



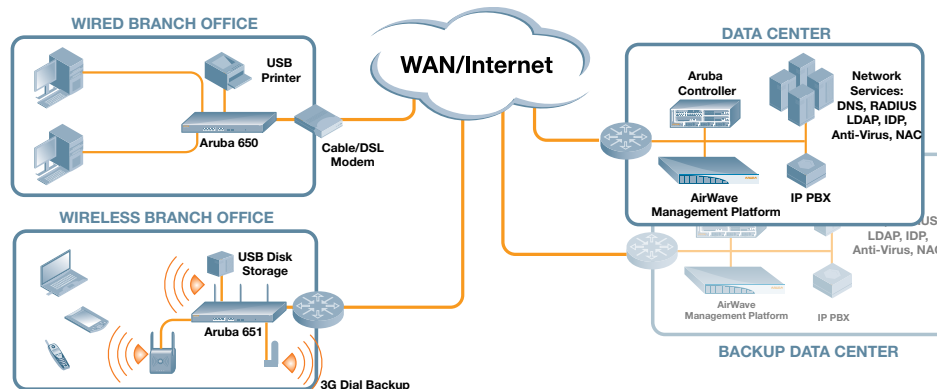
## ARUBA 650 AND 651 BRANCH OFFICE CONTROLLER

The Aruba 650 and 651 Branch Office Controller is a compact, cost-effective all-in-one networking solution. The 650 and 651 branch office controllers include a firewall, wireless LAN controller, eight-port Ethernet switch with PoE+, IP router, site-to-site VPN edge device, file server and print server in an attractive desktop-mount enclosure.



The 651 branch office controller includes an integrated single-radio, dual-band 802.11a/b/g/n access point (AP). Aruba's centralized zero-touch configuration and management model enables these branch office controllers to be deployed, monitored and controlled without any local IT staff. Additional deployment options include remote management or local configuration via a web interface.

Both branch office controllers rely on central controllers in the data center to manage complex and processor-intensive management and security functions. Edge services are virtualized and implemented in cost-effective 650 and 651 branch office controllers, which move user traffic to data center controllers through secure IP tunnels over a public or private transport network. The 650 and 651 branch office controllers provide local wireless services when used in conjunction with any Aruba AP, or they can operate as wired-only devices. They also include print server and network-attached storage capabilities to enable local network printing and mass storage.



Running the ArubaOS operating system, Aruba 650 and 651 branch office controllers come standard with advanced authentication, encryption, wireless radio management and Layer 2-3 networking features. Optional ArubaOS software modules deliver additional functionality including the RFProtect Wireless Intrusion Protection and Spectrum Analyzer, Policy Enforcement Firewall (PEF), and the FIPS-compliant xSec Layer 2 protocol, which provides a unified framework to secure all wired and wireless connections using strong encryption and authentication.

### PERFORMANCE AND CAPACITY WITH ARUBAOS 6.0

External LAN-connected access points (maximum)	16
Internal access point (651 only)	1
Remote Access Points (maximum)	64
Wired Access Points (maximum)	2
Users (maximum)	512
MAC addresses	2,048
VLAN IP interfaces	128
Number of IPv4 unicast routes	2,048
Active firewall sessions	16,384
System BSSIDs	256
Concurrent IPSec tunnels	512
Firewall throughput	2 Gbps

Encrypted throughput (3DES)	1.6 Gbps
Encrypted throughput (AES-CCM)	800 Mbps

### INTERFACES

Console (RS-232) RJ-45	1
Gigabit Ethernet (10/100/1000BASE-T)	2
Gigabit Ethernet (10/100/1000BASE-T) with PoE+	4
Gigabit Ethernet pluggable (1000BASE-X SFP)	2
ExpressCard®	1
USB 2.0	4

### WARRANTY

Hardware	1 year parts/labor*
Software	90 days*

\* Extended with support contract

# ARUBA 650 AND 651 BRANCH OFFICE CONTROLLER DATA SHEET

## USB DEVICE SUPPORT

Maximum concurrent printers	2
Maximum concurrent HSDPA/GPRS/EDGE/EVDO modems	2
Maximum concurrent storage media (hard disk/flash)	4
Maximum concurrent devices (all types)	4

## NETWORK PRINTING

Printing mode	Raw
Printer driver download to clients	No
Client compatibility	MS Windows, MacOS, UNIX

## NETWORK ATTACHED STORAGE

File protocol	CIFS/SMB
Share-level security	No
User-level security	No
Per-role firewall restriction of share access	Yes
Client compatibility	MS Windows, MacOS, UNIX
USB 1.0 devices	Yes
USB 2.0 flash storage	Yes
USB 2.0 disk storage	Yes
Maximum storage size	1TB
Ext2/Ext3 Filesystem	Yes
FAT16 Filesystem	Yes
FAT32 Filesystem	Yes
NTFS Filesystem	No

## POWER SPECIFICATIONS

AC input voltage	100-240 V, universal input
AC input frequency	50-60 Hz
Maximum power consumption	126 watts
Power-over-Ethernet total capacity	78 watts
Power-over-Ethernet capacity per port	19.5 watts

## COMPATIBLE USB MODEMS

The following is a partial list of tested and fully supported USB modems. Some modems not on this list may be fully supported with factory-default configuration, while others may require controller configuration in order to function. An updated list can be found at [http://www.arubanetworks.com/usb\\_devices](http://www.arubanetworks.com/usb_devices).

- Novatel U727
- Kyocera KPC680
- Compass 597
- USBConnect Quicksilver
- USBConnect Mercury

## COMPATIBLE USB PRINTERS

The following is a partial list of tested and fully supported USB printers. Some printers (such as the HP LaserJet 1000 series) require a firmware upload each time they are powered on. These printers are currently not supported. An updated list can be found at [http://www.arubanetworks.com/usb\\_devices](http://www.arubanetworks.com/usb_devices).

- HP Deskjet 6988 Printer
- HP LaserJet M1522nf MFP
- HP Officejet Pro L7590 All-in-One Printer, Fax, Scanner, Copier
- HP LaserJet P3005
- HP Color LaserJet CP3505
- Lexmark X7675 Professional
- Lexmark T640
- Lexmark C534dn

## COMPATIBLE USB STORAGE

The following is a partial list of tested and fully supported USB storage devices. An updated list can be found at [http://www.arubanetworks.com/usb\\_devices](http://www.arubanetworks.com/usb_devices).

- Seagate FreeAgent Pro hard drive
- Maxtor OneTouch 4 Plus hard drive
- My Passport Essential WDME3200 hard drive
- Iomega eGo Desktop hard drive
- Iomega Desktop Hard Drive hard drive
- Kingston DataTraveler 100 USB flash drive (2/4/8G)
- SanDisk Cruzer Micro USB flash drive (2/8G)

## OPERATING SPECIFICATIONS AND DIMENSIONS

Operating temperature range	0° C to 40° C (32° C to 104° F)
Storage temperature range	0° C to 50° C (32° C to 122° F)
Humidity, non-condensing	5% to 95%
Height	1.5" (38 mm)
Width	13.6" (346 mm)
Depth	8.9" (226 mm)
Weight	4.9 lbs/2.2 kgs (unboxed)

## WIRELESS RADIO SPECIFICATIONS (ARUBA 651 INTERNAL AP)

- AP type: 3x3 Multiple-In, Multiple-Out (MIMO) 802.11a/n or 802.11b/g/n
- Supported frequency bands (country-specific restrictions apply):
  - 2.400 - 2.4835 GHz
  - 5.150 - 5.250 GHz
  - 5.250 - 5.350 GHz
  - 5.470 - 5.725 GHz
  - 5.725 - 5.850 GHz
- Available channels: Controller-managed, dependent upon configured regulatory domain
- Supported radio technologies:
  - 802.11b: Direct-Sequence Spread-Spectrum (DSSS)
  - 802.11a/g/n: Orthogonal Frequency Division Multiplexing (OFDM)
  - 802.11n: 3x3 MIMO with 2 spatial streams
- Supported modulation types:
  - 802.11b: BPSK, QPSK, CCK
  - 802.11a/g/n: BPSK, QPSK, 16-QAM, 64-QAM
- Transmit power: Configurable in increments of 0.5 dBm
- Maximum Ratio Combining (MRC) for improved receiver performance
- Association rates (Mbps):
  - 802.11b: 1, 2, 5.5, 11
  - 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54
  - 802.11n: MCS0 - MCS15 (6.5 Mbps - 300 Mbps)
- 802.11n High-Throughput (HT) support: HT 20/40
- 802.11n packet aggregation: A-MPDU, A-MSDU

## ANTENNA (ARUBA 651 INTERNAL AP)

- Three RP-SMA interfaces for external antenna support (supports up to 3x3 MIMO with spatial diversity)
- Three AP-ANT-1B omni-directional dual-band antennas included

## AP OPERATING MODE (ARUBA 651 INTERNAL AP)

- Branch office 802.11a/n or b/g/n WLAN
- 802.11a/b/g/n air monitor
- Hybrid combination of WLAN/AM
- Remote AP
- Mesh portal
- Configurable to support 802.11n HT 20/40 channels or mixed-mode deployment IEEE 802.11a/b/g/n

# ARUBA 650 AND 651 BRANCH OFFICE CONTROLLER DATA SHEET

## 651 INTERNAL AP RF PERFORMANCE TABLE

	Max TX power per active TX chain (dBm)	RX sensitivity (dBm)
<b>802.11b 2.4 GHz</b>		
1Mbps	+18.0	-93.0
2Mbps	+18.0	-91.0
5.5Mbps	+18.0	-90.0
11Mbps	+18.0	-88.0
<b>802.11g 2.4 GHz</b>		
6Mbps	+17.0	-92.0
9Mbps	+17.0	-92.0
12Mbps	+17.0	-92.0
18Mbps	+17.0	-91.0
24Mbps	+17.0	-88.0
36Mbps	+17.0	-85.0
48Mbps	+16.0	-81.0
54Mbps	+13.0	-79.0
<b>802.11a 5 GHz</b>		
6Mbps	+17.0	-91.0
9Mbps	+17.0	-91.0
12Mbps	+17.0	-91.0
18Mbps	+17.0	-90.0
24Mbps	+17.0	-87.0
36Mbps	+16.0	-83.0
48Mbps	+15.0	-79.0
54Mbps	+13.0	-77.0
<b>802.11n 2.4 GHz</b>		
MCS0 HT20	+18.0	-92.0
MCS1 HT20	+18.0	-91.0
MCS2 HT20	+18.0	-89.0
MCS3 HT20	+18.0	-85.0
MCS4 HT20	+18.0	-82.0
MCS5 HT20	+17.0	-78.0
MCS6 HT20	+13.0	-76.0
MCS7 HT20	+11.0	-75.0
MCS8 HT40	+18.0	-87.0
MCS9 HT40	+18.0	-85.0
MCS10 HT40	+18.0	-82.0
MCS11 HT40	+18.0	-82.0
MCS12 HT40	+18.0	-76.0
MCS13 HT40	+17.0	-72.0
MCS14 HT40	+13.0	-70.0
MCS15 HT40	+11.0	-69.0
<b>802.11n 5 GHz</b>		
MCS0 HT20	+17.0	-91.0
MCS1 HT20	+17.0	-89.0
MCS2 HT20	+17.0	-87.0
MCS3 HT20	+17.0	-84.0
MCS4 HT20	+17.0	-80.0
MCS5 HT20	+17.0	-76.0
MCS6 HT20	+13.0	-74.0
MCS7 HT20	+12.0	-72.0
MCS8 HT40	+17.0	-86.0
MCS9 HT40	+17.0	-83.0
MCS10 HT40	+17.0	-81.0
MCS11 HT40	+17.0	-78.0
MCS12 HT40	+17.0	-75.0
MCS13 HT40	+17.0	-70.0
MCS14 HT40	+13.0	-68.0
MCS15 HT40	+12.0	-65.0

## REGULATORY AND SAFETY COMPLIANCE (ARUBA 650)

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

## REGULATORY AND SAFETY COMPLIANCE (ARUBA 651)

FCC 15.247/15.407  
 EU R&TTE Directive 1999/5/EC (EN 300 328, EN 301 893, EN 301 489)  
 EU LV Directive 2006/95/EC  
 IEC/EN 60950  
 CE Marking  
 cTUVus Marked  
 CB Scheme Certified

For a complete list of country-specific regulations please speak with your Aruba representative

## ORDERING INFORMATION

PART NUMBER	DESCRIPTION
650	Aruba 650 Branch Office Controller, 0 AP Support, Unrestricted Regulatory Domain
650-US	Aruba 650 Branch Office Controller, 0 AP Support, Restricted Regulatory Domain - US
650-IL	Aruba 650 Branch Office Controller, 0 AP Support, Restricted Regulatory Domain - IL
650-8	Aruba 650 Branch Office Controller, 8 AP Support, Unrestricted Regulatory Domain
650-8-US	Aruba 650 Branch Office Controller, 8 AP Support, Restricted Regulatory Domain - US
650-8-IL	Aruba 650 Branch Office Controller, 8 AP Support, Restricted Regulatory Domain - IL
651-1	Aruba 650 Branch Office Controller, 1 Internal AP Support, Unrestricted Regulatory Domain
651-1-US	Aruba 650 Branch Office Controller, 1 Internal AP Support, Restricted Regulatory Domain - US
651-1-IL	Aruba 650 Branch Office Controller, 1 Internal AP Support, Restricted Regulatory Domain - IL
651-9	Aruba 650 Branch Office Controller, 1 Internal + 8 External AP Support, Unrestricted Regulatory Domain
651-9-US	Aruba 650 Branch Office Controller, 1 Internal + 8 External AP Support, Restricted Regulatory Domain - US
651-9-IL	Aruba 650 Branch Office Controller, 1 Internal + 8 External AP Support, Restricted Regulatory Domain - IL
<b>PLUGGABLE MODULES</b>	
SFP-TX	Aruba SFP - 1000Base-T, RJ45
SFP-SX	Aruba SFP - 1000Base-SX, LC Connector
SFP-LX	Aruba SFP - 1000Base-LX, LC Connector



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