# FMC 6.2.3 PXgrid و ISE 2.4 لماكت نيوكت

# تايوتحملا

<u>ةمدق مل ا</u> <u>ةيساسألا تابلطتملا</u> <u>تابلطتملا</u> <u>ةمدختسملا تانوكملا</u> <u>ISE نىوكت</u> pxGrid تامدخ نىكمت .1 ةوطخلا <u>PxGrid ةداەش ىلا ةدنتسملا تاپاسحلا ةفاك ىلع ةقفاوملل ISE نىوكت .2 ةوطخلا</u> CA ل PxGrid تاداەش و ISE MNT لوؤس م ةداەش رىدص ت. 3 ةوطخلا <u>FMC نىوكت</u> <u>FMC يلا ديدج قاطن ةفاضا 4. ةوطخلا</u> FMC CA ةداەش ءاش نا .5 ةوطخلا <u>. OpenSSL مادختساب ةأشنملا ةداهشلا نم صاخلا حاتفملاو ةداهشلا جارختسا .6 ةوطخلا</u> <u>FMC ىف ةداەشلا تىپثت .7 ةوطخلا</u> ISE<u> ىل| FMC ةداەش داريتس| .8 ةوطخلا</u> FMC <u>يلع PXgrid لاصتا نىوكت .9 قوطخلا</u> <u>ةحصلا نم ققحتلا</u> <u>ISE يف ققحتاا</u> <u>FMC يف ةحصلا نم ققحتلا</u> اهحالصاو ءاطخألا فاشكتسا

# ەمدقملا

.5.2.5 FMC رادصإو 2.4 رادصإلا، ISE PxGrid لماكت نيوكت ةيلمع دنتسملا اذه فصي

# ةيساسألا تابلطتملا

#### تابلطتملا

:ةيلاتا عيضاوملاب ةفرعم كيدل نوكت نأب Cisco يصوت

- ISE 2.4
- FMC 6.2.3
- Active Directory/اليلدلل لوصولل فيفخلا لوكوتوربلا/LDAP)

### ةمدختسملا تانوكملا

ةيلاتلا ةيداملا تانوكملاو جماربلا تارادصإ ىلإ دنتسملا اذه يف ةدراولا تامولعملا دنتست

4.4 لقتسملا ISE •

- FMCv 6.2.3
- Active Directory 2012R2
- Identity Services Engine (ISE) PXgrid، رادصإلاا 2.4
- مرادإ زكرم Firepower (FMC)، رادصإلاا، (6.2.3

ةصاخ ةيلمعم ةئيب يف ةدوجوملا ةزهجألاا نم دنتسملا اذه يف ةدراولا تامولعملا ءاشنإ مت. تناك اذإ .(يضارتفا) حوسمم نيوكتب دنتسملا اذه يف ةمدختسُملا ةزهجألا عيمج تأدب رمأ يأل لمتحملا ريثأتلل كمهف نم دكأتف ،ليغشتلا ديق كتكبش.

## ISE نيوكت

#### pxGrid تامدخ نيكمت .1 ةوطخلا

- ا قرادال (GUI) قرادال (GUI) قيموسرلا مدختسملا قمجاو يل لوخدلا ليجستب مق 1. ر**شنلا <**
- 2. ل اهمادختسإ متيس يتلا ISE ل اهمادختس

disce Identity Services Engine Home	Context Visibility + Operations + Pol	cy Administration + Work Centers			License Warning 🔺 🔍 😝 😋 🌣
System      Identity Management      Network Re	sources	irid Services + Feed Service + Threat Centric NAC			
Deployment Licensing + Certificates + Loggin	g + Maintenance Upgrade + Backup	Restore + Admin Access + Settings			
Deployment	Deployment Nodes				
(2)* 臣*					Selected 0   Total 1 😵 🎡 🖕
Deployment     PAN Failower	🖊 Edit 🔯 Register 👩 Syncup 💆	Deregister			Show All 💌 🍟
0	Hostname	<ul> <li>Personas</li> </ul>	Role(s)	Services	Node Status
	🗌 tim24adm 🔶	Administration, Monitoring, Policy Service, pxGrid	STANDALONE	IDENTITY MAPPING, SESSION, PROFILER	

.ةروصلا يف حضوم وه امك **ظفح** قوف رقناو pxGrid ةمدخ نيكمتب مق .3

Deployment		Deployment Nodes List > tim24adm
(= • E •	- Siz - 1	Edit Node
<ul> <li>Deployment</li> <li>PAN Failover</li> </ul>		General Settings Profiling Configuration
		Hostname
		FQDN
		IP Address
		Node Type Identity Services Engine (ISE)
		Role STANDALONE Make Primary
		Administration
		V Monitoring
		Role PRIMARY
		Other Monitoring Node
		Policy Service
		<ul> <li>Enable Session Services (i)</li> </ul>
		Include Node in Node Group None T
		Enable Profiling Service ()
		Enable Threat Centric NAC Service (i)
		Enable SXP Service (i)
		Enable Device Admin Service (i)
		Enable Passive Identity Service (j)
		PxGrid (i)
		Save Reset

.رماوألا رطس ةەجاو نم pxGrid تامدخ ليغشت نم ققحت .4

لماك لكشب PXgrid تامدخ ليغشتل قئاقد 5 ىلإ لصي ام ةيلمعلا بلطتت :**قظحالم** قدقع نم رثكاً مادختسإ ةلاح يف (HA) يلاعلا رفوتلا قلاح ديدحتو

.قيبطتالا الماح ددجو ISE pxGrid المدقعل (CLI) رماوألاا رطس المجاو يف SSH لخدأ .5

```
# show application status ise | in pxGrid
pxGrid Infrastructure Service running 24062
pxGrid Publisher Subscriber Service running 24366
pxGrid Connection Manager running 24323
pxGrid Controller running 24404
#
6. قرادا مدختسملا المحالية المعالية المحالية المعالية ال
معالية المعالية ال
```

```
.ةلصتملا <pxGrid <pxGrid FQDN> ةدقع ISE ضرعي ،ةحفصلا لفسأ يف .7
```

-thele Identity Services Engine	Home   Context Visibility	Operations      Policy      Admin	stration + Work Centers				License Warning 🔺 🔍 😑 🔿 🔿
System      Identity Management	Network Resources      Devic	e Portal Management pxGrid Services	Feed Service     Threat Centric N	IAC			Click here to do wireless setup and visibility setup Do not show this again. $ imes$
All Clients Web Clients Capab	ilities Live Log Settings	Certificates Permissions					
√Enable ØDisable ØApprove	😝 Group 🛛 🞈 Decline 🛛 🚱 Delete						1 - 7 of 7 Show 25 + per page Page 1 +
Client Name	Client Description	Capabilities	Status	Client Group(s)	Auth Method	Log	
ise-mnt-tim24adm		Capabilities(2 Pub, 1 Sub)	Online (XMPP)	Internal	Certificate	View	
ise-fanout-tim24adm		Capabilities(0 Pub, 0 Sub)	Online (XMPP)	Internal	Certificate	View	
ise-pubsub-tim24adm		Capabilities(0 Pub, 0 Sub)	Online (XMPP)	Internal	Certificate	View	
■ Ise-bridge-tim24adm		Capabilities(0 Pub, 4 Sub)	Online (XMPP)	Internal	Certificate	View	
Ise-admin-tim24adm		Capabilities(4 Pub, 2 Sub)	Online (XMPP)	Internal	Certificate	View	
Iseagent-firepower-20762a2982	d	Capabilities(0 Pub, 6 Sub)	Online (XMPP)		Certificate	View	
Firesightisetest-firepower-20762	a	Capabilities(0 Pub, 0 Sub)	Offline (XMPP)		Certificate	View	

#### ةداەش ىلا ةدنتسملا تاباسحلا ةفاك ىلع ةقفاوملل ISE نيوكت .2 ةوطخلا PxGrid

1. **تادادعإلا < pxGrid تامدخ < ةرادإلا** ىلإ لقتنا.

رقناو "تاداەشلا ىلا ةدنتسملا ةدىدجلا تاباسحلا ىلع ايئاقلت ةقفاوملا" :عبرملا ددح .2 ظ**فح** قوف.

cisco	Identity Services Engi	ine Home	Context Visibility	Operations	▶ Policy	- Administration	n → Work Centers
► Sy	stem <ul> <li>Identity Manage</li> </ul>	ement + Network	Resources	e Portal Management	pxGrid Se	ervices + Feed	Service + Threat Centric NAC
All C	Clients Web Clients	Capabilities L	ive Log Settings	Certificates Perm	nissions		
Р	xGrid Settings						
	Automatically approve no Allow password based a	ew certificate-based	d accounts				
	Use Default Save						
	Test						
Conne	cted to pxGrid tim24adm.rt	paaa.net					

اذه نيكمت متي مل اذإ ISE ب FMC لاصتا ىلع ايودي لوؤسملا قفاوي نأ بجي :**قظحالم** رايخلا.

#### CA ل PxGrid تاداەشو ISE MNT لوؤسم ةداەش ريدصت .3 ةوطخلا

.ماظنلا تاداەش < تاداەشلا < قرادالا على القات ال

ةرادإلا" ةدقع ىلع اەنيكمت مدع ةلالح يف (MNT) "ةيساسألاا ةبقارملا" ةدقع عيسوتب مق .2 ةيساسألا.

3. لقح ىلع يوتحت يتلا ةداەشلا ددح Used-by "admin".

مادختسال ةيضارتفالا عيقوتلا ةيتاذ ISE ةداەش ليلدلا اذه مدختسي :**قظحالم** عجرملا ريدصتب مق ،(CA) قدصم عجرم نم ةعقوم ةرادإ ةداەش مدختست تنك اذإ .لوؤسملا قدقع يلع لوؤسملا ةداەش عقو يذلا رذجلا قدصملا

- **4**. **ريدصت** قوف رقنا.
- . صاخلا حاتفملاو ةداەشلا ريدصت رايخ رتخأ.

.ريفشت حاتفم نييعتب مق

.ةروصلا يف حضوم وه امك فلملا **ظفح**و **ريدصت** .7

dentity Services Engine	Home + Context Visibility + Operations	Policy     Administration	+ Work Centers				License Warning 🔺 🔍 🕘 😋 📀
System      Identity Management	Network Resources     Device Portal Management	pxGrid Services + Feed Serv	rice + Threat Centric NAC				
Deployment Licensing - Certificat	ites + Logging + Maintenance Upgrade + Ba	ckup & Restore + Admin Access	s + Settings				
0	2						
- Certificate Management	System Certificates A For disaster recover	r it is recommended to expression	cate and private key pairs of all system	n certificates.			
System Certificates	🖌 Edit 🛛 🛖 Generate Self Signed Certificate	- Import D Export X D	elete 🔎 View				
Trusted Certificates	Friendly Name	Used By	Portal group tag	Issued To	Issued By	Valid From	Expiration Date
OCSP Client Profile	▼ tim24adm						
Certificate Signing Requests Certificate Periodic Check Set5	OU+Certificate Services System Certific e,CN+tim24adm.rtpaaa.redfCertificate 3 vices Endpoint Sub CA - tim24admill000	at le pxGrid 10				Thu, 29 Mar 2018	Thu, 30 Mar 2028 🕑
Certificate Authority	Afault self-signed sami server certificat     CNI-SAMI, tim2/artm rinaaa cet	* SAML				Fri, 30 Mar 2018	Sat, 30 Mar 2019 🛃
	Default self-signed server certificate	EAP Authentication, Admin,	Pefault Portal Certificate Group 👔			Fri, 30 Mar 2018	Sat, 30 Mar 2019
				_			
			<ul> <li>Export</li> <li>Export</li> </ul>	Certificate Certificate	e Only e and Private Key		
					,		
	*Private K	ey Password	•••••				
	*Confir	m Password	•••••				
Warning	Exporting a private	e key is not a	a secure oper	ation. It o	could lead to poss	ible exposure o	f the private key.
						E	Export Cancel

ISE. ماظن تاداەش ةشاش ىلإ دع .9

دومعلا يف "pxGrid" مادختسإ مدختست يتلا ةداهشلا يف "ةطساوب هرادصإ مت" لقح ددح .10 "ةطساوب مدختسمل".

2.2 نم نكلو ،ايتاذ ةعقوم ةداهش هذه تناك ،ISE نم مدقألا تارادصإلا يف :**قظحالم** يضارتفا لكشب ةيلخادلا ISE CA ةلسلس نم ةداهشلا هذه ردصت ادعاصف.

.ةروصلا يف حضوم وه امك **ضرع** قوف رقناو ةداهشلا ددح .11

este Identity Services Engine	Home	+ Context Visibility + Operations +	Policy - Administration	Work Centers			u	ense Warning 🔺 🔍 0 0 0
* System + Identity Management	Network	Resources	pxGrid Services + Feed S	ervice				
Deployment Licensing Certification	es ⊁Log	ging + Maintenance Upgrade + Back	up & Restore + Admin Acc	ess + Settings				
0								
* Certificate Management	Syste	m Certificates 🛕 For disaster recovery it	is recommended to export ce	rtificate and private ky pairs of all system ce	rtificates.			
System Certificates	/ Ec	R 🚽 Generate Self Signed Certificate 🤤	- Import 🚱 Export 🗙	Delete View				
Trusted Certificates		Friendly Name	Used By	Portal group tag	Issued To	Issued By	Valid From	Expiration Date
OCSP Client Profile	🔻 timá	Madm						
Certificate Signing Requests		OU=Certificate Services System Certificate e,CN=tim24adm.rtpaaa.net#Certificate Se	pxOrid				Thu, 29 Mar 2018	Thu, 30 Mar 2028 🛃
Certificate Periodic Check Sets		Nices Endpoint Sub CA - tm24admi#0000						_
Certificate Authority		Default self-signed sami server certificate - CN=SAML_tim24adm.rtpaaa.net	SAML				Fri, 30 Mar 2018	Sat, 30 Mar 2019 🛃
		Default self-signed server certificate	EAP Authentication, Admin, Portal, RADIUS DTLS	Default Portal Certificate Group (j)			Fri, 30 Mar 2018	Sat, 30 Mar 2019

ان وكي ،ةلاحلا هذه يف .(رذجلا) ىلعألا ىوتسملا ةداەش ديدحت .12 'Certificate Services Root CA' - tim24adm".

.ةروصلا يف حضوم وه امك ةداهشلا ضرع ةذفان قلغاً .13

Certificate Services Root C/	A - tim24adm de CA - tim24adm	
Certificate Service	s Endpoint Sub CA - tim24adm	
tim24adm.rtpa	aa.net	
tim24adm.rtpaaa Issued By : Certif Expires : Thu, 30	.net ficate Services Endpoint Sub CA - tim24adm Mar 2028 14:17:12 EDT	
Certificate status is good		
Details		10
Issued To		
Common Name (CN)		
Organization Unit (OU)	Certificate Services System Certificate	
Organization (O)		
City (L)		
State (ST)		
Country (C)		
Serial Number	58:2A:91:45:E8:23:42:74:98:53:06:94:33:9E:AD:83	

Close

ISE. ةداەش عجرم ةمئاق عيسوتب مق .14

.قدصملا عجرملا تاداەش ددح 15.

عجرم ةداەش ظفحا مث **.ريدصت** قوف رقناو اەيلع فرعتلا مت يتلا رذجلا ةداەشلا ددح .16 رذج قدصم وە امك pxGrid رذج قدصم

use Identity Services Engine	Home	Context Visibility      Operatio	ns Policy A	fministration + Work Centers					License Warning 🔺 👘	ч. O	0 0
System      Identity Management	Network	Resources + Device Portal Manag	ement pxGrid Service	s + Feed Service + Threat Cent	ric NAC						
Deployment Licensing Certificate	is ⊁Lo	gging + Maintenance Upgrade	Backup & Restore	Admin Access      Settings							
0											
Certifiete Management	CAC	ertificates									
· Certificate Authority	1	Edit 🕂 Import 🕃 Export 🗙	Delete 🔎 View 🔮	Refresh							
Oranian		Friendly Name	Status	Trusted For	Serial Number	Issued To	Issued By	Valid From	Expiration Date	Expiration	Status
Charlien	🔻 tin	n24adm									
Issued Certificates	0	Certificate Services Endpoint Sub	Enabled	Infrastructure, Endpoints	32 D2 72 55 A9 7D 40 13 8F 2A EF	Certificate Services Endpoint Sub	Certificate Services Node CA -	Thu, 29 Mar 2018	Thu, 30 Mar 2028	2	
Certificate Authority Certificates	_	CA - Im2480m#00003			CF 00 10 41 AB	Cartificate Canizer Dout CA -	Cartificate Services Road CA			-	
Internal CA Settings		tim24adm#00001	Enabled	Infrastructure,Endpoints	E7 37 1A AB 88	tim24adm	tim24adm	Thu, 29 Mar 2018	Thu, 30 Mar 2028		
Certificate Templates	0	Certificate Services Node CA - tim24adm#00002	Enabled	Infrastructure,Endpoints	30 1A 22 E7 AA E5 45 35 8C 65 78 EE 53 09 34 3E	tim24adm	tim24adm	Thu, 29 Mar 2018	Thu, 30 Mar 2028	2	
External CA Settings		Certificate Services OCSP Responder - tim24adm#00004	Enabled	Infrastructure,Endpoints	74 C2 35 BB 32 6A 40 0F AC C8 D0 B9 51 DC 07 7D	Certificate Services OCSP Responder - tim24adm	Certificate Services Node CA - tim24adm	Thu, 29 Mar 2018	Thu, 30 Mar 2023	2	

# FMC نيوكت

#### FMC ىلإ ديدج قاطن ةفاضإ .4 ةوطخلا

1. مكحتلا ةدحوب ةصاخلا (GUI) ةيموسرلا مدختسملا ةهجاو ىلإ لوصولا كنكمي FMC مكحتلا ةدحوب قصاخلا ج**مدلا < ماظنلا** ىلإ هجوتلاو **Realms**.

<u>روس ا چې حصوم وه ام و <b>دید. ری</b>ح کارغ رون ا .</u>
---

Overview Analysis Policies Devices Objects AMP Intelligence	Deploy O System Help v adm	in v
	Configuration Users Domains Integration Updates Licenses Visith Monitoring Tr	iols v
Cisco CSI Realms Identity Sources eStreamer Host Input Client Smart Software Satellite		
	🧭 Compare realms 🕠 New r	mies

."رابتخالل (Active Directory (AD ةمدخ طبر" رز قوف رقناو جذومنلا ألما .3

يساسألا مدختسملا مسا قيسنتب AD طبر مدختسم مسا نوكي نأ بجي :**ةظحالم** (UPN) رابتخالا لشف وأ.

4. كان مامضنال البتخإ حجن اذا AD، ق**فاوم** قوف رقنا.

Add New Realm			? ×
Name *	ISEpxGrid		
Description	Realm for use with pxGrid		
Туре *	AD	·	
AD Primary Domain *		ex: domain.com	
AD Join Username		ex: user@domain	
AD Join Password	•••••	Test AD Join	
Directory Username *	admin	ex: user@domain	
Directory Password *			
Base DN *	CN=Users,DN=rtpaaa,DN=net	ex: ou=user,dc=cisco,dc=com	
Group DN *	DN=rtpaaa,DN=net	ex: ou=group,dc=cisco,dc=com	
Group Attribute	Member 🗸	·	
* Required Field			
		OK Cancel	

.ةروصلا يف حضوم وه امك **لـيلد ةفاضإ** قوف رقنا مث **لـيلدلا** بيوبتلا ةمالع قوف رقنا .5



6. رابتخاو IP/Hostname لاصتا نيوكت.

نيوكت" بيوبتلا ةمالع ىلع دامتعالا تانايب نم ققحتف ،رابتخالا لشف اذإ :**قظحالم** قاطنلا.

.7 قوف رقنا .7

Edit directory			?	×
Hostname / IP Address				
Port	389			
Encryption	🔵 STARTTLS 🗌 LDAPS 💿 None			
SSL Certificate	▼ ③			
	сок	Test Cancel		
Status				
Test of	connection succeeded			
	ок			

. **مدختسملا ليزنت** بيوبتلا ةمالع قوف رقنا.



ةعومجملاو مدختسملا ليزنت نيكمتب مق ،لعفلاب ديدحتلا مدع ةلاح يف .9

"نآلا ليزنت" قوف رقنا .10



Enter Description



••••|

- انيم صت ىل قفاص ددجو ةبول طمل تاعوم جمل فضأ ،ةمئ اقل قى عن درجمب. 11.
- .**قاطنلا نيوكت** ظفح .12

Overview Analysis Policies Devices Objects AMP Intelligence								Deploy System Help - admin
			Configuration	Users	Domains	Integration	Updates	Licenses • Health • Monitoring • Tools
LAB								You have unsaved changes 🔚 Save 🛛 😣 Cancel
Enter Description								
Directory Realm Configuration User Download								
Oownload users and groups								
Begin automatic download at 8 V PM V America/New York Repeat Every 24	Hours							
d Download Now								
Available Groups G		Groups to Include (35)			Groups to Ex	clude (0)		
Search by name		A NetCos		9.0	None			
		SOLServer2005SOLBrowserUser58TPAAA-DC2		ä				
A NetOps		WSUS Administrators		ă				
sqcserverzoossqcerowserusersk17AAA-0C2		A Enterprise Read-only Domain Controllers		all				
Kotominorators		A DnsUpdateProxy		a				
Controlise Read-only Domain Controllers		📣 theehn-group		8				
A Dealer and		A Denied RODC Password Replication Group		8				
Denied BODC Research Replication Group		📤 Domain Admins		8				
Company Admines		률 Child		8				
A COM		A DisAdmins		8				
n Douldmins		💤 Lester\Made\Me\Do\Jt		8				
A Lester(Made\Me\Do\]t		🝰 Group Policy Creator Owners		8				
A Group Policy Creator Owners		🛃 INE		8				
A INE		🏉 🍰 Domain Users		8				
Domain Users		A ChadTest		8				
A ChadTest		🚔 Read-only Domain Controllers		8				
Read-only Domain Controllers	Include	AAS and IAS Servers		8				
RAS and IAS Servers	Add to	Cert Publishers		8				
A Cert Publishers	Exclude	💼 🍰 Schema Admins		8				
🔗 Schema Admins		A WSUS Reporters		8				
A WSUS Reporters		🝰 Parent		8				
🔗 Parent		📤 ISE Admins		8				
💤 ISE Admins		WinRMRemoteWMIUsers		8				
A WinRMRemoteWHIUsers		Allowed RODC Password Replication Group		8				
Allowed RODC Password Replication Group		A TimSponsors		8				
💣 TimSponsors		AllowedVPN		8				
Allowed VPN		Enterprise Admins		8				
💣 Enterprise Admins		🚁 test-users		8				
🍰 test-users		a sponsors		8				
af sponsors		# HelpUbraryUpdaters		9				
A HelpLibraryUpdaters		Protected Users		9				
Protected Users		Domain Guests		0				
A Domain Guests		Domain Computers		0				
Domain Computers		p uomain Controllers		0.0				
A Domain Controllers								

.قاطنلا ةلاح نيكمتب مق 13.

Overview Analysis Policies Devices Objects AMP Intelligence					Deploy O	System Help	v admin v
		Configuration User	rs Domains Integr	ration Updates	Licenses • Health	Monitorin	g • Tools •
Cisco CSI Realms Identity Sources eStreamer Host Input Client Smart Software Satellite							
		ويمرو بالبوين بمبدية المدي		والافتر والمتعادة والمتداو		mpare realms	O New realm
Name	Description Domain	Туре	Base DN	Group DN	Group Attribute	State	
LAB	Global	AD	DC=rtpaaa,DC=net	CN=Users,DC=rtpaaa,D	C+ member		± 🥒 🐚 🖯

#### FMC CA ةداەش ءاشنإ .5 ةوطخلا

يف حضوم وه امك **ةيلخادلا ةقدصملا عجارملا < نئاكلا ةرادا < تانئاكلا** ىلا لقتنا .1. ةروصلا.

Overview Analysis Polic	es Devices Objects AMP Intelligence	l i i i i i i i i i i i i i i i i i i i	Deploy 🔺 Syst	tem Help v I	edmin v
Object Management Intr	usion Rules				
			Add Network •	🔍 Filter	
Retwork	Name	Value	Туре	Override	
Port Sinterface	any		Group	×	۹.8
Application Filters	any-ipu4		Network	×	
S VLAN Tag	any-ipv6		Host	×	
ORL .	IPv4-Benchmark-Tests		Network	×	
Geolocation	19v4-Unic-Local		Network	×	
\$ Variable Set	IPv4-Multicast		Network	×	
Security Intelligence	1Pv4-Private-10.0.0.0-8		Network	×	
DNS Lists and Feeds	IPv4-Private-172.16.0.0-12		Network	×	
URL Lists and Feeds	19vd-9viuster 192 168 0.0-16		Network	*	
Sinkhole				~	
Opher Suite List	IPv4-Private-All-RFC1918		Group	×	
A 🖣 Distinguished Name	IPv6-IPv4-Macced		Network	×	
Individual Objects     Object Groups	Pvf-Link-Local		Network	×	
a 🔑 PKI	In the bank stream		Naturk	0	
Internal CAse			PROVINCE AND A DESCRIPTION	2	
Trusted CAs	IPv6-to-IPv4-Relay-Anycest		Network	×	
External Certs     Cert Envolment     Internal CA Groups     Internal CA Groups     Internal CA Groups     Internal Cert Groups     External Cert Groups					

. **قدصم عجرم ءاشنا** قوف رقنا.2

	2			-			
$\mathbf{a}$	1 11						
~		L L		· 0 · ·	$( \Delta )$		
Ο.	10,11	1,11,10,9,2,6	91(), 9)	9,9		104.42	20(3).
	10			20			

Overview Analysis	Policies Devices	objects AMP Intelligence				L	Deploy 🗛 Sy	stem Help <b>v admin v</b>
Object Management	Intrusion Rules							
						Generate CA	O Import CA	🔍 Filter
Retwork	Name				Value			
		Generate Internal Certificate a Name: Country Name (two-letter code): State or Province: Locality or City: Organization: Organizational Unit (Department): Common Name:	Authority LabFP623	? ×				
		Generate CSR	Generate self-signed CA	Cancel				

عجرملا ةداهش نيمي ىلع دوجوملا صاصرلا ملقلا قوف رقنا ،ءاشنإلا لامتكا درجمب .4 ةروصلا يف حضوم وه امك ةأشنملا قدصملا.

Overview Analysis	Policies Devices Objects	AMP Intelligence	Deploy	🔺 System Help	• admin •
<b>Object Management</b>	Intrusion Rules				
			Generate CA O Impo	rt CA	
Network	Name		Value		
Port Interface	LabFP623		CN+LabFP623.rtpasa.net, ORG+Cisco, OU+TAC, C+US		/ 8

.**ليزنت** قوف رقنا .5

lame:	LabFP623		
Subje	ect:		
Co	ommon Name:		
Or	rganization: Cisco		
Or	rganization Unit: TAC		
Issue	r:		
Co	ommon Name:		
Or	rganization: Cisco		
Or	rganization Unit: TAC		
Not V	/alid Before:		
Ma	ay 15 18:13:52 2018 GMT		
Not V	/alid After:		
Ma	ay 12 18:13:52 2028 GMT		
Serial	Number:		
a	2:1e:98:52:be:2f:b8:98		
Certif	ficate Fingerprint:		
C7	7:D7:99:F3:EE:41:5C:7B:36:91:40:04:F7:1D:22:4C:60:C2:3C:9C		
Public	c Key Fingerprint:		
b5	51aabcb2cb25e922fdf6c0088771fca794897a1		
Dow	aload	OK	Cancel

6. قوف رقناو اهديكأتو ريفشتلا رورم ةملك نيوكتب مق

7. ايلحملا الماطن الماطن عن PKCS) واعلام حاتفملل ريفشتلا ريياعم فلم ظفحا.

#### مادختساب ةأشنملا ةداهشلا نم صاخلا حاتفملاو ةداهشلا جارختسإ .6 ةوطخلا OpenSSL

1. فلم نم (PVK) صاخلا حاتفملاو (certficate (CER) لا صالختسا لجأ نم **OpenSSL** مدختس p12.

.FMC ىلع ةداەش ءاشنإ نم ةداەشلا ريدصت حاتفم نيوكتب مق مث CER فلم جرختسا .2

~\$ openssl pkcs12 -nokeys -clcerts -in <filename.p12> -out <filename.cer>
Password:
Last login: Tue May 15 18:46:41 UTC 2018
Enter Import Password:
MAC verified OK

رورم ةرابع نييعتب مق مث ،ةداهشلا ريدصت حاتفم نيوكتب مقو ،PVK فلم جرختسا .3

-\$ openssl pkcs12 -nocerts -in <filename.p12> -out <filename.pvk> Password: Last login: Tue May 15 18:46:41 UTC 2018 Enter Import Password: MAC verified OK 4. ميلات القوطخلاي في قبول طم PEM قرابعل

#### FMC يف ةداەشلا تيبثت .7 ةوطخلا

. **ةيلخادلا جئاتنلا < PKI < تانئاكلا ةرادا < تانئاكلا ي**ان ال

.ةروصلا يف حضوم وه امك **يلخاد عجرم ةفاضإ** قوف رقنا .2

Overview Analysis	Policies Devices	s Objects AMP Intelligence	Deploy 🙂 Syn	tem Help v admin	Υ.
Object Management	Intrusion Rules				
			Add Internal Cert	🔍 Filter 🔤	כ
Retwork	Name	Value			
Port -	TimEP623	O mile	rEP623 rtoasa net, ORG=Citco, OU=TAC, C=US	25	
🔩 Interface	11117025			~ 0	
Tunnel Zone					
Application Filters					
S VLAN Tag					
Contraction					
Time Races					
C Mariable Est					
A Security Intelligence					
Network Lists and I	Feeds				
ONS Lists and Feed	05				
URL Lists and Feed	2s				
Sinkhole					
Tile List					
Opher Suite List					
🖌 📢 Distinguished Name					
Individual Objects					
Cobject Groups					
# 🔑 PKI					
Internal CAs					
Trusted CAs					
External Certs					
Internal Certs					
Cert Enrollment					
Trusted CA Groups					
Tatemal Cet Cours					
External Cert Group	05				
Consideration of the second					

3. ةيلخادلا ةداەشلل مسا نيوكتب مق.

.يناثلا رايخلا ددح ،صيخرتلا تانايب ةئبعت درجمب .هديدحتو CER فلم عقوم ضارعتسإ - 4

.5 فلم ددجو **رايخ** حفصت .5

ةصاخلا رسلا ةملك أدبت .PVK مسق يف ةقحال ميق يأو ةئداب "ةبيقح صئاصخ" يأ فذحا .6 **—يئاەن رفشم صاخ حاتفمب** يەتنتو — حاتفملاب.

نيب تافاسملا تالصاو جراخ فورح يأ PVK صنل ناك اذإ **قفاوم** رقن كنكمي ال :**ةظحالم** فورحلا نيب تافاسملاو روطسلا.

7. ريدصت مت امدنع اهؤاشنإ مت يتلا رورملا ةملك نيوكتب مقو رفشملا عبرملا ددح 6. قوطخلا يف

.8 قوف رقنا .8 **OK** 

#### Add Known Internal Certificate

Name: TZfpcert	
Certificate Data or, choose a file: Browse	
BEGIN CERTIFICATE MIIDFTCCAmWgAwIBAgIJAKIemFK+L7iYMA0GCSqGSIb3DQEBCwUAMGQxCzAJBgNV BAYTAIVTMQswCQYDVQQIDAJOQzEMMAoGA1UEBwwDUIRQMQ4wDAYDVQQKDAVDaXNj bzEMMAoGA1UECwwDVEFDMRwwGgYDVQQDDBNMYWJGUDYyMy5ydHBhYWEubmV0MB4X DTE4MDUxNTE4MTM1MloXDTI4MDUxMjE4MTM1MlowZDELMAkGA1UEBhMCVVMxCzAJ BgNVBAgMAk5DMQwwCgYDVQQHDANSVFAxDjAMBgNVBAoMBUNpc2NvMQwwCgYDVQQL DANUQUMxHDAaBgNVBAMME0xhYkZQNjIzLnJ0cGFhYSSuZXQwggEiMA0GCSqGSIb3 DQEBAQUAA4IBDwAwggEKAoIBAQDMjtSSIUIFiZkZK/TSGtkOCmuivTK5kk1WzAy6 D7Gm/c69cXw/VfIPWnSBzhEkiRTyspmTMdyf/4TJvUmUH60h108/8dZeqJOzbjon	
Bag Attributes localKeyID: C7 D7 99 F3 EE 41 5C 7B 36 91 40 04 F7 1D 22 4C 60 C2 3C 9C Key Attributes: <no attributes=""> MIIFDjBABgkqhkiG9w0BBQ0wMzAbBgkqhkiG9w0BBQwwDgQI5uV3MsiHZsICAggA MBQGCCqGSIb3DQMHBAhgGVm1+xHLIASCBMjjJxkffXUNUcdB22smybvWotwbcRrt xL0qjEStmwuyExVp+TWC3AyIJN1DE7/rRssjRAqsnSOxIvDGmg0dVsvnbbqZwjFP 74POu/O2Vy99iFoVgW2q9DyXyL/h64TH9CZtwLKIOGOeEunNKpamDnpfyN8QC4DC fXvNZ9/NG4HrEcFmnnij0EwJ0QT8Jn5gAUj+AIPMe32zPqwoccRNYrRXMVM9+Jwp</no>	1
Encrypted, and the password is:	
OK Cance	e <b>l</b>
cfCJU2QGI4jT0SorN4u2Lk+S+Qd1s7Ii2wIQMWKPl2R9UGv1tyM6HTPCGoCo6VDI acClCUAsecVrYY081GKTVVJ3bWgWfPtR3OH12YCA2whcCKcG50MByB4tjhHN036q 0/g= END_ENCRYPTED_PRIVATE_KEY ← DELETE	
Encrypted, and the password is:	
OK Cancel	

#### ISE ىلإ FMC ةداەش داريتسإ .8 ةوطخلا

.**داريتسإ** قوف رقنا .2

ence Identity Services Engine ,	Home	• Administra	tion + Work Centers							License Warning 🔺	A 0	•	0
System → Identity Management →	Network Resources	id Services	eed Service + Threat Cen	tric NAC									
Deployment Licensing - Certificates	Logging      Maintenance Upgrade      Backup &	Restore + Admir	n Access + Settings										
0													
Certificate Management	Trusted Certificat												
System Certificates	/Edit 📲 Import 😨 Export 🗙 Delete 🔎 View									Show All		- 5	6
Trusted Certificates	Friendly Name	Status	Trusted For	Serial Number	Issued To	Issued By	Valid From	Expiration Date	Expiration Status				
OCSP Client Profile	<ul> <li>Baltimore CyberTrust Root</li> </ul>	Enabled	Cisco Services	02 00 00 B9	Baltimore CyberTrust Ro	Baltimore CyberTrust Ro	Fri, 12 May 2000	Mon, 12 May 2025					
Certificate Signing Requests	Cisco CA Manufacturing	Disabled	Endpoints Infrastructure	6A 69 67 B3 00 00	Cisco Manufacturing CA	Cisco Root CA 2048	Fri, 10 Jun 2005	Mon, 14 May 2029	2				
Certificate Periodic Check Sets	Cisco Manufacturing CA SHA2	Enabled	Endpoints Infrastructure	02	Cisco Manufacturing CA	Cisco Root CA M2	Mon, 12 Nov 2012	Thu, 12 Nov 2037	<b>1</b>				
Certificate Authority	Cisco Root CA 2048	Disabled	Infrastructure Endpoints	SF F8 78 28 28 54	Cisco Root CA 2048	Cisco Root CA 2048	Fri, 14 May 2004	Mon, 14 May 2029	2				
	Cisco Root CA M2	Enabled	Endpoints Infrastructure	01	Cisco Root CA M2	Cisco Root CA M2	Mon, 12 Nov 2012	Thu, 12 Nov 2037	<b>•</b>				
	Default self-signed server certificate	Enabled	Endpoints Infrastructure	5A BE 7E D8 00 00	tim24adm.rtpaaa.net	tim24adm.rtpaaa.net	Fri, 30 Mar 2018	Sat, 30 Mar 2019	2				
	DigiCert root CA	Enabled	Endpoints Infrastructure	02 AC 5C 26 6A 08	DigiCert High Assurance	DigiCert High Assurance	Thu, 9 Nov 2006	Sun, 9 Nov 2031					
	DigiCert SHA2 High Assurance Server CA	Enabled	Endpoints Infrastructure	04 E1 E7 A4 DC SC	DigiCert SHA2 High Ass	DigiCert High Assurance.	Tue, 22 Oct 2013	Sun, 22 Oct 2028					
	DST Root CA X3 Certificate Authority	Enabled	Cisco Services	44 AF 80 80 D6 A3	DST Root CA X3	DST Root CA X3	Sat, 30 Sep 2000	Thu, 30 Sep 2021					
	HydrantID SSL ICA G2	Enabled	Cisco Services	75 17 16 77 83 D0	HydrantID SSL ICA G2	QuoVadis Root CA 2	Tue, 17 Dec 2013	Sun, 17 Dec 2023	2				
	QuoVadis Root CA 2	Enabled	Cisco Services	05 09	QuoVadis Root CA 2	QuoVadis Root CA 2	Fri, 24 Nov 2006	Mon, 24 Nov 2031	<b>1</b>				
	<ul> <li>Thawte Primary Root CA</li> </ul>	Enabled	Cisco Services	34 4E D5 57 20 D5	thawte Primary Root CA	thawte Primary Root CA	Thu, 16 Nov 2006	Wed, 16 Jul 2036	<b>2</b>				
	TimFP623	Enabled	Infrastructure Endpoints	BE F9 42 3D 25 AS	TimFP623.rtpasa.net	TimFP623.rtpaaa.net	Tue, 15 May 2018	Fri, 12 May 2028	<b>1</b>				
	VeriSign Class 3 Public Primary Certification Authority	Enabled	Cisco Services	18 DA D1 9E 26 7D	VeriSign Class 3 Public	VeriSign Class 3 Public	Tue, 7 Nov 2006	Wed, 16 Jul 2036					
	VeriSign Class 3 Secure Server CA - G3	Enabled	Cisco Services	6E CC 7A A5 A7 03	VeriSign Class 3 Secure	VeriSign Class 3 Public	Sun, 7 Feb 2010	Fri, 7 Feb 2020	<b>2</b>				

.يلحملا كماظن نم FMC CER فلم ددحو **فلم رايتخإ** رقنا .3

			e .
	· /	1	
12	יייס פו <sup>ג</sup> ייייי א פ	1	
		יקשי	20.
		<b>U</b> 1	-

- .4 لخاد ةقداصملل **ةقثلا** نم ققحت .4
  - فصو نيوكت :يرايتخإ.
- .ةروصلا يف حضوم وه امك **لاسرا** قوف رقنا .5

#### Import a new Certificate into the Certificate Store

* Certificate File	Choose File TZfpcert.cer	
Friendly Name		(i)
\[         \]     \[         \[         \]     \[	Trusted For: (j)	
	✓ Trust for authentication within ISE	
	Trust for client authentication and Syslog	
	Trust for authentication of Cisco Services	
	Validate Certificate Extensions	
Description		
<b>`</b> `	Submit Cancel	

#### FMC ىلع PXgrid لاصتا نيوكت .9 ةوطخلا

.ةروصلا يف حضوم وه امك **ةيوهلا رداصم < لماكتلا < ماظنلا** ىلإ لقتنا .1



- . الالتان الالتان الالتان المسا وأ IP ناونع نيوكتب مق .3 ISE pxGrid.
- 4. مداخب صاخلا CA رماوأ عجرم نيمي ىلإ + ددح

5. ل رذجلا عيقوتلل قدصملا عجرملا ىل ضرعتسا مث مداخلل CA فلم ةيمستب مق **ظفح** قوف رقناو .3 ةوطخلا يف هعيمجت مت يذلا.

. مداخل قدصملا عجرملا نيمي يل + ددح MNT.

مت يتلا لوؤسملا ةداەش ىلع لوصحلل ضرعتسا مث مداخلل CA فلم ةيمستب مق .7 **ظفح** قوف رقناو .3 ةوطخلا يف اەعيمجت.

.ةلدسنملا ةمئاقلا نم **FMC CER** فلم ددح .8

Identity Sources		
Service Type	None Identity Services Engine	User Agent
Primary Host Name/IP Address * Secondary Host Name/IP Address	<ise address="" ip="" node="" pxgrid=""></ise>	3
pxGrid Server CA *	ISE24InternalRoot	▼ ②
MNT Server CA *	ISE24SelfSigned	• O
FMC Server Certificate *	TimFP623	▼ ③
ISE Network Filter		ex. 10.89.31.0/24, 192.168.8.0/24,
* Required Field	Test	

.**رابتخإ** قوف رقنا .9

ةشاشلا نيمي ىلعأ يف **ظفحا** مث ،**قفاوم** قوف رقناف ،رابتخالا حجن اذإ .10.

## Status

٩	ISE connection status: Primary host: Success	
- 👻 Ac	ditional Logs	
		ОК

حاجنلا راهظإ دحاو فيضمل يعيبطلا نم نوكي ،ISE PxGrid يتدقع ليغشت دنع :**قظحالم** ISE قدقع ىلع طشن لكشب طقف لمعت pxGrid نأل ارظن لشفلا راهظإل دحاو فيضمو لطعلا يساسألا فيضملا ضرعي دق يذلا نيوكتلا ىلع كلذ دمتعي .قرم لك يف قدحاو ISE يف قدوجوملا قدقعلا ىلع دمتعي هلك اذهو .حاجنلا يوناثلا فيضملا ضرعي دقو .قدقعلا يه يتلاو

# ةحصلا نم ققحتلا

ISE يف ققحتلا

# 1. القتناو ISE يلإلى القتناو Administration > يل القتناو Administration كل القتناو ISE يل القتناو Administration > PxGrid Services.

ةدحول امەدحأ .ءالـمعلاا ةمئاق يف FirePOWER نيلاصتإ جاردإ متي ،ةيلـمعلاا ەذە حاجن ةلاح يف مكحتلا مكتلا (firesightisetesthostname-33) رابتخالا زاەجل رخآلاو ،(iseagent-hostname-33bytes) قيلعفلا hostname-33 رابتخالا زاەجل رخآل

dentity Services Engine	Home + Context Visibility	Operations      Policy      Admin	stration + Work Centers				License Warning 🔺 🔍 😐 🔿 🗢			
System      Identity Management	t      Network Resources      Device Po	rtal Management pxGrid Services	Feed Service      Threat Centric N	IAC						
Al Clients Web Clients Capabilities Live Log Settings Certificates Permissions										
√Enable  ØDisable  ØApprove	😝 Group 📫 Decline ( 😵 Delete 🕶	Refresh Total Pending Approval(0)					1 - 7 of 7 Show 25 + per page Page 1 +			
Client Name	Client Description	Capabilities	Status	Client Group(s)	Auth Method	Log				
		Capabilities(2 Pub, 1 Sub)	Online (XMPP)	Internal	Certificate	View				
		Capabilities(0 Pub, 0 Sub)	Online (XMPP)	Internal	Certificate	View				
		Capabilities(0 Pub, 0 Sub)	Online (XMPP)	Internal	Certificate	View				
		Capabilities(0 Pub, 4 Sub)	Online (XMPP)	Internal	Certificate	Vew				
		Canabilities(4 Pub. 2 Sub)	Online (XMPP)	Internal	Certificate	Vew				
		Capabilities(0 Pub, 6 Sub)	Online (XMPP)		Certificate	Vew				
		Capabilities(0 Pub, 0 Sub)	Offline (XMPP)		Certificate	Vew				

.تنرتنإلا الماع رەظيو ةيعرف تاكبش (6) ةتس ISEAGENT-FIREPOWER لاصتا ضرعي

.لاصتا نود رەظيو (0) اعرف FireSIGetest-FirePOWER لاصتا ضرعي

.تسلا تاكارتشالا ضرعي ISEAGENT-FirePOWER ليمعل عسوم ضرع

<ul> <li>iseagent-firepower-20762a2982d</li> </ul>	Ca	pabilities(0 Pub, 6 Sub) Or	nline (XMPP)	Certificate	View			
	Cap	ability Detail			1 - 6 of 6	Show 25 👻 per page	Page 1	¢
		Capability Name	Capability Version	Messaging Role	Message Filter			
	0	AdaptiveNetworkControl	1.0	Sub				_
	0	Core	1.0	Sub				
	0	EndpointProfileMetaData	1.0	Sub				
	0	EndpointProtectionService	1.0	Sub				
	0	SessionDirectory	1.0	Sub				
	0	TrustSecMetaData	1.0	Sub				

ليزنتلا لشفو فيضملا مسا ديدجت دجوي Cisco bug <u>IDCSCvo75376</u> ببسب :**قظحالم** لسكب 3 .2 ىلع كلذ رثوي .لاصتالا لشف FMC ىلع دوجوملا رابتخالا رز ضرعي .عمجملا 2 2.4 وأ 5 حيحصتلا ليغشت يف ةيلاحلا ةيصوتلا لثمتت .6 .2 و 6 لسكب 4 .2 و 6 .قيمسر حيحصت قمزح رادصإ متي يتح

#### FMC يف ةحصلا نم ققحتلا

ا. لي لحتلا على القريب المنفقية (GUI) مكري المنفقية (GUI) من المنفقية المنفقية المنفقية المنفقية المنفقية المع من المعل ا

لودج يف ISE يف لمعلا ةسلج ليلد ةردق ربع اهرشن مت ةطشن لمع تاسلج يأ ضرع متي حلع ةطشنلا لمعلا تاسلج FMC.

Overview Analysis Policies Devices Objects   AMP Intelligence Depicy   🕲 System Help v admin												ip v admin v				
Co	ntext Exp	orer Connection	s • Intrusions •	Files • Hosts •	Users + Active	Sessions Vulnerabilitie	ts • Correlation •	Custom •	Lookup •	Search						
													Bookmark This P	ege Report De	signer Dashboard View Bookn	arks Search ¥
Active Sessions																
							O Info			×						
							No devices reg	istered.								
							Click here to re	egister a device	<u>e.</u>							
Te	ble View o	f Active Sessions > 8	Active Sessions													
•	Search Con	straints (Edit. Search)														Disabled Columns
	ump to															
	•	Login Time ×	Last.Seen ×	User ×		Authentication Type ×	Current IP ×	Realm ×	Username ×	Eirst.Name >	Last Name ×	E-Mail ×	Department ×	Phone ×	Discovery Application ×	Device ×
-	L 0 2	018-05-15 13:26:21	2018-05-15 13:27:36	xiao vao (LAB\xi	EVIRO, LDAP)	Passive Authentication		LAB					users (rtoaaa)		LDA2	firecower
4		018-05-15 12:35:54	2018-05-15 12:35:54	admin admin (U	Wadmin, LDAP)	Passive Authentication		LAB					users (rtoaaa)		LDAP	firecower
4	0 2	018-05-15 11:27:14	2018-05-15 11:27:14	tom (LAB\tom, L	DAPI	Passive Authentication		LAB					users (rtoaaa)		LDAP	firecower
4		018-05-15 11:20:30	2018-05-15 11:20:30	Slark kent (LAB)	superman, LDAP)	Passive Authentication		LAB					users_(ctoasa)		IDA2	firecower
P	< < Page	1 of 1 >>  Display	ing rows 1-4 of 4 rows													
	View	Logout	)													
- 6	View All															

#### مكحتلا ةدحوب صاخلا (CLI) رماوألا رطس ةهجاو عضو نم 'adi\_cli' لمع قسلج ضرعي FMC، كرماوألا رطس تهجاو عضو نم يل ISE نم ةلسرملا مدختسملا لمع قسلج تامولعم SMC.

ssh admin@<FMC IP ADDRESS> Password: Last login: Tue May 15 19:03:01 UTC 2018 from dhcp-172-18-250-115.cisco.com on ssh Last login: Wed May 16 16:28:50 2018 from dhcp-172-18-250-115.cisco.com Copyright 2004-2018, Cisco and/or its affiliates. All rights reserved. Cisco is a registered trademark of Cisco Systems, Inc. All other trademarks are property of their respective owners. Cisco Fire Linux OS v6.2.3 (build 13) Cisco Firepower Management Center for VMWare v6.2.3 (build 83) admin@firepower:~\$ sudo -i Password: Last login: Wed May 16 16:01:01 UTC 2018 on cron root@firepower:~# adi\_cli session received user session: username tom, ip ::ffff:172.18.250.148, location\_ip ::ffff:10.36.150.11, realm\_id 2, domain rtpaaa.net, type Add, identity Passive. received user session: username xiayao, ip ::ffff:10.36.148.98, location\_ip ::, realm\_id 2,

domain rtpaaa.net, type Add, identity Passive. received user session: username admin, ip ::ffff:10.36.150.24, location\_ip ::, realm\_id 2, domain rtpaaa.net, type Add, identity Passive. received user session: username administrator, ip ::ffff:172.18.124.200, location\_ip ::, realm\_id 2, domain rtpaaa.net, type Add, identity Passive.

# اهحالصإو ءاطخألا فاشكتسا

نيوكتلا اذهل اهحالصإو ءاطخألا فاشكتسال ةددحم تامولعم أَيلاح رفوتت ال.

ةمجرتاا مذه لوح

تمجرت Cisco تايان تايانق تال نم قعومجم مادختساب دنتسمل اذه Cisco تمجرت ملاعل العامي عيمج يف نيم دختسمل لمعد يوتحم ميدقت لقيرشبل و امك ققيقد نوكت نل قيل قمجرت لضفاً نأ قظعالم يجرُي .قصاخل امهتغلب Cisco ياخت .فرتحم مجرتم اممدقي يتل القيفارت عال قمجرت اعم ل احل اوه يل إ أم اد عوجرل اب يصوُتو تامجرت الاذة ققد نع اهتي لوئسم Systems الما يا إ أم الا عنه يل الان الانتيام الال الانتيال الانت الما