

Using RLX2-IHx Bridging Client on Cisco Wireless Infrastructure

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Introduction

RLX2-IHx Bridging Client provides a way for non-wireless devices to connect to 3rd party wireless infrastructure when these devices are connected to its Ethernet port. However, customers that use RLX2-IHx Bridging Client on a Cisco wireless infrastructure may experience intermittent connectivity issues with Ethernet devices that are connected to the Bridging Client. The problem happens when the Bridging Client is connected to a Cisco access point that is configured to *Local* AP Mode (Figure 1). In this technical note, we will describe the problem and the solution.

Problem

When a Cisco access point is operating in Local AP Mode (a.k.a. centrally switched), all clients' traffic is processed by the Cisco wireless controller. In this mode, after a Bridging Client is connected to a Cisco access point, the Cisco wireless controller will learn the IP address of the Bridging Client by analyzing packets (e.g., ARP request, DHCP request, etc.) sent from the Bridging Client. Once an IP address of the Bridging Client is learned (it can be the IP address of one of the devices behind the Bridging Client or the Bridging Client itself), the Cisco wireless controller will bind the IP address to the MAC address of the Bridging Client (Figure 2). By default, Cisco wireless controllers act as proxy for all ARP requests, i.e., upon receiving an ARP request, the wireless controller responds with an ARP response instead of passing the request directly to the client. However, the controller will only respond if the target IP address of the ARP request is known, otherwise, the ARP request will be dropped. This means that ARP resolution from the

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infrastructure side will only work for one of the devices that are connected to the Bridging Client or the Bridging Client itself. Network traffic may not be able to start because of the ARP failures. Since the IP-to-MAC address mapping of a wireless client may change over time due to continuously (re-)learning by the wireless controller, the ARP resolution of a device may or may not work depending on which IP address is bound to the MAC address of the Bridging Client at that moment, thus showing intermittent behavior.

							Sa <u>v</u> e Cor	nfiguration <u>P</u> ing	Logout <u>R</u> efresh		
CISCO	MONITOR	<u>M</u> LANs <u>C</u>	ONTROLLER	W <u>I</u> RELESS	<u>S</u> ECURITY	M <u>A</u> NAGEMENT	C <u>O</u> MMANDS	HE <u>L</u> P <u>F</u> EEDBAC	.K 🔒 <u>H</u> ome		
Monitor	All APs > D	etails for	AP2					< Back	Apply		
_											
Summary	General Credentials Interfaces High Availability Inventory						FlexConnect	Advanced			
 Access Points Radios 802.11a/n/ac 802.11b/g/n Dual-Band Radios 	General Versions										
	AP Name		AP2			Primar	y Software Versior	n 8.5.135.0			
Cisco CleanAir	Location		default location			Backup	o Software Version	0.0.0.0			
Statistics	AP MAC A	Address	6c:41:6a:b2:0)3:4f		Predow	vnload Status	None			
	Base Rad	lio MAC	d0:c7:89:0b:a	ab:c0		Predow	vnloaded Version	None			
F CDP	Admin St	atus	Enable 🚽	_		Predow	vnload Next Retry	Time NA			
Rogues	AP Mode		local	•		Predow	vnload Retry Count	t NA			
Clients	AP Sub M	lode	None 👻			Boot V	ersion	12.4.23.0			
Sleeping Clients	Operation	nal Status	REG			IOS Ve	ersion	15.3(3)JF8	\$\$		
Multicast	Port Num	ber	1			Mini IO	S Version	7.3.1.53			
Applications	Venue Gr	roup	Unspecified -			IP Config	IP Config				
Local Profiling	Venue Type		Unspecified 👻			CAPWA	P Preferred Mode	Ipv4 (Glob	oal Config)		
	Add New	Venue				DHCP 1	Ipv4 Address	10.67.132	.28		
	Language	Venue Name				Static I	IP (Ipv4/Ipv6)		E		
	Network S Interface	Spectrum Key	DC4F4911ADB438DEFA4EA5211A4663E			Time Stat	tistics				
	GPS Locat	ion				UP Tim	ie	33 d, 03 h	20 m 19 s		
	GPS Pres	ent	No			Contro	ller Associated Tim	ne 33 d, 03 h	18 m 52 s		
						Contro	ller Association La	tency 0 d, 00 h (01 m 26 s		
	Hardware R	leset			Set to Fa	Set to Factory Defaults					
	Perform a	a hardware r	reset on this A	P	Clear configuration on this AP and reset it to factory defaults Clear All Config Clear Config Except Static IP						
	Reset	AP Now									

Figure 1 Cisco AP Mode configuration



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CISCO	<u>M</u> ONITOR <u>W</u> LANs	<u>C</u> ONTROLLER	W <u>I</u> RELESS	<u>S</u> ECURITY	M <u>A</u> NAGEMENT	C <u>O</u> MMANDS	HELP	<u>F</u> EEDBACK	n <u>H</u> ome		
Monitor	Clients							Entries 1	- 1 of 1		
Summary Access Points 	Current Filter	None		[<u>Change F</u>	Filter] [Clear Filter]						
 Cisco CleanAir Statistics 	Client MAC Addr	IP Addres	ss(Ipv4/Ipv6)			AP Name					
► CDP	00:0d:8d:f0:71:0a	10.67.132.	100			AP2					
Rogues											
Clients											
Sleeping Clients											
Multicast											
Applications											
Local Profiling											
	Foot Notes										
	RLAN Clients conne	RLAN Clients connected to AP702w, will not show Client IP details.									

Figure 2 IP-to-MAC address mapping of wireless client

Solution

Currently, there is no way to disable the proxy ARP function in the Cisco wireless controller when an access point is configured in Local AP mode. To facilitate ARP resolution for all devices behind a Bridging Client, we have to configure the access points involved to operate in *FlexConnect* AP mode <u>and</u> enable *FlexConnect Local Switching* on the corresponding SSID.

Configuring an access point to operate in FlexConnect AP mode (GUI)

Step 1 Choose **Wireless** to open the All APs page.

Step 2 Click the name of the desired access point. The All APs > Details page appears.

Step 3 Choose FlexConnect from the AP Mode drop-down list to enable FlexConnect for this access point (Figure 3).

Step 4 Click **Apply** to commit the change. The access point will reboot.



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CISCO	MONITOR	<u>W</u> LANs	CONTROLLER	WIRELES:	5 <u>S</u> ECURITY	MANAGEMENT	C <u>O</u> MMANDS	HELP	<u>F</u> EEDBACK	<mark>n</mark> <u>H</u> e
Wireless	All APs > I	Details f	or AP2						< Back	Apply
 Access Points 	General	Crede	ntials Inte	rfaces H	ligh Availability	/ Inventory	FlexConne	ct A	dvanced	
All APs Direct APs Radios	General					Versions				
802.11b/g/n	AP Name	e	AP2			Prima	Primary Software Version			
Global Configuration	Location		default locati	on		Backu	p Software Versio	on	0.0.0.0	
Advanced	AP MAC	Address	6c:41:6a:b2:	03:4f		Predo	wnload Status		None	
Mesh	Base Ra	dio MAC	d0:c7:89:0b:	ab:c0	Predo	Predownloaded Version				
▶ ATF	Admin S	tatus	Enable 🚽	_	Predo	Predownload Next Retry Time				
RF Profiles	AP Mode		FlexConnect	-	Predo	Predownload Retry Count				
ElexConnect Groups	AP Sub I	Mode	None 👻			Boot \	Boot Version			
FlexConnect ACLs	Operatio	onal Status	REG		IOS V	IOS Version Mini IOS Version				
FlexConnect VLAN Templates	Port Nur	nber	1		Mini I					
OEAP ACLs	Venue G	Group				IP Config	IP Config			
Network Lists	Venue T	уре	Unspecified 👻			CAPW	CAPWAP Preferred Mode			Config)
802.11a/n/ac	Add Nev	Venue				DHCP	DHCP Ipv4 Address			3
▶ 802.11b/g/n	Language	Name			Static	Static IP (Ipv4/Ipv6)			=	
Media Stream	Network Interface	: Spectrum e Key	C2442A8C8C	98C9B37203/	Time Sta	tistics				
Application Visibility	GPS Loca	tion				UP Tir	ne		0 d, 00 h 45	m 34 s
Country	GPS Pre	sent	No		Contro	Controller Associated Time			m 07 s	
Timors						Contro	oller Association L	atency	0 d, 00 h 01	m 26 s
Notflow		_								
> Nethow	Hardware Reset Set to Factory Defaults									
▶ QoS	Perform a hardware reset on this AP				Clear configuration on this AP and reset it to factory defaults					
	Reset	Reset AP Now				Clear All Confin				
					Clea	ar Config Excep	t Static IP			

Figure 3 Configuring access point to FlexConnect AP mode

Configuring Local Switching on a SSID

Step 1 Choose WLANs to open the WLANs page.

Step 2 Click the WLAN ID of the desired SSID. The WLANs > Edit page appears.

Step 3 In the Advanced tab, select the **FlexConnect Local Switching** check box to enable local switching for the WLAN (Figure 4).

Step 4 Click **Apply** to commit the change.



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CISCO	<u>M</u> ONITOR <u>W</u> LANs	<u>C</u> ONTROLLER	WIRELESS	<u>S</u> ECURITY	M <u>A</u> NAGEMENT	C <u>O</u> MMANDS	HELP <u>F</u>	EEDBAC	K 🏫 <u>H</u> orr	
WLANs	WLANs > Edit 'RL	.X2'					< B	ack	Apply	
WLANs WLANs	General Securit	ty QoS	Policy-Mapp	ing Adva	anced Radius Client Pr	otiling				
Advanced	11ac MU-MIMO WGB PRP	Enabled			DHCP Profiling		^			
	Off Channel Scannin	ng Defer			HTTP Profiling					
	Scan Defer Priority	0123	4 5 6 7		Local Client Prof					
			V V V 🗆		DHCP Profiling					
	Scan Defer	100			HTTP Profiling					
	Time(msecs)				Universal AP Admin Support					
	FlexConnect				Universal AP A					
	FlexConnect Local Switching 2	V E	nabled		11v BSS Transit	ion Support				
	FlexConnect Local	Auth 😐 📃 Ei	nabled		BSS Transition					
	Learn Client IP Add	dress 5 🔽 E	nabled		Optimized Roa 40 TBTT)	to 40	=			
	Vlan based Centra Switching ¹³	I 📃 Е	nabled		BSS Max Idle S					
	Central DHCP Proc	essing 📃 E	nabled		mDNS					
	Override DNS	E	nabled		mDNS Sasasia			Fachlad		
	NAT-PAT	E	Enabled		TrustSec				Enabled	
	Central Assoc	E	nabled					0		
	•								•	
	Foot Notes 1 Web Policy cannot b 2(a) FlexConnect Loca 2(b) When flexconnect 2(c) When flexconnec mode 3 When client exclusion 4 Client MFP is not act 5 Learn Client IP is co 6 WMM and open or A 8 Value zero implies t 9 MAC Filtering is not 10 MAC Filtering shoul	ee used in combi al Switching is no t local authentic t local authentic on is enabled, a wise unless WPA2 nfigurable only ES security sho here is no restri supported with H Id be enabled.	ination with IPse t supported with ation is enabled, ation is disabled Timeout Value o Is configured when FlexConne ild be enabled t ction on maximu FlexConnect Loca	ic h Override Ini i, irrespective , AP on conne of zero means of zero means of zero means of support hig um clients allo al authenticat	terface ACLs of AP on connected seted mode will use infinity (will requir hing is enabled her 11n rates wed. ion	d or standalone i WLC as NAS an e administrative	mode the AP d AP as NAS override to I	will act a while its (reset excl	s NAS on standalone luded clients)	

Figure 4 Enabling FlexConnect Local Switching