 24- and 48-port 10/100/1000 Mbps models with 1 GbE uplink or 10 GbE dual-purpose uplink/stacking ports (see Figure 1)—with or without PoE and PoE+—to support

enterprise edge networking, wireless mobility, and IP communications without the need for additional power outlets or power injectors.

The new Brocade Campus Fabric technology* maximizes the value of Brocade ICX 7250 Switches. It enables the Brocade ICX 7250 to extend ports in combination with Brocade ICX 7450 and 7750 Switches, creating a complete campus network solution with consolidated management across aggregation and core layers, shared network services—adding advanced Layer 3 capabilities to all switches—and scale-out flexibility to expand port density as needed (see Figure 2). The Brocade ICX 7250 with Campus Fabric technology* provides an ideal network access solution for the campus network.

* Support on the Brocade ICX 7250 to be available in a future release.

Scaling Out Ports and Services as Demand Grows

The Brocade ICX 7250 is easy to deploy, manage, and integrate into both new and existing networks. Organizations can buy only what they need today, and easily scale out as demand grows and new technologies emerge.

Brocade stacking technology makes it easy to scale ports by stacking up to 12 Brocade ICX 7250 Switches into a single logical switch. This allows the Brocade ICX 7250 to provide a class-leading 80 Gbps of backplane bandwidth as well as simple and robust expandability for future growth at the network edge. In addition, this stacked switch has only a single IP address to simplify management and offers transparent forwarding across a pool of up to 576×1 GbE ports and 96×10 GbE ports. When new switches join the stack, they automatically inherit the stack's existing configuration file, enabling true plug-and-play network expansion. Flexible licensing of 1 GbE to 10 GbE ports, for uplink and stacking, allows organizations to optimize network performance based on specific requirements.

Furthermore, Brocade Campus Fabric technology* enables organizations to add advanced Layer 3 services across the stack by simply adding premium Brocade ICX 7750 Switches to existing Brocade ICX 7250 deployments. This eliminates the need for "rip and replace" upgrades, since low-cost Brocade ICX 7250 ports can live on to inherit new services.

Brocade Campus Fabric Technology: Extending Options and Scalability

Brocade Campus Fabric technology, offered for Brocade ICX 7250*, 7450, and 7750 Switches, extends network options and scalability. It integrates premium Brocade ICX 7750, midrange Brocade ICX 7450, and entry-level Brocade ICX 7250 Switches, collapsing network access, aggregation, and core layers into

Brocade ICX 7250 Switches

Except as noted, all Brocade ICX 7250 models offer eight uplink/stacking ports, a single integrated power supply and fan, one RJ-45 network management port, one mini USB serial management port, and one USB storage port on the front panel.



Brocade ICX 7250-24G
24×10/100/1000 Mbps RJ-45 ports
4×1 GbE uplink ports
Not upgradable; no EPS connector
Premium Layer 3 licenses not applicable



Brocade ICX 7250-24
24×10/100/1000 Mbps RJ-45 ports
8×1 GbE uplink/stacking ports
Upgradable to 10 GbE



Brocade ICX 7250-24P
24×10/100/1000 Mbps RJ-45 PoE+ ports
370 W PoE budget
8×1 GbE uplink/stacking ports
Upgradable to 10 GbE



Brocade ICX 7250-48
48×10/100/1000 Mbps RJ-45 ports
8×1 GbE uplink/stacking ports
Upgradable to 10 GbE



Brocade ICX 7250-48P
48×10/100/1000 Mbps RJ-45 PoE+ ports
740 W PoE budget
8×1 GbE uplink/stacking ports
Upgradable to 10 GbE

a single logical switch. This logical device shares network services while reducing management touch points and network hops through a single-layer design spanning the entire campus network.

These powerful deployments deliver equivalent or better functionality than large, rigid modular chassis systems, but with significantly lower costs and smaller carbon footprints.



Figure 1: Up to 12 Brocade ICX 7250 Switches can be stacked together using up to four full-duplex SFP+ 10 Gbps ports for a fully redundant backplane with 80 Gbps of stacking bandwidth.

* Support on the Brocade ICX 7250 to be available in a future release.

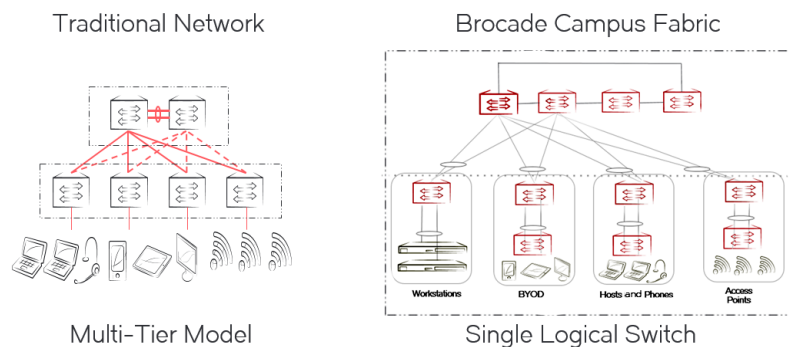


Figure 2: Brocade Campus Fabric technology.

Brocade ICX switches support a Distributed Chassis deployment model that uses standards-based optics and cabling interface connections to help ensure maximum distance between campus switches—up to 80 km—and minimum cabling costs—up to 50 percent less than incumbent solutions. This gives organizations the flexibility to deliver ports wherever they are needed on campus at a fraction of the cost. The Distributed Chassis design future-proofs campus networks by allowing networks to easily and cost-effectively expand in scale and capabilities.

Full Layer 3 Capabilities

Brocade ICX 7250 Switches offer an upgrade option to bring full Layer 3 capabilities to the network edge, reducing complexity and enhancing the reliability of enterprise networks.

Power to Spare

The Brocade ICX 7250 can deliver both power and data across network connections, supporting Power over Ethernet (PoE/PoE+) standards and providing a single-cable solution for edge devices, such as wireless access points, VoIP phones, video surveillance equipment, and VDI thin terminals. Carrying data and power through a single Ethernet wire reduces the number of power receptacles and power adapters while increasing reliability and wiring flexibility. The Brocade ICX 7250-24P provides 370 watts and can deliver PoE power to all 24 ports, while the Brocade ICX 7250-48P provides

740 watts and can deliver PoE+ power for up to 12 or 24 ports. Both switches can provide PoE and PoE+ (30 watts) power to all ports when an external power supply is deployed.

The optional Brocade ICX-EPS 4000 is an external power supply source that delivers additional power for up to 16 Brocade ICX 7250 Switches (see Figures 3 and 4). It can be used for system power redundancy and an increased PoE/PoE+ power budget to enable additional ports.

EEE Power Savings

The Brocade ICX 7250 Switch supports the IEEE 802.3az standard for Energy Efficient Ethernet (EEE), reducing power consumption during periods of low utilization. Ports are placed into a low power mode when no data is being transmitted.

Enterprise-Class Availability

When every second matters, Brocade ICX 7250 Switches help deliver continuous availability to optimize the user experience. Brocade stacking technology delivers high availability, performing real-time state synchronization across the stack and enabling instantaneous hitless failover to a standby controller in the unlikely event of a failure of the master stack controller. Organizations also can use hot-insertion/removal of stack members to avoid interrupting service when adding a switch to increase the capacity of a stack or replacing a switch that needs servicing.

BROCADE CAMPUS FABRIC TECHNOLOGY

Brocade Campus Fabric technology brings campus networks into the modern era to better support seamless wireless mobility, security, and ease of application deployment. This innovative technology collapses multiple network layers into a single logical switch, flattening the network and eliminating deployment complexity while simplifying network management and reducing operating costs.

Brocade Campus Fabric technology enables organizations to build networks that deliver:

- **Consolidated management:** Reduces unnecessary network layers to create large management domains that eliminate individual switch touch points, reducing maintenance time and costs.
- **Shared network services:** Allows premium and entry-level switches to mesh together into a single logical switch and share advanced Layer 2/3 services, delivering lower price-per-port functionality without compromising performance.
- **Scale-out networking:** Integrates high-performance, fixed form-factor switches to create a single distributed logical switch that is independent of physical location and allows organizations to add ports whenever and wherever needed across the campus without adding complexity.



Figure 3: Brocade ICX-EPS 4000 for the Brocade ICX 7250, shown with four AC power supplies.



Figure 4: Rear view of the Brocade ICX-EPS 4000 connectivity.

In addition to stack-level high availability, Brocade ICX 7250 Switches also offer an external power supply for failover resiliency, as well as increased PoE/PoE+ port availability.

Simplified, Open-Standards-based Management and Monitoring

The Brocade ICX 7250 provides simplified, standards-based management capabilities that help organizations reduce administrative time and effort while securing their networks.

sFlow-based "Always-On" Network Monitoring

sFlow is a modern, standards-based network export protocol (RFC 3176) that addresses many of the challenges that network managers face today. By embedding sFlow hardware support into the Brocade ICX 7250, Brocade delivers an "always-on" technology that operates with wire-speed performance. sFlow dramatically reduces implementation costs compared to traditional network monitoring solutions that rely on mirrored ports, probes, and line-tap technologies. Moreover, sFlow gives organizations full, enterprise-wide monitoring capability for every port in the network.

Simplified, Automated Deployment with Auto-Provisioning

The Brocade ICX 7250 supports auto-provisioning, simplifying deployment with a truly plug-and-play experience. Organizations can use this feature to automate IP address and feature configuration of the switches without requiring a highly trained network engineer onsite. When the switches power up, they can automatically receive their IP addresses and configuration files from DHCP and Trivial File Transport Protocol (TFTP) servers. They also can automatically receive a software update to be at the same code revision as currently installed switches.

Open-Standards Management

The Brocade ICX 7250 includes an industry-standard Command Line Interface (CLI) and supports Secure Shell (SSHv2), Secure Copy (SCP), and SNMPv3 to restrict and encrypt management communications to the system. In addition, support for Terminal Access Controller Access Control System (TACACS/TACACS+) and RADIUS authentication helps ensure secure operator access.

SDN-Enabled Programmatic Control of the Network

Software-Defined Networking (SDN) is a powerful new network paradigm designed for the world's most demanding networking environments and promises breakthrough levels of customization, scale, and efficiency. The Brocade ICX 7250 enables SDN by supporting the OpenFlow 1.3 protocol, which allows communication between an OpenFlow controller and an OpenFlow-enabled switch. Using this approach, organizations can control their networks programmatically, transforming the network into a platform for innovation through new network applications and services.

The Brocade ICX 7250 delivers OpenFlow in true hybrid port mode, which allows organizations to simultaneously deploy traditional Layer 2/3 forwarding with OpenFlow on the same port. This unique capability provides a pragmatic path to SDN by enabling network administrators to progressively integrate OpenFlow into existing networks, giving them the programmatic control offered by SDN for specific flows while the remaining traffic is forwarded as before. Brocade ICX 7250 hardware support for OpenFlow enables organizations to apply these capabilities at line rate.

Plug-and-Play Operations for Powered Devices

Brocade ICX switches support the IEEE 802.1AB Link Layer Discovery Protocol (LLDP) and ANSI TIA 1057 Link Layer Discovery Protocol-Media Endpoint Discovery (LLDP-MED) standards that enable organizations to deploy interoperable multivendor solutions for Unified Communications (UC). Configuring IP endpoints such as VoIP phones can be a complex task, requiring manual and time-consuming

configuration. LLDP and LLDP-MED provide a standard, open method for configuring, discovering, and managing network infrastructure.

Unified Wired/Wireless Network Management with Brocade Network Advisor

Managing enterprise campus networks continues to become more complex due to the growth in services that rely on wired and wireless networks. Services such as Internet, e-mail, video conferencing, real-time collaboration, and distance learning all have specific configuration and management requirements. At the same time, organizations face increasing demand to provide uninterrupted services for high-quality voice and UC, wireless mobility, and multimedia applications. To reduce complexity and the time spent managing these environments, the easy-to-use Brocade Network Advisor discovers, manages, and deploys configurations to groups of IP devices. By using Brocade Network Advisor, organizations can configure Virtual LANs (VLANs) within the network, manage wireless access points, and execute commands on specific IP devices or groups of IP devices. sFlow-based proactive monitoring is ideal for performing network-wide troubleshooting, generating traffic reports, and gaining visibility into network activity from the edge to the core. Brocade Network Advisor centralizes management of the entire family of Brocade wired products and Aruba wireless products.

Data Center ToR Server Connectivity

The Brocade ICX 7250 is designed to fit in server racks by consuming only one rack unit. In data center environments where most servers are 1 GbE-capable, the Brocade ICX 7250 provides a compact and cost-effective 1 GbE Top-of-Rack (ToR) switch by simply connecting 1 GbE Network Interface Cards (NICs) in the servers to Brocade ICX 7250 1 GbE ports. This configuration uses 10 GbE links to connect to Brocade ICX data center aggregation switches.

Warranty

Brocade ICX 7250 Switches are covered by the Brocade Assurance® Limited Lifetime Warranty. For details, visit www.brocade.com/warranty.

Best-in-Class Support

The Brocade ICX 7250 Switch is supported by next-business-day advance replacement where available, as well as software defect repairs and maintenance updates. In an effort to further improve service levels and operational efficiency, Brocade includes three years of technical support for Brocade ICX 7250 Switches, providing direct 24x7 access to the Brocade Technical Assistance Center.

Brocade Global Services

Brocade Global Services has the expertise to help organizations build scalable, efficient cloud infrastructures. Leveraging 20 years of expertise in storage, networking, and virtualization, Brocade Global Services delivers world-class professional services, technical support, network monitoring services, and education, enabling organizations to maximize their Brocade investments, accelerate new technology deployments, and optimize the performance of networking infrastructures.

Affordable Acquisition Options

Brocade Capital Solutions helps organizations easily address their IT requirements by offering flexible network acquisition and support alternatives. Organizations can select from purchase, lease, Brocade Network Subscription, and Brocade Subscription Plus options to align network acquisition with their unique capital requirements and risk profiles. To learn more, visit www.brocade.com/CapitalSolutions.

Maximizing Investments

To help optimize technology investments, Brocade and its partners offer complete solutions that include professional services, technical support, and education. For more information, contact a Brocade sales partner or visit www.brocade.com.

BROCADE ICX 7250 SWITCH AND CONTROLLER INTEROPERABILITY

The Brocade ICX 7250 Switch operates seamlessly under the Brocade SDN Controller. This controller is a quality-assured edition of the OpenDaylight controller code supported by an established networking provider and its leaders within the OpenDaylight community.

Brocade ICX 7250 Feature/Model Comparison

	24 RJ-45 Ports	24 or 48 Ports Non-PoE		24 or 48 PoE+ Ports	
	Brocade ICX 7250-24G	Brocade ICX 7250-24	Brocade ICX 7250-48	Brocade ICX 7250-24P	Brocade ICX 7250-48P
Switching capacity (data rate, full duplex)	128 Gbps	208 Gbps	256 Gbps	208 Gbps	256 Gbps
Forwarding capacity (data rate, full duplex)	96 Mpps	154 Mpps	190 Mpps	154 Mpps	190 Mpps
Fixed ports: 10/100/1000 Mbps RJ-45	24	24	48	24	48
Fixed ports: 100/1000 Mbps SFP	4				
Fixed ports: 1/10 Gbps SFP+ (10 GbE SPF+ optional upgrade license)		8	8	8	8
Maximum PoE Class 3 ports (internal AC power supply only)	N/A	N/A	N/A	24	48
Maximum PoE+ ports (internal AC power supply only)	N/A	N/A	N/A	12	24
Maximum PoE+ ports (with external power supply)	N/A	N/A	N/A	24	48
Advanced IPv4/v6 L3 routing (RIP, OSPF)	N/A	with license	with license	with license	with license
Aggregated stacking bandwidth	N/A	480 Gbps	480 Gbps	480 Gbps	480 Gbps
Stacking density (maximum switches in a stack)	N/A	12	12	12	12
Maximum stacking distance (distance between stacked switches)	N/A	10 km	10 km	10 km	10 km
Power					
Power inlet (AC)	C14				
Input voltage/frequency	AC: 100 to 240 VAC @ 50 to 60 Hz				
Power supply rated maximum (AC)	135 W	135 W	135 W	525 W	880 W
PoE power budget (AC) (internal AC power supply only)	N/A	N/A	N/A	370 W	740 W
Switch power consumption (25°C)					
Idle (no PoE load)	33.6 W	42.6 W	50.64 W	50 W	66 W
10% traffic* (full PoE load)	42.6 W	51.6 W	63.55 W	63 W	84 W
100% traffic* (full PoE load)	44.4 W	57.6 W	69.51 W	73 W	96 W
Airflow	front-to-back	side-to-back	side-to-back	side-to-back	side-to-back
Switch heat dissipation (25°C)†					
Idle (no PoE load)	114.6 BTU/Hr	145.3 BTU/Hr	172.7 BTU/Hr	170.6 BTU/Hr	225.2 BTU/Hr
10% traffic* (full PoE load)	145.3 BTU/Hr	176.06 BTU/Hr	216.8 BTU/Hr	214.9 BTU/Hr	286.6 BTU/Hr
100% traffic* (full PoE load)	151.4 BTU/Hr	196.5 BTU/Hr	237.1 BTU/Hr	249.08 BTU/Hr	327.5 BTU/Hr

* Traffic load on all ports connected with maximum possible PoE/PoE+ loads (if equipped). PoE power delivered to powered devices not included.

† PoE power not included in switch heat dissipation figures since the heat is not dissipated at the switch.

Brocade ICX 7250 Feature/Model Comparison (Continued)

	24 RJ-45 Ports	24 or 48 Ports Non-PoE		24 or 48 PoE+ Ports	
Environment					
Weight (kg)	3.58	3.76	4.84	4.73	5.86
Dimensions	48 port: 440 mm (17.323 in.) W×370 mm (14.56 in.) D×43.7 mm (1.720 in.) H — 1U 24 port: 440 mm (17.323 in.) W×280 mm (11.02 in.) D×43.7 mm (1.720 in.) H — 1U				
Acoustics (25°C)	40 dB	41.9 dB	44.5 dB	44.7 dB	45.9 dB
MTBF (hours) (25°C)	767,718	676,362	665,319	429,209	411,187

Brocade ICX 7250 Specifications

Specifications

Connector options	<ul style="list-style-type: none"> • 10/100/1000 ports: RJ-45 • 1 Gbps SFP ports (Brocade ICX 7250-24G only) • 1/10 Gbps SFP+ ports (not available on Brocade ICX 7250-24G) • Out-of-band Ethernet management: 10/100/1000 Mbps RJ-45 • Console management: Mini-USB serial port (Mini-B plug) • File transfer: USB port (Standard-A plug) For the latest information about supported optics, please visit www.Brocade.com/Optics .	
Maximum MAC addresses	16,000	
Maximum VLANs	4,095	
Maximum STP (spanning trees)	254	
Maximum routes (in hardware)	12,000	
Trunking	16	
Maximum jumbo frame size	9,216 bytes	
Average latency	1.5 µs	
QoS Priority Queues	8	
Layer 2 switching	<ul style="list-style-type: none"> • 802.1s Multiple Spanning Tree • 802.1x Authentication • Auto MDI/MDIX • BPDU Guard, Root Guard • Dual-Mode VLANs • MAC-based VLANs, Dynamic MAC-based VLAN activation • Dynamic VLAN Assignment • Dynamic Voice VLAN Assignment • Fast Port Span • GARP VLAN Registration Protocol • IGMP Snooping (v1/v2/v3) • IGMP Proxy for Static Groups • IGMP v2/v3 Fast Leave • IGMP Tracking • Inter-Packet Gap (IPG) adjustment • Link Fault Signaling (LFS) • MAC Address Locking; MAC Port Security • MAC-Layer Filtering • MAC Learning Disable • MLD Snooping (v1/v2) • Multi-device Authentication • Per-VLAN Spanning Tree (PVST/PVST+/PVRST) • Mirroring—Port-based, ACL-based, MAC Filter-based, and VLAN-based • PIM-SM v2 Snooping • Port Loop Detection • Private VLAN • Protocol VLAN (802.1v), Subnet VLAN • Remote Fault Notification (RFN) • Single-instance Spanning Tree • Single-link LACP • Trunk Groups • Uni-Directional Link Detection (UDLD) 	

Brocade ICX 7250 Specifications (Continued)

Base Layer 3 IP routing	<ul style="list-style-type: none"> • IPv4 and IPv6 static routes • ECMP • Port-based Access Control Lists • L3/L4 ACLs • Host routes 	<ul style="list-style-type: none"> • Virtual interfaces • Routed interfaces • Route-only support • Routing between directly connected subnets
Premium Layer 3 IP routing	<ul style="list-style-type: none"> • IPv4 and IPv6 dynamic routes • RIP v1/v2 • OSPF v2 • Virtual Route Redundancy Protocol (VRRP) • VRRP-E • IPv6 over IPv4 tunnels 	<ul style="list-style-type: none"> • PIM-SM, PIM-SSM, PIM-DM, PIM passive (IPv4/IPv6 multicast routing functionality) • OSPF v3 • VRRP v3 • RIPng
SDN features	<ul style="list-style-type: none"> • Support for OpenFlow v1.0 and v1.3 • OpenFlow support with true hybrid port mode 	<ul style="list-style-type: none"> • Operates seamlessly under the Brocade SDN Controller
Metro features	<ul style="list-style-type: none"> • Metro-Ring Protocol MRP (v1, v2) • Virtual Switch Redundancy Protocol (VSRP) • VLAN Stacking (Q-in-Q) 	<ul style="list-style-type: none"> • VRRP • Topology Groups
Quality of Service (QoS)	<ul style="list-style-type: none"> • ACL Mapping and Marking of ToS/DSCP • ACL Mapping and Marking of 802.1p • ACL Mapping to Priority Queue • ACL Mapping to ToS/DSCP • Classifying and Limiting Flows Based on TCP Flags • DHCP Relay 	<ul style="list-style-type: none"> • DiffServ Support • Honoring DSCP and 802.1p • MAC Address Mapping to Priority Queue • Priority Queue Management using Weighted Round Robin (WRR), Strict Priority (SP), and a combination of WRR and SP
IEEE standards compliance	<ul style="list-style-type: none"> • 802.1AB LLDP/LLDP-MED • 802.1D-2004 MAC Bridging • 802.1p Mapping to Priority Queue • 802.1s Multiple Spanning Tree • 802.1w Rapid Spanning Tree (RSTP) • 802.1x Port-based Network Access Control • 802.3 10Base-T • 802.3ab 1000Base-T • 802.3ad Link Aggregation (Dynamic and Static) 	<ul style="list-style-type: none"> • 802.3ae 10 Gigabit Ethernet • 802.3af Power over Ethernet • 802.3at Power over Ethernet Plus • 802.3u 100Base-TX • 802.3x Flow Control • 802.3z 1000Base-SX/LX • 802.3 MAU MIB (RFC 2239) • 802.3az-2010 - EEE • 802.1Q VLAN Tagging
RFC standards compliance	For a complete list of RFCs supported by the Brocade FastIron® software platform, please visit www.brocade.com/fastironrfc .	
Traffic management	<ul style="list-style-type: none"> • ACL-based inbound rate limiting and traffic policies • Broadcast, multicast, and unknown unicast rate limiting 	<ul style="list-style-type: none"> • Inbound rate limiting per port • Outbound rate limiting per port and per queue
High availability	<ul style="list-style-type: none"> • L3 VRRP protocol redundancy • Real-time state synchronization across the stack 	<ul style="list-style-type: none"> • Hitless failover from master to standby stack controller • Hot insertion and removal of stacked units

Network and Device Management

Management	<ul style="list-style-type: none"> • Auto Configuration • Configuration Logging • Digital Optical Monitoring • Display Log Messages on Multiple Terminals • Embedded Web Management • Embedded DHCP Server 	<ul style="list-style-type: none"> • Industry-standard Command Line Interface (CLI) • Key-based activation of optional software features • Integration with HP OpenView for Sun Solaris, HP-UX, IBM AIX, and Windows • Brocade Network Advisor • MIB Support for MRP, Port Security, MAC Authentication, and MAC-based VLANs
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Brocade ICX 7250 Specifications (Continued)

Management (continued)	<ul style="list-style-type: none">• Out-of-band Ethernet Management• ERSPAN support for remote traffic monitoring• RFC 783 TFTP• RFC 854 TELNET Client and Server• RFC 951 Bootp• RFC 1157 SNMPv1/v2c• RFC 1213 MIB-II• RFC 1493 Bridge MIB• RFC 1516 Repeater MIB• RFC 1573 SNMP MIB II• RFC 1643 Ethernet Interface MIB• RFC 1724 RIP v1/v2 MIB• RFC 1757 RMON MIB• RFC 2068 Embedded HTTP	<ul style="list-style-type: none">• RFC 2131 DHCP Server and DHCP Relay• RFC 2570 SNMPv3 Intro to Framework• RFC 2571 Architecture for Describing SNMP Framework• RFC 2572 SNMP Message Processing and Dispatching• RFC 2573 SNMPv3 Applications• RFC 2574 SNMPv3 User-based Security Model• RFC 2575 SNMP View-based Access Control Model SNMP• RFC 2818 Embedded HTTPS• RFC 3176 sFlow• SNTP Simple Network Time Protocol• Multiple Syslog Servers
Security	<ul style="list-style-type: none">• 802.1X Accounting• MAC Authentication• DHCP snooping• Dynamic ARP inspection• Bi-level Access Mode (Standard and EXEC Level)• EAP pass-through support• IEEE 802.1X username export in sFlow• Protection against Denial of Service (DoS) attacks• Authentication, Authorization, and Accounting (AAA)	<ul style="list-style-type: none">• Advanced Encryption Standard (AES) with SSHv2• RADIUS/TACACS/TACACS+• Secure Copy (SCP)• Secure Shell (SSHv2)• Username/Password• Web authentication• Change of Authorization (CoA) RFC 5176• Flexible authentication
Environment		
Temperature	<ul style="list-style-type: none">• Operating temperature: -5°C to 50°C/23°F to 122°F• Storage temperature: -25°C to 70°C/-13°F to 158°F	
Humidity	<ul style="list-style-type: none">• Operating relative humidity: 5% to 95% at 50°C, non-condensing• Non-operating relative humidity: 0% to 95% at 70°C, non-condensing	
Altitude	<ul style="list-style-type: none">• Operating altitude: 10,000 ft (3,000 m) maximum• Storage altitude: 39,000 ft (12,000 m) maximum	
Compliance/Certification		
Electromagnetic emissions	FCC Class A (Part 15); EN 55022/CISPR-22 Class A; VCCI Class A; ICES-003 Electromagnetic Emission; AS/NZS 55022; EN 61000-3-2 Power Line Harmonics; EN 61000-3-3 Voltage Fluctuation and Flicker; EN 61000-6-3 Emission Standard (supersedes: EN 50081-1)	
Safety	CAN/CSA-C22.2 NO. 60950-1-07; UL 60950-1 Second Edition; IEC 60950-1 Second Edition; EN 60950-1:2006 Safety of Information Technology Equipment; EN 60825-1 Safety of Laser Products—Part 1: Equipment Classification, Requirements and User's Guide; EN 60825-2 Safety of Laser Products—Part 2: Safety of Optical Fibre Communication Systems	
Immunity	EN 61000-6-1 Generic Immunity and Susceptibility (supersedes EN 50082-1); EN 55024 Immunity Characteristics (supersedes EN 61000-4-2 ESD); EN 61000-4-3 Radiated, Radio Frequency, Electromagnetic Field; EN 61000-4-4 Electrical Fast Transient; EN 61000-4-5 Surge; EN 61000-4-6 Conducted Disturbances Induced by Radio-Frequency Fields; EN 61000-4-8 Power Frequency Magnetic Field; EN 61000-4-11 Voltage Dips and Sags	
Environmental regulatory compliance	RoHS-compliant (6 of 6); WEEE-compliant	
Vibration	IEC 68-2-36, IEC 68-2-6	
Shock and drop	IEC 68-2-27, IEC 68-2-32	

Brocade ICX 7250 Ordering Information

Part Number	Description
Brocade ICX 7250 Switches	
ICX7250-24G	Brocade ICX 7250 Switch 24-port, 4×1 GbE (basic, non-upgradable switch) with front-to-back airflow, no EPS connector
ICX7250-24	Brocade ICX 7250 Switch 24-port, 8×1/10 GbE, no 10 GbE PoD license preloaded, with side-to-back airflow
ICX7250-24P	Brocade ICX 7250 Switch 24-port PoE, 8×1/10 GbE, no 10 GbE PoD license preloaded, with side-to-back airflow
ICX7250-48	Brocade ICX 7250 Switch 48-port, 8×1/10 GbE, no 10 GbE PoD license preloaded, with side-to-back airflow
ICX7250-48P	Brocade ICX 7250 Switch 48-port PoE, 8×1/10 GbE, no 10 GbE PoD license preloaded, with side-to-back airflow
Switches	With 2×10 GbE PoD Licenses
ICX7250-24-2X10G	Brocade ICX 7250 Switch 24-port, 8×1/10 GbE, 2×10 GbE PoD license preloaded
ICX7250-24P-2X10G	Brocade ICX 7250 Switch 24-port PoE, 8×1/10 GbE, 2×10 GbE PoD license preloaded
ICX7250-48-2X10G	Brocade ICX 7250 Switch 48-port, 8×1/10 GbE, 2×10 GbE PoD license preloaded
ICX7250-48P-2X10G	Brocade ICX 7250 Switch 48-port PoE, 8×1/10 GbE, 2×10 GbE PoD license preloaded
Brocade ICX-EPS 4000 External Power Supply Options for the Brocade ICX 7250 Switch	
The Brocade ICX-EPS4000 supports up to four removable power supplies. Each power supply provides 920 W.	
ICX-EPS4000-SHELF	1U EPS
RPS17	EPS power supply, 920 W
ICX-EPS4000-CBL-01	Brocade ICX-EPS4000 power cable 1:1
ICX-EPS4000-CBL-02	Brocade ICX-EPS4000 power cable 1:2
Feature License and Accessories	
ICX7250-PREM-LIC	Brocade ICX 7250 Layer 3 Premium software license (non-node lock)
ICX7250-2X10G-LIC-POD	2×10 GbE PoD license (node lock)—upgrade uplink/stacking ports from 8×1 GbE to 2×1 GbE/10 GbE + 6×1 GbE
ICX7250-8X10G-LIC-POD	Upgrade uplink/stacking ports from 2×1 GbE/10 GbE + 6×1 GbE to 8×1 GbE/10 GbE (node lock)
ICX7000-RMK	FRU, rack mount kit, two-post, Brocade ICX 7750/7450
XBR-R000295	FRU, rack mount kit, four-post, 24 in. to 32 in. depth rack
BR-NTWADV-IP-BASE	Brocade Network Advisor IP management software license for up to 50 devices; required for initial purchase of IP-only management; minimum of one year of support required
Optics	For Brocade ICX 7250-24G Only
EIMG-BXD	1000BASE-BXD SFP optic SMF, transmits at 1,490 nm and receives at 1,310 nm, LC connector, single strand SMF fiber. This optic should only be connected to an EIMG-BXU at the far end.
EIMG-BXU	1000BASE-BXU SFP optic SMF, transmits at 1,310 nm and receives at 1,490 nm, LC connector, single strand SMF fiber. This optic should only be connected to an EIMG-BXD at the far end.
EIMG-LHA-OM-T	1000BASE-LHA SFP optic, SMF, LC connector, optical monitoring capable (70 km), industrial temperature
EIMG-LX-OM	1000BASE-LX SFP optic, SMF, LC connector, optical monitoring capable
EIMG-SX-OM	1000BASE-SX SFP optic, MMF, LC connector, optical monitoring capable
EIMG-TX	1000BASE-TX SFP copper, RJ-45 connector

Brocade ICX 7250 Ordering Information (Continued)

Optics	For Brocade ICX 7250-24/24P/48/48P
10G-SFPP-ER	10GBASE-ER SFP+ optic (LC), for up to 40 km over SMF
10G-SFPP-LR	10GBASE-LR, SFP+ optic (LC), for up to 10 km over SMF
10G-SFPP-SR	10GBASE-SR, SFP+ optic (LC), target range 300 m over MMF
10G-SFPP-USR	10GE USR SFP+ optic (LC), target range 100 m over MMF, 1-pack
10G-SFPP-ZR	10GBASE-ZR SFP+ optic (LC), for up to 80 km over SMF
E1MG-BXD	1000BASE-BXD SFP optic SMF, transmits at 1,490 nm and receives at 1,310 nm, LC connector, single strand SMF fiber. This optic should only be connected to an E1MG-BXU at the far end.
E1MG-BXU	1000BASE-BXU SFP optic SMF, transmits at 1,310 nm and receives at 1,490 nm, LC connector, single strand SMF fiber. This optic should only be connected to an E1MG-BXD at the far end.
E1MG-LHA-OM-T	1000BASE-LHA SFP optic, SMF, LC connector, optical monitoring capable (70 km), industrial temperature
E1MG-LX-OM	1000BASE-LX SFP optic, SMF, LC connector, optical monitoring capable
E1MG-SX-OM	1000BASE-SX SFP optic, MMF, LC connector, optical monitoring capable
E1MG-TX	1000BASE-TX SFP Copper, RJ-45 connector
Direct-Attached Cables	For Brocade ICX 7250-24/24P/48/48P
10G-SFPP-TWX-0101	Direct-attached SFP+ copper cable, 1 m, 1-pack, active
10G-SFPP-TWX-0301	Direct-attached SFP+ copper cable, 3 m, 1-pack, active
10G-SFPP-TWX-0501	Direct-attached SFP+ copper cable, 5 m, 1-pack, active
10GE-SFPP-AOC-0701	10 GbE SFP+ direct-attached active optical cable, 7m, 1-pack
10GE-SFPP-AOC-1001	10 GbE SFP+ direct-attached active optical cable, 10 m, 1-pack
1G-SFP-TWX-0101	Direct-attached 1 GbE SFP copper cable, 1 m
1G-SFP-TWX-0501	Direct-attached 1 GbE SFP copper cable, 5 m

For a list of cables and fiber optics approved for stacking, visit www.brocade.com/fastironstacking.

Ordering Instructions

Customers have two options when ordering a Brocade ICX 7250 Switch. They can order one of the five Brocade ICX 7250 Switch models with 1 GbE uplink/stacking ports, or order a switch preloaded with a PoD license for two 10 GbE uplink/stacking ports.

The Brocade ICX 7250 (-24/-24P/-48/-48P) can be upgraded to 2×10 GbE uplink/stacking ports by purchasing a PoD license (ICX7250-2X10G-LIC-POD).

A Brocade ICX 7250 Switch with 2×10 GbE uplink/stacking ports can be upgraded to 8×10 GbE by purchasing an additional PoD license (ICX7250-8X10G-LIC-POD). Only switches that already have 2×10 GbE can be upgraded to 8×10 GbE.

Note that the Brocade ICX 7250-24G Switch is not upgradable and will support 4×1 GbE uplink ports only.

All Brocade ICX 7250 Switches include a power cord, two-post rack mounting brackets, and a USB serial console cable. Stacking cables must be ordered separately.

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Brocade Network Advisor

HIGHLIGHTS

- Simplifies network operations with an intuitive interface and customizable dashboards
- Provides unprecedented visibility through integration with Brocade fabric technologies
- Reduces costs by automating tasks across the network operations lifecycle
- Unifies management of Fibre Channel and IP storage network devices
- Integrates seamlessly with industry-leading management solutions from Microsoft, VMware, EMC, HP, and IBM, maximizing the value of IT investments

Simplified Network Operations for Dynamic Networks

Under pressure to reduce costs, free up resources, and accelerate the introduction of cloud services, many organizations are standardizing their operational processes and policies. Operations teams are seeking ways to get ahead of performance issues and ensure maximum availability. Focus on the network is critical to avoid unexpected downtime, reduce ongoing operational costs, and enable IT and business agility.

Brocade® Network Advisor simplifies daily network operations with customizable dashboards that enable administrators to identify network problems quickly and maintain network availability. It unifies management of the Brocade IP and SAN portfolio, and integrates with third-party solutions, reducing the number of tools needed for end-to-end network visibility and control. Brocade Network Advisor automates repetitive tasks, so that network teams can focus on proactively managing their network resources.

More Effective Network Operations

Brocade Network Advisor helps network teams efficiently manage the network operations lifecycle, including monitoring, diagnostics, change management, and troubleshooting. Brocade Network Advisor saves time and enables IT and business agility through:

- **Customizable, browser-accessible dashboards:** Proactively identify problem areas and prevent network

downtime with at-a-glance summaries of all discovered Brocade devices and third-party IP devices.

- **Performance reporting:** Gain visibility into real-time and historical performance data for advanced troubleshooting and performance management.
- **Point-in-time analysis:** Filter dashboards to observe and report on trends, and use the playback feature to quickly identify errors that might have caused a network event.
- **Network scope:** Use simple, customizable filters to focus all dashboard widgets on a specific segment of the network, such as a department or device type.
- **Virtual infrastructure:** See Virtual Machine (VM) connectivity in topologies and sFlow reports, and use event insights to enhance network troubleshooting through VMware integrations.

- **Role-Based Access Control (RBAC):** Define granular administrator roles and privileges to support the needs of different SAN and IP network teams.
- **Event management:** Receive SNMP traps, syslog event messages, and customizable event alerts for reporting, analysis, and remediation.
- **Advanced Call Home:** Automatically collect diagnostic information and send notifications for faster fault detection, isolation, and remote support operations.

Data Center Storage Networks

Brocade Network Advisor simplifies management of data center fabrics with its performance dashboards, easy-to-use interface, and automation features. Storage and server administrators can proactively manage their storage network environments to support non-stop networking, address issues before they impact operations, and minimize manual tasks. Key capabilities and features include:

- **Consolidated storage views:** See both Gen 5 Fibre Channel and IP storage devices from a single, pre-defined storage dashboard—or view networks separately via individual storage dashboards.
- **Configuration and Operational Monitoring Policy Automation Services Suite:** Guard against drift from preferred configuration settings with configuration and policy violation monitoring, highlighted in dashboards.
- **Multiprotocol support:** Automate manual operations with configuration wizards for Fibre Channel SANs, FICON® and cascaded FICON environments, Fibre Channel over IP (FCIP) tunnels, and Fibre Channel over Ethernet (FCoE) networks.
- **Out of Range Violations widget:** Identify devices or ports with the most demanding traffic flows for proactive capacity planning.
- **VM-to-storage visibility:** Easily integrate insights from leading virtualization solutions for VM-to-LUN visibility and management.
- **Multivendor adapter management:** Monitor and report on Emulex and QLogic adapter properties for a more holistic view of the SAN.

Brocade Fabric Vision Technology

Brocade Network Advisor integrates with Brocade Fabric Vision™ technology to provide unprecedented visibility and insight across storage networks. Brocade Network Advisor supports the following Brocade Fabric Vision technology features:

- **Monitoring and Alerting Policy Suite (MAPS):** Apply pre-built, customizable rules and policies to multiple ports, switches, or fabrics in a single click and instantly visualize health and performance statistics of the SAN infrastructure in the dashboard, topology, and event views. Click through wizards to adjust configurations to ensure availability is maintained; minimal expertise is required.
- **Fabric Performance Impact (FPI) Monitoring:** Set pre-defined thresholds in a single click from MAPS and take action on latency alerts highlighted in the dashboard or via e-mail. Use customizable topology views to visually pinpoint which devices and hosts are impacted by a bottlenecked port. Use the wizard and right-click menus to diagnose and troubleshoot before performance begins to degrade.
- **Brocade ClearLink Diagnostics:** Configure ports to diagnostic mode and view reports to validate optic and cable signal integrity before deployment.
- **Flow Vision:** Automatically configure application flows from the network topology view to accelerate and simplify troubleshooting and maximize performance.
- **Single-dialog bulk configuration:** Reduce time spent on repetitive tasks by deploying MAPS policies and rules across the fabric from a single dialog.
- **Customizable health and performance dashboards:** Focus attention on the most critical health and performance indicators for the campus network.
- **Brocade HyperEdge® architecture:** Consolidate management of wired and wireless solutions, including Access Points (APs) and wireless controllers.
- **Discover and manage configurations:** Ensure consistency across dynamically updated groups of devices.
- **Policy monitoring:** Configure multiple check options, including end-to-end VLAN consistency.
- **Real-time alerts:** Receive instant notifications when users deviate from customizable configuration policies, ensuring compliance standards are maintained.
- **Report for audit and compliance:** Create and export reports for wired products and APs using pre-built templates that can be easily customized.

Enterprise Campus Networks

Brocade Network Advisor provides management for increasingly complex enterprise campus networks that support services such as video conferencing, real-time collaboration, and distance learning. Brocade Network Advisor helps network administrators deliver highly available wired and wireless networks by enabling:

- **Customizable health and performance dashboards:** Focus attention on the most critical health and performance indicators for the campus network.
- **Brocade HyperEdge® architecture:** Consolidate management of wired and wireless solutions, including Access Points (APs) and wireless controllers.
- **Discover and manage configurations:** Ensure consistency across dynamically updated groups of devices.
- **Policy monitoring:** Configure multiple check options, including end-to-end VLAN consistency.
- **Real-time alerts:** Receive instant notifications when users deviate from customizable configuration policies, ensuring compliance standards are maintained.
- **Report for audit and compliance:** Create and export reports for wired products and APs using pre-built templates that can be easily customized.

Metro and Carrier Ethernet Networks

Service providers must address the exponential growth in network traffic by helping to reduce operational costs, prevent bandwidth over-provisioning,

¹ The Brocade Network Advisor license is required only for the VMware vRealize Operations Analytics Pack. All other adapters are available to download at no cost from the [VMware Solutions Exchange](#).

and improve user service provisioning. Brocade Network Advisor helps service providers achieve these goals by providing:

- Discovery, monitoring, deployment, management, and configuration capabilities for metro and Carrier Ethernet networks
- Comprehensive MPLS service management with support for MPLS Virtual Private LAN Services (VPLS), Label Switched Path (LSP), Local VPLS, Virtual Leased Line (VLL), and Local VLL services
- The ability to detect, isolate, and report Ethernet faults with full support for the IEEE 802.1ag Connectivity Fault Management (CFM) set of standards

Advanced Management for VCS Fabrics

Brocade Network Advisor allows organizations to maximize their Brocade VCS® Fabric technology investments by enabling advanced management of Brocade VCS fabrics and Brocade VDX® switches. For more information on VCS Fabric technology, visit www.brocade.com/vcs.

Key VCS fabric technology features include:

- **Flexible management options:** Manage a VCS fabric as a single entity or logical chassis, or drill down to individual Brocade VDX switches.
- **VCS fabric visibility:** Gain end-to-end visibility from the data center edge to hosts and VMs, as well as across multiple VCS fabrics and at individual node levels.
- **VCS fabric diagnostics:** Visualize traffic paths, measure network latency, and perform fault isolation via hop-by-hop inspection to pinpoint bottlenecks.
- **sFlow-based monitoring:** Achieve VM-level monitoring and gain application performance insights through this integration.

- **Firmware management:** Receive non-disruptive firmware updates for the entire VCS fabric or for a subset of Brocade VDX switches within the fabric.
- **VCS Virtual Fabric management:** Create, edit, and delete virtual fabrics.
- **Automatic Migration of Port Profiles (AMPP) Management:** Create, read, inventory, delete, associate, and disassociate port profiles to VMs. Rapidly associate port profiles and VMware port groups managed by a single or multiple VMware vCenter servers. Perform integrity checks of the port profiles across Brocade VDX switch configurations, either in the same fabric or across different VCS fabrics.

Flexibility through Partner Integration

To ensure organizations maximize their existing investments, Brocade Network Advisor integrates with a wide range of network management solutions—including tools from VMware, Microsoft, HP, EMC, and IBM—to provide end-to-end network visibility. Organizations also have the flexibility to extract data directly from Brocade Network Advisor for integration with homegrown applications through Open Database Connectivity (ODBC), or SMI-S.

Integration options include:

- **Brocade Network Advisor REST APIs (SAN):** Enables third-party applications to leverage REST services to access Brocade Fabric Vision performance data, events, dashboard summaries, SAN zoning, and inventory. This enables further programmability and paves the way for cloud, virtual, and Software-Defined Networking (SDN).
- **Brocade integrations with VMware vRealize Operations Insight¹:** Delivers health, risk, and efficiency insights from Brocade fabric technologies to dashboards in VMware vRealize Operations, enabling faster root-cause analysis and better VM and application performance. The vRealize Log Insight integration helps virtualization and cloud teams further troubleshoot from within vRealize, by presenting Brocade SAN and IP device log data.

- **Brocade Management Pack for Microsoft System Center Operations Manager (SCOM):** Provides visibility into the network connectivity of Microsoft SCOM servers and proactively responds to bottlenecks through policy-based actions.

Supported Technologies and Platforms

Brocade Network Advisor supports the entire Brocade portfolio, unifying network management under a single tool. For a complete list of supported products, refer to the [Brocade Network Advisor Installation and Migration Guide](#).

Supported platforms and hardware include:

- Brocade DCX® Backbones
- Brocade CER 2000 Series
- Brocade FastIron® SX Series
- Brocade SAN switches
- Brocade FastIron WS Series
- Brocade VDX switches
- Brocade ICX® switches
- Brocade vRouters
- Brocade MLX® Series
- QLogic and Emulex adapters
- Brocade MLXe Core Routers
- Aruba mobility devices

Brocade Global Services

Brocade Global Services has the expertise to help organizations build scalable, efficient cloud infrastructures. Leveraging 15 years of expertise in storage, networking, and virtualization, Brocade Global Services delivers world-class professional services, technical support, and education services, enabling organizations to maximize their Brocade investments, accelerate new technology deployments, and optimize the performance of networking infrastructures.

Training and Education

Brocade Global Education Services offers Web-based training and instructor-led courses to share product information, tips, and best practices—and to provide hands-on experience with Brocade Network Advisor.

Affordable Acquisition Options

Brocade Capital Solutions helps organizations easily address their IT requirements by offering flexible network acquisition and support alternatives. Organizations can select from purchase, lease, Brocade Network Subscription, and Brocade Subscription Plus options to align network acquisition with their unique capital requirements and risk profiles.

To learn more, visit www.Brocade.com/CapitalSolutions.

Maximizing Investments

To help optimize technology investments, Brocade and its partners offer complete solutions that include professional services, technical support, and education. For more information, contact a Brocade sales partner or visit www.brocade.com.

System Requirements

Brocade Network Advisor software and documentation are available via download. For details on the recommended system specifications, refer to the [Brocade Network Advisor Installation and Migration Guide](#).

Supported Client and Server Operating Systems

- Windows Server 2008 R2 Standard, Data Center, and Enterprise Editions
- Windows Server 2012 and 2012 R2 Standard and Data Center Editions
- Windows 8 and 8.1 Enterprise
- Red Hat Enterprise Linux 6.4, 6.5, 6.6, and 6.7 Adv
- Oracle Enterprise Linux 6.4, 6.5, 7.0
- SUSE Linux Enterprise 11.3 and 12
- Guest VMs for the following operating systems: VMware ESXi (5.1/5.5), KVM RedHat Linux Enterprise 6.5, and Microsoft Hyper-V (Hyper-V Server 2008 R2, Windows Server 2012, and Windows Server 2012 R2 Data Center)

Server Requirements

For 64-bit Windows and Linux systems, Intel Core 2 Duo Dual-CPU, 2.4 GHz or equivalent, 8 to 16 GB RAM, 80 GB disk is required. 16 GB RAM is required for the SAN+IP bundle, and medium or large networks.

Browser Support

Windows versions of Firefox, Internet Explorer, and Chrome are supported.

Software Evaluation

A 120-day, full-featured evaluation version of Brocade Network Advisor is available for download from www.brocade.com/networkadvisor. Install the software in minutes and start managing your network more effectively today.

Ordering Information

Brocade Network Advisor comes in several packages, providing organizations with the flexibility to choose what best meets their network requirements. Package options include SAN-only, IP-only, SAN+IP, and SMI Agent-only. For additional details, refer to the [Brocade Network Advisor Software Licensing Guide](#).

License	Description
SAN Professional (no license required)	Up to 300 SAN switch ports and 2 SAN fabrics
SAN Professional Plus	SAN management, supports up to 2,560 switch ports and 36 fabrics
SAN Enterprise	SAN management, supports up to 15,000 switch ports and 100 fabrics
IP Base ²	IP management, supports multiple VCS fabrics, up to 50 IP devices
SAN Professional Plus with IP	SAN+IP management, supports up to 2,560 SAN switch ports, 36 SAN fabrics, and 150 IP devices
SAN Enterprise with IP	SAN+IP management, supports up to 15,000 SAN switch ports, 100 SAN fabrics, and 550 IP devices

² Additional licenses can be purchased for MPLS management and increased IP device support.

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