對無線LAN控制器(WLC)上的mDNS閘道進行疑難 排解

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簡介

本檔案說明Bonjour通訊協定在無線控制器上的實作,並提供協助排除問題的準則。

必要條件

需求

思科建議您瞭解以下主題:

- Bonjour協定基礎知識
- 有關如何在WLC上配置mDNS的基本知識
- 組播路由的基本知識

採用元件

本文中的資訊係根據以下軟體和硬體版本:

- AIR-CT2504-K9 WLC , 8.2.141.0
- WS-C3560CX-8PC-S
- AIR-CAP3702I-E-K9
- Apple電視

• Iphone5s , 10.2

本文中的資訊是根據特定實驗室環境內的裝置所建立。文中使用到的所有裝置皆從已清除(預設))的組態來啟動。如果您的網路運作中,請確保您瞭解任何指令可能造成的影響。

背景資訊

Bonjour協定是一種Apple服務發現協定,它使用組播域名系統(mDNS)服務記錄來查詢本地網路上的裝置和服務。Bonjour協定用於服務通告和服務查詢。每個查詢或通告都傳送到Bonjour組播地址 ipv4 <u>224.0.0.251</u> (ipv6 FF02::FB)。此協定在UDP埠<u>5353</u>上使用mDNS。

Bonjour協定使用的地址是本地鏈路組播地址,因此只轉發到本地L2網路。由於生存時間(TTL)設定 為1,路由器無法使用組播路由來重定向流量。這意味著所有服務提供商/源(通告該服務)和 Bonjour客戶端(請求服務)必須在同一子網中。這會導致可擴充性問題。

為了解決此問題,思科無線LAN控制器(WLC)會作為Bonjour閘道。WLC偵聽Bonjour服務,從源/主 機快取這些Bonjour廣告(AirPlay、AirPrint等)。例如,Apple TV和Bonjour客戶端在請求/請求服 務時響應。這樣,源裝置和客戶端就可以位於不同的子網中。

設定

網路圖表



在Cisco WLC上運行mDNS需要執行四個基本步驟。這些步驟說明如下:

步驟 1.當您在WLC上全局啟用mDNS時

如果您沒有建立自訂mDNS設定檔(如圖所示),WLC會監聽這些預設服務。

Service Name	Service String	Quei			
AirPrint	_ipptcp.local.		ALL	۲	
AirTunes	_raoptcp.local.	1	ALL	T	
AppleTV	_airplaytcp.local.		ALL	v	
HP Photosmart Printer 1	_universalsubipptcp.local.	1	ALL	v	
HP Photosmart Printer 2	_cupssubipptcp.local.	1	ALL	۲	
Printer	_printertcp.local.	1	ALL	T	

每個服務都有一個相關聯的服務字串。服務字串用於將服務例項與服務查詢相匹配。服務型別始終 包含服務名稱和協定。此外,它可以包含一個或多個子型別識別符號。 AppleTV服務使用 :_airplay._tcp.local。

當全局啟用mDNS時,控制器會針對有線(管理和動態介面)和無線網路上的所有服務將mDNS查 詢傳送到224.0.0.251。

在WLC交換器連線埠的此擷取中,封包80、81和82顯示WLC使用管理來源IP (10.48.39.142)和動態 介面(192.168.232.11和192.168.239.8),透過有線網路向224.0.0.251傳送查詢,如下圖所示。

ndns	(
No.	Time	Source	Destination	Protocol	Length	Signal strength (dBm)	Channel	Info		
Г	80 15:24:18.206675	10.48.39.142	224.0.0.251	MDNS	216			Standard quer	y 0x0000	ANY _
	81 15:24:18.207010	192.168.232.11	224.0.0.251	MDNS	216			Standard quer	y 0x0000	ANY _
	82 15:24:18.207663	192.168.239.8	224.0.0.251	MDNS	216			Standard quer	y 0x0000	ANY _
Ľ	83 15:24:18.208051	10.48.39.142	224.0.0.251	MDNS	292			Standard quer	y 0x0000	ANY _
> Fra	ame 80: 216 bytes on w	wire (1728 bits)	, 216 bytes capt	tured (1728	bits)	on interface 0				
> Eth	nernet II, Src: Cisco	b9:62:60 (00:a2	:89:b9:62:60), D	Ost: IPv4mca	st_fb	(01:00:5e:00:00:f	b)			
> Int	ternet Protocol Versio	on 4, Src: 10.48	.39.142, Dst: 22	24.0.0.251						

> User Datagram Protocol, Src Port: 5353, Dst Port: 5353

> Multicast Domain Name System (query)

Packet 83顯示WLC透過無線傳送查詢。內部資料包顯示從管理介面到224.0.0.251的WLC查詢。由 於此查詢是透過無線進行的,因此capwap報頭會增加到資料包中,而外部源IP仍然是管理源IP,但 目的地是組播IP 239.100.100.100,如圖所示。



現在,此組播IP 239.100.100.100從何而來?在WLC上,存取點(AP)組播模式(controller > general)設定為組播組地址為239.100.100.100(例如,239範圍內的任何ip)。AP加入此組播組並

偵聽它。WLC將查詢轉發到此組,AP接收查詢並透過無線傳送。地址239.100.100.100(這不是靜 態的,這是您在下一個示例中配置的)只出現在WLC和AP之間的capwap報頭中,無線客戶端看不 到其中的任何內容(但可以看到內部原始mdns資料包),如圖所示。

alah				- 5/11				a na m	Save Configuration
cisco	MONITOR	<u>W</u> LANs		WIRELESS	SECURITY	MANAGEMENT	COMMANDS	HELP	<u>F</u> EEDBACK
Controller	General								
General	Name			AKS_WLC					
Icons	802.3x Flo	ow Control	Mode	Disabled *					
Inventory	LAG Mode	e on next re	eboot	Disabled ¥		(L	AG Mode is curr	ently disal	bled).
Interface Groups	Broadcast	Forwardin	g	Disabled •					
Multicast	AP Multica	ast Mode 1		Multicast 🔻	239.100.100.10	00 Multicast Gr	roup Address		
Internal DHCP Server	AP IPv6 M	Iulticast Mo	ode 1	Multicast 🔻	::			IPv6 Mult	icast Group Address
Mobility Management	AP Fallbac	:k		Enabled *					
Ports	CAPWAP F	Preferred M	lode	ipv4 🔻					
				[n: 11.1=]					

請記住,在此設定中,WLC是VLAN 1中的2504,AP是VLAN 231。由於裝置位於不同的vlan中 ,您需要為有線上的vlan 1和239啟用組播路由,這樣才能正常工作。

注意:如果在有線上未為wlc和AP管理VLAN啟用組播路由,則AP組播模式必須設定為單播。 在此模式中,控制器會將每個組播資料包單播到與控制器關聯的每個AP。此模式效率非常低 ,不建議使用。

此捕獲是查詢資料包的詳細資訊,如圖所示。

mdns											
No.	Time	Source	Destination	Protocol	Length	Signal strength (dBm)	Channel	Info			
Г	80 15:24:18.206675	10.48.39.142	224.0.0.251	MDNS	216			Standard	query	0x0000	ANY
	81 15:24:18.207010	192.168.232.11	224.0.0.251	MDNS	216			Standard	query	0x0000	ANY
-	82 15:24:18.207663	192.168.239.8	224.0.0.251	MDNS	216			Standard	query	0x0000	ANY
	83 15:24:18.208051	10.48.39.142	224.0.0.251	MDNS	292			Standard	query	0x0000	ANY
> Use	r Datagram Protocol,	Src Port: 5247,	Dst Port: 5247								
> Con	trol And Provisioning	g of Wireless Ad	cess Points - Da	ata							
> IEE	E 802.11 Data, Flags:	F.									
> Log	ical-Link Control										
> Int	ernet Protocol Versio	on 4, Src: 10.48	3.39.142, Dst: 22	4.0.0.251							
> Use	r Datagram Protocol,	Src Port: 5353,	Dst Port: 5353								
∽ Mul	ticast Domain Name Sy	stem (query)									
	Transaction ID: 0x000	00									
>	Flags: 0x0400 Standar	rd query									
	Questions: 6										
2	Answer RRs: 0										
1	Authority RRs: 0										
3	Additional RRs: 0										
~	Queries										
	> _ipptcp.local: t	ype ANY, class	IN, "QU" questio	n							
	> _raoptcp.local:	type ANY, class	IN, "QU" questi	on							
	> _airplaytcp.loca	1: type ANY, cl	ass IN, "QU" que	stion							
	> _universalsubi	pptcp.local:	type ANY, class	IN, "QU" qu	estion						
	> _cupssubippt	cp.local: type	ANY, class IN, "	QU" questio	n						
	S autotas tas lass	1. tune ANN al	ACC TH "OU" ON	ation							

調試所反映的內容與捕獲中看到的內容相同。在這裡,代碼片段只顯示來自管理介面的查詢。

(Cisco Controller) >

debug mdns all enable

Cisco Controller) >*emWeb: Feb 22 16:24:18.203: bgSetBonjourAccessPolicy :1192 Bonjour AccessPolicy sta *emWeb: Feb 22 16:24:18.203: bgSetBonjourQueryInterval :1359

Bonjour query interval is already configured for requested value = 15

*Bonjour_Process_Task: Feb 22 16:24:18.215: bonjourProcessTask :

220 Processing message type = BONJOUR_AGGREGATED_QUERY

*Bonjour_Process_Task: Feb 22 16:24:18.215: sendBonjourPkt : 3881 sendBonjourPkt msg-type = BONJOUR_AGG
*Bonjour_Process_Task: Feb 22 16:24:18.216: Send to Wired, All vlan is TRUE
*Bonjour_Process_Task: Feb 22 16:24:18.216: sendBonjourPacketToWired : 3652 sending aggregated query on
*Bonjour_Process_Task: Feb 22 16:24:18.216: buildBonjourPacket : 2916 Preparing for 12 Multicast send
*Bonjour_Process_Task: Feb 22 16:24:18.216: buildBonjourPacket : 2936 allVlan = 0 ,

vlanId = 0

*Bonjour_Process_Task: Feb 22 16:24:18.216: buildBonjourPacket : 2948 simInterfaceMacAddrGet(

management

: fillBonjourAggregatedQuery : PACKET-1 mDNS-QUERY sent for [6] services

*Bonjour_Process_Task: Feb 22 16:24:18.216: fillBonjourAggregatedQuery : mDNS-QUERY sent for all service

*Bonjour_Process_Task: Feb 22 16:24:18.216: -----*Bonjour_Process_Task: Feb 22 16:24:18.216: buildBonjourPacket : 3054 BONJOUR_AGGREGATED_QUERY: buildBo

*Bonjour_Process_Task: Feb 22 16:24:18.216: buildBonjourPacket MCAST-DST-IP ADDR = 224.0.0.251

步驟 2.WLC快取Bonjour服務(Apple TV廣告)

在此資料包中,Apple TV (192.168.239.37)向224.0.0.251傳送通告。因為在本例中Apple TV是無線 的,所以您可以看到透過capwap傳送的廣告。WLC僅注意到一次mDNS服務回應,但快取專案具 有TTL,且需要使用keepalive對其進行維護,如圖所示。

ns												
Time	Source	Destination	Protocol	Length	Signal strength (dBm)	Channel	Info					
9363 15:22:02.388333	3 192.168.239.37	224.0.0.251	MDNS	1436			Standard	query	response	0x0000	TXT,	cache
9364 15:22:02.389688	8 fe80::10c1:887	ff02::fb	MDNS	1456			Standard	query	response	0x0000	TXT,	cache
9369 15:22:02.402261	192.168.239.8	224.0.0.251	MDNS	714			Standard	query	response	0x0000	PTR,	cache
9371 15:22:02.406054	192.168.239.8	224.0.0.251	MDNS	707			Standard	query	response	0x0000	PTR,	cache
10039 15:22:03.390977	192.168.239.37	224.0.0.251	MDNS	1436			Standard	query	response	0x0000	TXT,	cache
10043 15:22:03.391354	fe80::10c1:887	ff02::fb	MDNS	1456			Standard	query	response	0x0000	TXT,	cache
thernet II, Src: Cisco nternet Protocol Versi ser Datagram Protocol, ontrol And Provisionin EEE 802.11 Data, Flags ogical-Link Control nternet Protocol Versi	_5f:f7:ca (00:14 on 4, Src: 192.1 Src Port: 24505 g of Wireless Ac :T on 4. Src: 192.1	:f1:5f:f7:ca), [68.231.105, Dst: , Dst Port: 5247 cess Points - Da 68.239.37, Dst:	0st: Cisco_1 10.48.39.3 nta 224.0.0.25	09:62:60 142 1	0 (00:a2:89:b9:6;	2:60)						
	Time 9363 15:22:02.388333 9364 15:22:02.389688 9369 15:22:02.402261 9371 15:22:02.406054 10039 15:22:03.390977 10043 15:22:03.391354 rame 9363: 1436 bytes thernet II, Src: Cisco nternet Protocol Versi ser Datagram Protocol, ontrol And Provisionin EEE 802.11 Data, Flags ogical-Link Control nternet Protocol Versi	Time Source 9363 15:22:02.388333 192.168.239.37 9364 15:22:02.389688 fe80::10c1:887 9369 15:22:02.402261 192.168.239.8 9371 15:22:03.390977 192.168.239.8 10039 15:22:03.390977 192.168.239.8 10043 15:22:03.391354 fe80::10c1:887 rame 9363: 1436 bytes on wire (11488 b thernet II, Src: Cisco_5f:f7:ca (00:14 nternet Protocol Version 4, Src: 192.1 ser Datagram Protocol, Src Port: 24505 ontrol And Provisioning of Wireless Ac EEE 802.11 Data, Flags:T ogical-Link Control nternet Protocol Version 4, Src: 192.1	Time Source Destination 9363 15:22:02.388333 192.168.239.37 224.0.0.251 9364 15:22:02.389688 fe80::10c1:887 ff02::fb 9369 15:22:02.402261 192.168.239.8 224.0.0.251 9371 15:22:02.406054 192.168.239.8 224.0.0.251 10039 15:22:03.39037 192.168.239.37 224.0.0.251 10043 15:22:03.391354 fe80::10c1:887 ff02::fb rame 9363: 1436 bytes on wire (11488 bits), 1436 bytes thernet II, Src: Cisco_5f:f7:ca (00:14:f1:5f:f7:ca), D nternet Protocol Version 4, Src: 192.168.231.105, Dst: ser Datagram Protocol, Src Port: 24505, Dst Port: 5247 ontrol And Provisioning of Wireless Access Points - Da Da Da Da EEE 802.11 Data, Flags: T Da Data Flags: T ogical-Link Control Version 4, Src: 192.168.239.37, Dst: Dst Dat	Time Source Destination Protocol 9363 15:22:02.388333 192.168.239.37 224.0.0.251 MDNS 9364 15:22:02.389688 fe80::10c1:887 ff02::fb MDNS 9369 15:22:02.402261 192.168.239.8 224.0.0.251 MDNS 9371 15:22:02.406054 192.168.239.8 224.0.0.251 MDNS 10043 15:22:03.391354 fe80::10c1:887 ff02::fb MDNS rame 9363: 1436 bytes captured thernet II.Scc.co fif7:ca (00:14:f1:5f:f7:ca), Dst: 10:48.39.3 ser Datagram Protocol yersion 4, Src: 192.168.231.105, Dst: 10:48.39.3 ser Data EEE 802.11	Image Source Destination Protocol Length 9363 15:22:02.388333 192.168.239.37 224.0.0.251 MDNS 1436 9364 15:22:02.389688 fe80::10c1:887 ff02::fb MDNS 1436 9369 15:22:02.389688 fe80::10c1:887 ff02::fb MDNS 1436 9371 15:22:02.406054 192.168.239.8 224.0.0.251 MDNS 767 10039 15:22:03.390977 192.168.239.37 224.0.0.251 MDNS 767 10039 15:22:03.390977 192.168.239.37 224.0.0.251 MDNS 1436 10043 15:22:03.391354 fe80::10c1:887 ff02::fb MDNS 1436 10043 15:22:03.391354 fe80::10c1:887 ff02::fb MDNS 1436 rame 9363: 1436 bytes on wire (11488 bits), 1436 bytes captured (11488 thernet II, Src: Cisco_5f:f7:ca (00:14:f1:5f:f7:ca), Dst: 10.48.39.142 ser ser Da	Image Source Destination Protocol Length Signal strength (dBm) 9363 15:22:02.388333 192.168.239.37 224.0.0.251 MDNS 1436 9364 15:22:02.389688 fe80::10c1:887 ff02::fb MDNS 1456 9369 15:22:02.3402261 192.168.239.8 224.0.0.251 MDNS 714 9371 15:22:02.406054 192.168.239.8 224.0.0.251 MDNS 707 10039 15:22:03.390377 192.168.239.37 224.0.0.251 MDNS 707 10039 15:22:03.390374 192.168.239.37 224.0.0.251 MDNS 1436 10043 15:22:03.391354 fe80::10c1:887 ff02::fb MDNS 1436 10043 15:22:03.391354 fe80::10c1:887 ff02::fb MDNS 1436 rame 9363: 1436 bytes captured (11488 bits) on interfactor rhemet II, Src: Cisco_5f:f7:ca (00:14:f1:5f:f7:ca), Dst: 10:48.39.142 ser <t< td=""><td>Image Source Destination Protocol Length Signal strength (dBm) Channel 9363 15:22:02.388333 192.168.239.37 224.0.0.251 MDNS 1436 9364 15:22:02.389688 fe80::10c1:887 ff02::fb MDNS 1456 9369 15:22:02.402261 192.168.239.8 224.0.0.251 MDNS 714 9371 15:22:02.406054 192.168.239.8 224.0.0.251 MDNS 707 10039 15:22:03.390377 192.168.239.37 224.0.0.251 MDNS 1436 10043 15:22:03.391354 fe80::10c1:887 ff02::fb MDNS 1436 10043 15:22:03.391354 fe80::10c1:887 ff02::fb MDNS 1436 10043 15:22:03.391354 fe80::10c1:87 ff02::fb MDNS 1436 10043 15:22:03.391354 fe80::10c1:87 ff02::fb MDNS 1436 10043 15:22:03.391354 fe80::10c1:87 ff02::fb MDNS 1436 rame 936</td><td>Image Source Destination Protocol Length Signal strength (dBm) Channel Info 9363 15:22:02.388333 192.168.239.37 224.0.0.251 MDNS 1436 Standard 9364 15:22:02.389688 fe80::10c1:887 ff02::fb MDNS 1456 Standard 9369 15:22:02.400261 192.168.239.8 224.0.0.251 MDNS 714 Standard 9371 15:22:02.406054 192.168.239.37 224.0.0.251 MDNS 707 Standard 10039 15:22:03.390977 192.168.239.37 224.0.0.251 MDNS 1436 Standard 10043 15:22:03.390374 fe82::16 MDNS 1436 Standard 10043 15:22:03.391354 fe80::10c1:887 ff02::fb MDNS 1436 Standard rame 9363: 1436 bytes on wire (11488 bits), 1436 bytes captured (11488 bits) on interface 0 thernet II, Src: Cisco_5f:f7:ca (00:14:f1:5f:f7:ca), Dst: 10:48.39.142 Standard Standard <tr< td=""><td>Image Source Destination Protocol Length Signal strength (dBm) Channel Info 9363 15:22:02.388333 192.168.239.37 224.0.0.251 MDNS 1436 Standard query 9364 15:22:02.389688 fe80::10c1:887 ff02::fb MDNS 1456 Standard query 9369 15:22:02.400261 192.168.239.8 224.0.0.251 MDNS 714 Standard query 9371 15:22:02.406054 192.168.239.37 224.0.0.251 MDNS 707 Standard query 1003 15:22:02.406054 192.168.239.37 224.0.0.251 MDNS 707 Standard query 10043 15:22:03.390375 192.40.0.251 MDNS 1436 Standard query 10043 15:22:03.391354 fe80::10c1:887 ff02::fb MDNS 1436 Standard query rame 9363: 1436 bytes on wire (11488 bits), 1436 bytes captured (11488 bits) on interface 0 thernet II, Src: Cisco_5f:f7:ca (00:14:f1:5f:f7:ca), Dst: 10.48.39.142 ser</td><td>Ime Source Destination Protocol Length Signal strength (dBm) Channel Info 9363 15:22:02.388333 192.168.239.37 224.0.0.251 MDNS 1436 Standard query response 9364 15:22:02.389688 fe80::10c1:887 ff02::fb MDNS 1456 Standard query response 9369 15:22:02.400261 192.168.239.8 224.0.0.251 MDNS 714 Standard query response 9371 15:22:02.406054 192.168.239.37 224.0.0.251 MDNS 707 Standard query response 10039 15:22:03.390977 192.168.239.37 224.0.0.251 MDNS 1436 Standard query response 10043 15:22:03.390977 192.168.239.37 224.0.0.251 MDNS 1436 Standard query response 10043 15:22:03.391354 fe80::10c1:887 ff02::fb MDNS 1436 Standard query response rame 9363: 1436 bytes on wire (11488 bits), 1436 bytes captured (11488 bits) on interface 0 thernet II, Src: Cisco_5f:f7:ca (00:14::f1:5f:f7:ca), Dst: 10.48.39.142 <tr< td=""><td>Image Source Destination Protocol Length Signal strength (dBm) Channel Info 9363 15:22:02.388333 192.168.239.37 224.0.0.251 MDNS 1436 Standard query response 0x0000 9364 15:22:02.389688 fe80::10c1:887 ff02::fb MDNS 1456 Standard query response 0x0000 9369 15:22:02.402261 192.168.239.8 224.0.0.251 MDNS 714 Standard query response 0x0000 10039 15:22:02.406054 192.168.239.37 224.0.0.251 MDNS 707 Standard query response 0x0000 10043 15:22:03.39037 124.0.0.251 MDNS 1436 Standard query response 0x0000 10043 15:22:03.391354 fe80::10c1:887 ff02::fb MDNS 1436 Standard query response 0x0000 rame 9363: 1436 bytes optimed (11488 bits) on interface 0 reme 9363:<!--</td--><td>Ime Source Destination Protocol Length Signal strength (dBm) Channel Info 9363 15:22:02.388333 192.168.239.37 224.0.0.251 MDNS 1436 Standard query response 0x0000 TXT, 9364 15:22:02.389688 fe80::10c1:887 ff02::fb MDNS 1436 Standard query response 0x0000 TXT, 9369 15:22:02.400254 192.168.239.8 224.0.0.251 MDNS 714 Standard query response 0x0000 PTR, 9371 15:22:02.406054 192.168.239.37 224.0.0.251 MDNS 707 Standard query response 0x0000 PTR, 10039 15:22:03.399377 192.168.239.37 224.0.0.251 MDNS 1436 Standard query response 0x0000 PTR, 10043 15:22:03.399377 192.168.239.37 224.0.0.251 MDNS 1436 Standard query response 0x0000 TXT, 10043 15:22:03.391354 fe80::10c1:887 ff02:</td></td></tr<></td></tr<></td></t<>	Image Source Destination Protocol Length Signal strength (dBm) Channel 9363 15:22:02.388333 192.168.239.37 224.0.0.251 MDNS 1436 9364 15:22:02.389688 fe80::10c1:887 ff02::fb MDNS 1456 9369 15:22:02.402261 192.168.239.8 224.0.0.251 MDNS 714 9371 15:22:02.406054 192.168.239.8 224.0.0.251 MDNS 707 10039 15:22:03.390377 192.168.239.37 224.0.0.251 MDNS 1436 10043 15:22:03.391354 fe80::10c1:887 ff02::fb MDNS 1436 10043 15:22:03.391354 fe80::10c1:887 ff02::fb MDNS 1436 10043 15:22:03.391354 fe80::10c1:87 ff02::fb MDNS 1436 10043 15:22:03.391354 fe80::10c1:87 ff02::fb MDNS 1436 10043 15:22:03.391354 fe80::10c1:87 ff02::fb MDNS 1436 rame 936	Image Source Destination Protocol Length Signal strength (dBm) Channel Info 9363 15:22:02.388333 192.168.239.37 224.0.0.251 MDNS 1436 Standard 9364 15:22:02.389688 fe80::10c1:887 ff02::fb MDNS 1456 Standard 9369 15:22:02.400261 192.168.239.8 224.0.0.251 MDNS 714 Standard 9371 15:22:02.406054 192.168.239.37 224.0.0.251 MDNS 707 Standard 10039 15:22:03.390977 192.168.239.37 224.0.0.251 MDNS 1436 Standard 10043 15:22:03.390374 fe82::16 MDNS 1436 Standard 10043 15:22:03.391354 fe80::10c1:887 ff02::fb MDNS 1436 Standard rame 9363: 1436 bytes on wire (11488 bits), 1436 bytes captured (11488 bits) on interface 0 thernet II, Src: Cisco_5f:f7:ca (00:14:f1:5f:f7:ca), Dst: 10:48.39.142 Standard Standard <tr< td=""><td>Image Source Destination Protocol Length Signal strength (dBm) Channel Info 9363 15:22:02.388333 192.168.239.37 224.0.0.251 MDNS 1436 Standard query 9364 15:22:02.389688 fe80::10c1:887 ff02::fb MDNS 1456 Standard query 9369 15:22:02.400261 192.168.239.8 224.0.0.251 MDNS 714 Standard query 9371 15:22:02.406054 192.168.239.37 224.0.0.251 MDNS 707 Standard query 1003 15:22:02.406054 192.168.239.37 224.0.0.251 MDNS 707 Standard query 10043 15:22:03.390375 192.40.0.251 MDNS 1436 Standard query 10043 15:22:03.391354 fe80::10c1:887 ff02::fb MDNS 1436 Standard query rame 9363: 1436 bytes on wire (11488 bits), 1436 bytes captured (11488 bits) on interface 0 thernet II, Src: Cisco_5f:f7:ca (00:14:f1:5f:f7:ca), Dst: 10.48.39.142 ser</td><td>Ime Source Destination Protocol Length Signal strength (dBm) Channel Info 9363 15:22:02.388333 192.168.239.37 224.0.0.251 MDNS 1436 Standard query response 9364 15:22:02.389688 fe80::10c1:887 ff02::fb MDNS 1456 Standard query response 9369 15:22:02.400261 192.168.239.8 224.0.0.251 MDNS 714 Standard query response 9371 15:22:02.406054 192.168.239.37 224.0.0.251 MDNS 707 Standard query response 10039 15:22:03.390977 192.168.239.37 224.0.0.251 MDNS 1436 Standard query response 10043 15:22:03.390977 192.168.239.37 224.0.0.251 MDNS 1436 Standard query response 10043 15:22:03.391354 fe80::10c1:887 ff02::fb MDNS 1436 Standard query response rame 9363: 1436 bytes on wire (11488 bits), 1436 bytes captured (11488 bits) on interface 0 thernet II, Src: Cisco_5f:f7:ca (00:14::f1:5f:f7:ca), Dst: 10.48.39.142 <tr< td=""><td>Image Source Destination Protocol Length Signal strength (dBm) Channel Info 9363 15:22:02.388333 192.168.239.37 224.0.0.251 MDNS 1436 Standard query response 0x0000 9364 15:22:02.389688 fe80::10c1:887 ff02::fb MDNS 1456 Standard query response 0x0000 9369 15:22:02.402261 192.168.239.8 224.0.0.251 MDNS 714 Standard query response 0x0000 10039 15:22:02.406054 192.168.239.37 224.0.0.251 MDNS 707 Standard query response 0x0000 10043 15:22:03.39037 124.0.0.251 MDNS 1436 Standard query response 0x0000 10043 15:22:03.391354 fe80::10c1:887 ff02::fb MDNS 1436 Standard query response 0x0000 rame 9363: 1436 bytes optimed (11488 bits) on interface 0 reme 9363:<!--</td--><td>Ime Source Destination Protocol Length Signal strength (dBm) Channel Info 9363 15:22:02.388333 192.168.239.37 224.0.0.251 MDNS 1436 Standard query response 0x0000 TXT, 9364 15:22:02.389688 fe80::10c1:887 ff02::fb MDNS 1436 Standard query response 0x0000 TXT, 9369 15:22:02.400254 192.168.239.8 224.0.0.251 MDNS 714 Standard query response 0x0000 PTR, 9371 15:22:02.406054 192.168.239.37 224.0.0.251 MDNS 707 Standard query response 0x0000 PTR, 10039 15:22:03.399377 192.168.239.37 224.0.0.251 MDNS 1436 Standard query response 0x0000 PTR, 10043 15:22:03.399377 192.168.239.37 224.0.0.251 MDNS 1436 Standard query response 0x0000 TXT, 10043 15:22:03.391354 fe80::10c1:887 ff02:</td></td></tr<></td></tr<>	Image Source Destination Protocol Length Signal strength (dBm) Channel Info 9363 15:22:02.388333 192.168.239.37 224.0.0.251 MDNS 1436 Standard query 9364 15:22:02.389688 fe80::10c1:887 ff02::fb MDNS 1456 Standard query 9369 15:22:02.400261 192.168.239.8 224.0.0.251 MDNS 714 Standard query 9371 15:22:02.406054 192.168.239.37 224.0.0.251 MDNS 707 Standard query 1003 15:22:02.406054 192.168.239.37 224.0.0.251 MDNS 707 Standard query 10043 15:22:03.390375 192.40.0.251 MDNS 1436 Standard query 10043 15:22:03.391354 fe80::10c1:887 ff02::fb MDNS 1436 Standard query rame 9363: 1436 bytes on wire (11488 bits), 1436 bytes captured (11488 bits) on interface 0 thernet II, Src: Cisco_5f:f7:ca (00:14:f1:5f:f7:ca), Dst: 10.48.39.142 ser	Ime Source Destination Protocol Length Signal strength (dBm) Channel Info 9363 15:22:02.388333 192.168.239.37 224.0.0.251 MDNS 1436 Standard query response 9364 15:22:02.389688 fe80::10c1:887 ff02::fb MDNS 1456 Standard query response 9369 15:22:02.400261 192.168.239.8 224.0.0.251 MDNS 714 Standard query response 9371 15:22:02.406054 192.168.239.37 224.0.0.251 MDNS 707 Standard query response 10039 15:22:03.390977 192.168.239.37 224.0.0.251 MDNS 1436 Standard query response 10043 15:22:03.390977 192.168.239.37 224.0.0.251 MDNS 1436 Standard query response 10043 15:22:03.391354 fe80::10c1:887 ff02::fb MDNS 1436 Standard query response rame 9363: 1436 bytes on wire (11488 bits), 1436 bytes captured (11488 bits) on interface 0 thernet II, Src: Cisco_5f:f7:ca (00:14::f1:5f:f7:ca), Dst: 10.48.39.142 <tr< td=""><td>Image Source Destination Protocol Length Signal strength (dBm) Channel Info 9363 15:22:02.388333 192.168.239.37 224.0.0.251 MDNS 1436 Standard query response 0x0000 9364 15:22:02.389688 fe80::10c1:887 ff02::fb MDNS 1456 Standard query response 0x0000 9369 15:22:02.402261 192.168.239.8 224.0.0.251 MDNS 714 Standard query response 0x0000 10039 15:22:02.406054 192.168.239.37 224.0.0.251 MDNS 707 Standard query response 0x0000 10043 15:22:03.39037 124.0.0.251 MDNS 1436 Standard query response 0x0000 10043 15:22:03.391354 fe80::10c1:887 ff02::fb MDNS 1436 Standard query response 0x0000 rame 9363: 1436 bytes optimed (11488 bits) on interface 0 reme 9363:<!--</td--><td>Ime Source Destination Protocol Length Signal strength (dBm) Channel Info 9363 15:22:02.388333 192.168.239.37 224.0.0.251 MDNS 1436 Standard query response 0x0000 TXT, 9364 15:22:02.389688 fe80::10c1:887 ff02::fb MDNS 1436 Standard query response 0x0000 TXT, 9369 15:22:02.400254 192.168.239.8 224.0.0.251 MDNS 714 Standard query response 0x0000 PTR, 9371 15:22:02.406054 192.168.239.37 224.0.0.251 MDNS 707 Standard query response 0x0000 PTR, 10039 15:22:03.399377 192.168.239.37 224.0.0.251 MDNS 1436 Standard query response 0x0000 PTR, 10043 15:22:03.399377 192.168.239.37 224.0.0.251 MDNS 1436 Standard query response 0x0000 TXT, 10043 15:22:03.391354 fe80::10c1:887 ff02:</td></td></tr<>	Image Source Destination Protocol Length Signal strength (dBm) Channel Info 9363 15:22:02.388333 192.168.239.37 224.0.0.251 MDNS 1436 Standard query response 0x0000 9364 15:22:02.389688 fe80::10c1:887 ff02::fb MDNS 1456 Standard query response 0x0000 9369 15:22:02.402261 192.168.239.8 224.0.0.251 MDNS 714 Standard query response 0x0000 10039 15:22:02.406054 192.168.239.37 224.0.0.251 MDNS 707 Standard query response 0x0000 10043 15:22:03.39037 124.0.0.251 MDNS 1436 Standard query response 0x0000 10043 15:22:03.391354 fe80::10c1:887 ff02::fb MDNS 1436 Standard query response 0x0000 rame 9363: 1436 bytes optimed (11488 bits) on interface 0 reme 9363: </td <td>Ime Source Destination Protocol Length Signal strength (dBm) Channel Info 9363 15:22:02.388333 192.168.239.37 224.0.0.251 MDNS 1436 Standard query response 0x0000 TXT, 9364 15:22:02.389688 fe80::10c1:887 ff02::fb MDNS 1436 Standard query response 0x0000 TXT, 9369 15:22:02.400254 192.168.239.8 224.0.0.251 MDNS 714 Standard query response 0x0000 PTR, 9371 15:22:02.406054 192.168.239.37 224.0.0.251 MDNS 707 Standard query response 0x0000 PTR, 10039 15:22:03.399377 192.168.239.37 224.0.0.251 MDNS 1436 Standard query response 0x0000 PTR, 10043 15:22:03.399377 192.168.239.37 224.0.0.251 MDNS 1436 Standard query response 0x0000 TXT, 10043 15:22:03.391354 fe80::10c1:887 ff02:</td>	Ime Source Destination Protocol Length Signal strength (dBm) Channel Info 9363 15:22:02.388333 192.168.239.37 224.0.0.251 MDNS 1436 Standard query response 0x0000 TXT, 9364 15:22:02.389688 fe80::10c1:887 ff02::fb MDNS 1436 Standard query response 0x0000 TXT, 9369 15:22:02.400254 192.168.239.8 224.0.0.251 MDNS 714 Standard query response 0x0000 PTR, 9371 15:22:02.406054 192.168.239.37 224.0.0.251 MDNS 707 Standard query response 0x0000 PTR, 10039 15:22:03.399377 192.168.239.37 224.0.0.251 MDNS 1436 Standard query response 0x0000 PTR, 10043 15:22:03.399377 192.168.239.37 224.0.0.251 MDNS 1436 Standard query response 0x0000 TXT, 10043 15:22:03.391354 fe80::10c1:887 ff02:

> Multicast Domain Name System (response)

Apple TV的詳細響應如圖所示。

M md	ns											
No.	Time	Source	Destination	Protocol	Length	Signal strength (dBm)	Channel	Info				
	9363 15:22:02.388333	192.168.239.37	224.0.0.251	MDNS	1436			Standard query	response	0x0000	TXT,	cache f
	9364 15:22:02.389688	fe80::10c1:887	ff02::fb	MDNS	1456			Standard query	response	0x0000	TXT,	cache f
	9369 15:22:02.402261	192.168.239.8	224.0.0.251	MDNS	714			Standard query	response	0x0000	PTR,	cache f
	9371 15:22:02.406054	192.168.239.8	224.0.0.251	MDNS	707			Standard query	response	0x0000	PTR,	cache f
	10039 15:22:03.390977	192.168.239.37	224.0.0.251	MDNS	1436			Standard query	response	0x0000	TXT,	cache f
	10043 15:22:03.391354	fe80::10c1:887	ff02::fb	MDNS	1456			Standard query	response	0x0000	TXT,	cache f
	Transaction ID: 0x000 se Transaction ID: 0x000 Flags: 0x8400 Standar Questions: 0 Answer RRs: 21 Authority RRs: 0 Additional RRs: 8 Answers > 70-35-60-63.1 Wire > services. dns-sd.	conos] 30 d query response cless Team (4)s udp.local: type	e, No error leep-proxyudp	.local: typ	e TXT,	class IN, cache 5.local	flush					
	<pre>> _sleep-proxyudp. > 70-35-60-63.1 Wire > Wireless Team (4). > _servicesdns-sd. > _airplaytcp.loca</pre>	<pre>local: type PTR, less Team (4)s _airplaytcp.lc _udp.local: type l: type PTR, cla</pre>	class IN, 70-3 leep-proxy_udp cal: type TXT, PTR, class IN, ss IN, Wireless	5-60-63.1 W .local: typ class IN, c _airplay Team (4)	ireless e SRV, ache fl tcp.loc airplay	s Team (4)sleep class IN, cache Lush :al /tcp.local	-proxy flush, p	udp.local riority 0, weig	nt 0, port	t 53104,	, targ	get Wire

> 18EE6911DC61@Wireless Team._raop._tcp.local: type TXT, class IN, cache flush

這些調試顯示Apple TV響應WLC的查詢。在這個場景中,Apple TV回應了21項服務,其中只有 Airplay服務感興趣。

<#root>

*Bonjour_Msg_Task: Feb 23 16:22:02.372:

18:ee:69:11:dc:60

Parsing 21 Bonjour Answers.

*Bonjour_Msg_Task: Feb 23 16:22:02.374: bgProcessServiceAdvRsp : 1562 aStringNameStr = Wireless Team (4
*Bonjour_Msg_Task: Feb 23 16:22:02.374: bgProcessServiceAdvRsp : 1579 RR: Wireless Team (4)._airplay._t
*Bonjour_Msg_Task: Feb 23 16:22:02.374: bgProcessServiceAdvRsp : 1581 aStringNameStr : Wireless Team (4
*

Bonjour_Msg_Task: Feb 23 16:22:02.374: Found Service Name:_airplay._tcp.local., Service Provider Name:W

*Bonjour_Msg_Task: Feb 23 16:22:02.374: bgServiceAllowedInMsalDb : 181 srv_str = _airplay._tcp.local. ty *Bonjour_Msg_Task: Feb 23 16:22:02.374: bgServiceAllowedInMsalDb : 195 Incoming Service Advertisement s *Bonjour_Msg_Task: Feb 23 16:22:02.374: Service-Name = AppleTV Service-String = _airplay._tcp.local. Typ

```
<<< Airplay service registered in WLC DB >>
*Bonjour_Msg_Task: Feb 23 16:22:02.374: Service Name:_airplay._tcp.local. is supported in Master-servic
*Bonjour_Msg_Task: Feb 23 16:22:02.374: aDataLen: 2, aSrPtrRecord.aSrvProName.size: 39
*Bonjour_Msg_Task: Feb 23 16:22:02.374: Updating updateBonjourSrPtrDb:
*Bonjour_Msg_Task: Feb 23 16:22:02.374: aType: 12, aClass: 1, aTTL: 4500, aDataLen: 2, ptr: 0x327a9d93,
*Bonjour_Msg_Task: Feb 23 16:22:02.374:
                                                 bgProcessServiceAdvRsp : .. < SP-SR_PTR PKT >...
*Bonjour_Msg_Task: Feb 23 16:22:02.374:
                                                 bgProcessServiceAdvRsp : SERVICE NAME ..... = App
                                                 bgProcessServiceAdvRsp : SERVICE STRING ..... = _air
*Bonjour_Msg_Task: Feb 23 16:22:02.374:
*Bonjour_Msg_Task: Feb 23 16:22:02.374:
                                                 bgProcessServiceAdvRsp : SERVICE PROVIDER ..... = Wire
*Bonjour_Msg_Task: Feb 23 16:22:02.374:
                                                 bgProcessServiceAdvRsp : aTTL ..... = 450
*Bonjour_Msg_Task: Feb 23 16:22:02.374: bgProcessServiceAdvRsp : 1546 msg : 0x327a9bda, ptr : 0x327a9d9
```

步驟 3.WLC偵聽客戶端的服務查詢

稍後,無線客戶端(192.168.232.98)在任何時間點傳送請求空中播放服務的查詢(通常當客戶端打 開具有空中播放功能的應用程式時),如圖所示。

II n	dns										
No.	Time	Source	Destination	Protocol	Length	Signal strength (dBm)	Channel	Info			
	2544 16:03:27.	563772 192.168.232.98	224.0.0.251	MDNS	188			Standard query	0x0000 PTR	_sleep-proxyudp	.local, "QM"
	2545 16:03:27.	563785 fe80::87c:cc5c	ff02::fb	MDNS	208	10 10		Standard query	0x0000 PTR	_sleep-proxyudp	.local, "QM"
	3198 16:03:45.	206702 192.168.232.98	224.0.0.251	MDNS	196			Standard query	0x0000 PTR	_raoptcp.local,	"QU" questi
	3199 16:03:45.	207216 fe80::87c:cc5c	ff02::fb	MDNS	216	ù.		Standard query	0x0000 PTR	raop. tcp.local.	"OU" questi
>	Frame 3198: 196 b	ytes on wire (1568 bi	ts), 196 bytes ca	ptured (156	8 bits) on interface 0					
>	Ethernet II, Src:	Cisco_5f:f7:ca (00:1	4:f1:5f:f7:ca), D	st: Cisco_b	9:62:6	0 (00:a2:89:b9:6	2:60)				
>	Internet Protocol	Version 4, Src: 192.	168.231.105, Dst:	10.48.39.1	42						
>	User Datagram Pro	tocol, Src Port: 2450	5, Dst Port: 5247								
>	Control And Provi	sioning of Wireless A	ccess Points - Da	ta							
>	IEEE 802.11 Data,	Flags:T									
>	Logical-Link Cont	rol									
>	Internet Protocol	Version 4, Src: 192.	168.232.98, Dst:	224.0.0.251	0						
>	User Datagram Pro	tocol, Src Port: 5353	, Dst Port: 5353								
~	Multicast Domain	Name System (query)									
	Transaction ID:	: 0x0000									
	> Flags: 0x0000 S	Standard query									
	Questions: 2										
	Answer RRs: 0										
	Authority RRs:	0									
	Additional RRs:	: 1									
	✓ Queries										
	> _raoptcp.1	ocal: type PTR, class	s IN, "QU" questio	on							
	> _airplayto	p.local: type PTR, cl	lass IN, "QU" que	stion							
	> Additional reco	ords									

<#root>

*Bonjour_Msg_Task: Feb 27 17:03:15.603: 00:6d:52:5d:5a:7d Parsing 2 bonjour questions

*Bonjour_Msg_Task: Feb 27 17:03:15.603: 00:6d:52:5d:5a:7d Query Service Name: _airplay._tcp.local., RR-

*Bonjour_Msg_Task: Feb 27 17:03:15.603: processBonjourPacket : 1017 qNameStr : _airplay._tcp.local., bor

*Bonjour_Msg_Task: Feb 27 17:03:15.603: Service Name : AppleTV Service String : _airplay._tcp.local. i *Bonjour_Msg_Task: Feb 27 17:03:15.603: 00:6d:52:5d:5a:7d SRV : _airplay._tcp.local. is supported by cl

步驟 4.WLC傳送單播響應到客戶端對Bonjour服務的查詢

WLC以快取的服務無線組(4)。_airplay._tcp.local作出響應。內部資料包的源IP是客戶端vlan的動態 介面,在本例中為192.168.232.11,如圖所示。

l m	dns													
No.	Time	Source	Destination	Protocol	Length	Signal strength (dBm)	Channel	Info						
Г	8885 16:06:45.782278	192.168.232.11	224.0.0.251	MDNS	775			Standard	query	response	0x0000	PTR,	cache	flush 1
	8886 16:06:45.783030	192.168.232.11	224.0.0.251	MDNS	782			Standard	query	response	0x0000	PTR,	cache	flush W
	8887 16:06:45.783869	192.168.232.11	224.0.0.251	MDNS	775			Standard	query	response	0x0000	PTR,	cache	flush 1
L	8888 16:06:45.784786	192.168.232.11	224.0.0.251	MDNS	782			Standard	query	response	0x0000	PTR,	cache	flush W
	8965 16:06:46.120078	192.168.239.40	224.0.0.251	MDNS	196			Standard	query	response	0x0000	TXT		
	8966 16:06:46.121534	fe80::10c1:887	ff02::fb	MDNS	216			Standard	query	response	0x0000	TXT		
> F	rame 8886: 782 bytes o	n wire (6256 bit	s), 782 bytes o	aptured (62	56 bits) on interface 0								
> E	thernet II, Src: Cisco	_b9:62:64 (00:a2	:89:b9:62:64),	Dst: Cisco_	5f:f7:c	a (00:14:f1:5f:f)	7:ca)							
> 1	Internet Protocol Versio	on 4, Src: 10.48	.39.142, Dst: 1	192.168.231.1	105									
> L	Jser Datagram Protocol,	Src Port: 5247,	Dst Port: 2456	95										
> 0	Control And Provisioning	g of Wireless Ac	cess Points - D	Data										
> 1	EEE 802.11 Data, Flags	:F.												
> 1	ogical-Link Control													
> 1	Internet Protocol Versio	on 4, Src: 192.1	68.232.11, Dst:	224.0.0.25	1									
> 1	Jser Datagram Protocol,	Src Port: 5353,	Dst Port: 5353	3										
V M	ulticast Domain Name S	ystem (response)												
	Transaction ID: 0x000	90												
	> Flags: 0x8400 Standar	rd query respons	e, No error											
	Questions: 0													
	Answer RRs: 7													
	Authority RRs: 0													
	Additional RRs: 0													
	✓ Answers													
	<pre>> _airplaytcp.loca > services. dns-sd.</pre>	<pre>il: type PTR, cla udp.local: type</pre>	ass IN, cache f PTR, class IN	lush, Wirele . airplav.	ss Team tcp.loc	(4)airplayt al	cp.local							

偵錯的片段

<#root>

BONJOUR_AGGREGATED_QUERY_RESPONSE

*Bonjour_Process_Task: Feb 27 17:03:45.229: buildBonjourQueryResponsePld : SRV-NAME : AppleTV
*Bonjour_Process_Task: Feb 27 17:03:45.229: buildBonjourQueryResponsePld : SP-NAME..... :
*Bonjour_Process_Task: Feb 27 17:03:45.229: buildBonjourQueryResponsePld : SEND TO : BONJOUR_PKT_
*Bonjour_Process_Task: Feb 27 17:03:45.229: buildBonjourQueryResponsePld : VLAN : 232
*Bonjour_Process_Task: Feb 27 17:03:45.229: buildBonjourQueryResponsePld : IS MCAST : NO
*Bonjour_Process_Task: Feb 27 17:03:45.230: buildBonjourQueryResponsePld : DST-MAC : 00:6D:52:5I

```
*Bonjour_Process_Task: Feb 27 17:03:45.230: buildBonjourQueryResponsePld : ALL mDNS-AP .. : 0
*Bonjour_Process_Task: Feb 27 17:03:45.230: buildBonjourQueryResponsePld : TTL COUNTER .. : TIMEOUT_RES
*Bonjour_Process_Task: Feb 27 17:03:45.230: buildBonjourQueryResponsePld : RESTART TIME . : 0
*Bonjour_Process_Task: Feb 27 17:03:45.230: buildBonjourQueryResponsePld : SNOOP STATUS . : 0
*Bonjour_Process_Task: Feb 27 17:03:45.230: buildBonjourQueryResponsePld : LSS STATUS ... : DISABLED
*Bonjour_Process_Task: Feb 27 17:03:45.230: buildBonjourQueryResponsePld : RSP SRV NAME . : AppleTV
*Bonjour_Process_Task: Feb 27 17:03:45.230: buildBonjourQueryResponsePld : MSG-ID ...... : 0
*Bonjour_Process_Task: Feb 27 17:03:45.230: buildBonjourQueryResponsePld : POLICY STATUS : DISABLED
*Bonjour_Process_Task: Feb 27 17:03:45.230: buildBonjourQueryResponsePld INCLUDING SpData : Wireless Tea
*Bonjour_Process_Task: Feb 27 17:03:45.233: VALID SR-PTR RR FOUND, attaching.....
*Bonjour_Process_Task: Feb 27 17:03:45.233: VALID SD-PTR RR FOUND, attaching.....
*Bonjour_Process_Task: Feb 27 17:03:45.233: VALID SRV RR FOUND, attaching.....
*Bonjour_Process_Task: Feb 27 17:03:45.233: VALID TXT RR FOUND, attaching.....
*Bonjour_Process_Task: Feb 27 17:03:45.233: VALID NSEC RR FOUND, attaching.....
*Bonjour_Process_Task: Feb 27 17:03:45.233: VALID DOMAIN RR FOUND, attaching.....
*Bonjour_Process_Task: Feb 27 17:03:45.233: fillBonjourDomain : 6055 : attaching SP-DOMAIN RR
*Bonjour_Process_Task: Feb 27 17:03:45.233: VALID DOMAIN-NSEC RR FOUND, attaching.....
*Bonjour_Process_Task: Feb 27 17:03:45.233: buildBonjourPacket DST-IP ADDR = 192.168.232.98
*Bonjour_Process_Task: Feb 27 17:03:45.233: Transmitting bonjour Pkt to STA: 00:6D:52:5D:5A:7D
```

*Bonjour_Process_Task: Feb 27 17:03:45.233: Unicast Packet sent to client 00:6D:52:5D:5A:7D success.

驗證與疑難排解

本節提供的資訊可用於確認組態和對其進行疑難排解。

為了辨識和隔離mdn中的問題,需要正確配置,因此不需要進行基本檢查。

步驟1.必須全局啟用mDNS。

在GUI中,導航Controller > mDNS,如圖所示。

cisco	MONITOR	<u>W</u> LANs	<u>C</u> ONTROLLER	WIRELESS	SECURITY	M <u>A</u> NAGEMENT	C <u>O</u> MMAN
Controller							
General	Global Co	nfiguratio	'n				
Icons	mDNS G	obal Snoop	ing				
Inventory	mDNS Po	licy 1					
Interfaces	Ouery Int	terval (10-1	.20)			15 (mins)	
Interface Groups	. ,						

在 CLI 上:

<#root>

show network summary

(snippet)

mDNS snooping..... Enabled mDNS Query Interval..... 15 minutes

步驟 2.如果您使用自定義mDNS配置檔案,請確保所有必需的服務都增加到該配置檔案。

步驟 3.確保在SSID下啟用了mDNS,並且正確的mdns配置檔案已對映到SSID。

在GUI中,導覽至WLAN > WLAN ID > Advanced,如下圖所示。

mDNS	
mDNS Snooping	Enabled
mDNS Profile default-mans-profile V	
在 CLI 上:	
<#root>	
show wlan <id></id>	
(snippet)	
mDNS Status Enabled mDNS Profile Nameprofile	

步驟 4. 驗證mDNS服務提供程式是否在mDNS域服務中列出。這會列出WLC快取之服務的網域名稱 (Apple TV、airprinters)。

在GUI中,導航到Controller > mDNS > mDNS Domain Name IP> Summary,如下圖所示。

Number of Domain Name-IP Entries 1 Domain Name MAC Address IP Address Vian 1 Type TIL (seconds) Time Left (sec Wireless-Team-3.local. 18:ee:69:11:1d::60 192:168.239.37 239 Wireless 4725 4492 I. Maximum of 500 entries will be displayed. #GCLI上: ************************************	
Domain NameMAC AddressIP AddressVian IdTypeTTL (seconds)Time Left (secWireless-Team-3.local.18:ee:69:11:dc:60192.168.239.37239Wireless47254492I. Maximum of S00 entries will be displayed.本 CLI上:<#root>show mdns domain-name-ip summary	
wireless-Team-3.local. 18:ee:69:11:dc:60 192.168.239.37 239 Wireless 4725 4492 . Maximum of 500 entries will be displayed. 在CLI上: <#root> show mdns domain-name-ip summary	ids)
1. Maximum of 500 entries will be displayed. 在CLI上: <#root> show mdns domain-name-ip summary	
在 CLI 上 : <#root> show mdns domain-name-ip summary	
<#root> show mdns domain-name-ip summary	
show mdns domain-name-ip summary	
Number of Domain Name-IP Entries 1	
DomainName MAC Address IP Address Vlan Id Type TTL Time left (sec)	(sec)

步驟 5. 驗證該服務提供商是否也列在特定服務本身下。

在GUI中,導覽至Controller > mDNS > General > Service Name,如下圖所示。

mDNS Service > Detail					< Back	Apply
Service Name Service String		AppleTV _airplaytcp.local.				
Service Id Service Query Status LSS Status		3				
Origin Profile Count Service Provider Count		ALL •				
Profile Information		Service Provider Information				
default-mdns-profile		MAC Address 18:ee:69:11:dc:60	Wireless Team (4)airplaytcp.local.	a4:6c:2a:7c:8f:80	239	Wireless
Priority MAC Information Priority MAC AP Group	default-group T	Ĵ				
Priority MAC AP Group						

在 CLI 上:

<#root>

0

show mdns service detailed AppleTV

 Service Name.
 AppleTV

 Service String.
 _airplay._tcp.local.

 Service Id.
 3

 Service query status.
 Enabled

 Service LSS status.
 Disabled

 Service learn origin.
 Wireless and Wired

 Number of Profiles.
 1

 Profile.
 default-mdns-profile

 Number of Service Providers
 1

 Number of priority MAC addresses
 0

 ServiceProvider MAC Address AP Radio MAC Vlan Id Type TTL Time left(sec) (sec)

Wireless Team (4)._airplay._tcp.local. 18:EE:69:11:DC:60 A4:6C:2A:7C:8F:80 239 Wireless 4500 3841

步驟 6.如果WLC未發現該服務,請檢查是否可在bonjour瀏覽器(Controller>>mDNS>>mDNS瀏覽 器)下獲取該服務。 Bonjour瀏覽器是在WLC上看到的所有服務通告的快取,由於配置不允許學習 ,因此未發現該快取。您可以從Bonjour瀏覽器選擇並增加服務,這在測試和實施新服務時非常有用 步驟 7.以下是用於調試Bonjour的命令:

<#root>

(

debug mdns error enable

debug mdns message enable

debug mdns detail enable

debug mdns all enable

Bonjour瀏覽器和show mdns service not-learnt也可用作調試工具。

步驟 8.如前所述,如果WLC和AP位於不同的子網中,並且AP組播模式設定為組播,請確保在兩個 vlan之間的有線網路上啟用組播路由。在此設定中,vlan是vlan 1 (WLC)和vlan 231 (AP)。

```
Conf t
I
interface Vlan1
ip pim sparse-dense-mode
T
interface Vlan231
ip pim sparse-dense-mode
!
播放中的組播路由:
<#root>
Gateway#sh ip mroute 239.100.100.100
IP Multicast Routing Table
-----snippet-----
(*, 239.100.100.100), 2w4d/stopped, RP 10.48.39.5, flags: SJC
 Incoming interface: Null, RPF nbr 0.0.0.0
 Outgoing interface list:
   Vlan231, Forward/Sparse-Dense, 2w0d/00:02:10
   Vlan232, Forward/Sparse-Dense, 2w4d/00:02:11
```

10.48.39.142

, 239.100.100.100), 2w4d/00:02:50, flags: T

Incoming interface: Vlan1

, RPF nbr 0.0.0.0, RPF-MFD Outgoing interface list:

Vlan231, Forward/Sparse-Dense, 2w0d/00:02:10, H

除了這些核對表,關鍵還要瞭解mDNS在WLC上運行時的資料包流。資料包流和調試有助於深入瞭 解先前的

驗證命令不足。

關於此翻譯

思科已使用電腦和人工技術翻譯本文件,讓全世界的使用者能夠以自己的語言理解支援內容。請注 意,即使是最佳機器翻譯,也不如專業譯者翻譯的內容準確。Cisco Systems, Inc. 對這些翻譯的準 確度概不負責,並建議一律查看原始英文文件(提供連結)。