



WHITE PAPER

LYNC DEPLOYMENT – ARUBA INSTANT BEST PRACTICES GUIDE

VERSION 1.0

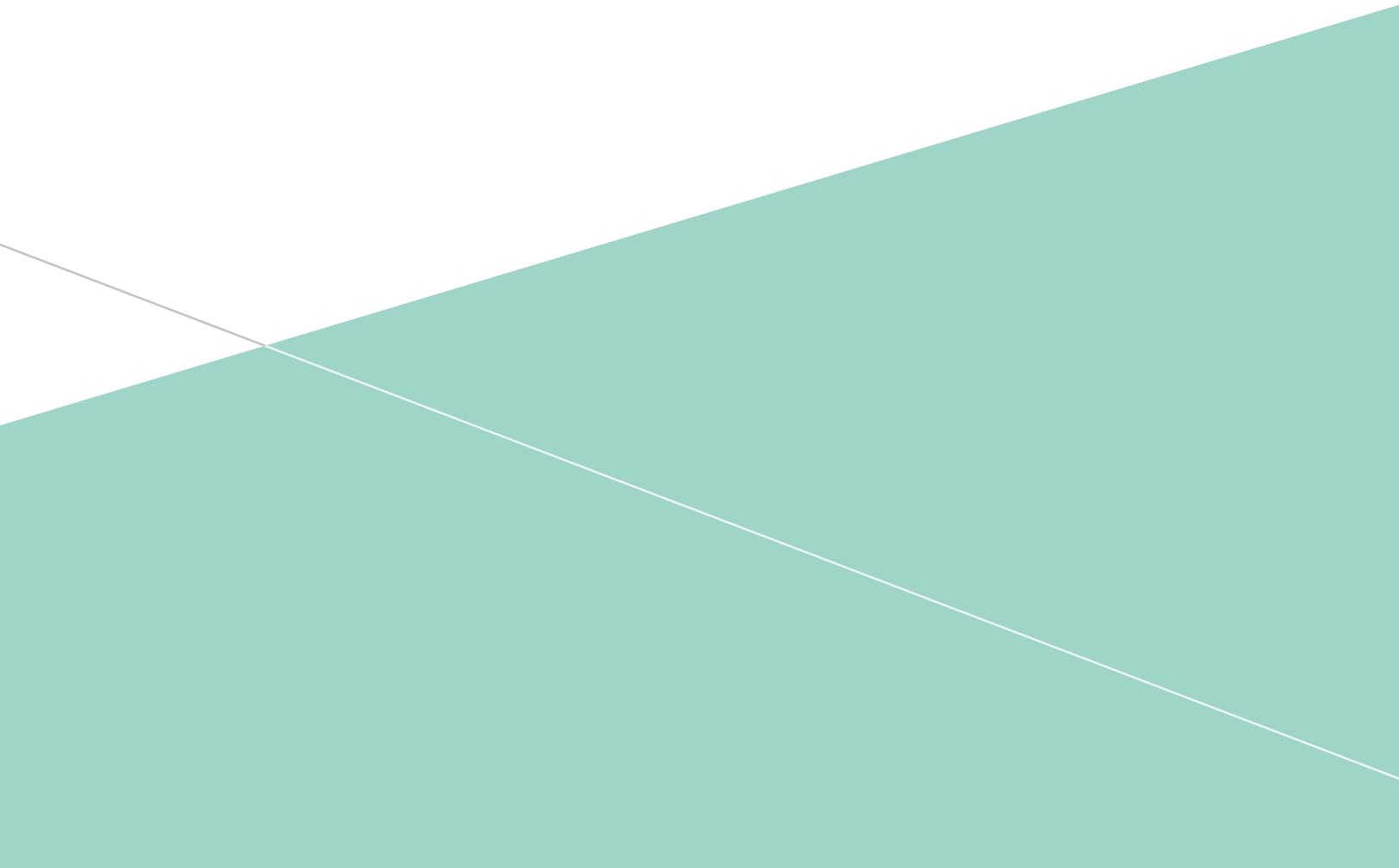


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INTRODUCTION

This document is intended to serve as guide to deploying Microsoft Lync on an Aruba Instant network. The Guide walks through the market dynamics influencing the change in the Unified Communications market, as well as GUI configuration fields in Instant to setup the network.

ARUBA SOFTWARE VERSIONS	
Product	Version
Aruba Instant™	3.4
Microsoft Lync Server	2010 and above
Microsoft Lync Online	Lync 2013 client

Reference Material

- This guide assumes a working knowledge of Aruba products. This guide is based on the network detailed in the Aruba Campus Wireless Networks VRD and the Base Designs Lab Setup for Validated Reference Design. These guides are available for free at <http://www.arubanetworks.com/vrd>.

- The complete suite of Aruba technical documentation is available for download from the Aruba support site. These documents present complete, detailed feature and functionality explanations outside the scope of the VRD series. The Aruba support site is located at: <https://support.arubanetworks.com/>. This site requires a user login and is for current Aruba customers with support contracts.

WHY ARUBA IS THE PREFERRED WLAN VENDOR FOR LYNC OVER WI-FI

Where is Enterprise Communications headed

Globalization and explosion of mobile devices has created unique set of requirements on IT administrators of both small and large enterprises today. The challenge now is for organizations to adapt to the ever growing demand of supporting communications over mobile devices that do not even have Ethernet ports, while keeping the communications reliable, secure and cost effective. With branches and customers located all over the globe and employees working remotely from their homes, café's and while on the move, the notion of having a desk phone assigned to an employee seems archaic. The idea of an all wireless office is now a reality.

To address this problem, a unified communications platform like Lync seems to be a perfect solution as far as security and cost effectiveness of the solution. Lync traffic is encrypted end to end, making communications over the internet or intranet secure. Lync Media allows employees to have a seamless platform for both internal communications within the organization as well as to engage with customers. Lync calling with Video support helps create notion of personal interaction across global teams. With Lync client support available across all major platforms like iOS and Android, the usability of Lync becomes truly seamless.

How to achieve reliability of a desk phone when deploying Lync over Wi-Fi

Lync traffic being encrypted is a great security feature, but for the underlying infrastructure this poses a new challenge. Traditional WLANs relied on source destination or protocol based classification to identify, tag and prioritize voice and video traffic. How can this be achieved when the voice and video traffic itself is encrypted? How can IT set policies to ensure that Lync communication traffic is given preferential treatment over all background email and file download transactions?

Aruba's unique application and device fingerprinting technology can identify Lync streams in session and the devices from which they originate. The network can then be dynamically conditioned to deliver QoS – on an application-by-application, device-by-device basis – as needed to ensure highly reliable application delivery. Classify Media, a unique feature on Aruba platforms ensures automatic detection and tagging of Voice and Video traffic with appropriate Wireless Multi Media (WMM) tags despite the traffic being encrypted.

To ensure reliable application delivery in changing RF environments, Aruba's Adaptive Radio Management (ARM) technology forces client devices to shift away from the noisy 2.4 GHz band to the quieter 5 GHz band, adjusts radio power levels to blanket coverage areas, load balances by shifting clients between access points, and even allocates airtime based on the capabilities of each client device. The result is a superb user experience without any user involvement.

These services are complemented by security systems that ensure the integrity of the network. Rogue detection, wireless intrusion and prevention, access control, remote site VPN, content security scanning, end-to-end data encryption, and other services protect the network and users at all times.

Aruba's extensive portfolio of campus, branch/teleworker, and mobile solutions simplify operations and secure access to unified communications applications and services – regardless of the user's device, location, or network. This dramatically improves productivity, lowering capital and operational costs while providing a superior un-interrupted user experience.

Aruba is the only Wi-Fi networking provider to be certified for both controller-based and Instant controller-less Wireless LAN deployments. Visit this site <http://technet.microsoft.com/en-us/lync/hh972602.aspx> and select "Software Defined Networking" for more information.

ARUBA INSTANT – FEATURES DESIGNED FOR LYNC UNIFIED COMMUNICATIONS

Mobility presents a number of unique challenges for Unified Communications that are not experienced with wired networks. These challenges must be overcome to ensure an uninterrupted mobile unified communications user experience. These challenges, together with Aruba best practices to alleviate these challenges, are summarized below.

Pervasive wireless coverage

Real-time services like voice and video are intolerant of poor RF conditions. They demand high signal levels with good signal-to-noise ratios. To support multimedia services, it is important to ensure that WLAN coverage extends pervasively to all parts of the building, with uniformly good signal levels. RF channels must be selected to avoid the interference sources that are present in every modern enterprise.

Aruba's ARM technology continually optimizes RF coverage based on measurements of signal strength and interference reported by WLAN access points, ensuring that client devices always enjoy the high signal levels required for good voice and video performance. ARM maximizes coverage and network capacity, while avoiding interference. It is the sum of these features that optimizes voice and video quality.

Managing RF interference

Wireless interference is time varying and can arise unexpectedly. In most cases an Aruba wireless LAN will automatically adapt and mitigate the effects of interference, but sometimes that's not possible. In these cases the network needs to open a window of visibility into the RF environment, without the expense of a truck roll, to help network engineers understand what's happening. Aruba Instant's 802.1n access points incorporate background spectrum monitoring that provides monitoring, logging, and reporting of non-Wi-Fi interference sources. This feature can be enabled remotely so that a distant network engineer can assess how best to mitigate issues like continuous high level fixed frequency transmitters that can't otherwise be addressed automatically by ARM.

Wi-Fi is a broadcast medium in which over-the-air packets collisions are a fact of life. These collisions can result in dropped packets or consume bandwidth by forcing packet retransmission, both of which have detrimental effects on real-time like voice and video traffic.

ARM mitigates these issues by using band steering to redirect 5 GHz-capable clients away from the congested 2.4 GHz band and up to the quieter, higher capacity 5 GHz band. This feature is particularly well suited for PC users running Lync since most modern laptops support 5 GHz operation. Enabling Spectrum Load Balancing also ensures that clients are balanced across all available channels and not just based on clients per AP.

Applying correct priority to mixed voice, video, and data clients

The traditional approach to enterprise VoIP has been to use a separate voice VLAN to segregate and prioritize voice traffic. This model breaks down when a Lync enabled PC or mobile device transmits both voice and data traffic. The device can belong to only a single VLAN – which should it be, voice or data? Instant’s built in Application Level Gateway (ALG) identify and police individual sessions from a device, dynamically prioritizing them (set QoS tag) by traffic type without need to relegate them to different VLANs. With this network intelligence, a single WLAN SSID, matched with a single VLAN, can offer full voice control and prioritization in presence of lower priority data traffic. The end result is a better user experience and less IT overhead managing VLANs.

Performance assurance for encrypted Microsoft Lync traffic

The signaling channel for Microsoft Lync is encrypted, and as a call setup and teardown cannot be easily monitored. And yet, without visibility to this information, it is difficult if not impossible to identify and prioritize real-time traffic.

Instant’s heuristics-based application fingerprinting continuously inspects UDP sessions set up over the WLAN to identify those that are RTP and carry voice or other multimedia traffic. When such streams are identified, they are automatically tagged with the correct voice priority

BEST PRACTICE RECOMMENDATIONS FOR LYNC DEPLOYMENTS

Recommended Aruba Instant configurations

Aruba Instant OS

The environment should be running Instant OS 3.4.0.0 or higher

RF design recommendations

- 100% coverage in all areas of Lync use
- Minimum RF signal (RSSI) levels of -67 dBm
- Minimum Signal-to-noise ratio (SNR) of 25 dB
- Co-channel separation of 20 dB

Scalability recommendations

- Number of simultaneous client associations we can support per radio Theoretical: 256; Recommended – 60 simultaneous client associations or less per AP
- Recommended max. clients simultaneously on Lync voice and video calls – 20

Access policies to configure

Configuring the following access policies will ensure that Lync traffic will automatically get detected and Voice packets will get marked with DSCP value of 48 and Video packets will get marked with DSCP of 40.

For Lync Server based deployments, configure the following access rule under WLAN setup in addition to any other ACLs that you may have and move it to the top of the list.

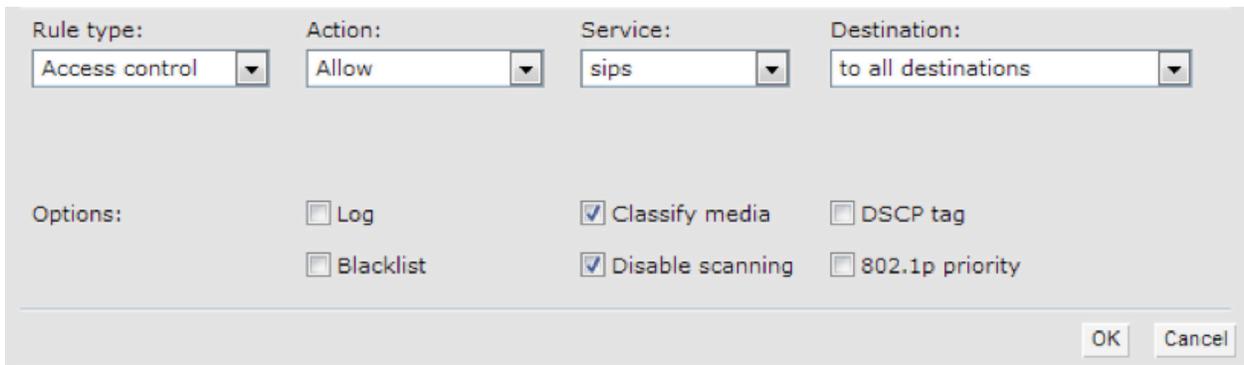


Figure 1: Classify Media ACL for Lync Server based deployments



Figure 2: Classify Media ACL for Lync Online deployments

For Lync Online (cloud) based deployments, configure the following access rule under WLAN setup in addition to any other ACLs that you may have and move it to the top of the list.

RF settings to configure

The settings listed below are those that need to be tweaked from their default values. The remaining RF settings not listed here should only be tweaked by consulting with an Aruba Expert. The settings below are located under WLAN settings, advanced options.

Feature	Recommended setting
Broadcast filtering	ARP
Multicast Optimization	Enabled
Dynamic Multicast Optimization	Enabled
Local Probe Request Threshold	25 dB

Traffic shaping configuration

Use these configuration settings if you need to protect Lync Voice and Video traffic in presence of high volume of background traffic. This feature will ensure that Voice and Video packets are processed and only background and best effort traffic gets shaped to preserve Lync quality.

These settings are under WLAN settings, advanced options.

Adjust the Voice and Video % based on expected Voice/Video traffic in your environment.

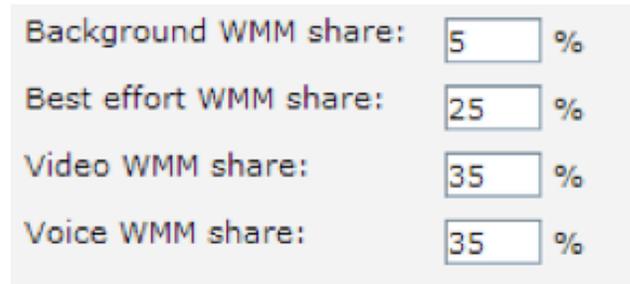


Figure 2: Classify Media ACL for Lync Online deployments

Conclusion

As the migration continues towards mobile computing and smartphones, and away from wired desk connections, a wirelessly connected Microsoft Lync Server platform is an ideal platform through which users can stay connected with the enterprise and one another. Aruba’s wireless infrastructure is the ideal host platform for Lync: application fingerprinting identifies and prioritizes sessions without network configuration, enabling the Microsoft Lync Server to be deployed anywhere within the enterprise WLAN or the cloud, with service assurance.

The combination of Microsoft Lync Server and Aruba’s wireless LAN allows mobile employees to communicate more reliably, securely, and effectively over voice, video, IM, or conferencing than was ever before possible.

APPENDIX: CONTACTING ARUBA NETWORKS

CONTACTING ARUBA NETWORKS

Web Site Support

Main Site	http://www.arubanetworks.com
Support Site	https://support.arubanetworks.com
Software Licensing Site	https://licensing.arubanetworks.com/login.php
Wireless Security Incident Response Team (WSIRT)	http://www.arubanetworks.com/support/wsirt.php

Support Emails

Americas and APAC	support@arubanetworks.com
EMEA	emea_support@arubanetworks.com
WSIRT Email Please email details of any security problem found in an Aruba product.	wsirt@arubanetworks.com

VRD CONTACTS AND USER FORUM

Validated Reference Design Contact and User Forum

Validated Reference Designs	http://www.arubanetworks.com/vrd
VRD Contact Email	referencedesign@arubanetworks.com
AirHeads Online User Forum	http://airheads.arubanetworks.com

TELEPHONE SUPPORT

Telephone Support

Aruba Corporate	+1 (408) 227-4500
FAX	+1 (408) 227-4550

Support

United States	+1-800-WI-FI-LAN (800-943-4526)
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Universal Free Phone Service Numbers (UIFN)

Australia	Reach: 11 800 494 34526
United States	1 800 9434526 1 650 3856589
Canada	1 800 9434526 1 650 3856589
United Kingdom	BT: 0 825 494 34526 MCL: 0 825 494 34526
Japan	IDC: 10 810 494 34526 * Select fixed phones IDC: 0061 010 812 494 34526 * Any fixed, mobile & payphone KDD: 10 813 494 34526 * Select fixed phones JT: 10 815 494 34526 * Select fixed phones JT: 0041 010 816 494 34526 * Any fixed, mobile & payphone
Korea	DACOM: 2 819 494 34526 KT: 1 820 494 34526 ONSE: 8 821 494 34526

TELEPHONE SUPPORT

Universal Free Phone Service Numbers (UIFN)

Singapore	Singapore Telecom: 1 822 494 34526
Taiwan (U)	CHT-I: 0 824 494 34526
Belgium	Belgacom: 0 827 494 34526
Israel	Bezeq: 14 807 494 34526 Barack ITC: 13 808 494 34526
Ireland	EIRCOM: 0 806 494 34526
Hong Kong	HKTI: 1 805 494 34526
Germany	Deutsche Telekom: 0 804 494 34526
France	France Telecom: 0 803 494 34526
China (P)	China Telecom South: 0 801 494 34526 China Netcom Group: 0 802 494 34526
Saudi Arabia	800 8445708
UAE	800 04416077
Egypt	2510-0200 8885177267 * within Cairo 02-2510-0200 8885177267 * outside Cairo
India	91 044 66768150

ABOUT ARUBA NETWORKS, INC.

Aruba Networks is a leading provider of next-generation network access solutions for the mobile enterprise. The company designs and delivers Mobility-Defined Networks that empower IT departments and #GenMobile, a new generation of tech-savvy users who rely on their mobile devices for every aspect of work and personal communication. To create a mobility experience that #GenMobile and IT can rely upon, Aruba Mobility-Defined Networks™ automate infrastructure-wide performance optimization and trigger security actions that used to require manual IT intervention. The results are dramatically improved productivity and lower operational costs.

Listed on the NASDAQ and Russell 2000® Index, Aruba is based in Sunnyvale, California, and has operations throughout the Americas, Europe, Middle East, Africa and Asia Pacific regions. To learn more, visit Aruba at www.arubanetworks.com. For real-time news updates follow Aruba on [Twitter](#) and [Facebook](#), and for the latest technical discussions on mobility and Aruba products visit Airheads Social at <http://community.arubanetworks.com>.



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