## 如何使用Raspberry Pi建立基本語音網路

#### 目標

本文檔提供有關如何使用Raspberry Pi配置基本語音網路作為使用星號的通訊伺服器的說明。 虛擬區域網(VLAN)和服務品質(QoS)將用於幫助區分語音和資料流量,從而確定流量的優先順 序。此網路的目標是設定內部測試。這些測試將幫助您適當擴展網路,檢查您是否有足夠的頻 寬來容納預期的語音音量,以及找到裝置之間的任何其他可能爭用。它還可以幫助您確定是要 在本地託管還是要在雲中託管。一旦公司達到一定規模,他們可能更願意擁有自己的本地呼叫 控制器,如PBX或IP PBX。這將提高內部呼叫的效率,因為公司內部的電話之間的呼叫不必 從大樓外轉接回來。

重要附註:Raspberry Pi不是思科支援的產品,本文檔僅供支援使用,不是解決方案文檔。

## 簡介

為了使公司能夠開展有效的業務,員工需要能夠訪問語音網路。這促進了員工與其客戶之間的 溝通,也使員工能夠在內部進行溝通。每個員工都可以使用固定電話和/或手機,但價格可能 相當昂貴。公司通常會選擇建立一個語音網路,該網路使用網際網路語音協定(VoIP)。

VoIP技術允許您使用網際網路撥打和接收從任何地點到世界上任何地點的電話呼叫,並且只 需支付極少的長途電話費(如果有)。這可在任何使用Internet的裝置上使用。

VoIP可以節省公司資金,同時提高工作效率、通訊和客戶滿意度。員工可以利用不同的功能 ,如呼叫路由、通話等待音樂和整合語音信箱。

VoIP的一個常見功能是呼叫路由,也稱為自動呼叫分配器。呼叫路由將傳入呼叫分配給下一 個可用座席,而不是將其傳送到語音信箱。這可確保儘可能高效地應答客戶呼叫。工作時間過 後,電話可以直接傳送到語音信箱。

新增使用者和升級功能是一個簡單的過程,在您的業務正在擴展或需要改變時,該過程會很有 幫助。與傳統的電話系統不同,無需進行昂貴的佈線。

要設定VoIP網路,您需要考慮一些選項。您可以使用KSU、無KSU、專用交換機(PBX)或其他 VoIP系統為自己的電話系統託管VoIP服務。

您所在地區的預算、員工和地點的數量、可用的服務以及公司的發展都應該考慮在內。可能也

需要提供培訓和額外的裝置,如耳機。VoIP可以增加資料使用率,您可能需要提高頻寬以應 付語音網路流量。

您還應計畫備份「B計畫」,以防網路發生故障。如果斷電,您的VoIP系統將不會連線。應實 施此冗餘以立即恢復您的電話服務並防止您的業務工作效率中斷。

在本文中,我們將使用Asterisk(Raspberry Pi上的PBX)部署我們自己的電話系統。

註:完成這些步驟後,如果還希望能夠呼叫內部網路,則需要選擇網際網路電話服務提供商 (ITSP)。

#### 定義

虛擬區域網路 (VLAN) 可讓您以邏輯方式將區域網路 (LAN) 劃分為不同的廣播網域。如果是敏 感資料可能會在網路上廣播的情況,可以建立 VLAN,透過指定廣播給特定 VLAN 來增強安全 。特定VLAN上的使用者是唯一可以存取和操縱該VLAN上資料的使用者。VLAN 也可以用來 增強效能,方法是減少將廣播和多點傳送發送到不必要目的地的需求。

預設情況下,所有埠都分配給VLAN 1,因此,一旦設定了不同的VLAN,就需要手動將每個埠 分配給適當的VLAN。

每個VLAN必須配置唯一的VLAN ID(VID),其值為1到4094。裝置將VID 4095保留為丟棄 VLAN。分類為「丟棄VLAN」的所有資料包會在入口處丟棄,而且不會轉發到埠。

服務品質(QoS)允許您為不同的應用、使用者或資料流確定流量的優先順序。它還可以用於保 證效能達到指定級別,從而影響客戶端的QoS。QoS通常受以下因素影響:抖動、延遲和丟包 。通常,影片或VoIP會優先得到處理,因為它們受QoS的影響最大。

專用分支交換機(PBX)是一個電話交換系統,用於管理公司內部使用者的呼入和撥出呼叫。 PBX連線到公共電話系統並自動將呼入呼叫路由到特定分機。它還共用和管理多個線路。典型 的小型企業PBX系統包括外部和內部電話線路、管理呼叫交換和路由的電腦伺服器以及用於手 動控制的控制檯。

IP PBX可以完成傳統小型企業PBX所能做的一切工作,等等。它執行VoIP的交換和連線以及 固定電話呼叫。IP PBX系統運行在IP資料網路上,可以節省成本並最大程度地減少網路管理 。您可以在IP PBX電話系統上使用IP電話、軟電話(除了電腦和麥克風耳機之外,不需要任 何電話硬體)和固定電話。

Raspberry Pi是一款價格便宜、小型的筆記型電腦,功能與台式電腦類似。

Asterisk是一個開源框架,可以將電腦(如Raspberry Pi)連線到通訊伺服器。這允許您構建 自己的企業PBX電話系統。在本文中,星號使用FreePBX作為圖形使用者介面(GUI),控制和 管理星號,您可以在其中配置擴展、使用者等。

## 適用裝置

- 路由器
- 乙太網供電(PoE)交換機
- 樹莓Pi(Pi3B+、Pi3、Pi3、B+、B和A型號)
- 2個或多個Cisco SPA/MPP IP電話

軟體版本

- 14.0.1.20(FreePBX)
- 13.20.0(星號)
- 1.1.1.06(RV325路由器)
- 1.1.4.1(SF220-24P)
- 7.1.3(SPA502G)

要使用Raspberry Pi配置基本語音網路,請遵循以下指南:

拓撲:



RasPBX的映像可以在此找到。此映像需要安裝在Raspberry Pi上。

注意:在本文檔中,已配置帶有RasPBX映像的Raspberry Pi。要訪問Raspberry Pi的 GUI,請在瀏覽器中鍵入<u>http://raspbx.local</u>或Raspberry Pi的IP地址以配置PBX。預設的 FreePBX登入名是user: admin password: admin。此外,Raspberry Pi已預配置為具有靜態 IP地址。

目錄

- 1. <u>在路由器上設定VLAN</u>
- 2. <u>配置SPA/MPP電話</u>
- 3. 在交換機上配置VLAN
- 4. <u>在交換機上設定語音VLAN</u>
- 5. <u>在交換機上配置介面設定</u>
- 6. <u>在交換機上配置埠VLAN成員資格</u>
- 7. <u>將Raspberry Pi的IP地址更改為其他子網上</u>
- 8. <u>結論</u>

在路由器上設定VLAN

步驟 1.登入到基於Web的實用程式並導航到埠管理> VLAN成員資格。

注意:這可能因型號而異。本示例使用RV325。有關訪問基於Web的設定頁面的詳細資訊



Small Business								isco English	Log Out	About Help
cisco RV325 Gi	gabit Dual W	AN VPN Route	r							
Getting Started	VI AN Membe	ershin								
System Summary		sionip								
▶ Setup	VLAN: 🗆 Enabl	le								
▶ DHCP	Create VLANs an	d assign the Outgoing Fram	ne Type.							_
<ul> <li>System Management</li> </ul>	Up to fourteen ne	w VI ANs can be created \	/I AN IDs must be in th	e range (4, 4094)						_
Port Management		W VEARS can be created. Y	EAR IDS Indst be in th	e lange (44004)						
Port Setup	VLAN Table									
Port Status	VLAN ID	Description	Inter VLAN Routing	Device Management	LAN1	LAN2	LAN3	LAN4	LAN5	LAN6
Traffic Statistics	1	Default	Disabled	Enabled	Untagged	Untagged	Untagged	Untagged	Untagged	Untagged
QoS:CoS/DSCP Setting	25	Guest	Disabled	Disabled	Tagged	Tagged	Tagged	Tagged	Tagged	Tagged
DSCP Marking	0 100	Voice	Disabled	Disabled	Tagged	Tagged	Tagged	Tagged	Tagged	Tagged
802.1X Configuration	Add Edit	Doloto								
▶ Firewall		Delete								
▶ VPN										
<ul> <li>Certificate Management</li> </ul>	Save	Cancel								
▶ Log										
SSL VPN										
User Management										
Wizard										
	•									•
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## 步驟 2.勾選「Enable」覈取方塊以在路由器上啟用VLAN。

cisco RV325 G	igabit Dual V	VAN VPN Rout	er					cisco English	Log Out	About Help
Getting Started System Summary > Setup > DHCP > System Management • Port Management	VLAN Memb	ership Die nd assign the Outgoing Fra ew VLANs can be created.	ame Type. . VLAN IDs must be in th	e range (44094)						
Port Setup	VLAN Table			-						
Traffic Statistics	VLAN ID	Description	Disabled	Device Management	LAN1 Untagged	LAN2 Untagged	LAN3 Untagged	LAN4 Untagged	LAN5	LAN6 Untagged
VLAN Membership QoS:CoS/DSCP Setting	25	Guest	Disabled	Disabled	Tagged	Tagged	Tagged	Tagged	Tagged	Tagged
DSCP Marking	100	Voice	Disabled	Disabled	Tagged	Tagged	Tagged	Tagged	Tagged	Tagged
Firewall	Add Edit	Delete								
▶ VPN										
Certificate Management	Save	Cancel								
Log  SSL VPN										
User Management										
Wizard										
	ł									•

步驟 3.在VLAN表部分中,按一下Add以建立新的VLAN ID。

cisco RV325 Gig	gabit Dual	WAN VPN Rou	ıter				cisco	English <b>v</b>	Log Out Al	bout H	lelp
Getting Started System Summary	VLAN Men	nbership									
Setup     DHCP     System Management     Port Management	VLAN: VLAN: El Create VLANs Up to fourteer	nable s and assign the Outgoing n new VLANs can be creat	Frame Type. ed. VLAN IDs must be in the ra	ange (44094)							
Port Setup	VLAN Table										
Port Status	VLAN	D Description	Inter VLAN Routing	Device Management	LAN1	LAN2	LAN3	LAN4	LAN5		LA
Traffic Statistics	1	Default	Disabled	Enabled	Untagged	Untagged	Untagged	Untagged	Untagged		Un
QoS:CoS/DSCP Setting	25	Guest	Disabled	Disabled	Tagged	Tagged	Tagged	Tagged	Tagged		Тас
DSCP Marking	100	Voice	Disabled	Disabled	Tagged	Tagged	Tagged	Tagged	Tagged		Тас
802.1X Configuration			Disabled <b>v</b>	Enabled V	Tagged 🔻	Tagged <b>v</b>	Tagged <b>v</b>	Tagged <b>v</b>	Tagged	T	Та
	Add	dit Delete									
Certificate Management											
▶ Log											
▶ SSL VPN	Save	Cancel									
User Management											
Wizard											
	4										•
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步驟 4.在VLAN ID 欄位中輸入VLAN編號。VLAN ID必須在4到4094範圍內。在本例中 ,200用於作為VLAN ID的資料。接下來,在說明欄位中輸入VLAN的說明。輸入資料作為說 明示例。然後按一下「Save」。

注意:預設情況下在此路由器上建立了語音VLAN 100。最多可建立十四個新VLAN。

cisco RV325 Gig	gabit Dual W	/AN VPN Router					cisco	English <b>T</b>			Help
Getting Started System Summary	VLAN Membe	ership									
Setup     DHCP     System Management     Port Management	VLAN: Create VLANs an Up to fourteen ne	le nd assign the Outgoing Frame ew VLANs can be created. VLA	Type. N IDs must be in the r	ange (44094)							
Port Setup	VLAN Table										
Port Status	VLAN ID	Description	Inter VLAN Routing	Device Management	LAN1	LAN2	LAN3	LAN4	LAN5		LA
Traffic Statistics	1	Default	Disabled	Enabled	Untagged	Untagged	Untagged	Untagged	Untagg	ed	Un
QoS:CoS/DSCP Setting	25	Guest	Disabled	Disabled	Tagged	Tagged	Tagged	Tagged	Tagged		Та
DSCP Marking	100	Voice 2	Disabled	Disabled	Tagged	Tagged	Tagged	Tagged	Tagged		Тас
802.1X Configuration		Data	Disabled •	Enabled V	Tagged V	Tagged 🔻	Tagged <b>v</b>	Tagged V	Tagge	d 🔻	Ta
Firewall		Doloto									
VPN	Add	Delete									
Certificate Management											
	Save	Cancel									
Liser Management											
Wizard											
	4										-
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步驟 5.要編輯VLAN,請選中相應VLAN的覈取方塊。在本例中,將編輯VLAN 1、100和 200。然後按一下Edit編輯VLAN。

cisco RV325 Gig	gabit Dual W	/AN VPN Route	۲ <b></b>					cisco English	▼ Log Out	About Help
Getting Started System Summary	VLAN Memb	ership								
<ul> <li>Setup</li> <li>DHCP</li> <li>System Management</li> <li>Port Management</li> </ul>	VLAN: Create VLANs ar Up to fourteen ne	ole nd assign the Outgoing Fran ew VLANs can be created. N	ne Type. /LAN IDs must be in th	e range (44094)						
Port Setup	VLAN Table									
Port Status Traffic Statistics	VLAN ID	Description Default	Inter VLAN Routing Disabled	Device Management Enabled	LAN1 Untagged	LAN2 Untagged	LAN3 Untagged	LAN4 Untagged	LAN5 Untagged	LAN6 Untagged
QoS:CoS/DSCP Setting	25	Guest	Disabled	Disabled	Tagged	Tagged	Tagged	Tagged	Tagged	Tagged
DSCP Marking 802.1X Configuration	✓ 100	Voice	Disabled	Disabled	Tagged	Tagged	Tagged	Tagged	Tagged	Tagged
Firewall	200	Data	Disabled	Enabled	Tagged	Tagged	Tagged	Tagged	Tagged	Tagged
▶ VPN	Add	Delete								
Certificate Management										_
► SSL VPN	Save	Cancel								
User Management										
Wizard										
	•									
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步驟6.(可選)在Inter VLAN Routing下拉式清單中,選擇Enabled或Disabled,將封包從一個 VLAN路由到另一個VLAN。啟用此功能很有用,因為內部網路管理員將能夠遠端訪問您的裝 置以幫助解決您的問題。這將減少為訪問裝置而必須不斷交換VLAN的時間。

- 已禁用 表示VLAN間路由處於非活動狀態
- 已啟用 這表示此VLAN上的VLAN間路由處於活動狀態。Inter VLAN routing僅路由已 啟用資料包的VLAN中的資料包。

注意:在本例中,我們將為VLAN ID 1、100和200啟用VLAN間路由。

cisco RV325 Gi	gabit Dual V	VAN VPN Router							cis	co	English V	L			Help
Getting Started System Summary	VLAN Memb	pership													
Setup     DHCP     System Management     Port Management	VLAN: C Ena Create VLANs a Up to fourteen r	/LAN:   Enable  Treate VLANs and assign the Outgoing Frame Type.  Jp to fourteen new VLANs can be created. VLAN IDs must be in the range (44094)													
Port Setup Port Status	VLAN Table VLAN ID	Description	Inter VLAN Routing	Device Management	LAN1		LAN2		LAN3		LAN4		LAN5		LA
VLAN Membership QoS:CoS/DSCP Setting	1 25	Default Guest	Enabled   Disabled	Enabled Disabled	Untagged Tagged	¥	Untagged Tagged	•	Untagged Tagged	•	Untagged Tagged	•	Untagged Tagged	T	U Ta
DSCP Marking 802.1X Configuration	100	Voice Data	Enabled V Enabled V	Disabled T Enabled T	Tagged Tagged	۲ ۲	Tagged Tagged	▼ ▼	Tagged Tagged	• •	Tagged Tagged	• •	Tagged Tagged	<b>T</b>	Ta Ta
Firewall     VPN	Add Edit	Delete													
Certificate Management     Log     SSL VPN     Liser Management	Save	Cancel													
Wizard															
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步驟 7.從所連線的LAN埠的下拉選單中選擇所需的選項,設定應與所連線的埠匹配。如果連線 了多個埠,則對於每個連線的埠,需要選擇相同的設定。預設值已標籤,但VLAN 1未標籤。

注意:如果在第6步中啟用VLAN間路由,則必須標籤VLAN以區分流量。

已標籤

- 表示連線埠和VLAN之間的關聯已標籤。
- 當為同一埠建立多個VLAN時,標籤用於確定流量通過唯一VLAN ID屬於哪個VLAN。

#### 未標籤

- 表示連線埠和VLAN之間的關聯未標籤。
- 當只建立一個VLAN且流量可識別VLAN時,會使用此功能。每個LAN連線埠只能將一個 VLAN標籤為未標籤。
- 如果埠上有預設VLAN,則即使埠有多個VLAN,也應該始終取消標籤。

已排除

- 表示介面不是VLAN的成員。
- 如果選擇此選項,則會禁用VLAN和埠之間的流量。

	ual W	AN VPN Router								CIS	co	English <b>v</b>		og Out Al	out	Help
Getting Started VLAN System Summary	Membe	rship														
Setup VLAN:     DHCP Create     System Management Up to fi      Port Management	Enable VLANs and purteen new	e I assign the Outgoing Frame T v VLANs can be created. VLAN	ype. N IDs must b	e in the r	ange (44094)											
Port Setup VLAN	Table															
Traffic Statistics	VLAN ID	Description	Inter VLAN	Routing	Device Management	LAN1		LAN2		LAN3	-	LAN4	_	LAN5		LA
VLAN Membership	1	Default	Enabled	•	Enabled	Untagged	•	Untagged	•	Untagged	•	Untagged	•	Untagged	•	To
QoS:CoS/DSCP Setting	20	Voice	Enabled	-	Disabled	Tagged	-	Tagged	-	Tagged	-	Tagged	-	Tagged		Ta(
802.1X Configuration	200	Data	Enabled	•	Enabled V	Tagged	•	Tagged	·	Tagged	÷	Tagged	·	Tagged		Te
► Firewall	200	Data	Enabled	•	Ellabled	laggeu		laggeu	•	Tayyeu		laggeu	•	Taggeu	<u> </u>	Ic
VPN     Add	Edit	Delete														
Certificate Management																
Save	•	Cancel														
User Management																
Wizard																
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步驟 8.按一下「Save」以儲存設定。

注意:在路由器上,可以登入到基於Web的實用程式,然後導航到DHCP > DHCP Setup以將 VLAN配置到所需的特定子網。預設情況下,VLAN配置為位於不同的子網中。

#### 配置SPA/MPP電話

使用者還可以將電話配置為從手動配置的配置檔案位置、通過DHCP選項150找到的位置或 Cisco EDOS伺服器提取配置檔案。以下是手動配置的示例。

步驟 1.在瀏覽器上輸入SPA/MPP的IP地址,然後導航至Admin Login,然後導航至 advanced。

註:SPA/MPP電話的配置可能因型號而異。在本示例中,我們使用SPA502G。要查詢IP電話的IP地址,請導航到路由器上的DHCP > DHCP Status(根據型號的不同而有所不同)。另一 種方法是在您的Cisco電話上按Setup按鈕並導航到Network(選單和選項可能會因電話型號而 異)。

## hetwork

save

# 1 WANConnection Type DHCP

CurrentIP 2. 192.168.1.115 edit

small Busin cisco SPA50	ness Pro 2G Configuration	Utility					Admin Login	basic   advanced
Voice	Call History	Personal Direc	tory Attendant	Console Status				
Info	System Phone	User						
								<b>^</b>
System Information	Connection Type:	DUCP			Current IP:	100 168 1 108		_
	Host Name:	SinuraSPA			Domain:	routerf72530.com		
	Current Netmask:	255 255 255 0			Current Gateway:	192 168 1 1		_
	Primary DNS:	192.168.1.1			ourient outentaj.	102.100.1.1		
	Secondary DNS:							
Product Information	Product Name:	SP4502G			Serial Number:	CBT133400 IK		
	Software Version:	713			Hardware Version:	1.0.0(0001)		
	MAC Address:	0018B9FFD97A			Client Certificate:	Installed		
	Customization:	Open			Licenses:	None		
Phone Status								
	Current Time:	12/18/2017 06:52:56			Elapsed Time:	00:00:07		
	Broadcast Pkts Sent:	9			Broadcast Bytes Sent:	2014		
	Broadcast Pkts Recv:	6			Broadcast Bytes Recv:	360		
			Undo All Changes	Submit All Changes				
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cance

#### 步驟 2.導航到Voice > Ext 1, 分機頁開啟。

cisco SPA50	ness Pro 2G Configuration	Utility				<u>User Logi</u>	<u>n</u> <u>basic</u>   advanced
Voice	Call History	Personal Direc	ctory Attenda	nt Console Status			
Info	System SIP	Provisioning	Regional	Phone User	Attendant Console		
Ext 1							
General							Â
Share Line Appearance	Line Enable:	yes V					
	Share Ext:	private <b>v</b>			Shared User ID:		
	Subscription Expires:	3600	]				
NAT Settings							
	NAT Mapping Enable:		1		NAT Keep Alive Enable:		
	NAT Keep Alive Wsg.	ano ne n	]		NAT Keep Alive Dest.	SPROAT	
Network Settings		0.00	1		017 0 01/1		
	SIP TOS/DiffServ Value:	0x68	] 1		SIP CoS Value:	3 •	
	Network .litter Level:	bigh T			litter Buffer Adjustment:	up and down	
		- ngn			enter Barrer Hajaethern	ap and down	
SIP Settings							•
			Undo All Changes	Submit All Changes			
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步驟 3.在「Proxy and Registration」部分的「Proxy」欄位中鍵入代理伺服器。在本示例中 ,Raspberry Pi(192.168.3.10)的地址將用作代理伺服器。VLAN 100位於具有192.168.3.x的子 網中。

注意:如果您想瞭解更多信息,請在本文稍後配置Raspberry Pi的IP地址,按一下要重定向到 該部分的鏈<u>接:將Raspberry Pi的地址更改為位於不同的子網</u>。

small Busin cisco SPA502	ess Pro 2G Configuration l	Jtility						<u>User Login</u>	basic   advanced
Voice	Call History	Personal Direct	ory Attendant	Console Status					
Info	System SIP	Provisioning	Regional	Phone Us	er Attendant Co	nsole			
Ext 1									
	CFWD Notifier:								<b>^</b>
Proxy and Registration									
, ,	Proxy:	192.168.3.10			Use	Outbound Proxy:	no 🔻		
	Outbound Proxy:				Use OB	Proxy In Dialog:	yes 🔻		
	Register:	yes 🔻			Make C	Call Without Reg:	no 🔻		
	Register Expires:	3600			Ans C	Call Without Reg:	no 🔻		
	Use DNS SRV:	no 🔻			DNS	SRV Auto Prefix:	no 🔻		
	Proxy Fallback Intvl:	3600			Proxy Redu	indancy Method:	Normal	•	
Subscriber Information									
	Display Name:					User ID:			
	Password:					Use Auth ID:	no 🔻		
	Auth ID:								
	Mini Certificate:								
	SRTP Private Key:								-
			Undo All Changes	Submit All Change	s				
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步驟 4.在Subscriber Information下,輸入共用分機的顯示名稱和使用者ID(分機號)。在本 例中,我們將使用副檔名1003。

注意:已在Raspberry Pi上建立並配置擴展1003。

cisco SPA50	iness Pro D2G Configuration U	tility	User Login basic   advanced
Voice	Call History	Personal Directory Attendant Console Status	
Info	System SIP	Provisioning Regional Phone User Attendant Console	
Ext 1			
	Register Expires.	Alls Gall VV	
	Use DNS SRV:	no 🔻 DNS SRV A	auto Prefix: no 🔻
	Proxy Fallback Intvl:	1600 Proxy Redundan	cy Method: Normal
Subscriber Informatio	n		
	Display Name:	1003	User ID: 1003
	Password:	U	se Auth ID: no 🔻
	Auth ID:		
	Mini Certificate:		
	SRTP Private Key:		
Audio Configuration			
	Preferred Codec:	G711u Vuse Pref C	odec Only: no 🔻
	Second Preferred Codec:	Unspecified Third Prefer	red Codec: Unspecified 🔻
	G729a Enable:	yes 🔻 G7	22 Enable: yes 🔻
	G726-16 Enable:	yes 🔻 G726-	24 Enable: yes 🔻
	G726-32 Enable:	yes 🔻 G726-	40 Enable: yes 🔻
		Undo All Changes Submit All Changes	
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步驟 5.輸入在Raspberry Pi擴展部分中配置的副檔名的密碼。在Raspberry Pi的Edit Extension部分下也稱為Secret。在本例中,使用密碼12345。

注意:密碼12345僅用作示例;建議使用更複雜的密碼。

cisco SPA50	siness Pro D2G Configuration l	Jtility			<u>User Login</u> <u>basic</u>   advanced
Voice	Call History	Personal Directory	Attendant Console Status		
Info	System SIP	Provisioning Regional	Phone User	Attendant Console	
Ext 1					
	register Expires.	3000		Ans Gair Without Reg.	
	Use DNS SRV:	no 🔻		DNS SRV Auto Prefix:	no 🔻
	Proxy Fallback Intvl:	3600		Proxy Redundancy Method:	Normal T
Subscriber Informatio	n				
	Display Name:	1003		User ID:	1003
	Password:	12345		Use Auth ID:	no 🔻
	Auth ID:				
	Mini Certificate:				
	SRTP Private Key:				
Audio Configuration					
	Preferred Codec:	G711u 🔻		Use Pref Codec Only:	no 🔻
	Second Preferred Codec:	Unspecified <b>v</b>		Third Preferred Codec:	Unspecified <b>T</b>
	G729a Enable:	yes 🔻		G722 Enable:	yes 🔻
	G726-16 Enable:	yes 🔻		G726-24 Enable:	yes 🔻
	G726-32 Enable:	yes 🔻		G726-40 Enable:	yes 🔻
		Undo All Cl	nanges Submit All Changes	]	
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步驟 6.從Use Auth ID下拉選單中選擇所需的選項。選項包括Yes和No。要啟用會話發起協定 (SIP)身份驗證(在此可以質詢SIP消息以確定其是否獲得授權後再進行傳輸),請從Auth ID下拉選單中選擇Yes。在本例中,我們選擇Yes。

cisco SPA5	usiness Pro 502G Configuration l	Utility						<u>User Login</u> <u>basic</u>   advanced
Voice	Call History	Personal Dire	ectory Attendan	t Console Status				
Info	System SIP	Provisioning	Regional	Phone Us	er Attendant Co	onsole		
Ext 1								
	Register Expires.	3000			Alls	call without reg.	10 •	
	Use DNS SRV:	no 🔻			DNS	SRV Auto Prefix:	no 🔻	
	Proxy Fallback Intvl:	3600			Proxy Red	undancy Method:	Normal	•
Subscriber Informat	ion							
	Display Name:	1003				User ID:	1003	
	Password:	12345				Use Auth ID:	yes 🔻	
	Auth ID:							
	Mini Certificate:							
	SRTP Private Key:							
Audio Configuration	1							
	Preferred Codec:	G711u 🔻			Use	Pref Codec Only:	no 🔻	
	Second Preferred Codec:	Unspecified <b>T</b>			Third	Preferred Codec:	Unspecified <b>T</b>	
	G729a Enable:	yes 🔻				G722 Enable:	yes 🔻	
	G726-16 Enable:	yes 🔻				G726-24 Enable:	yes 🔻	
	G726-32 Enable:	yes 🔻				G726-40 Enable:	yes 🔻	-
			Undo All Changes	Submit All Change	es			
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步驟 7.在Auth ID欄位中輸入您嘗試為此電話配置的分機。身份驗證ID用於SIP身份驗證。

CISCO SPA502G Configuration	Jtility	<u>User Login</u> basic   advanced
Voice Call History	Personal Directory Attendant Console Status	
Info System SIP	Provisioning Regional Phone User Attendant Console	
Ext 1		
negioier.	yes •	110 ·
Register Expires:	3600 Ans Call Without Reg:	no 🔻
Use DNS SRV:	no 🔻 DNS SRV Auto Prefix:	no 🔻
Proxy Fallback Intvl:	3600 Proxy Redundancy Method:	Normal
Subscriber Information		1000
Display Name:		1003
Password:	12345 Use Auth ID:	yes 🔻
Auth ID:		
Mini Certificate:		
SRTP Private Key:		
Audio Configuration		
Preferred Codec:	G711u ▼ Use Pref Codec Only:	no 🔻
Second Preferred Codec:	Unspecified Third Preferred Codec:	Unspecified V
G729a Enable:	yes T G722 Enable:	yes 🔻
G726-16 Enable:	yes V G726-24 Enable:	yes 🔻
	Undo All Changes Submit All Changes	
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步驟 8.然後按一下Submit All Changes。

注意:如果要配置更多SPA/MPP電話,請返回配置SPA/MPP電話一節的步驟1。

## 在交換機上配置VLAN

步驟 1.登入到基於Web的實用程式並導航到VLAN管理>建立VLAN。

注意:配置可能因裝置而異。在本示例中,我們使用SF220-24P來配置VLAN。

Small Business SF220-24P	24-Port 10/100 PoE Smart Switch
Getting Started  Status and Statistics	Create VLAN
Administration	VLAN Table
Port Management	VLAN ID VLAN Name Type
<ul> <li>VLAN Management</li> </ul>	1 default Default
Default VLAN Settings (Create VLAN) Interface Settings	Add Edit Delete
Port to VLAN	
Port VLAN Membership	
GVRP Settings	
Voice VLAN	
Spanning Tree	
Multicast	
IB Configuration	
<ul> <li>Security</li> </ul>	
Access Control	
Quality of Service	
▶ SNMP	
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步驟 2.按一下Add...建立新的VLAN。

Small Business cisco SF220-24P	24-Port 10/100 PoE Smart Switch
Getting Started  Status and Statistics	Create VLAN
<ul> <li>Administration</li> </ul>	VLAN Table
<ul> <li>Port Management</li> </ul>	VLAN ID VLAN Name Type
✓ VLAN Management	1 default Default
Default VLAN Settings Create VLAN	Add Edit Delete
Interface Settings	
Port to VLAN	
GVRP Settings	
Voice VLAN	
Spanning Tree	
MAC Address Tables	
<ul> <li>Multicast</li> </ul>	
IP Configuration	
<ul> <li>Security</li> </ul>	
<ul> <li>Access Control</li> </ul>	
<ul> <li>Quality of Service</li> </ul>	
▶ SNMP	
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步驟 3.要建立單個VLAN,請選擇VLAN單選按鈕。輸入VLAN ID和VLAN名稱。然後按一下「 Apply」以儲存VLAN。在本例中,我們將為語音建立VLAN 100,為資料建立VLAN 200。

注意:系統需要使用某些VLAN才能使用內部系統,因此不能通過輸入起始VID和結束VID(包括起始VID和結束VID)建立。使用Range函式時,可以同時建立的VLAN的最大數量為100。

🗋 Add VLAN - Google Chrome	_		×
A Not secure https://192.168.1.100/html/vlan_createAdd.html			
<ul> <li>VLAN</li> <li>VLAN ID: 100 (Range: 2 - 4094)</li> <li>VLAN Name: Voice (5/32 Characters Used)</li> <li>Range</li> </ul>	(Pango: 2	4004)	
3	(Range: 2 -	4094)	
Apply Close			

注意:如果您需要建立另一個單一VLAN,請重複步驟2。

## 在交換機上設定語音VLAN

步驟 1.登入Web組態並導覽至VLAN Management > Voice VLAN > Properties。

#### 注意:配置自動語音VLAN將自動應用語音VLAN的QoS設定並優先處理語音流量。

Small Business CISCO SF220-24P	24-Port 10/100 PoE Smart Switch
Getting Started   Status and Statistics  Administration  Port Management	Properties CoS/802.1p and DSCP values are used only for LLDP MED Network Policy and Auto Voice VLAN.
VLAN Management     Default VLAN Settings     Create VLAN     Interface Settings	Administrative Status: Operational Status:
Port to VLAN Port VLAN Membership GVRP Settings	O Voice VLAN ID:         1         (Range: 1 - 4094, Default: 1)         Voice VLAN ID:         1           CoS/802.1p:         5 ▼ (Default: 5)         CoS/802.1p:         5           DSCP:         46 ▼ (Default: 46)         DSCP:         46
Voice VLAN Properties Telephony OUI Telephony OUI Interface	Dynamic Voice VLAN Settings:
Spanning Tree     MAC Address Tables     Multicast	Dynamic Voice VLAN:  Enable Auto Voice VLAN Enable Telephony OUI Disable
IP Configuration     Security     Access Control	Apply Cancel
Quality of Service     SNMP	
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步驟 2.在Administrative Status下,在Voice VLAN ID欄位中輸入要作為語音VLAN的VLAN。 在本例中,VLAN 100被輸入為語音VLAN。

注意:語音VLAN ID、服務類別(CoS)/802.1p和/或區別服務代碼點(DSCP)的變化會導致裝置 將管理語音VLAN通告為靜態語音VLAN。如果選擇由外部語音VLAN觸發的自動語音VLAN啟 用選項,則需要維護預設值。在本示例中,CoS/802.1p保留為預設值5,DSCP保留為預設值 46。

Small Business CISCO SF220-24P	etsco Language: <mark>English ▼</mark> Logout About Help 24-Port 10/100 PoE Smart Switch
Getting Started   Status and Statistics  Administration	Properties CoS/802.1p and DSCP values are used only for LLDP MED Network Policy and Auto Voice VLAN.
Port Management     VLAN Management	Voice VLAN Settings:
Create VLAN Interface Settings	Administrative Status: Operational Status:
Port to VLAN Port VLAN Membership	Cos/802.1p:         5 V         (Default: 5)         Cos/802.1p:         5
Voice VLAN     Properties	DSCP: 46 (Default: 46) DSCP: 46
Telephony OUI Telephony OUI Interface	Dynamic Voice VLAN Settings:
Spanning Tree     MAC Address Tables     Multicaet	Enable Telephony OUI     Disable
IP Configuration     Security	Apply Cancel
Access Control	
Quality of Service     SNMP	
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步驟 3.按一下「Apply」以儲存設定。

Small Business CISCO SF220-24P	24-Port 10/100 PoE Smart Switch	Save cisco Language: English 🔹 Logout About Help										
Getting Started  Status and Statistics  Administration	Properties CoS/802.1p and DSCP values are used only for LLDP MED Network Policy and Auto Voice V	/LAN.										
<ul> <li>Port Management</li> <li>VLAN Management</li> </ul>	Voice VLAN Settings:	Voice VLAN Settings:										
Default VLAN Settings Create VLAN	Administrative Status:	Operational Status:										
Interface Settings Port to VLAN	C Voice VLAN ID: 100 (Range: 1 - 4094, Default: 1)	Voice VLAN ID: 1										
Port VLAN Membership GVRP Settings	CoS/802.1p: 5 ▼ (Default: 5)	CoS/802.1p: 5										
Voice VLAN     Reporties	DSCP: 46 (Default: 46)	DSCP: 46										
Telephony OUI Telephony OUI	Dynamic Voice VLAN Settings:											
Spanning Tree	Dynamic Voice VLAN:   Enable Auto Voice VLAN  Enable Telephony OUI											
MAC Address Tables     Multicast	Disable											
IP Configuration	Apply Cancel											
Security												
<ul> <li>Access Control</li> </ul>												
Quality of Service												
▶ SNMP												
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## 在交換機上配置介面設定

o

可以將介面(交換機上的物理埠)分配給以下設定之一:

- 一般:埠可支援IEEE 802.1q規範中定義的所有功能。該介面可以是一個或多個VLAN的 已標籤或未標籤成員。
- 訪問:介面上只能配置一個VLAN,且只能承載一個VLAN。
- Trunk:可以在一條鏈路上傳輸多個VLAN的流量,並允許您在網路上擴展VLAN。
- Dot1p-Tunnel:將介面置於QinQ模式。這允許使用者在提供商網路上使用自己的 VLAN安排(PVID)。當交換機有一個或多個dot1p隧道埠時,交換機將處於QinQ模式。

Small Business CISCO SF220-24P	24-F	Port 10	0/100	PoE Smart Sw	itch				cisco Language	English	▼ Logo	ut About	Help
Getting Started  Status and Statistics	Inte	rface S	ettings										*
<ul> <li>Administration</li> </ul>	Inte	rface Sett	ings Table							Showing 1-26 of 2	6 All 🔻	per page	
<ul> <li>Port Management</li> </ul>	Filte	or: Interfac			1			_					111
<ul> <li>VLAN Management</li> </ul>			e iype eq										-
Default VLAN Settings		Entry No	Interfa	interface VLAN Mode	Administrative PVID	Frame Type	Ingress Filtering	Uplink					-
Create VLAN		1	FE1	Trunk	1	Admit All	Enabled	Disabled					
Port to VI AN		2	FE2	Trunk	1	Admit All	Enabled	Disabled					
Port VLAN Membership		3	FE3	Trunk	1	Admit All	Enabled	Disabled					4
GVRP Settings		4	FE4	Trunk	1	Admit All	Enabled	Disabled					
<ul> <li>Voice VLAN</li> </ul>		5	FED	Trunk	1	Admit All	Enabled	Disabled					
Properties Telephony OLU		-	FE6	Trunk	1	Admit All	Enabled	Disabled					
Telephony OUI Interface		1	FE/	Trunk	1	Admit All	Enabled	Disabled					
Spanning Tree		5	FE8	Trunk	1	Admit All	Enabled	Disabled					
MAC Address Tables		9	FE9	Trunk	1	Admit All	Enabled	Disabled					4
▶ Multicast		10	FE10	Trunk	1	Admit All	Enabled	Disabled					
IP Configuration		11	FE11	Trunk	1	Admit All	Enabled	Disabled					
Security		12	FE12	Trunk	1	Admit All	Enabled	Disabled					
<ul> <li>Access Control</li> </ul>		13	FE13	Trunk	1	Admit All	Enabled	Disabled					
<ul> <li>Quality of Service</li> </ul>		14	FE14	Trunk	1	Admit All	Enabled	Disabled					
▶ SNMP		15	FE15	Trunk	1	Admit All	Enabled	Disabled					
		16	FE16	Trunk	1	Admit All	Enabled	Disabled					
		17	FE17	Trunk	1	Admit All	Enabled	Disabled					
		18	FE18	Trunk	1	Admit All	Enabled	Disabled					-
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步驟 1.登入Web組態並導覽至VLAN Management > Interface Settings。

步驟 2.選擇VLAN的介面模式。在本例中,我們將將Raspberry Pi(埠: FE3)配置為接入埠

Small Business CISCO SF220-24P	24-F	Port 1	)/100 F	PoE Smart Swi	tch				cisco I	_anguage:	English	T	Logout	About	Help
Getting Started	Into	rfaca S	ottinge												-
<ul> <li>Status and Statistics</li> </ul>	mie	inace o	ettings												
<ul> <li>Administration</li> </ul>	Inte	erface Setti	ings Table								Showing	1-26 of 26	All 🔻	per page	
<ul> <li>Port Management</li> </ul>	Filte	ar Interfac		als to Port V Go	1										1
✓ VLAN Management			e rype equ		J										4
Default VLAN Settings		Entry No.	Interface	Interface VLAN Mode	Administrative PVID	Frame Type	Ingress Filtering	Uplink							4
Create VLAN		1	FE1	Trunk	1	Admit All	Enabled	Disabled							4
Interface Settings		2	FE2	Trunk	1	Admit All	Enabled	Disabled							
Port to VLAN	Ο	3	FE3	Trunk	1	Admit All	Enabled	Disabled							
GVRP Settings		4	FE4	Trunk	1	Admit All	Enabled	Disabled							
<ul> <li>Voice VLAN</li> </ul>		5	FE5	Trunk	1	Admit All	Enabled	Disabled							
Spanning Tree		e	FE6	Trunk	1	Admit All	Enabled	Disabled							
MAC Address Tables		7	FE7	Trunk	1	Admit All	Enabled	Disabled							
Multicast		8	FE8	Trunk	1	Admit All	Enabled	Disabled							
IP Configuration		Ş	FE9	Trunk	1	Admit All	Enabled	Disabled							
Security		10	FE10	Trunk	1	Admit All	Enabled	Disabled							
<ul> <li>Access Control</li> </ul>		11	FE11	Trunk	1	Admit All	Enabled	Disabled							
<ul> <li>Quality of Service</li> </ul>		12	FE12	Trunk	1	Admit All	Enabled	Disabled							
▶ SNMP		13	FE13	Trunk	1	Admit All	Enabled	Disabled							
		14	FE14	Trunk	1	Admit All	Enabled	Disabled							
		15	FE15	Trunk	1	Admit All	Enabled	Disabled							
		16	FE16	Trunk	1	Admit All	Enabled	Disabled							
		17	FE17	Trunk	1	Admit All	Enabled	Disabled							-
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## 步驟3.然後按一下編輯……編輯介面。

Small Business	24 Do	H 10/1		Smort Switch					cisco	Language:	English	•	Logout	Help
	24-P0		UU PUE	Smart Switch										
Getting Started	$\bigcirc$	7 F	E7 Trunk	k	1	Admit All	Enabled	Disabled						-
<ul> <li>Status and Statistics</li> </ul>	$\odot$	8 F	E8 Truni	k	1	Admit All	Enabled	Disabled						
<ul> <li>Administration</li> </ul>	$\odot$	9 F	E9 Trunk	k	1	Admit All	Enabled	Disabled						
<ul> <li>Port Management</li> </ul>		10 F	E10 Trunk	k	1	Admit All	Enabled	Disabled						
<ul> <li>VLAN Management</li> </ul>		11 F	E11 Trunk	k	1	Admit All	Enabled	Disabled						
Default VLAN Settings		12 F	E12 Trunk	k	1	Admit All	Enabled	Disabled						
Create VLAN		13 F	E13 Trunk	k	1	Admit All	Enabled	Disabled						
Port to VLAN		14 F	E14 Trunk	k	1	Admit All	Enabled	Disabled						
Port VLAN Membership		15 F	E15 Trunk	k	1	Admit All	Enabled	Disabled						
GVRP Settings		16 5	E16 Trunk	k.	1	Admit All	Enabled	Disabled						
Voice VLAN		10 F	Elo Ituli	Λ Ι	1	Admit All	Enabled	Disabled						
<ul> <li>Spanning Tree</li> </ul>		17 F	E17 Trunk	к 1.	1	Admit All	Enabled	Disabled						
<ul> <li>MAC Address Tables</li> </ul>		18 F	EI8 Iruni	к	1	Admit All	Enabled	Disabled						
<ul> <li>Multicast</li> </ul>		19 F	E19 Trunk	ĸ	1	Admit All	Enabled	Disabled						
<ul> <li>IP Configuration</li> </ul>	$\bigcirc$	20 F	E20 Trunk	k	1	Admit All	Enabled	Disabled						
<ul> <li>Security</li> </ul>		21 F	E21 Trunk	k	1	Admit All	Enabled	Disabled						
<ul> <li>Access Control</li> </ul>		22 F	E22 Trunk	k	1	Admit All	Enabled	Disabled						
<ul> <li>Quality of Service</li> </ul>	$\bigcirc$	23 F	E23 Trunk	k	1	Admit All	Enabled	Disabled						
▶ SNMP		24 F	E24 Trunk	k	1	Admit All	Enabled	Disabled						
	$\odot$	25 0	GE1 Trunk	k	1	Admit All	Enabled	Disabled						
	$\bigcirc$	26 0	GE2 Trunk	k	1	Admit All	Enabled	Disabled						
	C	Copy Setting	IS	Edit										
														-
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步驟 4.在「Interface VLAN Mode」欄位中,選擇「Access」,將介面設定為單個VLAN的無 標籤成員。

🗋 Edit Interface Settings -	Google Chrome –	- 🗆	×
A Not secure https://	/192.168.1.100/html/vlan_intfEdit.html?port=FE3		
Interface:	Port FE3      LAG 1		
Interface VLAN Mode:	General Access Trunk Dot1q-Tunnel (The switch will be in Q-in-Q mode when it has one or r	nore Dot1q-T	unnel pc
Administrative PVID:	1 (Range: 1 - 4094, Default: 1)		
Frame Type:	<ul> <li>Admit All</li> <li>Admit Tagged Only</li> <li>Admit Untagged Only</li> </ul>		
Ingress Filtering:	Enable		
Uplink:	Enable		
TPID:	0x8100 V		
Apply Close			

## 步驟 5.按一下「Apply」以儲存設定。

🖹 Edit Interface Settings -	Google Chrome	_		×
A Not secure https://	192.168.1.100/html/vlan_intfEdit.html?port=FE3			
Interface:	● Port FE3 ▼ ○ LAG 1 ▼			
Interface VLAN Mode:	<ul> <li>General</li> <li>Access</li> <li>Trunk</li> <li>Dot1q-Tunnel (The switch will be in Q-in-Q mode when it has on</li> </ul>	e or more	Dot1q-T	unnel po
Administrative PVID:	1 (Range: 1 - 4094, Default: 1)			
Frame Type:	<ul> <li>Admit All</li> <li>Admit Tagged Only</li> <li>Admit Untagged Only</li> </ul>			
Ingress Filtering:	Enable			
Uplink:	Enable			
TPID:	0x8100 V			
Apply Close				Þ

## 在交換機上配置埠VLAN成員資格

建立VLAN後,您需要將VLAN分配到您要連線的埠。

步驟 1.登入到Web配置並導航到VLAN管理>埠VLAN成員資格。

Small Business CISCO SF220-24P	24-	Port 10	)/100	PoE Smart Sw	vitch			-	Save 🕈	cisco	Language	English		۲	Logout	About	Help
Getting Started   Status and Statistics  Administration	Por F - F	t VLAN orbidden me	Membe	ership T - Tagged member	U - Untagged mer	nber	P - PVID	G - Guest <sup>v</sup>	/LAN								-
<ul> <li>Port Management</li> </ul>	Po	rt VLAN Me	mbership	Table								Sh	iowing 1-26	6 of 26	All 🔻	per page	
<ul> <li>VLAN Management</li> </ul>	Filt	er: Interface				_				_				_			
Default VLAN Settings			, i i i i i i i i i i i i i i i i i i i														-
Create VLAN		Interface	Mode	Administrative VLANs	Operational VLANs	LAG											-
Port to VLAN		FE1	Trunk	10P	10P, 100T												
Port VLAN Membership)		FE2	Trunk	1UP	1UP, 100T												
GVRP Settings		FE3	Access	1UP	1UP												
Voice VLAN		FE4	Trunk	1UP	1UP												
Spanning Tree		FE5	Trunk	1UP	1UP												
MAC Address Tables		FE6	Trunk	1UP	1UP												
<ul> <li>Multicast</li> </ul>		FE7	Trunk	1UP	1UP												
<ul> <li>IP Configuration</li> </ul>		FE8	Trunk	1UP	1UP												
<ul> <li>Security</li> </ul>		FE9	Trunk	1UP	1UP												
<ul> <li>Access Control</li> </ul>	0	FE10	Trunk	1UP	1UP												
<ul> <li>Quality of Service</li> </ul>		FE11	Trunk	1UP	1UP												
▶ SNMP		FE12	Trunk	1UP	1UP												
	0	FE13	Trunk	1UP	1UP												
		FE14	Trunk	1UP	1UP												
		FE15	Trunk	1UP	1UP												
		FE16	Trunk	1UP	1UP												-
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步驟 2.在「埠VLAN成員資格」表中,選擇要配置VLAN成員資格的介面。在本例中,我們將 將Raspberry Pi(埠: FE3)配置為VLAN 100。

注意:任何語音裝置都將配置到您在交換機上設定語音VLAN<u>(Setting Up Voice VLAN on the</u> <u>Switch)部分中選擇的語音</u>VLAN。

Small Business CISCO SF220-24P	24-	Port 10	)/100	PoE Smart Sv	vitch				cisco	Language: English	T	Logout At	bout	Help
Getting Started   Status and Statistics  Administration	Poi F - F	rt VLAN	Membe	ership T - Tagged member	U - Untagged mer	nber	P - PVID	G - Guest VLAN						*
<ul> <li>Port Management</li> </ul>	Po	rt VLAN Me	mbership	Table						Showing 1-26 of	26 A	JI <b>▼</b> perp	age	
<ul> <li>VLAN Management</li> </ul>	Filt	ter: Interfac	e Type eau	uals to Port ▼ Go		_			_					
Default VLAN Settings		Interface	Mode	Administrative VI ANs	Operational VI ANs	LAG								
Interface Settings		FE1	Trunk	1UP	1UP, 100T									
Port to VLAN		FE2	Trunk	1UP	1UP, 100T									
Port VLAN Membership	$\mathbf{O}$	FE3	Access	1UP	1UP									
<ul> <li>Voice VLAN</li> </ul>		FE4	Trunk	1UP	1UP									
<ul> <li>Spanning Tree</li> </ul>		FE5	Trunk	1UP	1UP									
MAC Address Tables		FE6	Trunk	1UP	1UP									
<ul> <li>Multicast</li> </ul>		FE7	Trunk	1UP	1UP									
<ul> <li>IP Configuration</li> </ul>		FE8	Trunk	1UP	1UP									
Security		FE9	Trunk	1UP	1UP									
Access Control		FE10	Trunk	1UP	1UP									
Quality of Service		FE11	Trunk	1UP	1UP									
▶ SINMP		FE12	Trunk	1UP	1UP									
		FE13	Trunk	1UP	1UP									
		FE14	Trunk	1UP	1UP									
		FE15	Trunk	10P	1UP									-
© 2014-2017 Cisco Systems, Inc. A	II Rights	FE16 s Reserved.	Trunk	TUP	10P									

步驟 3.按一下加入VLAN...修改要配置VLAN的埠。

Small Business CISCO SF220-24P	24-	Port 1	0/100 P	oE Smart Sw	itch			cisco Language: Englist	n 🔻	Logout	About	Help
Getting Started		EEQ	Trunk	1110	110							<b></b>
Status and Statistics		FEO	Trunk	1110	1110							
Administration		FE9	Trunk	IUP	IUP							
Port Management		FEIU	Trunk	IUP	IUP							
✓ VLAN Management		FE11	Trunk	10P	10P							
Default VLAN Settings		FE12	Trunk	10P	10P							
Create VLAN		FE13	Trunk	1UP	1UP							
Interface Settings		FE14	Trunk	1UP	1UP							
Port to VLAN		FE15	Trunk	1UP	1UP							
Port VLAN Membership		FE16	Trunk	1UP	1UP							
GVRP Settings		FE17	Trunk	1UP	1UP							
Spanning Tree		FE18	Trunk	1UP	1UP							
MAC Address Tables		FE19	Trunk	1UP	1UP							
Multicast		FE20	Trunk	1UP	1UP							
IP Configuration		FE21	Trunk	1UP	1UP							
Security		FE22	Trunk	1UP	1UP							
<ul> <li>Access Control</li> </ul>		FE23	Trunk	1UP	1UP							
Quality of Service		FE24	Trunk	1UP	1UP							
▶ SNMP		GE1	Trunk	1UP	1UP							
		GE2	Trunk	1UP	1UP							
	J	oin VLAN	Details.									
@ 2014 2017 Circo Svetoma Inc. A	F - F	orbidden m	ember	T - Tagged member	U - Untagged member	P - PVID	G - Guest VLAN					- -

#### 步驟 4.選擇1UP,然後在選擇VLAN一節中按一下<以從介面刪除VLAN 1。當介面是存取連線 埠時,只能將1個未標籤的VLAN新增到介面。

🗋 Join VLAN - Google Chrome	_	×
▲ Not secure https://192.168.1.100/html/vlan_portMembershipEdit.html?port=FE3		
Select VI AN:		
F - Forbidden member, T - Tagged member, U - Untagged member, P - PVID, G - Guest VLAN		
Tagging: Forbidden Excluded Tagged ● Untagged ✓ PVID		
Apply Close		

步驟 5.選擇100,然後按一下>,將未標籤的VLAN新增到介面。

🗋 Join VLAN - Google Chrome	_	×
▲ Not secure https://192.168.1.100/html/vlan_portMembershipEdit.html?port=FE3		
Interface:   Port FE3  LAG  I		
Mode: Access		
Select VLAN:		
1       Image: Additional system         F - Forbidden member, T - Tagged member, U - Untagged member, P - PVID, G - Guest VLAN		
Tagging: Forbidden		
Excluded		
<ul> <li>Untagged</li> </ul>		
PVID		
Apply Close		

步驟 6.按一下「Apply」以儲存設定。

Din VLAN - Google Chrome	– 🗆 X
A Not secure https://192.168.1.100/html/vlan_portMembershipEdit.html?pd	ort=FE3
Interface:   Port FE3  LAG 1	
Mode: Access	
Select VLAN:	
200       1       100UP         1       Image: Comparison of the second	VLAN
Tagging:       Forbidden         Excluded         Tagged         Untagged         VID	
Apply Close	

步驟 7.在Interface欄位中選擇連線到路由器的介面連線埠。在此示例中,選擇了埠GE1。

🗋 Join VLAN - G	oogle Chrome	_		$\times$
A Not secure	https://192.168.1.100/html/vlan_portMembershipEdit.html?port=FE3			
Success icon.	. To permanently save the configuration, go to the Copy/Save Configuration page o	or click t	he Save	2
Interface:	● Port GE1 ▼  LAG 1 ▼			
Mode:	Trunk			
Select VLAN:				
F - Forbidden r	nember, T - Tagged member, U - Untagged member, P - PVID, G - Guest VLAN			
Tagging:	<ul> <li>Forbidden</li> <li>Excluded</li> <li>Tagged</li> <li>Untagged</li> <li>PVID</li> </ul>			
Apply	Close			

步驟 8.選擇要新增到選定介面的VLAN,然後按一下>在選擇VLAN 部分新增它們。在本例中 ,我們將選擇VLAN 100和200。

🗋 Join VLAN - G	oogle Chrome	_		×
A Not secure	https://192.168.1.100/html/vlan_portMembershipEdit.html?port=FE3			
Success icon.	. To permanently save the configuration, go to the Copy/Save Configuration page o	r click tl	he Save	
Interface:	● Port GE1 ▼ ○ LAG 1 ▼			
Mode:	Trunk			
Select VLAN:				
F - Forbidden r	nember, T - Tagged member, U - Untagged member, P - PVID, G - Guest VLAN			
Tagging:	Forbidden			
	<ul> <li>Excluded</li> <li>Tagged</li> </ul>			
	Untagged			
	PVID			
Apply	Close			

步驟 9.按一下「Apply」以儲存設定。

注意:可能需要在IP電話上重新啟動,才能將IP地址更改為正確的子網。

## 將Raspberry Pi的IP地址更改為位於不同的子網上

步驟 1.通過Secure Shell(SSH)連線到您的Raspberry Pi或將Raspberry Pi連線到電腦監視器。 在本示例中,我們將使用SSH來配置Raspberry Pi。

注意:設定介面設定時,電腦/筆記型電腦交換機上的埠需要與Raspberry Pi位於同一VLAN上 並配置為接入埠。請參閱本文的<u>在交換器上設定介面設定和在交換器上設定連線埠VLAN成員</u> <u>身分</u>一節。確保您的IP地址與您的Raspberry Pi位於同一網路,以便通過SSH連線到該網路。 如果您的裝置與Raspberry Pi不在同一網路上,請使用靜態IP地址並手動將IP地址更改為位於 同一網路上,或者可以在命令提示符下鍵入命令ipconfig /release 和ipconfig/renew 以獲取新 的IP地址。SSH客戶端可能因作業系統而異。在本示例中,PuTTY用於通過SSH連線到 Raspberry Pi。有關SSH的詳細資訊,請按一下<u>此處</u>。

PuTTY Configuration		×
Category:		
<ul> <li>Session         <ul> <li>Logging</li> <li>Terminal</li> <li>Keyboard</li> <li>Bell</li> <li>Features</li> </ul> </li> <li>Window         <ul> <li>Appearance</li> <li>Behaviour</li> <li>Translation</li> <li>Selection</li> <li>Colours</li> </ul> </li> <li>Connection         <ul> <li>Data</li> <li>Proxy</li> <li>Telnet</li> <li>Rlogin</li> <li>SSH</li> <li>Serial</li> </ul> </li> </ul>	Basic options for your PuTTY set Specify the destination you want to connect Host Name (or IP address) Connection type: Raw O Telnet O Rlogin O SSH Load, save or delete a stored session Saved Sessions Default Settings	ssion t to Port 22 () Serial Load Save Delete
	Close window on exit: Always Never Only on cl	ean exit
About	Open	Cancel

步驟 2.在Host Name(或IP address)欄位中鍵入Raspberry Pi的IP地址。在本示例中,輸入 了192.168.1.10。

注意:您可以使用路由器中的DHCP表來查詢Raspberry Pi的地址。在本文檔中,此 Raspberry Pi已預配置為具有靜態IP地址。

		×
Category:		
<ul> <li>Session         <ul> <li>Logging</li> <li>Terminal</li> <li>Keyboard</li> <li>Bell</li> <li>Features</li> </ul> </li> <li>Window         <ul> <li>Appearance</li> <li>Behaviour</li> <li>Translation</li> <li>Selection</li> <li>Colours</li> </ul> </li> <li>Connection         <ul> <li>Data</li> <li>Proxy</li> <li>Telnet</li> <li>Rlogin</li> <li>SSH</li> <li>Serial</li> </ul> </li> </ul>	Basic options for your PuTTY ses Specify the destination you want to connect Host Name (or IP address) 192.168.1.10 Connection type: Raw Telnet Rlogin SSH Load, save or delete a stored session Saved Sessions Default Settings	ssion to Port 22 () Serial Load Save Delete
	Close window on exit: Always Never Only on clo	ean exit
About	Open	Cancel

步驟 3.在「Port」欄位中輸入22作為連線埠號碼。埠22是SSH協定的標準埠。

PuTTY Configuration		×
Category:		
<ul> <li>Session</li> <li>Logging</li> <li>Terminal</li> <li>Keyboard</li> <li>Bell</li> <li>Features</li> <li>Window</li> <li>Appearance</li> <li>Behaviour</li> <li>Translation</li> <li>Selection</li> <li>Colours</li> <li>Connection</li> <li>Data</li> <li>Proxy</li> <li>Telnet</li> <li>Rlogin</li> <li>SSH</li> <li>Serial</li> </ul>	Basic options for your PuTTY sess   Specify the destination you want to connect   Host Name (or IP address)   192.168.1.10   Connection type:   Raw   Telnet   Raw   Telnet   Raw   Telnet   Raw   Telnet   Raw   Default Settings     Close window on exit:   Always   Never   Only on clear	sion to Port 22 () Serial Load Save Delete
About	Open	Cancel

步驟 4.在「Connection type: 」部分,按一下SSH單選按鈕以選擇SSH作為與交換機的連線方 法。然後按一下Open開始會話。

PuTTY Configuration		×
Category:		
<ul> <li>Session <ul> <li>Logging</li> <li>Terminal</li> <li>Keyboard</li> <li>Bell</li> <li>Features</li> </ul> </li> <li>Window <ul> <li>Appearance</li> <li>Behaviour</li> <li>Translation</li> <li>Selection</li> <li>Colours</li> </ul> </li> <li>Connection <ul> <li>Data</li> <li>Proxy</li> <li>Telnet</li> <li>Rlogin</li> <li>SSH</li> <li>Serial</li> </ul> </li> </ul>	Basic options for your PuTTY set Specify the destination you want to connect Host Name (or IP address) 192.168.1.10 Connection type: Raw Telnet Rlogin SSH Load, save or delete a stored session Saved Sessions	ssion t to Port 22 ) () Serial
	Close window on exit: Always O Never O Only on cl	Load Save Delete ean exit
About	Open	Cancel

步驟 5.在login as和password欄位中輸入RasPBX的使用者名稱和密碼。

注意:預設使用者:root和預設密碼:raspberry



步驟 6.要將乙太網的IP地址更改為靜態IP地址,請鍵入ifconfig eth0 [IP address] netmask [netmask]。在本例中,我們將使用192.168.3.10和網路掩碼255.255.255.0

ifconfig eth0 192.168.3.10 netmask 255.255.255.0

注意:在更改IP地址時,您將斷開與會話的連線。要連線回Raspberry Pi,您的電腦/筆記型電腦需要與Raspberry Pi(192.168.3.x)位於同一個子網上。

🛃 192.168.3.10 - PuTTY	-		×
Linux raspbx 4.9.59	-v7+ #1047 SMP Sun Oct 29 12:19:23 GMT 2017 armv71		^
Welcome to RasPBX -	Asterisk for Raspberry Pi		
RasPBX is based on I system are free soft described in the ind	Debian. The programs included with the Debian GNU/Lin tware; the exact distribution terms for each program dividual files in /usr/share/doc/*/copyright.	ux are	
RasPBX comes with A applicable law.	BSOLUTELY NO WARRANTY, to the extent permitted by		
List of RasPBX spec:	ific commands:		
raspbx-upgrade configure-timezone install-fax add-fax-extension install-fail2ban	Keep your system up to date with the latest add-ons security fixes Set timezone for both system and PHP Install HylaFAX Add additional fax extension for use with HylaFAX Install Fail2Ban for additional security	and	
install-dongle raspbx-backup	Install GSM/3G calling capability with chan_dongle Backup your complete system to an image file		
Last login: Mon Dec root@raspbx:~#(ifco	18 19:56:37 2017 from 192.168.1.151 nfig eth0 192.168.3.10 netmask 255.255.255.0		~

步驟 7.使用步驟6中配置的靜態IP地址連線回您的Raspberry Pi。在本例中,我們使用

192.168.3.10連線回來。

注意:確保您的電腦/筆記型電腦與Raspberry Pi以及VLAN位於同一子網中。如果您的電腦/筆 記型電腦與Raspberry Pi位於同一個VLAN中,並且您沒有正確的IP地址,則您可以轉到命令 提示符並鍵入ipconfig /release ,然後鍵入ipconfig /renew以請求新的IP地址,或者將裝置配 置為在乙太網屬性中具有靜態IP地址。

PuTTY Configuration		×
Category:		
<ul> <li>Session</li> <li>Logging</li> <li>Terminal</li> <li>Keyboard</li> <li>Bell</li> <li>Features</li> <li>Window</li> <li>Appearance</li> <li>Behaviour</li> <li>Translation</li> <li>Selection</li> <li>Colours</li> <li>Connection</li> <li>Data</li> <li>Proxy</li> <li>Telnet</li> <li>Rlogin</li> <li>SSH</li> <li>Serial</li> </ul>	Basic options for your PuTTY se Specify the destination you want to connect Host Name (or IP address) 192.168.3.10 Connection type: Raw Telnet Rlogin SSH Load, save or delete a stored session Saved Sessions	ssion et to Port 22
	Default Settings	Load Save Delete
	Close window on exit: Always Never Only on clean exit	
About	Open	Cancel

步驟 8.在命令列中,鍵入route add default gw [Router IP address of subnet]以新增預設網關。

注意:您可以使用命令route來檢視路由表。

路由新增預設gw 192.168.3.1

🛃 192.168.3.10 - PuTTY	_		×
Linux raspbx 4.9.59	-v7+ #1047 SMP Sun Oct 29 12:19:23 GMT 2017 armv7l		^
Welcome to RasPBX -	Asterisk for Raspberry Pi		
RasPBX is based on Debian. The programs included with the Debian GNU/Linux system are free software; the exact distribution terms for each program are described in the individual files in /usr/share/doc/*/copyright.			
RasPBX comes with ABSOLUTELY NO WARRANTY, to the extent permitted by applicable law.			
List of RasPBX specific commands:			
raspbx-upgrade	Keep your system up to date with the latest add-ons	and	
configure-timezone install-fax	Set timezone for both system and PHP Install HylaFAX		
add-fax-extension install-fail2ban	Add additional fax extension for use with HylaFAX Install Fail2Ban for additional security		
install-dongle raspbx-backup	Install GSM/3G calling capability with chan_dongle Backup your complete system to an image file		
Last login: Mon Dec	18 14:45:13 2017 from 192.168.3.102		
root@raspbx:~# rout	e add default gw 192.168.3.1		~

結論

您現在應該已經成功設定了一個基本語音網路。要驗證這一點,請拿起一部SPA/MPP電話 ,您應該會聽到撥號音。在本文檔中,其中一個SPA/MPP電話的副檔名為1002,另一個電話 的副檔名為1003。使用分機1002 SPA/MPP電話時,您應該能夠呼叫分機1003。

#### 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)。