802.1x WLAN + زواجت VLAN عم Mobility Express (ME) 8.2 و ISE 2.1

تايوتحملا

<u>ةمدقملا</u> <u>قيساسألا تابلطتملا</u> <u>تابلطتملا</u> <u>ةمدختسملا تانوكملا</u> <u>نىوكتلا</u> <u>ةكبشلل يطيطختلا مسرلا</u> <u>تانيوكتا.</u> <u>ىلع نيوكتلا</u> <u>أوبان وبان ISE</u> <u>ISE ىلع دىدج مدختسم ءاشنا</u> <u>ةقداصملا ةدعاق ءاشنا</u> <u>ليوختالا ةدعاق ءاشنا</u> <u>يفرطاا زامجاا نيوكت</u> <u>قحصالا نم ققحتاا</u> <u>ME يف ةقداصماا ةيالمع</u> <u>ISE يالع ةقداصما ا قيالمع</u>

ەمدقملا

نامأ مادختساب (ةيكلسال ةيلحم ةكبش) WLAN قكبش دادعإ ةيفيك دنتسملا اذه حضوي Wi-Fi Protected Access 2 (WPA2) مكحت ةدحو مادختساب ةسسؤملا ىوتسم ىلع (Mobility Express مادختسإ متي (RADIUS) ديعبلا مدختسملا لاصتا بلط ةقداصم ةمدخل يجراخ مداخو مداوخ ىلع لاثمك (ISE) ةيوهلا ةمدخ كرحم.

ةقداصملا لوكوتورب وه ليلدلا اذه يف مدختسملا (EAP) عسوتملا ةقداصملا لوكوتورب ةنيعم VLAN ةكبشل ليمعلا نييعت متي هنأ ىلا ةفاضإلاب .(PEAP) يمحملا عسوتملا (يضارتفا لكشب (WLAN) ةيكلساللا ةيلحملا ةكبشلل ةنيعملا كلت فالخب).

ةيساسألا تابلطتملا

تابلطتملا

:ةيلاتا عيضاوملاب ةفرعم كيدل نوكت نأب Cisco يصوت

- 802,1x
- خوخ •
- (CA) تاداەشلا ةئيە •
- تاداەشلا •

ةمدختسملا تانوكملا

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

8.2 رادصإلا ME

2.1 رادصإلا ISE

Windows 10 زارط لومحملا رتويبمكلا

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 ،ةرشابم كتكبش.

نيوكتلا

ةكبشلل يطيطختلا مسرلا



تانيوكتلا

:يه ةماعلا تاوطخلاو

- يلع (لاثملا اذه يف RADIUS (ISE مداخ نالعإو ME يف (SSID) ةمدخلا ةعومجم فرعم ءاشنإ .1
- 2. مداخ ىلع يدوجو نع نالعإلا RADIUS (ISE)
- ISE ىلع ةقداصملا ةدعاق ءاشنإ .3

ISE ىلع ليوختلا ةدعاق ءاشنإ .4

ةياەنلا ةطقن نيوكت .5

ىلع نيوكتلا

حضوت .سكعلاو يلع RADIUS مداخ ليجست مزلي ،ME و RADIUS مداخ نيب لاصتالاب حامسلل يلع RADIUS مداخ ليجست ةيفيك ةوطخلا هذه.

< ةيكلسال تادادعإ ىلإ لقتناو ME ب ةصاخلا ةيموسرلا مدختسملا ةمجاو حتفا .1 ةوطخلا ةكبش ةفاضإ < WLAN تاكبش.



(WLAN) ةيكلساللاا ةيلحملا ةكبشلل امسا ددح .2 ةوطخلا

Add New WLAN		×
General WLAN Security	VLAN & Firewall	QoS
WLAN Id	3	¥
Profile Name *	me-ise	
SSID *	me-ise	
Admin State	Enabled	•
Radio Policy	ALL	•
	(@ Ap	oply 🛞 Cancel

WLAN. نامأ بيوبت ةمالع نمض نامألا نيوكت ددح .3 ةوطخلا

رتخأ RADIUS المداخ رايتخال ،WPA2 Enterprise ويرحتال مداخ رايتخال ،RADIUS رتخأ ب صاخل IP الانت الفات الفاص ال RADIUS ب ماخل الما يافن ع قفاض ال

Add N	ew WLAN		×			
General	WLAN Security	VLAN & Firewal	II QoS			
-	Security	WPA2 Enterprise				
Authe	Radius IP 🛦	External Radius Radius Port	▼ Shared Secret			
C C		1812 1812	*********			
External Radius configuration applies to all WLANs						

Add N	ew WLAN	×
General	WLAN Security	VLAN & Firewall QoS
Authe	Security	WPA2 Enterprise V
	Radius IP 🛦	Radius Port Shared Secret
Image: Image: Image:	a.b.c.d	e enter valid IPv4 address
External R all WLANs	adius configuration a	applies to 🛛 📿 Apply 🛞 Cancel

<a.b.c.d> مداخ لثامي RADIUS.

SSID. فرعمل VLAN ةكبش صيصختب مق .4 ةوطخلا

.ةوطخلا هذه زواجت نكمي ،لوصولا ةطقنب ةصاخلا VLAN ةكبشل SSID نييعت مزلي ناك اذإ

فرعمل نيمدختسملا صيصختل SSID ةكبشل اذه SSID فرعمل نيمدختسملا صيصختل فرعم صيصختو VLAN ةكبش ىلع تامالع عضو مادختساٍ كنكمي ،(لوصولا ةطقنب ةصاخلا بوغرملا VLAN ةكبش.

Add New WLAN	×
General WLAN Security	VLAN & Firewall QoS
Use VLAN Tagging	Yes 🔹
VLAN ID *	2400 🔹
Enable Firewall	No 🔻
VLAN and Firewall configuration all WLANs	apply to ON Apply Cancel

نم دكأتف ،(VLAN) ةيرهاظلا ةيلحملا ةكبشلا ىلع تامالع عضو مادختسإ مت اذإ :ةظحالم نيوكت نمو لاصتا طخ ذفنمك هب لوصولا ةطقن ليصوت متي يذلا switchport نيوكت .قيلصأ ةكبشك لوصولا ةطقنب ةصاخلا VLAN قكبش

نيوكتلا ءاەنإل قيبطت قوف رقنا .5 ةوطخلا.

Add New WLAN	×
General WLAN Security	VLAN & Firewall QoS
Use VLAN Tagging	Yes 🔻
VLAN ID *	2400 🔹
Enable Firewall	No
VIAN and Firewall configuratio	
all WLANs	Apply S Cancel

.VLAN ةكبش زواجت لوبقل WLAN ةكبش نيوكتب مق ،يرايتخإ .6 ةوطخلا

،كلذب مايقلل .ةبولطملا VLAN تاكبش فضأو WLAN ةكبش ىلع AAA زواجت نيكمتب مق، تولام الماوألا رادصإو ME ةرادإ ةمجاو ىلإ CLI ةسلج حتف كيلع نيعتيس:

>config wlan disable <wlan-id> >config wlan aaa-override enable <wlan-id> >config wlan enable <wlan-id> >config flexconnect group default-flexgroup vlan add <vlan-id>

ISE ىلع ينلعأ

.ةفاضإ < ةكبشلا ةزهجأ < ةكبشلا دراوم < ةرادإلا ىلإ لقتناو ISE مكحت ةدحو حتفا .1 ةوطخلا

dialo Identity Serv	ices Engine	Home	Context \	/isibility	 Operation 	ons 🕨 Po	olicy	▼Adminis	tration	→ Wor
▶ System ▶ Ident	ity Management 🛛 🚽	• Network	k Resources	Device	Portal Mana	igement p	xGrid S	ervices 🕨	Feed Sei	rvice I
✓ Network Devices	Network Device Gro	oups	Network Devic	e Profiles:	External I	RADIUS Serv	ers F	RADIUS Ser	ver Seque	ences
	G									
Network devices		Netw	ork Devices	ŝ						
Default Device										
		🥖 Edi	it 🕂 Add 🖸	Duplicate	👔 Import	🚯 Export 👻	🕒 Ge	enerate PAC	XDelet	e 🕶

.تامولعملا لخدأ .2 ةوطخلا

ةزهجأ تاعومجم نييعتو فصو وأ جمانرب رادصإ وأ زارط مسا ديدحت نكمي ،يرايتخإ لكشبو ةيلحملا ةكبشلا يف مكحتلا تاودأ وأ عقوملا وأ ةزهجألا عاونأ ىلإ ادانتسا لااصتالا ةكبش آيكلساللا

.ME ب صاخلا IP ناونع عم a.b.c.d قفاوتي

Network Devices List > New Network Device Network Devices
* Name WLC-name
Description optional description
* IP Address: a.b.c.d / 32
* Device Profile Model Name Model Name Software Version wlc-software ₹ * Network Device Group
Device Type Will Cs-2504 Set To Default
Location All Locations
WLCs Will Co
DIDULC Authentiaction Cottings
← RADIOS Authentication Settings
Enable Authentication Settings
Protocol RADIUS
* Shared Secret Show
Enable KeyWrap 🗌 👔
* Key Encryption Key Show
* Message Authenticator Code Key Show
Key Input Format 💿 ASCII 🔵 HEXADECIMAL
CoA Port 1700 Set To Default

:طابترالا اذه عجار ةكبشلا ةزهجأ تاعومجم لوح تامولعملا نم ديزمل

<u>ةكبشلا ةزەجأ تاعومجم - ISE</u>

ISE ىلع ديدج مدختسم ءاشنإ

.ةفاضإ < نيمدختسملا < تايوهلا < ةيوهلا ةرادإ < قرادإلا ىلإ لقتنا .1 ةوطخلا

dialo Identit	y Services Engine	Home	▶ Context Visibility	Operations	▶ Policy	 Administration
▶ System	▼Identity Management	Network F	Resources 🔹 🕨 Device	e Portal Managemer	nt pxGrid 8	System
▼Identities	Groups External Ider	ntity Sources	Identity Source Seq	uences 🕨 Setting	s	Deployment Licensina
Users	G	Networ	'k Access Users			Certificates Logging Maintenance
Latest Manual I	Network Scan Res	🥖 Edit	🕂 Add 🔣 🔛 Change St	atus 👻 🕵 Import	🕞 Export 👻	Upgrade Backup & Restor
		Sta	tus Name	•	Description	Admin Access
		- 🦓 Lo:	ading			Settings Identity Managem
						Identities

.تامولعملا لخدأ .2 ةوطخلا

اهليدعت نكمي نكلو all_accounts ىمست ةعومجم ىلإ مدختسملا اذه يمتني ،لاثملا اذه يف ةجاحلا بسح.

Network Access Users	List > New Networ	k Access User	
Network Access	User		
* Name user1			
Status 🗾 Enable	d 💌		
Email			
 Passwords 			
Password Type:	Internal Users	٣	
	Password		Re-Enter Passw
* Login Password	•••••		•••••
Enable Password			
👻 User Informati	on		
First Name			
Last Name			
Account Optio	ns		
	Description		
Change password	on next login 🛛		
👻 Account Disab	le Policy		
Disable accourt	nt if date exceeds	2017-01-21	



ةديدج ةقداصم ةدعاق جاردإ .2 ةوطخلا.

لفسأ/ىلعأ ديدج فص جاردإ < ةقداصم < جەن ىلإ لقتنا ،كلذب مايقلل.

dude Identity Services Engine Home ► Context Visibility ► Operations -Policy ► Administration ► Wor	rk Centers Li
Authentication Authorization Profiling Posture Client Provisioning + Policy Elements	
ing the protocols that ISE should use to communicate with the network devices, and the identity sources that it should use for authentication. System > Backup & Restore > Policy Export Page	
ed	
: If Wired_MAB OR	Insert new row above
Protocols and	Insert new row below
: If Wired_802.1X OR	Duplicate above Duplicate below
IC_Protocols and	Delete

ةبولطملا تامولعملا لخدأ .3 ةوطخلا

ىلٍ لوصولاً ةمئاق تحت ةجردملاً تالوكوتوربلاً عيمجل اذه ةقداصملاً ةدعاق لاثم حمسي مادختسابو Wireless 802.1x ءالمعل ةقداصملاً بلط ىلع اذه قبطنيو ،ةيضارتفالاً ةكبشلاً ب يەتنيو ءاعدتسالاً قطحملاً فرعم ISE-SSID.

dialo Identity S	Services Engine	e Home	. ► C	ontext Visibility	 Operations 	▼Policy	Administration	Work Centers	
Authentication	Authorization	Profiling Pos	sture	Client Provisior	ing 🔹 🕨 Policy Ele	ements			
Authentication	Policy	colocting the prot		that ICE chould up	co to communicato	with the net	vark davisas, and the	identity courses that it of	aculd use for outbonties
For Policy Export (go to Administration Simple 💿 Rule	on > System > Ba e-Based	ickup 8	Restore > Policy	Export Page	; with the netv	voik devices, and the	idenity sources that it si	iouid use ior autrentica
		_							
	Rule name		: lf	Wireless_802.1>	AND Select Attribu		llow Protocols : Defa	ult Network Access	📀 🔤 and 👝
				Condition	ditions Below to L	Description			
	Default		: Us	Wireless_80	2.1X 🚫 A c	ondition to m	atch 802.1X based a	uthentication request	AND
				♦ [Radius:Cal	led-Sta 🚫 🛛 End	s With 🔻 🛛 ise-ssid	\odot

لاثملا اذه يف وهو ،هذه ةقداصملا ةدعاق قباطت نيذلا ءالمعلل ةيوهلا ردصم اضيأ رتخأ نييلخادلا نيمدختسملل مدختسم

Rule name : If Wir	reless_802.1X AND Radius:Call 🔶 Allow Protocols : Defau	Ilt Network Access 📀 and .
V Default : Use	Internal Users Identity Source Internal Users Options If authentication failed Reject If user not found Reject If process failed Drop Note: For authentications using PEAP, LEAP, EAP-FAST, EAP-TLS or it is not possible to continue processing when authentication fails o If continue option is selected in these cases, requests will be reject	Identity Source List Identity Source List Identity Sequence Identity Sequence List Identity Sequ
		📮 Internal Users

ظفحا و مت قوف رقنا ،اهئاهتنا درجمب

Rule name : If Wireless_802.1X AND Radius:Cal 💠 Allow Protocols : Default Network Access 📀 and	Done
🗹 🗸 Default : Use Internal Users 💠	Actions 👻
Save	

طابترالا اذه عجار تالوكوتوربلا جەنل حامسلا لوح تامولعملا نم ديزمل:

<u>اەب جومسملا تالوكوتوربلا ةمدخ</u>

طابترالا اذه عجار ةيوهلا رداصم لوح تامولعملا نم ديزم ىلع لوصحل:

<u>مدختسم ةيوه ةعومجم ءاشنا</u>

ليوختلا ةدعاق ءاشنإ

ىلٍ مامضنالاب ليمعلل حمسي ناك اذإ ام ديدحتل ةلوؤسملا ةدعاقلا يه ليوختلا ةدعاق ال مأ ةكبشلا

ضيوفتلا < ةسايسلا ىلإ لقتنا 1. ةوطخلا.

es Engine	e Home	e ⊧C	ontext Visibility	 Operations 	▼Policy	Administration	♦ Work Centers
norization	Profiling	Posture	Client Provisionir	ng 🔹 🕨 Policy El	Authentic	ation	Authorization
					Profiling		Posture
Y					Client Pro	visioning	Policy Elements
Policy by c	onfiguring rule	es based	on identity groups a	and/or other conc	i		Dictionaries
dministrati	on > System >	• Васкир (& Restore > Policy E	Export Page			Conditions
olies	•						Results

.ەاندأ/ەالعأ ةديدج ةدعاق جاردإ < ليوختلا < جەنلا ىلإ لقتنا .قديدج ةدعاق جاردإ .2 ةوطخلا

ditaliti cisco	Identity	Services Engine	Home	Context Visibility	 Operations 	→Policy	Administration	• Work Centers	License \
Authe	entication	Authorization Pro	filing Postu	e Client Provisioning	Policy Eleme	ents			
rfiguring ru > System	iles based ≻ Backup δ	on identity groups and Restore ≻ Policy Expo	/or other cond ort Page	itions. Drag and drop ru	les to change the	order.			
		Conditions (ide	ntity groups ar	nd other conditions)			Permissions		
									Insert New Rule Above Insert New Rule Below Duplicate Above Duplicate Below

.تامولعملا لخدأ .3 ةوطخلا

متي ،لاثملا اذه يف .مدختسملا نيزخت متي ثيح ةيوهلا تاعومجمو ةدعاقلل مسا الوأ رتخأ متي ،لاثملا اذه يف مدختسملا نيزخت متي ثير مي من مدختسملا نيزخت ALL_ACCOUNTS.

	Status	Rule Name	Co	nditions (identity groups and other conditions)	Permissions	
		NameAuthZrule		Any Pland Condition(s)	💠 then AuthZ	Pr 🗇
	~	The i	if V	·		
	~	Menters Rack as Terra	if C	Any Ol -+		less Ac. 355
1		Profiled Ciscolary Italiais	if C	User Identity Gro	ups	s
	×	Francis Mich Cheo (R.Phones i	if No	\$P	- 	900 <u>00</u> 0
	0	Compliant_Devices_Authors i	if ᠿ	et GuestType_Daily	(default) ly (default)	
	Ø	Employas JFAP TLS	if M	fr GuestType_Contr	actor (default)	INCOMPANY
	0	Etipievas Ophoending i	if <mark>(</mark> °	Ireless_800.11 AND EAP-MSCHAPy2 :- U ALL_ACCOUNTS	(default)	•10094210s
	-				S (default)	

زواجتت ،لاثملا اذه يف .قدعاقلا هذه يف عقت ليوختلا ةيلمع لعجت ىرخأ طورش رتخأ كلذ دعب ا يمسيو B Station Id قكبش مدختست تناك اذإ قدعاقلا هذه ليوختلا ةيلمع D Station Id يمسيو ID Station Id عم (قطحملا (قطحملا فرعم) ا

	Status	Rule Name	Conditions (identity groups a	and other conditions)	Permissions	
0	_	NameAuthZrule	if AL 💠 and	Wireless_802.1X AND Radius:Call	Then AuthZ Pr 💠	
	~		S	💾 Add All Conditions Below to Librar	у	
	-			5		
1	×		٩,	Condition Name De	escription	AND -
			<u>م</u> .	Condition Name De	escription sed Radius:RadiusFlowType EQUALS Wireless802_1> adius:Called-Stat	AND -

ىلع رقنا ،ةكبشلا ىلإ مامضنالاب ءالمعلل حمسي يذلا ليوختلا فيرعت فلم رتخأ اريخأو ظفحو مت.

	Status	Rule Name		Conc	litions (identit	y groups ar	nd other conditions)		Permis	ssions				_
	-	NameAuth2	ule	if	AL	🖓 and [Wireless_802.1X AND R	adius:Call	💠 then	PermitAc				Done
1	Z											-		Edit -
1									1	PermitAccess	0	- +		Edit 🕶
1												Standard		Edit 🕶
1												↓ = .	- 	Edit 🕶
1	0											Q E		Edit •
1	0													Edit 🔻
	0											Q (Edit 🔻
1	0													Edit 🕶
1	0										_	PermitAccess		Edit 🕶
-												**		Edit 🔻
		Default		if no ma	tches, then	DenyAco	ess							Edit I 🔻
	_													
_	_													
Sa	ve Re:	set												

ليمعلا نييعتب موقيس ديدج ليوخت فيرعت فلم ءاشناب مق ،يرايتخإ لكشبو ةفلتخم VLAN ةكبش ىلإ يكلساللاا:

°		
6) — +	
	Standard	
		£
	😪 Blackhole_Wireless_Access	🙀 Add New Standard Profile

:تامولعملا لخدأ

Add New Standard Pro	ofile	5
Authorization Profile		^
* Name	e name-of-profie	
Description	n	
* Access Type	e ACCESS_ACCEPT T	
Network Device Profile	the Cisco 🔹 🕀	
Service Template		
Track Movement	nt 🗆 ()	
Passive Identity Tracking	9 🗆 ()	
▼ Common Tasks		
DACL Name		^
ACL (Filter-ID)		
2 VLAN	Tag ID 1 Edit Tag IDIName Van-id	
Voice Domain Perm	mission	
		•
▼ Advanced Attribut	ites Settings	
Select an item		
 Attributes Details 	5	
Access Type = ACCESS Tunnel-Private-Group-ID	S_ACCEPT ID = 1:vlan-id	
Tunnel-Type = 1:13 Tunnel-Medium-Type =	= 1:6	
		~
¢		Save Cancel

يفرطلا زاهجلا نيوكت

ليغشتلا ماظنب لمعي لومحم رتويبمك نيوكتب مق Windows 10 فرعمب لاصتالل SSID مادختساب 1x مادختساب PEAP/MS-CHAPv2 (رادصإ) Microsoft مادختساب 1x مادختساب دادصإلا يدحتلا ةميقب لاصتالا ديكأتل.

.ةقداصملا ذيفنتل ايتاذ ةعقوملا هتداهش ISE مدختسي ،اذه نيوكتلا لاثم يف

:نارايخ كانه ،Windows زاهج ىلع WLAN فيرعت فلم ءاشنإل

- ةقثلاو ISE مداخ ةحص نم ققحتلل زاهجلا ىلع ايتاذ ةعقوملا ةداهشلا تيبثتب مق .1 ةقداصملا لامكتسال هيف
- ةقداصملا ءارجإل مدختسي RADIUS مداخ يأ يف ةقثلاو RADIUS مداخ نم ققحتلا زواجت .2 (نيمأت ةلكشم حبصي نأ نكمي امك ،نسحتسم ريغ)

<u>- WLAN فيرعت فلم ءاشنا - يفرطلا زامجلا نيوكت</u> يف تارايخلا هذهل نيوكتلا حرش متي <u>7 ةوطخلا</u>

عيقوتلا ةيتاذ ISE ةداەش تيبثت - زاەجلا نيوكت ءاەنإ

.ISE نم ايتاذ ةعقوم ةداهش ريدصت .1 ةوطخلا

.ماظنلا تاداهش < تاداهش < ماظن < ةرادإ ىلإ لقتناو ISE ىلإ لوخدلا لجس

ريدصت رقناو EAP ةقداصمل ةمدختسملا ةداهشلا ددح مث.

dentity Services Engine	Home • Co	ontext Visibility	 Operations 	Policy -	Administration	• Work
	Network Resource	ces 🔹 🕨 Device F	Portal Management	pxGrid Servic	es → Feed Serv	ice 🕨 F
Deployment Licensing -Certifica	tes 🕨 Logging	Maintenance	Upgrade Backu	p & Restore	Admin Access	▶ Settir
	•					
✓ Certificate Management	System Ce	rtificates 🛕	For disaster recover	y it is recomme	nded to export cer	tificate ar
Overview	📝 Edit 🚽	📙 Generate Self	Signed Certificate	🕂 Import	🖹 Export 🛛 🗙 I	Delete
System Certificates	Friend	dly Name	Used By	Porta	al group tag	1
Endpoint Certificates	▼ <1212:			_		
Trusted Certificates	EAP-S	SelfSignedCertific elfSignedCertifica	ate#E te#00 EAP Authenti	ication		EAI
OCSD Client Brofile						

.Windows زاهج ىلع ةتبثم ةداهشلا هذه .بولطملا عقوملا يف ةداهشلا ظفحب مق

Export Certificate 'EAP-SelfSignedCertificate#EAP-SelfSignedCertificate#00001'	×
 Export Certificate Only 	
Export Certificate and Private Key	
*Private Key Password	
*Confirm Password	
Warning: Exporting a private key is not a secure operation. It could lead to possible exposure of the private ke	ey.
Export Can	cel

Windows. زاهج يف ةداهشلا تيبثتب مق .2 ةوطخلا

نم فلملا دادتما رييغتب مقو ،Windows زاهج ىلإ كلذ لبق اهريدصت مت يتلا ةداهشلا خسنا ...ةداهشلا تيبثت ديدحتو هيلع جودزملا رقنلا دعب .crt. ىلإ pem.

💀 Certificate	х
General Details Certification Path	
Certificate Information This CA Root certificate is not trusted. To enable trust, install this certificate in the Trusted Root Certification Authorities store.	-
Issued to: EAP-SelfSignedCertificate	
Issued by: EAP-SelfSignedCertificate	
Valid from 23/11/2016 to 23/11/2018	
Install Certificate Issuer Statement	
OK	

.يلاتلا قوف رقنا مث ،يلحملا زاهجلا يف ەتيبثت رتخأ

🔶 😸 Certificate Import Wizard	×
Welcome to the Certificate Import Wizard	
This wizard helps you copy certificates, certificate trust lists, and certificate revocation lists from your disk to a certificate store.	
A certificate, which is issued by a certification authority, is a confirmation of your identity and contains information used to protect data or to establish secure network connections. A certificate store is the system area where certificates are kept.	
Store Location Current User Cucal Machine	
To continue, click Next.	
Sext Cancel	

قوثوملا رذجلا ةقداصم عجارم رتخاو ضرعتسا مث ،يلاتلا رجتملا يف تاداهشلا لك عضو ددح يلاتلا قوف رقنا ،كلذ دعب .اهب.

← .	🚰 Certificate Import Wizard	×
-	Certificate Store Certificate stores are system areas where certificates are kept.	
	Windows can automatically select a certificate store, or you can specify a location for the certificate.	
	O Automatically select the certificate store based on the type of certificate	
	Place all certificates in the following store	
	Certificate store:	
	Trusted Root Certification Authorities Browse	
	Next Canc	el

.ءاەنإ قوف رقنا مث

Г

÷ ∌	Certificate Import Wizard		×
	Completing the Certific	ate Import Wizard	
	The certificate will be imported after y	ou dick Finish.	
	You have specified the following setting	ngs:	
	Certificate Store Selected by User	Trusted Root Certification Authorities	
	Content	Certificate	
		Finish Cancel	

ةداەشلا تيبثت ديكأتل معن ىلع رقنا ةياەنلا يف.

Security	Warning	×
	You are about to install a certificate from a certification authority (CA) claiming to represent:	
	EAP-SelfSignedCertificate	
	Windows cannot validate that the certificate is actually from "EAP-SelfSignedCertificate". You should confirm its origin by contacting "EAP-SelfSignedCertificate". The following number will assist you in this process:	
	Thumbprint (sha1): 01/03/0000/20000000000000000000000000000	
	Warning: If you install this root certificate, Windows will automatically trust any certificate issued by this CA. Installing a certificate with an unconfirmed thumbprint is a security risk. If you click "Yes" you acknowledge this risk.	
	Do you want to install this certificate?	
	Yes No	

.OK قوف اريخأ رقناو



WLAN فيرعت فلم ءاشنإ - زاهجلا نيوكت ءاهنإ

مكحتلا ةحول ددحو ءدبلا ةنوقيأ ىلع نميألا سواملا رزب رقنا .1 ةوطخلا.

Programs and Features

Mobility Center

Power Options

Event Viewer

System

Device Manager

Network Connections

Disk Management

Computer Management

Command Prompt

Command Prompt (Admin)

Task Manager

Control Panel



.يلاتلا يلع رقنا مث ةيكلسال ةكبشب ايودي ليصوتلا ددح .3 ةوطخلا

		-		Х
-	Set Up a Connection or Network			
	Choose a connection option			
				-
	Set up a broadband or dial-up connection to the Internet.			
	Set up a new network			
	Set up a new router or access point.			
	Manually connect to a wireless network Connect to a hidden network or create a new wireless profile.			
	Connect to a workplace			
	Set up a dial-up or VPN connection to your workplace.			
		Next	Car	icel

			-		Х
÷	🐓 Manually connect to a v	vireless network			
	Enter information fo	r the wireless network you want to add			
	Network name:	ise-ssid			
	Security type:	WPA2-Enterprise ~			
	Encryption type:	AES			
	Security Key:	Hide characters			
	Start this connection	automatically			
	Connect even if the	network is not broadcasting			
	Warning: If you sele	ct this option, your computer's privacy might be at risk.			
			,		
		Ne	đ	Cane	sel

.WLAN فيرعت فلم نيوكت صيصختل لاصتالا تادادعإ رييغت ددح .5 ةوطخلا



.تادادعإ قوف رقناو نامأ بيوبتلا ةمالع ىلإ لقتنا .6 ةوطخلا

ise-ssid Wireless Network Properties 🛛 🗙						
Connection Security						
Security type:	WPA2-Enterprise		× .			
Encryption type:	AES		\sim			
<i></i>						
Choose a network aut Microsoft: Drotoctod J	hentication method:	6 .00				
Microsoft, Protected i	EAP (PEAP) ~	Settin	gs			
Remember my cre time I'm logged or	dentials for this connect	tion each				
time i moggeu o						
Advanced settings						
		OK	Cano	el		

ال مأ RADIUS مداخ ةحص نم ققحتلا مت اذإ ام رتخأ .7 ةوطخلا.

ةحص نم ققحتلا لالخ نم مداخلا ةيوه نم ققحتلا نيكمتب مقف ،معنب ةباجإلا تناك اذإ ايتاذ ةعقوملا ISE ةداهش ةمئاقلا ددحت :اهب قوثوملا رذجلا ةقدصملا عجارملا نمو ةداهشلا.

ىلإ لوخدلا ليجست رورم ةملكو مسا مادختسإ ليطعتو نيوكت ددح ،كلذ دعب Windows ىلإ لوخدلا ليجست رورم ةملكو مسا مادختس

Protected EAP Properties	×							
When connecting:								
Verify the server's identity by validating the certificate								
Connect to these servers (examples:srv1;srv2;.*\.srv3\.com):								
Trusted Root Certification Authorities:								
 Equila VOEbai interna. Equila 1986 Assessed infiltration. Encoded infiltration. 								
EAP-SelfSignedCertificate								
Egelez Action Collection Contracting								
Notifications before connecting:								
Tell user if the server name or root certificate isn't specified $\qquad \qquad \qquad$								
Select Authentication Method:								
Secured password (EAP-MSCHAP v2) Configure.	•••							
Enable Fast Reconnect								
Disconnect if server does not present cryptobinding TLV								
OK Cancel								

ةقداصملا عضو ددح ،ةمدقتملا تادادعإلا ددح ،نامألا بيوبتلا ةمالع ىلإ عوجرلا درجمب ةقداصمل ISE ىلع اەنيوكت مت يتلا دامتعالا تانايب ظفحب مقو مدختسملا ةقداصمك

مدختسملا.

ise-ssid Wireless Network Properties X							
Connection Security							
Security type:	WPA2-Enterprise		\sim				
Encryption type:	AES		\sim				
Choose a network aut	hentication method:						
Microsoft: Protected I	EAP (PEAP) ~	Setting	J 5				
Remember my cre time I'm logged or	dentials for this conne	ction each					
time in agges of							
Advanced settings							
		ОК	Cancel				

Advanced settings		×					
802.1X settings 802.11 settings							
Specify authentication mode:							
User authentication \sim	Save c	redentials					
Delete credentials for all users							
Enable single sign on for this network							
Perform immediately before user logo	in						
 Perform immediately after user logon 							
Maximum delay (seconds): 10							
Allow additional dialogs to be displayed sign on	d during	single					
This network uses separate virtual LA and user authentication	This network uses separate virtual LANs for machine and user authentication						
0	Ж	Cancel					

Windows Security

Save credentials

Saving your credentials allows your computer to connect to the network when you're not logged on (for example, to download updates).

ahaha	user1		
cisco	******		
		ОК	Cancel

ةحصلا نم ققحتلا

.ISE روظنم نم وأ WLC نم ةقداصملا قفدت نم ققحتلا نكمي

ME يف ةقداصملا ةيلمع

نيعم مدختسمل ةقداصملا ةيلمع ةبقارمل رمألا اذه ليغشتب مق:

> debug client <mac-add-client>

(تاجرخملا ضعب فذح مت) ةحجانلا ةقداصملل لاثم

<#root>

*apfMsConnTask_0: Nov 25 16:36:24.333:

08:74:02:77:13:45 Processing assoc-req station:08:74:02:77:13:45 AP:38:ed:18:c6:7b:40-01 thread:669ba80

*apfMsConnTask_0: Nov 25 16:36:24.333: 08:74:02:77:13:45 Association received from mobile on BSSID 38:e

X

*apfMsConnTask_0: Nov 25 16:36:24.334: 08:74:02:77:13:45 Applying site-specific Local Bridging override *apfMsConnTask_0: Nov 25 16:36:24.334: 08:74:02:77:13:45 Applying Local Bridging Interface Policy for s *apfMsConnTask_0: Nov 25 16:36:24.334: 08:74:02:77:13:45 Set Clinet Non AP specific apfMsAccessVlan = 2 *apfMsConnTask_0: Nov 25 16:36:24.334: 08:74:02:77:13:45 This apfMsAccessVlan may be changed later from *apfMsConnTask_0: Nov 25 16:36:24.334: 08:74:02:77:13:45 Received 802.11i 802.1X key management suite, *apfMsConnTask_0: Nov 25 16:36:24.335:

08:74:02:77:13:45 0.0.0.0 START (0) Change state to AUTHCHECK (2) last state START (0)

*apfMsConnTask_0: Nov 25 16:36:24.335: 0

8:74:02:77:13:45 0.0.0.0 AUTHCHECK (2) Change state to 8021X_REQD (3) last state AUTHCHECK (2)

*apfMsConnTask_0: Nov 25 16:36:24.335:

08:74:02:77:13:45 0.0.0.0 8021X_REQD (3) DHCP required on AP 38:ed:18:c6:7b:40 vapId 3 apVapId 3for this

*apfMsConnTask_0: Nov 25 16:36:24.335: 08:74:02:77:13:45 apfPemAddUser2:session timeout forstation 08:7 *apfMsConnTask_0: Nov 25 16:36:24.335: 08:74:02:77:13:45 Stopping deletion of Mobile Station: (callerId *apfMsConnTask_0: Nov 25 16:36:24.335: 08:74:02:77:13:45 Func: apfPemAddUser2, Ms Timeout = 0, Session *apfMsConnTask_0: Nov 25 16:36:24.335: 0

8:74:02:77:13:45 Sending assoc-resp with status 0 station:08:74:02:77:13:45 AP:38:ed:18:c6:7b:40-01 on a

*apfMsConnTask_0: Nov 25 16:36:24.335:

08:74:02:77:13:45 Sending Assoc Response to station on BSSID 38:ed:18:c6:7b:4d (status 0) ApVapId 3 Slot

*spamApTask0: Nov 25 16:36:24.341: 08:74:02:77:13:45 Sent dot1x auth initiate message for mobile 08:74: *Dot1x_NW_MsgTask_0: Nov 25 16:36:24.342: 08:74:02:77:13:45 reauth_sm state transition 0 ---> 1 for mob *Dot1x_NW_MsgTask_0: Nov 25 16:36:24.342: 08:74:02:77:13:45 EAP-PARAM Debug - eap-params for Wlan-Id :3 *Dot1x_NW_MsgTask_0: Nov 25 16:36:24.342: 08:74:02:77:13:45 Disable re-auth, use PMK lifetime. *Dot1x_NW_MsgTask_0: Nov 25 16:36:24.342: 08:74:02:77:13:45 Station 08:74:02:77:13:45 setting dot1x rea *Dot1x_NW_MsgTask_0: Nov 25 16:36:24.342: 08:74:02:77:13:45 dot1x - moving mobile 08:74:02:77:13:45 int *Dot1x_NW_MsgTask_0: Nov 25 16:36:24.342:

08:74:02:77:13:45 Sending EAP-Request/Identity to mobile 08:74:02:77:13:45 (EAP Id 1)

*Dot1x_NW_MsgTask_0: Nov 25 16:36:24.401:

08:74:02:77:13:45 Received EAPOL EAPPKT from mobile 08:74:02:77:13:45

*Dot1x_NW_MsgTask_0: Nov 25 16:36:24.401:

08:74:02:77:13:45 Received Identity Response (count=1) from mobile 08:74:02:77:13:45

*Dot1x_NW_MsgTask_0: Nov 25 16:36:25.978:

08:74:02:77:13:45 Processing Access-Accept for mobile 08:74:02:77:13:45

*Dot1x_NW_MsgTask_0: Nov 25 16:36:25.978:

08:74:02:77:13:45 Username entry (user1) created in mscb for mobile, length = 253

*Dot1x_NW_MsgTask_0: Nov 25 16:36:25.978: 08:74:02:77:13:45 Station 08:74:02:77:13:45 setting dot1x rea *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.978: 08:74:02:77:13:45 Creating a PKC PMKID Cache entry for statio *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.979: 08:74:02:77:13:45 Adding BSSID 38:ed:18:c6:7b:4d to PMKID cac *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.979: New PMKID: (16) *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.979: [0000] 80 3a 20 8c 8f c2 4c 18 7d 4c 28 e7 7f 10 11 03 *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.979: 08:74:02:77:13:45 Adding Audit session ID payload in Mobility *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.979: 08:74:02:77:13:45 0 PMK-update groupcast messages sent *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.979: 08:74:02:77:13:45 PMK sent to mobility group *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.979: 08:74:02:77:13:45 Disabling re-auth since PMK lifetime can ta *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.979: 08:74:02:77:13:45 Sending EAP-Success to mobile 08:74:02:77:1 *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.979: 08:74:02:77:13:45 Freeing AAACB from Dot1xCB as AAA auth is d *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.979: 08:74:02:77:13:45 Found an cache entry for BSSID 38:ed:18:c6: *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.979: 08:74:02:77:13:45 Found an cache entry for BSSID 38:ed:18:c6: *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.979: Including PMKID in M1 (16) *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.979: [0000] 80 3a 20 8c 8f c2 4c 18 7d 4c 28 e7 7f 10 11 03 *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.979: M1 - Key Data: (22) *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.979: [0000] dd 14 00 0f ac 04 80 3a 20 8c 8f c2 4c 18 7d 4c *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.979: [0016] 28 e7 7f 10 11 03 *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.979:

08:74:02:77:13:45 Starting key exchange to mobile 08:74:02:77:13:45, data packets will be dropped

*Dot1x_NW_MsgTask_0: Nov 25 16:36:25.980:

08:74:02:77:13:45 Sending EAPOL-Key Message to mobile 08:74:02:77:13:45

state INITPMK (message 1)

, replay counter 00.00.00.00.00.00.00.00
*Dot1x_NW_MsgTask_0: Nov 25 16:36:25.980: 08:74:02:77:13:45 Reusing allocated memory for EAP Pkt for re
*Dot1x_NW_MsgTask_0: Nov 25 16:36:25.980: 08:74:02:77:13:45 Entering Backend Auth Success state (id=70)
*Dot1x_NW_MsgTask_0: Nov 25 16:36:25.980: 08:74:02:77:13:45 Received Auth Success while in Authenticati
*Dot1x_NW_MsgTask_0: Nov 25 16:36:25.980: 08:74:02:77:13:45 dot1x - moving mobile 08:74:02:77:13:45 int
*Dot1x_NW_MsgTask_0: Nov 25 16:36:25.983: 08:74:02:77:13:45 Received EAPOL-Key from mobile 08:74:02:77:
*Dot1x_NW_MsgTask_0: Nov 25 16:36:25.983:

08:74:02:77:13:45 Received EAPOL-key in PTK_START state (message 2) from mobile 08:74:02:77:13:45

*Dot1x_NW_MsgTask_0: Nov 25 16:36:25.983: 08:74:02:77:13:45 Successfully computed PTK from PMK!!! *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.983: 08:74:02:77:13:45 Received valid MIC in EAPOL Key Message M2! *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.984: 00000000: 30 14 01 00 00 0f ac 04 01 00 00 0f ac 04 01 00 0. *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.984: 00000010: 00 0f ac 01 0c 00 *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.984: 00000000: 01 00 00 of ac 04 01 00 00 of ac 04 01 00 00 of ... *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.984: 00000010: ac 01 0c 00 *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.984: 00000010: ac 01 0c 00 *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.984: 08:74:02:77:13:45 PMK: Sending cache add *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.984: 08:74:02:77:13:45 Stopping retransmission timer for mobile 08 *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.984:

08:74:02:77:13:45 Sending EAPOL-Key Message to mobile 08:74:02:77:13:45

state PTKINITNEGOTIATING (message 3),

replay counter 00.00.00.00.00.00.00.01 *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.984: 08:74:02:77:13:45 Reusing allocated memory for EAP Pkt for re *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.988:

08:74:02:77:13:45 Received EAPOL-key in PTKINITNEGOTIATING state (message 4) from mobile 08:74:02:77:13:

*Dot1x_NW_MsgTask_0: Nov 25 16:36:25.988: 08:74:02:77:13:45 Stopping retransmission timer for mobile 08 *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.988:

08:74:02:77:13:45 0.0.0.0 8021X_REQD (3) Change state to L2AUTHCOMPLETE (4) last state 8021X_REQD (3)

*Dot1x_NW_MsgTask_0: Nov 25 16:36:25.988: 08:74:02:77:13:45 Mobility query, PEM State: L2AUTHCOMPLETE *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.988: 08:74:02:77:13:45 Building Mobile Announce : *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.988: 08:74:02:77:13:45 Client Ip: 0.0.0.0 *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.988: 08:74:02:77:13:45 Client Vlan Ip: 172.16.0.136, Vlan mask : 2 *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.988: 08:74:02:77:13:45 Client Van Ip: 172.16.0.136, Vlan mask : 2 *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.988: 08:74:02:77:13:45 Client Van Security: 16384 *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.988: 08:74:02:77:13:45 Virtual Ip: 192.0.2.1 *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.988: 08:74:02:77:13:45 ssid: ise-ssid *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.988: 08:74:02:77:13:45 Sid: ise-ssid *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.988: 08:74:02:77:13:45 Uirtual Ip: 192.0.2.1 *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.988: 08:74:02:77:13:45 Sid: ise-ssid *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.988: 08:74:02:77:13:45 Uirtual Ip: 192.0.2.1 *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.988: 08:74:02:77:13:45 Sid: ise-ssid *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.988: 08:74:02:77:13:45 Not Using VlanIpPayload. *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.988: 08:74:02:77:13:45 Not Using WMM Compliance code qosCap 00 *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.988: 08:74:02:77:13:45 Not Using WMM Compliance code qosCap 00 *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.988: 08:74:02:77:13:45 0.0.0.0 L2AUTHCOMPLETE (4) Plumbed mobile L *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.988:

08:74:02:77:13:45 0.0.0.0 L2AUTHCOMPLETE (4) Change state to DHCP_REQD (7) last state L2AUTHCOMPLETE (4)

*Dot1x_NW_MsgTask_0: Nov 25 16:36:25.988: 08:74:02:77:13:45 0.0.0.0 DHCP_REQD (7) pemAdvanceState2 6623 *Dot1x_NW_MsgTask_0: Nov 25 16:36:25.988: 08:74:02:77:13:45 0.0.0.0 DHCP_REQD (7) Adding Fast Path rule type = Airespace AP - Learn IP address on AP 38:ed:18:c6:7b:40, slot 1, interface = 1, QOS = 0 IPv4 ACL ID = 255, IPv*apfReceiveTask: Nov 25 16:36:25.989: 08:74:02:77:13:45 0.0.0.0 DHCP_REQD (7) mobility role update requ Peer = 0.0.0.0, Old Anchor = 0.0.0.0, New Anchor = 172.16.0.136 *apfReceiveTask: Nov 25 16:36:25.989: 08:74:02:77:13:45 0.0.0.0 DHCP_REQD (7) State Update from Mobilit *apfReceiveTask: Nov 25 16:36:25.989: 08:74:02:77:13:45 0.0.0.0 DHCP_REQD (7) pemAdvanceState2 6261, Ad *apfReceiveTask: Nov 25 16:36:25.989: 08:74:02:77:13:45 0.0.0.0 DHCP_REQD (7) Replacing Fast Path rule type = Airespace AP - Learn IP address on AP 38:ed:18:c6:7b:40, slot 1, interface = 1, QOS = 0 IPv4 ACL ID = 255, *apfReceiveTask: Nov 25 16:36:25.989: 08:74:02:77:13:45 0.0.0.0 DHCP_REQD (7) Successfully plumbed mobi *pemReceiveTask: Nov 25 16:36:25.990: 08:74:02:77:13:45 0.0.0.0 Added NPU entry of type 9, dtlFlags 0x0 *pemReceiveTask: Nov 25 16:36:25.990: 08:74:02:77:13:45 0.0.0.0 Added NPU entry of type 9, dtlFlags 0x0 *apfReceiveTask: Nov 25 16:36:27.835: 08:74:02:77:13:45 WcdbClientUpdate: IP Binding from WCDB ip_learn *apfReceiveTask: Nov 25 16:36:27.835: 08:74:02:77:13:45 IPv4 Addr: 0:0:0:0 *apfReceiveTask: Nov 25 16:36:27.835: 08:74:02:77:13:45 In apfRegisterIpAddrOnMscb_debug: regType=1 Inv *apfReceiveTask: Nov 25 16:36:27.835: 08:74:02:77:13:45 IPv4 Addr: 0:0:0:0 *apfReceiveTask: Nov 25 16:36:27.840: 08:74:02:77:13:45 WcdbClientUpdate: IP Binding from WCDB ip_learn *apfReceiveTask: Nov 25 16:36:27.841:

08:74:02:77:13:45 172.16.0.16 DHCP_REQD (7) Change state to RUN (20) last state DHCP_REQD (7)

َ ءاطخألاا حيحصت للحم ةاداً مدختساً ،ةلەس ةقيرطب ءاطخالا حيحصت ليمع تاجرخم ةءارقل ةيكلساللار:

<u>(يكلساللا جيحصتاا للحم) Wireless Debug Analyzer</u>

ISE ىلع ةقداصملا ةيلمع

جەنو ةقداصملا ةسايس ىلع عالطالل ةيحلا تالجسلا < RADIUS < تايلمعلا ىلإ لقتنا مدختسملل ەنييعت مت يذلا ليوختلا فيرعت فلمو ليوختلا.

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اليصفت رثكأ ةقداصم ةيلمع ىلع عالطالل ليصافتلا قوف رقنا ،تامولعملا نم ديزمل.

ةمجرتاا مذه لوح

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