

Dell Networking W-Series Wireless LAN Mobility Controller Optimizations for Microsoft Lync

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Revisions

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Introduction

This guide focuses on system configurations required to ensure Quality of Service (QoS) for Microsoft Lync in a Dell W-Series Mobility controller-based deployment.

Media collaborative applications like Microsoft Lync providing voice, video, and instant messaging (IM) are expected to reliably run across wireless LAN networks (WLANs) and provide the high quality of service required by these applications. This guide outlines the steps needed to set up the Dell W-Series controllers.

1 Configuration Settings

1.1 AOS Version

Dell W-series controllers must be running AOS 6.1.3.2 or higher.

The screenshot shows the Dell Mobility Controller web interface. The top navigation bar includes the Dell logo, 'MOBILITY CONTROLLER', 'PowerConnect W-620', and 'Powered by Aruba Networks'. Below this is a secondary navigation bar with tabs: 'Dashboard', 'Monitoring', 'Configuration', 'Diagnostics', 'Maintenance' (highlighted), and 'Plan'. The main content area is titled 'Controller > About'. On the left, there is a sidebar menu with 'CONTROLLER' and 'FILE' sections. Under 'CONTROLLER', 'About' is selected. The main panel displays the following information:

Controller > About	
Name:	Aruba Operating System Software.
Model:	Dell PowerConnect W-620 Controller-US
Version:	6.1.3.6
Compiled:	2012-12-11 at 14:51:24 PST (build 36470) by p4build
WebSite:	http://www.dell.com
Legal:	Copyright (c) 2002-2012, Aruba Networks, Inc.

Below the 'About' section, there is a 'FILE' section with a list of actions: 'Copy Files', 'Copy Logs', 'Copy Crash Files', and 'Backup Flash'. Each action has a corresponding 'AP-104 FCC ID' and 'AP-105 FCC ID' listed next to it.

Figure 1 AOS Version

1.2 Licenses

Verify that the Access Point license and the Policy Enforcement Firewall Next Generation (PEFNG) license are installed on the controller. To verify, navigate to **Configuration -> Network -> Controller -> Licenses**.

License Table					
Key	Installed	Expires	Flags	Service Type	
4XCuVBqI-Y/xtJXn9-JHqRQ6lv-ADzbh/lu-ikYDMOY/-XPQ	2012-01-31 11:26:55	Never	E	Access Points: 4	
cB9C8fJd-ZsSRdT/+--BLCH+GIA-IEJ3JmhB-2wuGyGQx-tns	2012-01-31 11:27:34	Never	E	RF Protect: 4	
35X0deWk-CNqWUGew-WZXwCOEs-zlYP/WuE-eOk2mL4T-BT0	2012-01-31 11:27:56	Never	E	Next Generation Policy Enforcement Firewall Module: 4	
FSkGZ3dP-/mwOY1TP-HVA1kB94-aNmh1ydb-c3RbnQ81-lhk	2012-01-31 12:42:09	Never	E	Power Over Ethernet	

Flags: A - auto-generated; E - enabled; R - reboot required to activate

Figure 2 Licenses

1.3 Virtual AP Profile

1.3.1 Dynamic Multicast Optimization (DMO)

Navigate to **Configuration -> All Profiles -> Wireless LAN -> Virtual AP Profile -> <profile name> -> Virtual AP Profile Details**. Select **Dynamic Multicast Optimization (DMO)**.

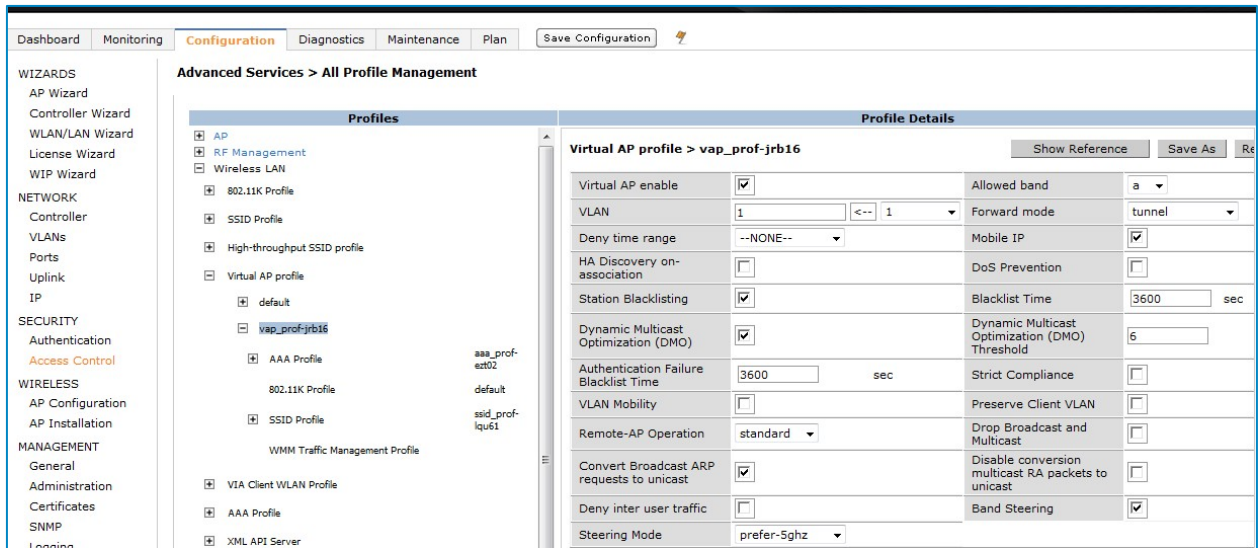


Figure 3 Virtual AP Profile

1.3.2 Band Steering

See Figure 3. Click the **Band Steering** checkbox to enable the feature. Steering Mode defaults to “**Prefer 5ghz**”. Verify that it is selected. Click **Apply** to carry out the changes. It is good practice to save the configuration.

With the Band Steering feature enabled, Dell access points will ignore 802.11 management Probe Requests from 2.5GHz RADIO client stations, responding only to Probe Requests from client stations in the 5GHz frequency band, effectively steering stations to the preferred spectrum.

1.4 SSID Profile

1.4.1 Delivery Traffic Indication Message (DTIM)

See Figure 4. Navigate to **Configuration -> All Profiles -> Wireless LAN -> SSID Profile -> <profile name>**. In **SSID Profile Details**, click the **Advanced tab**, and enter **3** into the **DTIM Interval** field.

DTIM Interval	3	beacon periods	Station Ageout Time	1000	sec		
802.11g Transmit Rates	☒ 1	☒ 2	☒ 5	☒ 6	☒ 9	☒ 11	☒ 12
	☒ 18	☒ 24	☒ 36	☒ 48	☒ 54		
802.11g Basic Rates	☒ 1	☒ 2	☐ 5	☐ 6	☐ 9	☐ 11	☐ 12
	☐ 18	☐ 24	☐ 36	☐ 48	☐ 54		
802.11a Transmit Rates	☒ 6	☒ 9	☒ 12	☒ 18	☒ 24		
	☒ 36	☒ 48	☒ 54				
802.11a Basic Rates	☒ 6	☐ 9	☒ 12	☐ 18	☒ 24		
	☐ 36	☐ 48	☐ 54				
Max Transmit Attempts	8		RTS Threshold	2333	bytes		
Short Preamble	☒		Max Associations	64			
Wireless Multimedia (WMM)	☒		Wireless Multimedia U-APSD (WMM-UAPSD) Powersave	☒			
WMM TSPEC Min Inactivity Interval	0	msec	Override DSCP mappings for WMM clients	☐			
DSCP mapping for WMM voice AC	46		DSCP mapping for WMM video AC	40			

Figure 4 SSID Profile

When setting DTIM to a value of 3, it means that every third Management Beacon frame is a DTIM beacon for client stations to wake from a power management state to retrieve multicast traffic from Dell access points.

1.4.2 Wireless Multimedia (WMM)

See Figure 4. Select **Wireless Multimedia (WMM)** checkbox to enable the feature.

The Wi-Fi Alliance includes Wi-Fi Multimedia (WMM) as part of its Certification Program. Wi-Fi Multimedia defines layer 2 MAC methods needed to meet the Quality of Service (QoS) requirements for time-sensitive applications like Microsoft Lync.

1.4.3 Differential Services Code Point (DSCP)

1.4.4 Wireless Multimedia (WMM)

See Figure 4. Set **DSCP mapping for WMM voice AC** field to value of **46**.

(See RFC 3246 section 2.7 Recommended Code Point for Expedited Forwarding:
<http://datatracker.ietf.org/doc/rfc3246/>)

Counters			
Deny_Broadcast Probes	☐	Local Probe Request Threshold (dB)	25
Disable Probe Retry	☒	Battery Boost	☐
WEP Key 1	 Retype:	WEP Key 2	 Retype:
WEP Key 3	 Retype:	WEP Key 4	 Retype:
WEP Transmit Key Index	1 ▾	WPA Hexkey	 Retype:
WPA Passphrase	 Retype:	Maximum Transmit Failures	0
BC/MC Rate Optimization	☒	Rate Optimization for delivering EAPOL frames	☐
Strict Spectralink Voice Protocol (SVP)	☐	802.11g Beacon Rate	default ▾
802.11a Beacon Rate	default ▾	Advertise QBSS Load IE	☐

Figure 5 Local Probe Request Threshold

1.4.5 Local Probe Request Threshold (dB)

See Figure 5. Set the **Local Probe Request Threshold (dB)** field to value of **25**.

1.4.6 Broadcast/Multicast Rate Optimization (BC/MC)

See Figure 5 Select the **BC/MC Rate Optimization** checkbox to enable the feature.

This feature suppresses broadcast and multicast traffic on both wired and wireless networks.

1.5 Adaptive RADIO Management (ARM) Profile

1.5.1 VOIP Aware Scan

Navigate to **Configuration -> All Profiles -> RF Management -> Adaptive RADIO Management ARM Profile -> <profile name>-> ARM Profile Details -> VOIP Aware Scan**.

Adaptive Radio Management (ARM) profile > default		Show Reference Save As Reset	
Assignment	single-band ▾	Allowed bands for 40MHz channels	a-only ▾
Client Aware	☒	Max Tx EIRP	127 ▾
Min Tx EIRP	9 ▾	Multi Band Scan	☒
Rogue AP Aware	☐	Scan Interval	10 sec
Active Scan	☐	Scanning	☒
Scan Time	110 msec	VoIP Aware Scan	☒
Power Save Aware Scan	☒	Video Aware Scan	☐

Figure 6 Adaptive RADIO Management (ARM) Profile

This feature prevents any single access point from becoming congested with voice calls. Dell access points will not attempt to scan different channels if one client has an active VOIP call.

1.5.2 Power Save Aware Scan

See Figure 6. Select the **Power Save Aware Scan** checkbox to enable the feature.

With this feature enabled, if Dell access points detect one or more clients in power save mode, the access point will not scan across other channels.

1.6 Quality of Service (QoS) Profile

1.6.1 Airtime Fairness

Navigate to **Configuration -> All Profiles -> QOS -> Traffic Management Profile -> Profile Details**. Add Lync, then select it. In the **Station Shaping Policy** field, select **fair-access**.

This feature allows each wireless client station equal access to the wireless medium.

Profiles	Profile Details
- AP - RF Management - Wireless LAN - Mesh - QOS - WMM Traffic management profile - Traffic management profile - lync - VoIP Call Admission Control profile	Traffic management profile > lync Show Reference Save As Reset Proportional BW Allocation ☐ Virtual AP default ▾ Share(%) 100 Delete Add Report interval 5 min Station Shaping Policy fair-access ▾

Figure 7 Traffic Management Profile

1.7 Lync Access Control List (ACL) with Classify Media

1.7.1 Employee Lync User Role

See Figure 8. Navigate to Configuration -> Security -> Access Control -> Policies -> Firewall Policies.

Create six new rules. Add an IP access-list session named employee_Lync.

The screenshot shows the Dell Mobility Controller configuration interface. The left sidebar contains a navigation menu with sections: WIZARDS, NETWORK, SECURITY, WIRELESS, and MANAGEMENT. The 'Access Control' link under SECURITY is highlighted. The main content area is titled 'Security > Access Control > User Roles'. It has tabs for 'User Roles', 'System Roles', 'Policies', 'Time Ranges', and 'Guest Access'. The 'User Roles' tab is active, displaying a table of user roles.

Name	Firewall Policies	Bandwidth Contract	Actions
authenticated	allowall/,v6-allowall/	Up:Not Enforced Down:Not Enforced	Show Reference Edit Delete
cpbase	Not Configured	Up:Not Enforced Down:Not Enforced	Show Reference Edit Delete
default-via-role	allowall/	Up:Not Enforced Down:Not Enforced	Show Reference Edit Delete
default-vpn-role	allowall/,v6-allowall/	Up:Not Enforced Down:Not Enforced	Show Reference Edit Delete
denyall	Not Configured	Up:Not Enforced Down:Not Enforced	Show Reference Edit Delete
employee-lync	employee_lync/	Up:Not Enforced Down:Not Enforced	Show Reference Edit Delete
guest	http-acl/,https-acl/,dhcp-acl/,icmp-acl/,dns-acl/,v6-http-acl/,v6-https-acl/,v6-dhcp-acl/,v6-icmp-acl/,v6-dns-acl/	Up:Not Enforced Down:Not Enforced	Show Reference Edit Delete
guest-logon	logon-control/,captiveportal/,v6-logon-control/,captiveportal6/	Up:Not Enforced Down:Not Enforced	Show Reference Edit Delete
logon	logon-control/,captiveportal/,vpnlogon/,v6-logon-control/,captiveportal6/	Up:Not Enforced Down:Not Enforced	Show Reference Edit Delete
voice	sip-acl/,noe-acl/,svp-acl/,vocera-acl/,skinny-acl/,h323-acl/,dhcp-acl/,tftp-acl/,dns-acl/,icmp-acl/	Up:Not Enforced Down:Not Enforced	Show Reference Edit Delete

Figure 8 Employee_Lync User Role

The screenshot shows the 'Security > Firewall Policies > Edit Session (employee_lync)' page. It has tabs for 'User Roles', 'System Roles', 'Policies', 'Time Ranges', and 'Guest Access'. The 'Policies' tab is active, displaying a table of rules.

Rules												
IP Version	Source	Destination	Service	Action	Log	Mirror	Queue	Time Range	Pause ARM Scanning	BlackList	Classify Media	
IPv4	any	10.36.0.0 255.255.0.0	tcp 5223	permit			Low				Yes	
IPv4	Lync-servers	any	tcp 1024- 65535	permit			Low				Yes	
IPv4	any	any	tcp 5061	permit			Low				Yes	
IPv4	any	any	udp 5061	permit			Low				Yes	
IPv4	any	any	any	permit			Low					
IPv6	any	any	any	permit			Low					

Figure 9 Employee_Lync Policy Rules

Security > Access Control > Firewall Policies

User RolesSystem RolesPoliciesTime RangesGuest Access

Policies

AllIPv4 SessionIPv6 SessionEthernetMACStandardExtended

Name	Type	Rule Count	Policy Usage
skinny-acl	session	1	voice
tftp-acl	session	1	voice
cplogout	session	1	
dhcp-acl	session	1	voice guest
http-acl	session	1	guest
ap-acl	session	6	ap-role
svp-acl	session	2	voice
noe-acl	session	1	voice
h323-acl	session	2	voice
employee_lync	session	6	employee-lync

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Figure 10 Employee_Lync Policies

The Dell W-Series Mobility controller optimization is complete.

A References

Dell Networking W-Series Mobility: <http://www.dell.com/Wireless>

Microsoft Lync Qualified Infrastructure: <http://technet.microsoft.com/en-us/lync/gg131938>

Microsoft Lync Server 2010 on Dell Systems:

<http://www.dell.com/Learn/us/en/555/business~solutions~engineering-docs~en/Documents~lync-server-2010-solution-architectures.pdf?c=us&l=en&s=biz&cs=555>