Huawei S Series Switches with the Versatile Routing Platform Software Version 5

Interoperability with the Cisco Identity Services Engine (ISE)

Tolly Report #216161
Commissioned by
Huawei Technologies Co., Ltd

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Huawei Technologies Co., Ltd

S Series Switches

Interoperability with the Cisco Identity Services Engine (ISE)

Tolly. Certified

Tested October 2016

Executive Summary

Huawei commissioned Tolly to verify the Huawei S series switches' interoperability with the Cisco Identity Services Engine (ISE) for authentication and more.

The complete list of devices tested is available in Table 1. Device support for each individual test case is provided in the test results (Table 2) and further details in the test case descriptions.

Huawei S Series Switches Under Test

Device Under Test	S/W Version	Platform Version	Hardware Model
Huawei S12700	Huawei Versatile Routing Platform Software VRP (R) software, Version 5.160 (S12700 V200R010C00SPC300)	VRP (R) software, Version 5.160	12704
Huawei S5720	Huawei Versatile Routing Platform Software VRP (R) software, Version 5.160 (S5720 V200R010C00SPC300)	VRP (R) software, Version 5.160	S5720-32C-HI-24S

Cisco Identity Services Engine (ISE)

Product	Version
Identity Services Engine (ISE)	Version 2.0.0.306 ADE-OS Version 2.3.0.187

Source: Tolly, October 2016

Table 1

Huawei S Series Switches Interoperability with the Cisco ISE Test Results

Authentication Protocol		Generic RADIUS Attributes	
✔	PAP/CHAP	✔	Framed-IP-Address On-demand DHCP IP address
✔	EAP-MD5	✔	Framed-Pool On-demand DHCP Pool
✔	PEAP	✔	NAS-Port
✔	EAP-TLS	Others	
✔	EAP-TTLS	✔	Post-rejection Authentication Once a client is rejected by ISE, authenticate certain VLAN to it
✔	EAP-FAST	✔	Time-based Authentication Policy
Authentication Method		Change of Authorization (CoA)	
✔	Wired MAC Authentication	✔	Session Re-authentication
✔	Wired 802.1X Authentication	✔	Session Termination
✔	Wireless MAC Authentication	✔	CoA Port Customization in ISE Huawei S switches use port 3799 for CoA. The CoA destination port can be changed to 3799 in Cisco ISE for interoperability
✔	Wireless 802.1X Authentication	Endpoint Profiling	
✔	Wired and Wireless Web Portal Authentication Huawei S Switch as the Portal Server	✔	with DHCP Packets e.g. DHCP Option60: Vendor Class Identifier
✔	Wired and Wireless Web Portal Authentication Cisco ISE as the Portal Server	✔	with MAC Addresses e.g. Organizationally Unique Identifier (OUI) in the MAC Address
✔	Wired Mixed Authentication e.g. MAC and 802.1X Authentication	✔	with HTTP Packets e.g. User-Agent attribute in the HTTP packet
✔	Wireless Mixed Authentication e.g. MAC and Web Portal Authentication	✔	with RADIUS Packets e.g. CallingStationID attribute in RADIUS
Authentication Policy		✔	Network Scan (NMAP)
Built-in Attributes		Other	
✔	Dynamic VLAN Assign one existing VLAN to the user with the VLAN number	✔	Posture Assessment with the Cisco ISE and the Cisco NAC Appliance Agent
✔	Dynamic ACL Assign one existing ACL to the user with the ACL number	✔	Guest Management Guest self-registration and authentication
Huawei Attributes		✔	BYOD BYOD device self-registration and authentication
✔	Dynamic ACL Rule Create a new ACL rule with the HW-Data-Filter attribute		
✔	Dynamic UCL Group Assign one existing UCL group to the user with the HW-UCL-Group attribute and the UCL group's name		
✔	Dynamic CAR CIR (rate limiting) create a new CAR CIR rule with the HW-Input-Committed-Information-Rate attribute or/and the HW-Output-Committed-Information-Rate attribute		
✔	Service Scheme Assign one existing service scheme to the user with Huawei's HW-Service-Scheme attribute and the service scheme's name		

Source: Tolly, October 2016 Table 2

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Test 1.1

PAP/CHAP Authentication

Objective

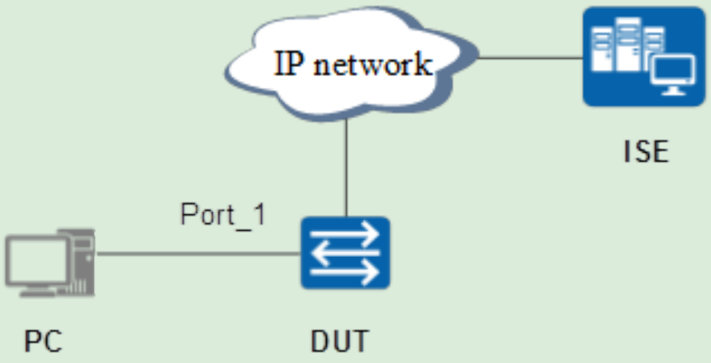
Verify the 802.1X authentication method with the PAP/CHAP authentication protocol when a Huawei S switch works as the access control switch and the Cisco ISE server works as the authentication (RADIUS) server.

Procedure

1. Configure the Huawei S switch to ensure that the Huawei switch and the Cisco ISE server communicate with each other at Layer 3.
2. Create the Cisco ISE server profile and configure the related parameters, including IP address of the authentication server, port number, the RADIUS server key, and the retransmission time. Create an authentication scheme, and configure the authentication mode as RADIUS. Configure a domain name, and apply the authentication scheme to the domain.
3. Configure the Huawei switch 802.1X authentication mode as CHAP.

```
#
dot1x-access-profile name tolly
dot1x authentication-method chap
#
```

4. Enable 802.1X authentication globally and on the interface Port_1.
5. Use the PC to initiate the 802.1X authentication in the CHAP mode, and expected result 1 is displayed.



Pass Criteria

The PC is authenticated to have network access.

Test Results

1. Configure the switch's IP address so that the switch can communicate with the ISE server.
2. Configure the RADIUS server profile and aaa profile on the switch.

```
#
radius-server template tolly
radius-server shared-key cipher huawei123
radius-server authentication 192.89.11.188 1812 weight 80
radius-server accounting 192.89.11.188 1813 weight 80
undo radius-server user-name domain-included
calling-station-id mac-format hyphen-split mode2
#
```

3. Configure the aaa scheme on the switch.

```
#
authentication-scheme tolly
authentication-mode radius
authorization-scheme tolly
accounting-scheme tolly
accounting-mode radius
domain tolly
authentication-scheme tolly
accounting-scheme tolly
radius-server tolly
#
```

4. Configure the 802.1X authentication profile on the device.

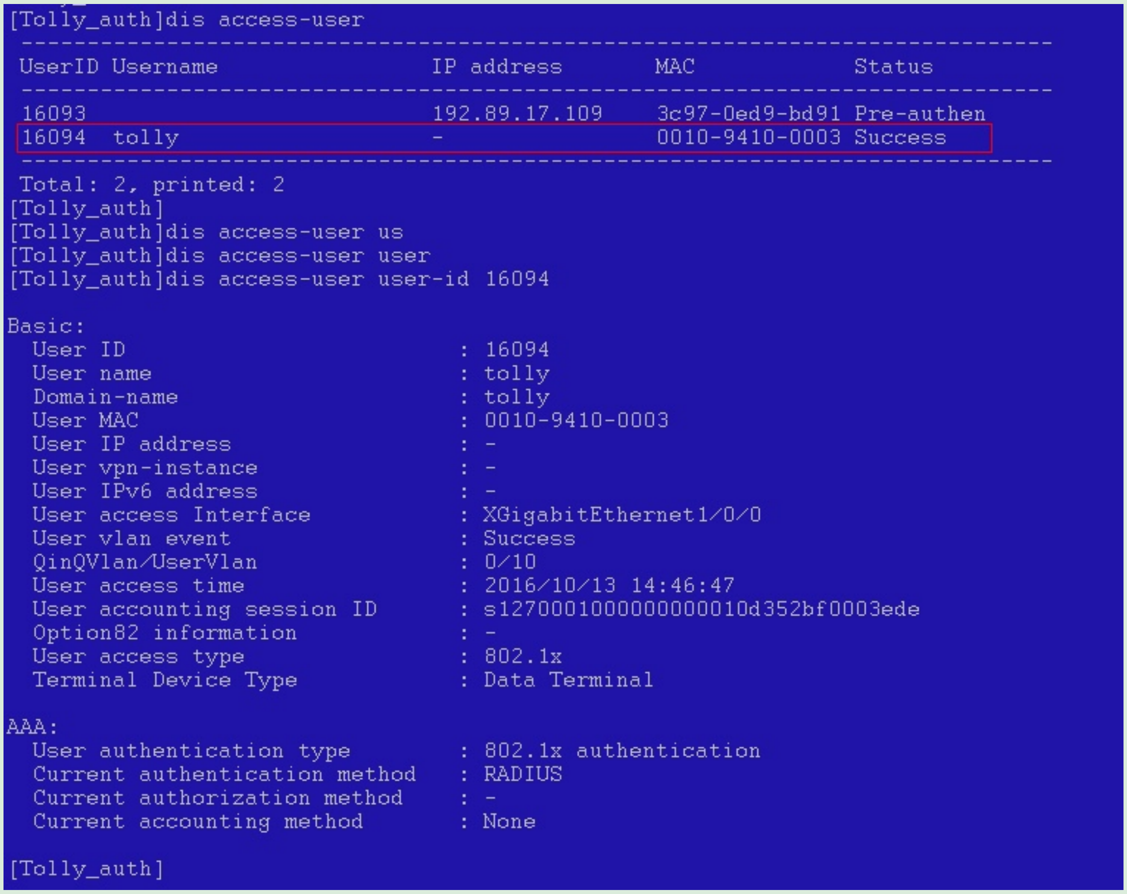
```
#
authentication-profile name tolly
dot1x-access-profile tolly
access-domain tolly dot1x force
#
```

Test Results

5. Configure the DHCP server on the device, and enable dot1x authentication on the correspondent interface.

```
#
interface Vlanif4090
ip address 192.89.6.202 255.255.255.0
dhcp select interface
interface GigabitEthernet1/1/0
port link-type hybrid
port hybrid pvid vlan 4090
port hybrid untagged vlan 4090
authentication-profile tolly
#
```

6. The tested device displays 802.1X authentication statistics information, which indicates that the authentication succeeds.



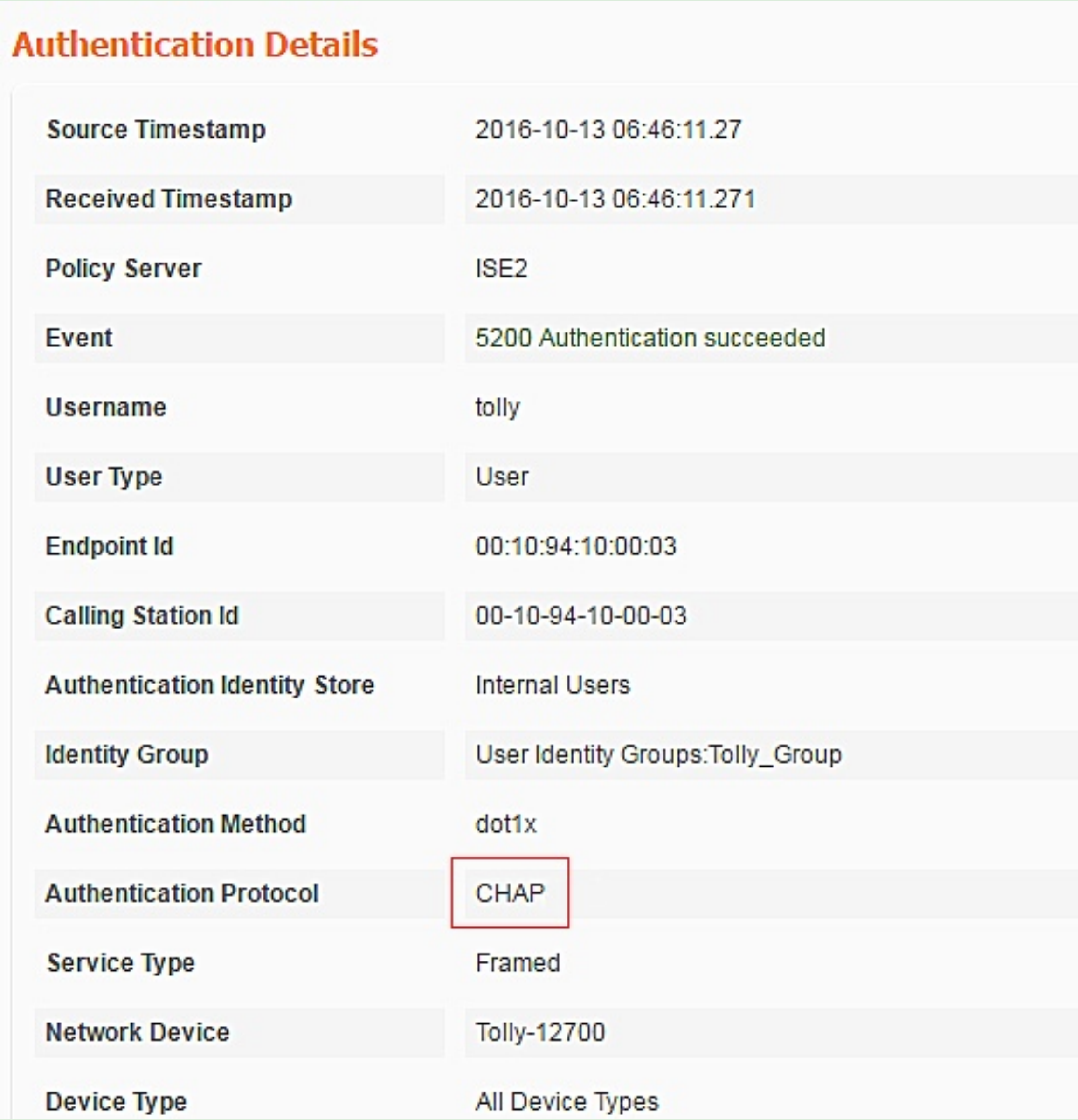
```
[Tolly_auth]dis access-user
 ------------------------------------------------------------------------------
 UserID Username                      IP address        MAC            Status
 ------------------------------------------------------------------------------
 16093                                192.89.17.109     3c97-0ed9-bd91 Pre-authen
 16094  tolly                         -                 0010-9410-0003 Success
 ------------------------------------------------------------------------------
 Total: 2, printed: 2
[Tolly_auth]
[Tolly_auth]dis access-user us
[Tolly_auth]dis access-user user
[Tolly_auth]dis access-user user-id 16094

Basic:
  User ID                              : 16094
  User name                            : tolly
  Domain-name                          : tolly
  User MAC                             : 0010-9410-0003
  User IP address                      : -
  User vpn-instance                    : -
  User IPv6 address                    : -
  User access Interface                : XGigabitEthernet1/0/0
  User vlan event                      : Success
  QinQVlan/UserVlan                    : 0/10
  User access time                     : 2016/10/13 14:46:47
  User accounting session ID           : s127000100000000010d352bf0003ede
  Option82 information                 : -
  User access type                     : 802.1x
  Terminal Device Type                 : Data Terminal

AAA:
  User authentication type             : 802.1x authentication
  Current authentication method        : RADIUS
  Current authorization method         : -
  Current accounting method            : None

[Tolly_auth]
```

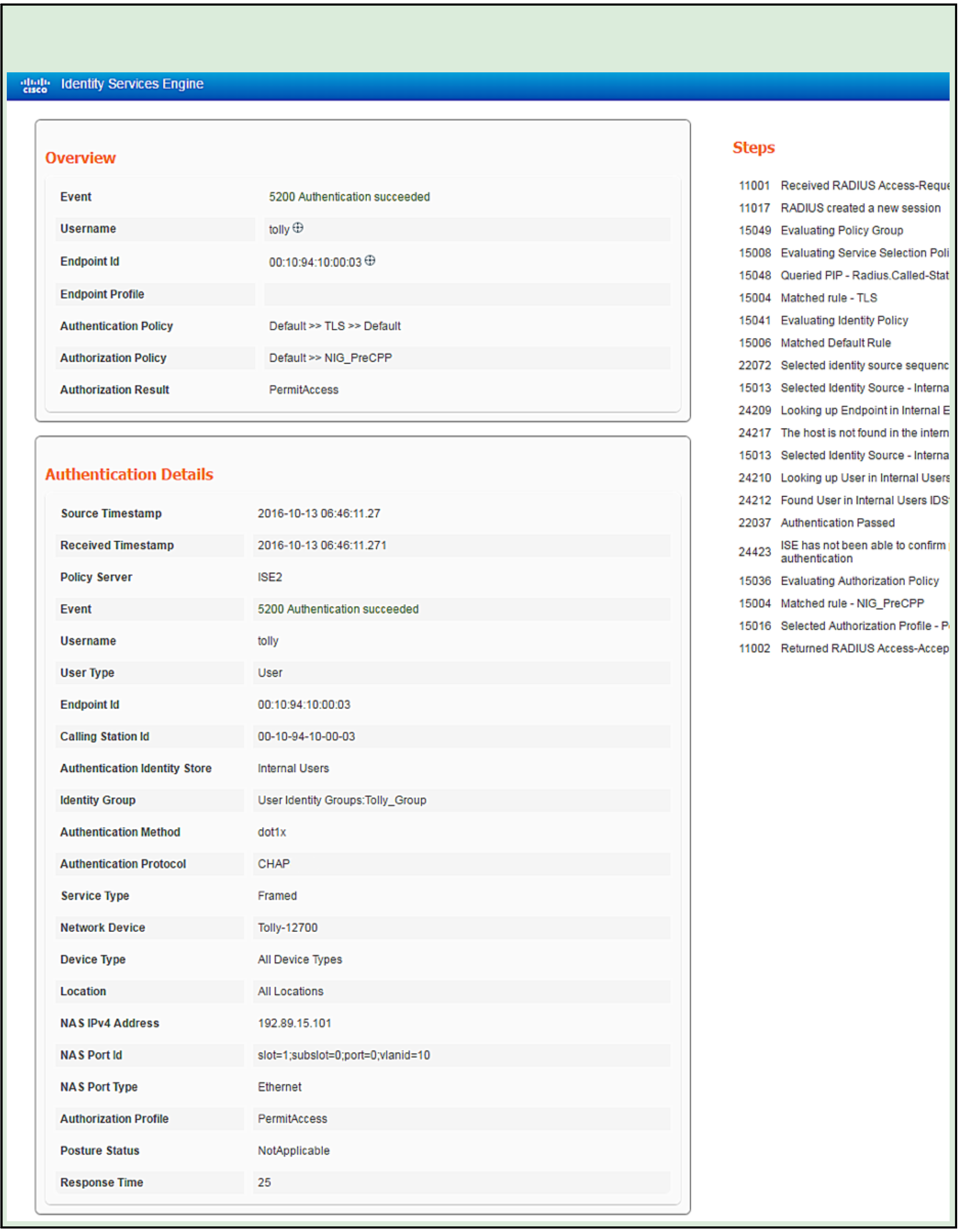
Test Results



Authentication Details

Source Timestamp	2016-10-13 06:46:11.27
Received Timestamp	2016-10-13 06:46:11.271
Policy Server	ISE2
Event	5200 Authentication succeeded
Username	tolly
User Type	User
Endpoint Id	00:10:94:10:00:03
Calling Station Id	00-10-94-10-00-03
Authentication Identity Store	Internal Users
Identity Group	User Identity Groups:Tolly_Group
Authentication Method	dot1x
Authentication Protocol	CHAP
Service Type	Framed
Network Device	Tolly-12700
Device Type	All Device Types

Test Results



Overview

Event	5200 Authentication succeeded
Username	tolly ⊕
Endpoint Id	00:10:94:10:00:03 ⊕
Endpoint Profile	
Authentication Policy	Default >> TLS >> Default
Authorization Policy	Default >> NIG_PreCPP
Authorization Result	PermitAccess

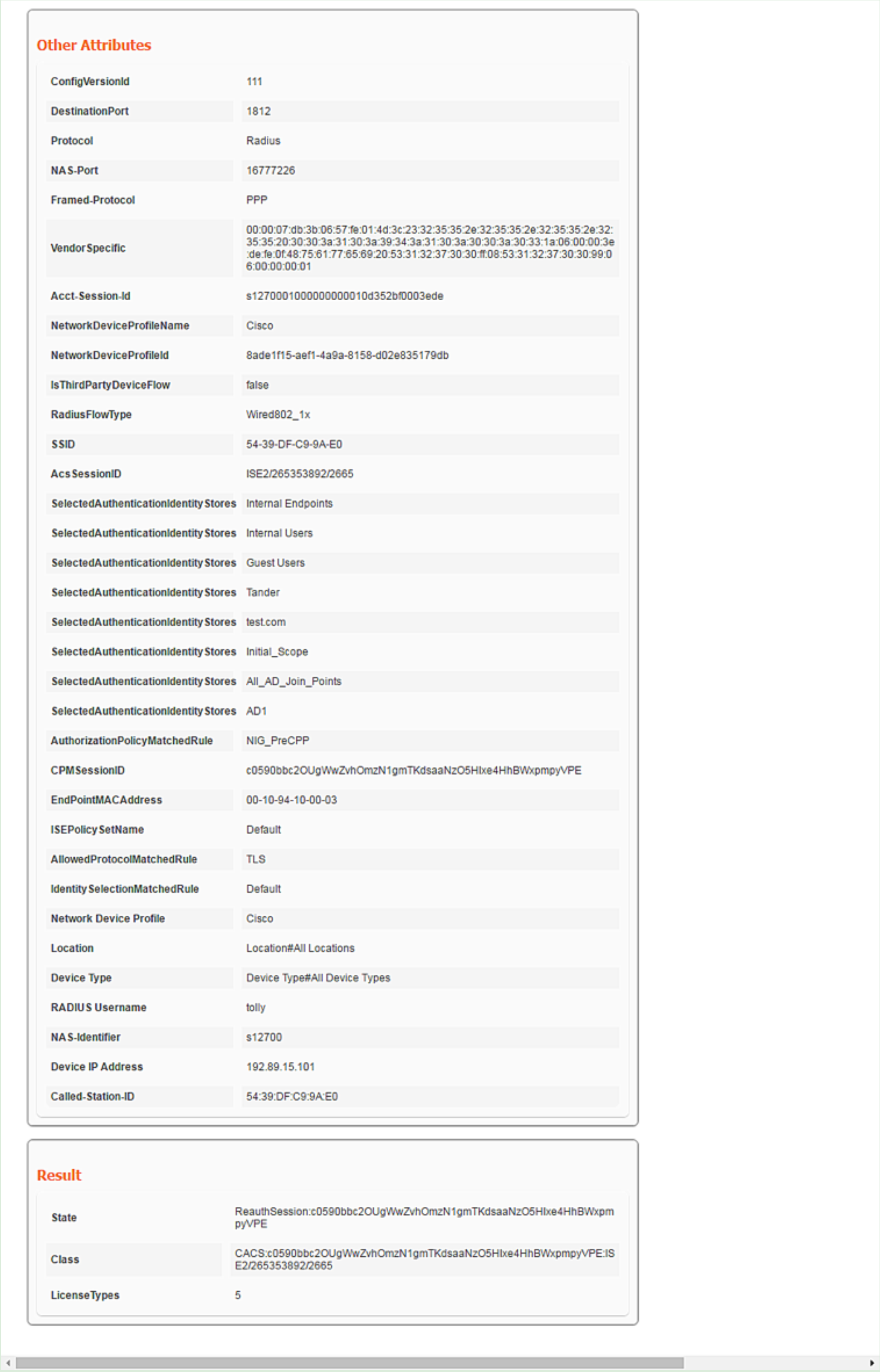
Authentication Details

Source Timestamp	2016-10-13 06:46:11.27
Received Timestamp	2016-10-13 06:46:11.271
Policy Server	ISE2
Event	5200 Authentication succeeded
Username	tolly
User Type	User
Endpoint Id	00:10:94:10:00:03
Calling Station Id	00-10-94-10-00-03
Authentication Identity Store	Internal Users
Identity Group	User Identity Groups:Tolly_Group
Authentication Method	dot1x
Authentication Protocol	CHAP
Service Type	Framed
Network Device	Tolly-12700
Device Type	All Device Types
Location	All Locations
NAS IPv4 Address	192.89.15.101
NAS Port Id	slot=1;subslot=0;port=0;vlanid=10
NAS Port Type	Ethernet
Authorization Profile	PermitAccess
Posture Status	NotApplicable
Response Time	25

Steps

11001	Received RADIUS Access-Reque
11017	RADIUS created a new session
15049	Evaluating Policy Group
15008	Evaluating Service Selection Poli
15048	Queried PIP - Radius.Called-Stat
15004	Matched rule - TLS
15041	Evaluating Identity Policy
15006	Matched Default Rule
22072	Selected identity source sequenc
15013	Selected Identity Source - Interna
24209	Looking up Endpoint in Internal E
24217	The host is not found in the intern
15013	Selected Identity Source - Interna
24210	Looking up User in Internal Users
24212	Found User in Internal Users IDS
22037	Authentication Passed
24423	ISE has not been able to confirm authentication
15036	Evaluating Authorization Policy
15004	Matched rule - NIG_PreCPP
15016	Selected Authorization Profile - P
11002	Returned RADIUS Access-Accep

Test Results

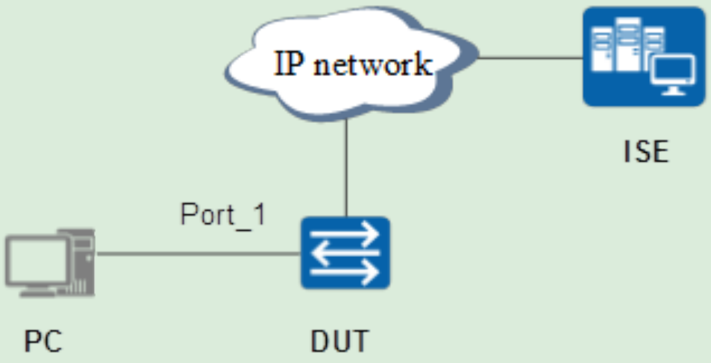


Other Attributes

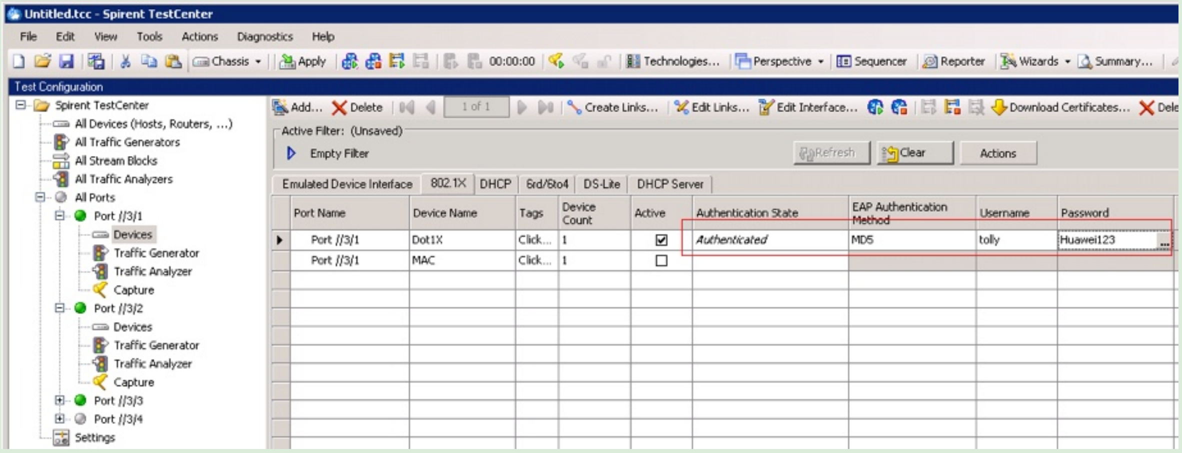
ConfigVersionId	111
DestinationPort	1812
Protocol	Radius
NAS-Port	16777226
Framed-Protocol	PPP
VendorSpecific	00:00:07:db:3b:06:57:fe:01:4d:3c:23:32:35:35:2e:32:35:35:2e:32:35:35:2e:32:35:35:20:30:30:3a:31:30:3a:39:34:3a:31:30:3a:30:30:3a:30:33:1a:06:00:00:3e:de:fe:0f:48:75:61:77:65:69:20:53:31:32:37:30:30:ff:08:53:31:32:37:30:30:99:06:00:00:00:01
Acct-Session-Id	s127000100000000010d352bf0003ede
NetworkDeviceProfileName	Cisco
NetworkDeviceProfileId	8ade1f15-aef1-4a9a-8158-d02e835179db
IsThirdPartyDeviceFlow	false
RadiusFlowType	Wired802_1x
SSID	54-39-DF-C9-9A-E0
AcsSessionID	ISE2/265353892/2665
SelectedAuthenticationIdentityStores	Internal Endpoints
SelectedAuthenticationIdentityStores	Internal Users
SelectedAuthenticationIdentityStores	Guest Users
SelectedAuthenticationIdentityStores	Tander
SelectedAuthenticationIdentityStores	test.com
SelectedAuthenticationIdentityStores	Initial_Scope
SelectedAuthenticationIdentityStores	All_AD_Join_Points
SelectedAuthenticationIdentityStores	AD1
AuthorizationPolicyMatchedRule	NIG_PreCPP
CPMSessionID	c0590bbc2OUgWwZvhOmzN1gmTKdsaaNzO5HIxe4HhBWxpmpyVPE
EndPointMACAddress	00-10-94-10-00-03
ISEPolicySetName	Default
AllowedProtocolMatchedRule	TLS
IdentitySelectionMatchedRule	Default
Network Device Profile	Cisco
Location	Location#All Locations
Device Type	Device Type#All Device Types
RADIUS Username	tolly
NAS-Identifier	s12700
Device IP Address	192.89.15.101
Called-Station-ID	54:39:DF:C9:9A:E0

Result

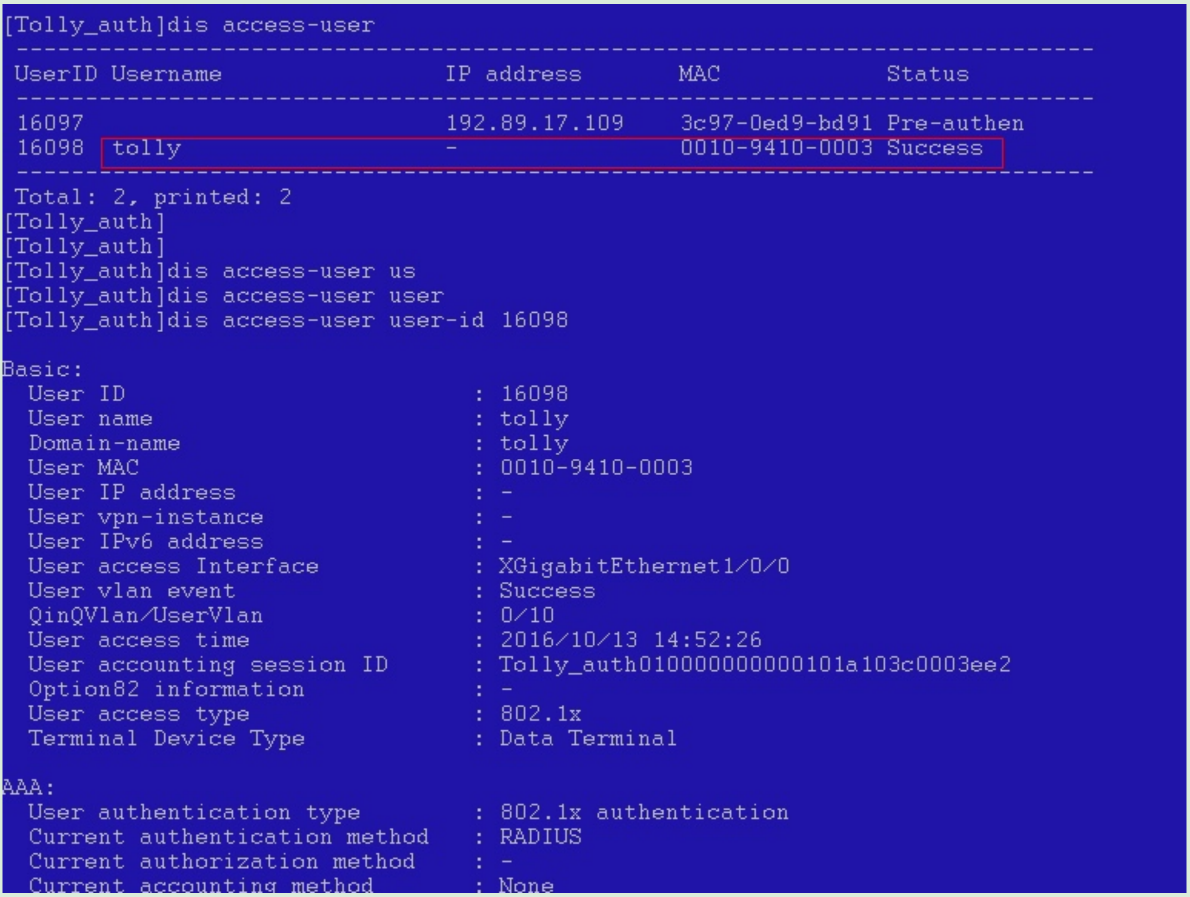
State	ReauthSession:c0590bbc2OUgWwZvhOmzN1gmTKdsaaNzO5HIxe4HhBWxpmpyVPE
Class	CACS:c0590bbc2OUgWwZvhOmzN1gmTKdsaaNzO5HIxe4HhBWxpmpyVPE:ISE2/265353892/2665
LicenseTypes	5

Test 1.2	EAP-MD5
Objective	Verify the 802.1X authentication method with the EAP-MD5 authentication protocol when a Huawei S switch works as the access control switch and the Cisco ISE server works as the authentication (RADIUS) server.
Procedure	1. Configure the Huawei S switch to ensure that the Huawei switch and the Cisco ISE server communicate with each other at Layer 3. 2. Create the Cisco ISE server profile and configure the related parameters, including IP address of the authentication server, port number, the RADIUS server key, and the retransmission time. Create an authentication scheme, and configure the authentication mode as RADIUS. Configure a domain name, and apply the authentication scheme to the domain. 3. Configure the Huawei switch 802.1X authentication mode as EAP. # dot1x-access-profile name tolly dot1x authentication-method eap # 4. Enable 802.1X authentication globally and on the interface Port_1. 5. Use the PC to initiate the 802.1X authentication in the EAP-MD5 mode, and expected result 1 is displayed. 
Pass Criteria	The PC is authenticated to have network access.

Test Results



	Port Name	Device Name	Tags	Device Count	Active	Authentication State	EAP Authentication Method	Username	Password
▶	Port //3/1	Dot1X	Click...	1	☑	*Authenticated*	MD5	tolly	Huawei123
	Port //3/1	MAC	Click...	1	☐				

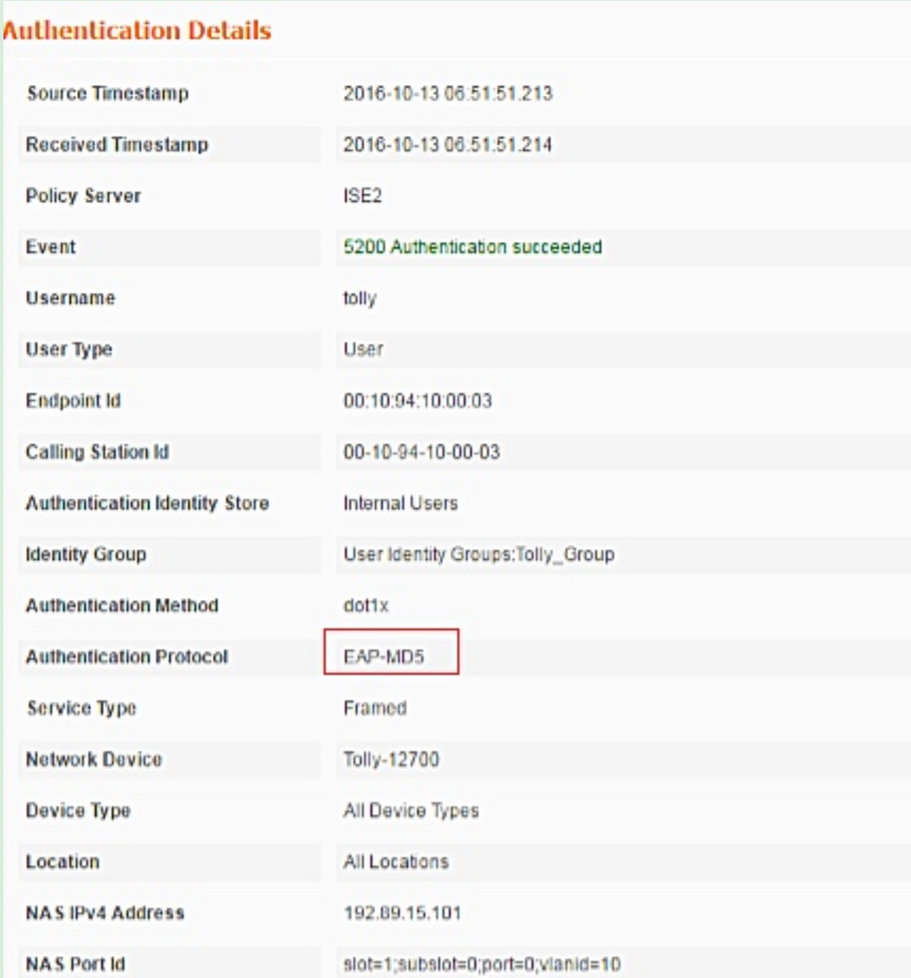


```
[Tolly_auth]dis access-user
 ------------------------------------------------------------------------------
 UserID Username                   IP address       MAC            Status
 ------------------------------------------------------------------------------
 16097                             192.89.17.109    3c97-0ed9-bd91 Pre-authen
 16098  tolly                      -                0010-9410-0003 Success
 ------------------------------------------------------------------------------
 Total: 2, printed: 2
[Tolly_auth]
[Tolly_auth]
[Tolly_auth]dis access-user us
[Tolly_auth]dis access-user user
[Tolly_auth]dis access-user user-id 16098

Basic:
  User ID                           : 16098
  User name                         : tolly
  Domain-name                       : tolly
  User MAC                          : 0010-9410-0003
  User IP address                   : -
  User vpn-instance                 : -
  User IPv6 address                 : -
  User access Interface             : XGigabitEthernet1/0/0
  User vlan event                   : Success
  QinQVlan/UserVlan                 : 0/10
  User access time                  : 2016/10/13 14:52:26
  User accounting session ID        : Tolly_auth010000000000101a103c0003ee2
  Option82 information              : -
  User access type                  : 802.1x
  Terminal Device Type              : Data Terminal

AAA:
  User authentication type          : 802.1x authentication
  Current authentication method     : RADIUS
  Current authorization method      : -
  Current accounting method         : None
```

Test Results



Authentication Details

Source Timestamp	2016-10-13 06:51:51.213
Received Timestamp	2016-10-13 06:51:51.214
Policy Server	ISE2
Event	5200 Authentication succeeded
Username	tolly
User Type	User
Endpoint Id	00:10:94:10:00:03
Calling Station Id	00-10-94-10-00-03
Authentication Identity Store	Internal Users
Identity Group	User Identity Groups:Tolly_Group
Authentication Method	dot1x
Authentication Protocol	EAP-MD5
Service Type	Framed
Network Device	Tolly-12700
Device Type	All Device Types
Location	All Locations
NAS IPv4 Address	192.89.15.101
NAS Port Id	slot=1;subslot=0;port=0;vlanid=10

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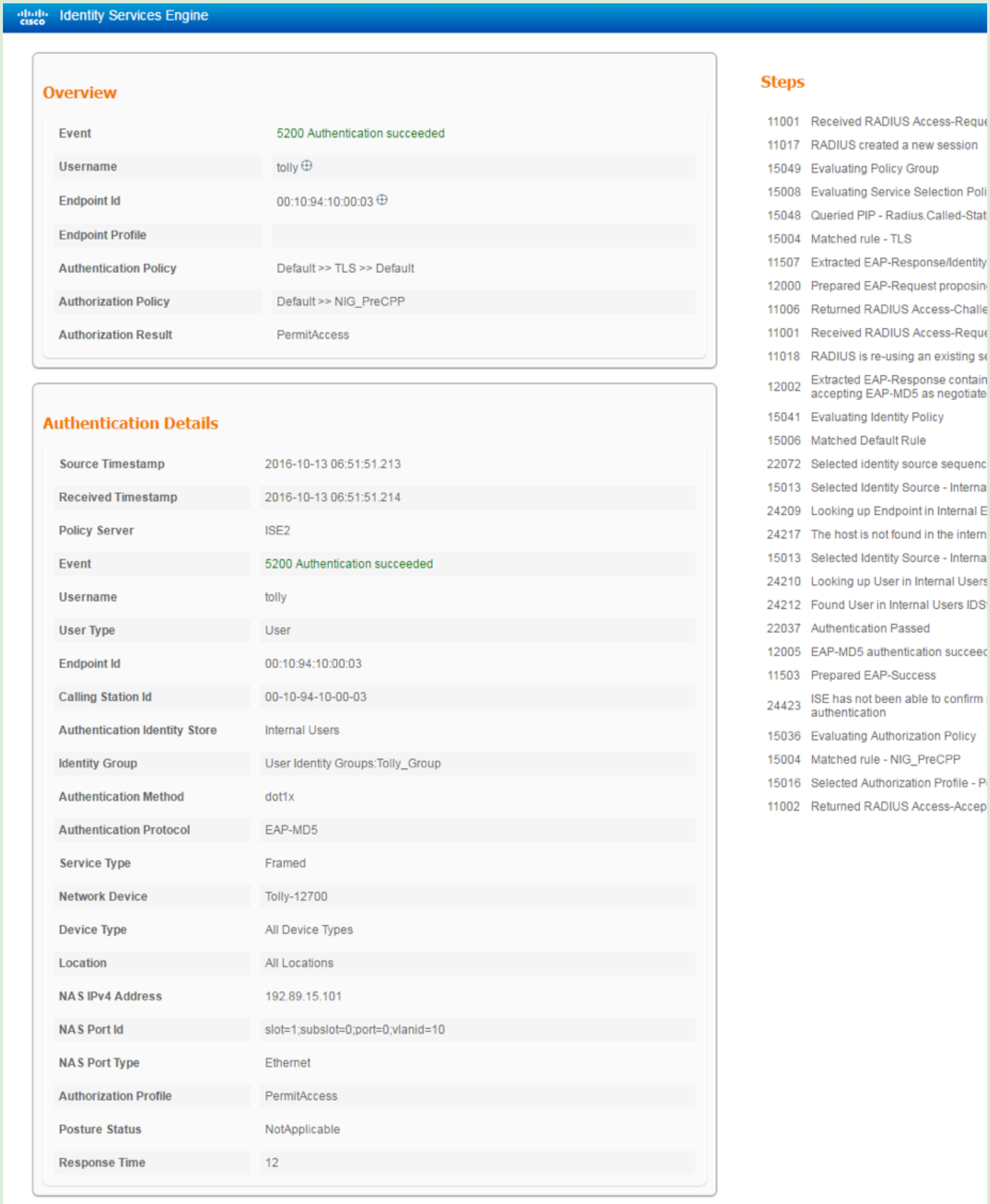
Test Results



Overview

Event	5200 Authentication succeeded
Username	tolly ⊕
Endpoint Id	00:10:94:10:00:03 ⊕
Endpoint Profile	
Authentication Policy	Default >> TLS >> Default
Authorization Policy	Default >> NIG_PreCPP
Authorization Result	PermitAccess

Authentication Details

Source Timestamp	2016-10-13 06:51:51.213
Received Timestamp	2016-10-13 06:51:51.214
Policy Server	ISE2
Event	5200 Authentication succeeded
Username	tolly
User Type	User
Endpoint Id	00:10:94:10:00:03
Calling Station Id	00-10-94-10-00-03
Authentication Identity Store	Internal Users
Identity Group	User Identity Groups:Tolly_Group
Authentication Method	dot1x
Authentication Protocol	EAP-MD5
Service Type	Framed
Network Device	Tolly-12700
Device Type	All Device Types
Location	All Locations
NAS IPv4 Address	192.89.15.101
NAS Port Id	slot=1;subslot=0;port=0;vlanid=10
NAS Port Type	Ethernet
Authorization Profile	PermitAccess
Posture Status	NotApplicable
Response Time	12

Steps

11001	Received RADIUS Access-Reque
11017	RADIUS created a new session
15049	Evaluating Policy Group
15008	Evaluating Service Selection Poli
15048	Queried PIP - Radius.Called-Stat
15004	Matched rule - TLS
11507	Extracted EAP-Response/Identity
12000	Prepared EAP-Request proposin
11006	Returned RADIUS Access-Challe
11001	Received RADIUS Access-Reque
11018	RADIUS is re-using an existing se
12002	Extracted EAP-Response contain accepting EAP-MD5 as negotiate
15041	Evaluating Identity Policy
15006	Matched Default Rule
22072	Selected identity source sequenc
15013	Selected Identity Source - Interna
24209	Looking up Endpoint in Internal E
24217	The host is not found in the intern
15013	Selected Identity Source - Interna
24210	Looking up User in Internal Users
24212	Found User in Internal Users IDS
22037	Authentication Passed
12005	EAP-MD5 authentication succeec
11503	Prepared EAP-Success
24423	ISE has not been able to confirm authentication
15036	Evaluating Authorization Policy
15004	Matched rule - NIG_PreCPP
15016	Selected Authorization Profile - P
11002	Returned RADIUS Access-Accep

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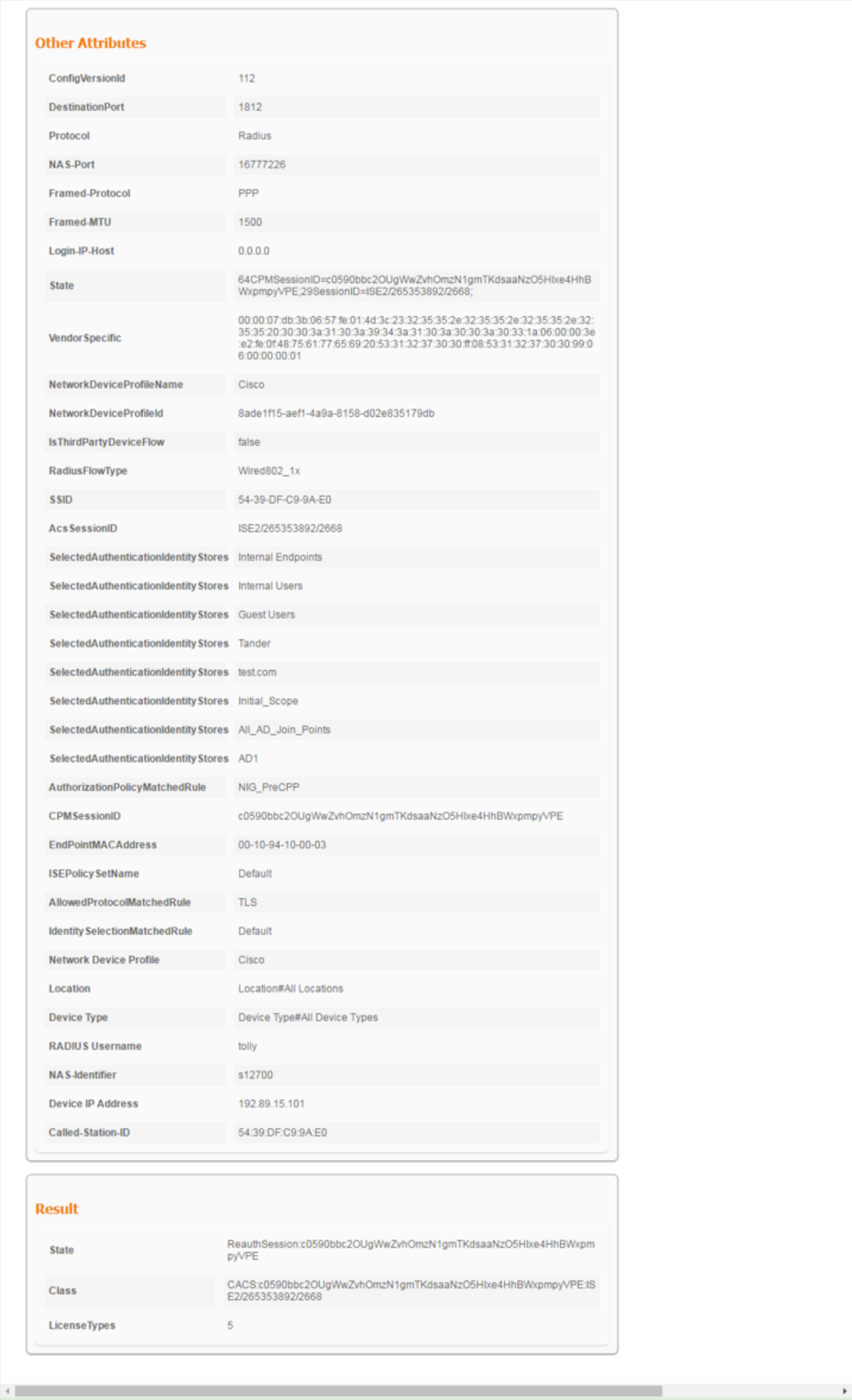
Test Results

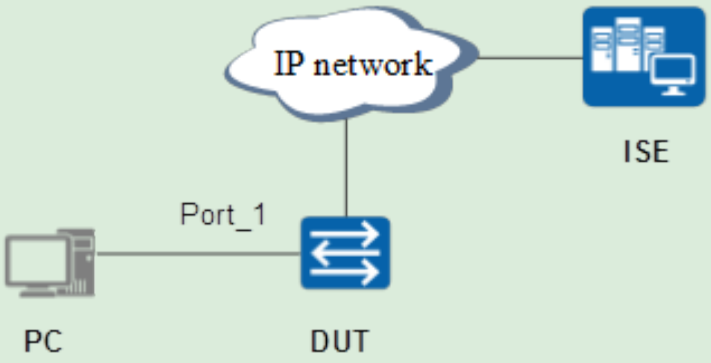


Other Attributes

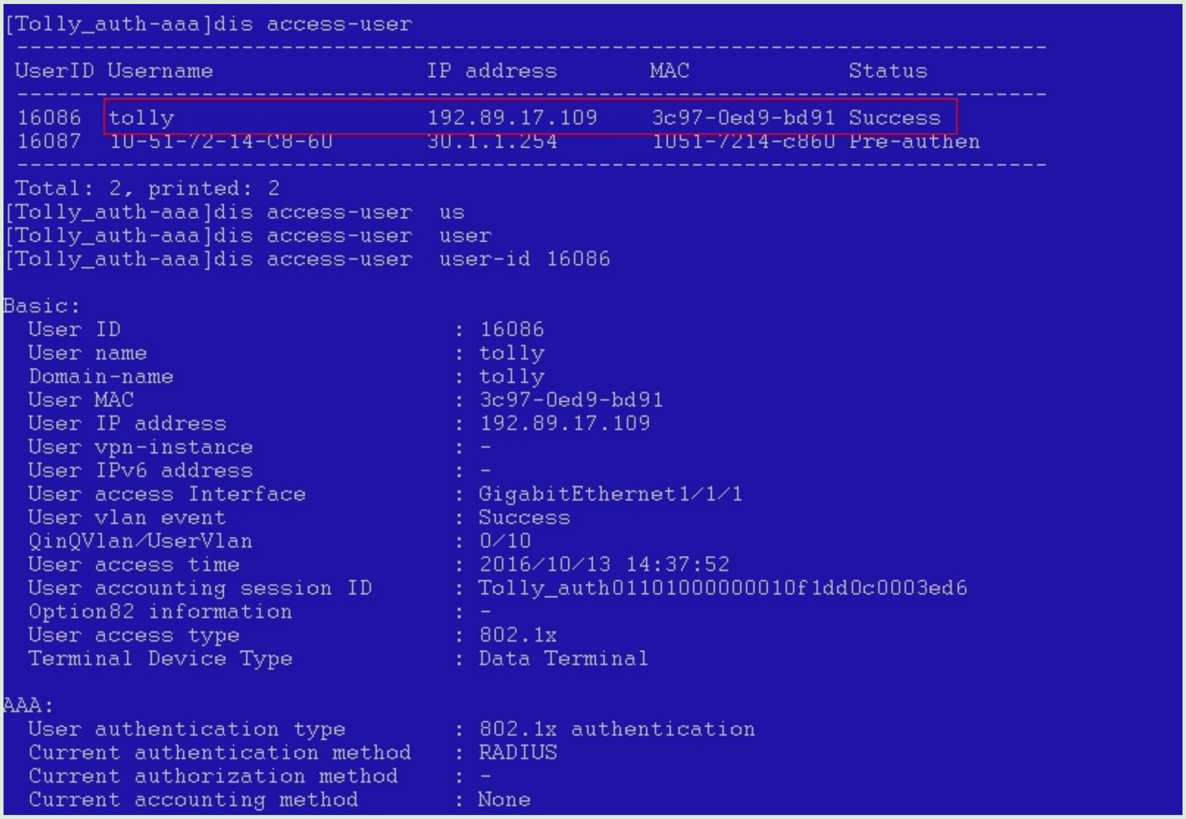
ConfigVersionId	112
DestinationPort	1812
Protocol	Radius
NAS-Port	16777226
Framed-Protocol	PPP
Framed-MTU	1500
Login-IP-Host	0.0.0.0
State	64CPMSessionID=c0590bbc2OUgWwZvhOmzN1gmTKdsaaNzO5HIxe4HhBWxpmpyVPE;29SessionID=ISE2/265353892/2668;
VendorSpecific	00:00:07:db:3b:06:57:fe:01:4d:3c:23:32:35:35:2e:32:35:35:2e:32:35:35:2e:32:35:35:20:30:30:3a:31:30:3a:39:34:3a:31:30:3a:30:30:3a:30:33:1a:06:00:00:3e:e2:fe:0f:48:75:61:77:65:69:20:53:31:32:37:30:30:ff:08:53:31:32:37:30:30:99:06:00:00:00:01
NetworkDeviceProfileName	Cisco
NetworkDeviceProfileId	8ade1f15-aef1-4a9a-8158-d02e835179db
IsThirdPartyDeviceFlow	false
RadiusFlowType	Wired802_1x
SSID	54-39-DF-C9-9A-E0
AcsSessionID	ISE2/265353892/2668
SelectedAuthenticationIdentityStores	Internal Endpoints
SelectedAuthenticationIdentityStores	Internal Users
SelectedAuthenticationIdentityStores	Guest Users
SelectedAuthenticationIdentityStores	Tander
SelectedAuthenticationIdentityStores	test.com
SelectedAuthenticationIdentityStores	Initial_Scope
SelectedAuthenticationIdentityStores	All_AD_Join_Points
SelectedAuthenticationIdentityStores	AD1
AuthorizationPolicyMatchedRule	NIG_PreCPP
CPMSessionID	c0590bbc2OUgWwZvhOmzN1gmTKdsaaNzO5HIxe4HhBWxpmpyVPE
EndPointMACAddress	00-10-94-10-00-03
ISEPolicySetName	Default
AllowedProtocolMatchedRule	TLS
IdentitySelectionMatchedRule	Default
Network Device Profile	Cisco
Location	Location#All Locations
Device Type	Device Type#All Device Types
RADIUS Username	tolly
NAS-Identifier	s12700
Device IP Address	192.89.15.101
Called-Station-ID	54:39:DF:C9:9A:E0

Result

State	ReauthSession:c0590bbc2OUgWwZvhOmzN1gmTKdsaaNzO5HIxe4HhBWxpmpyVPE
Class	CACS:c0590bbc2OUgWwZvhOmzN1gmTKdsaaNzO5HIxe4HhBWxpmpyVPE:ISE2/265353892/2668
LicenseTypes	5

Test 1.3	PEAP
Objective	Verify the 802.1X authentication method with the PEAP authentication protocol when a Huawei S switch works as the access control switch and the Cisco ISE server works as the authentication (RADIUS) server.
Procedure	1. Configure the Huawei S switch to ensure that the Huawei switch and the Cisco ISE server communicate with each other at Layer 3. 2. Create the Cisco ISE server profile and configure the related parameters, including IP address of the authentication server, port number, the RADIUS server key, and the retransmission time. Create an authentication scheme, and configure the authentication mode as RADIUS. Configure a domain name, and apply the authentication scheme to the domain. 3. Configure the Huawei switch 802.1X authentication mode as EAP. # dot1x-access-profile name tolly dot1x authentication-method eap # 4. Enable 802.1X authentication globally and on the interface Port_1. 5. Use the PC to initiate the 802.1X authentication in the PEAP mode, and expected result 1 is displayed. 
Pass Criteria	The PC is authenticated to have network access.

Test Results

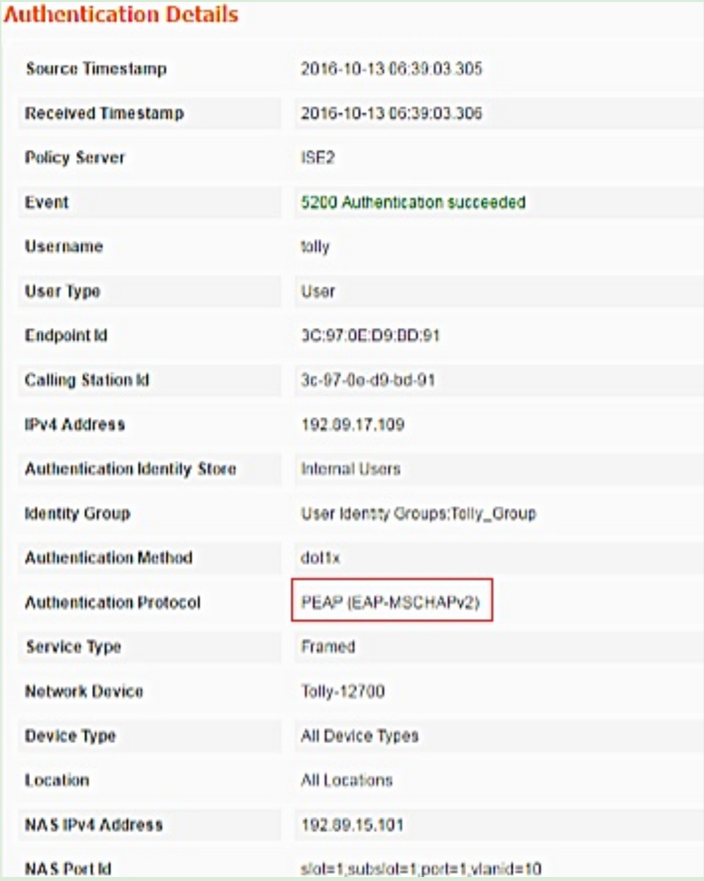


```
[Tolly_auth-aaa]dis access-user
 ------------------------------------------------------------------------------
 UserID Username                 IP address       MAC            Status
 ------------------------------------------------------------------------------
 16086  tolly                    192.89.17.109    3c97-0ed9-bd91 Success
 16087  10-51-72-14-C8-60        30.1.1.254       1051-7214-c860 Pre-authen
 ------------------------------------------------------------------------------
 Total: 2, printed: 2
[Tolly_auth-aaa]dis access-user  us
[Tolly_auth-aaa]dis access-user  user
[Tolly_auth-aaa]dis access-user  user-id 16086

Basic:
  User ID                          : 16086
  User name                        : tolly
  Domain-name                      : tolly
  User MAC                         : 3c97-0ed9-bd91
  User IP address                  : 192.89.17.109
  User vpn-instance                : -
  User IPv6 address                : -
  User access Interface            : GigabitEthernet1/1/1
  User vlan event                  : Success
  QinQVlan/UserVlan                : 0/10
  User access time                 : 2016/10/13 14:37:52
  User accounting session ID       : Tolly_auth01101000000010f1dd0c0003ed6
  Option82 information             : -
  User access type                 : 802.1x
  Terminal Device Type             : Data Terminal

AAA:
  User authentication type         : 802.1x authentication
  Current authentication method    : RADIUS
  Current authorization method     : -
  Current accounting method        : None
```

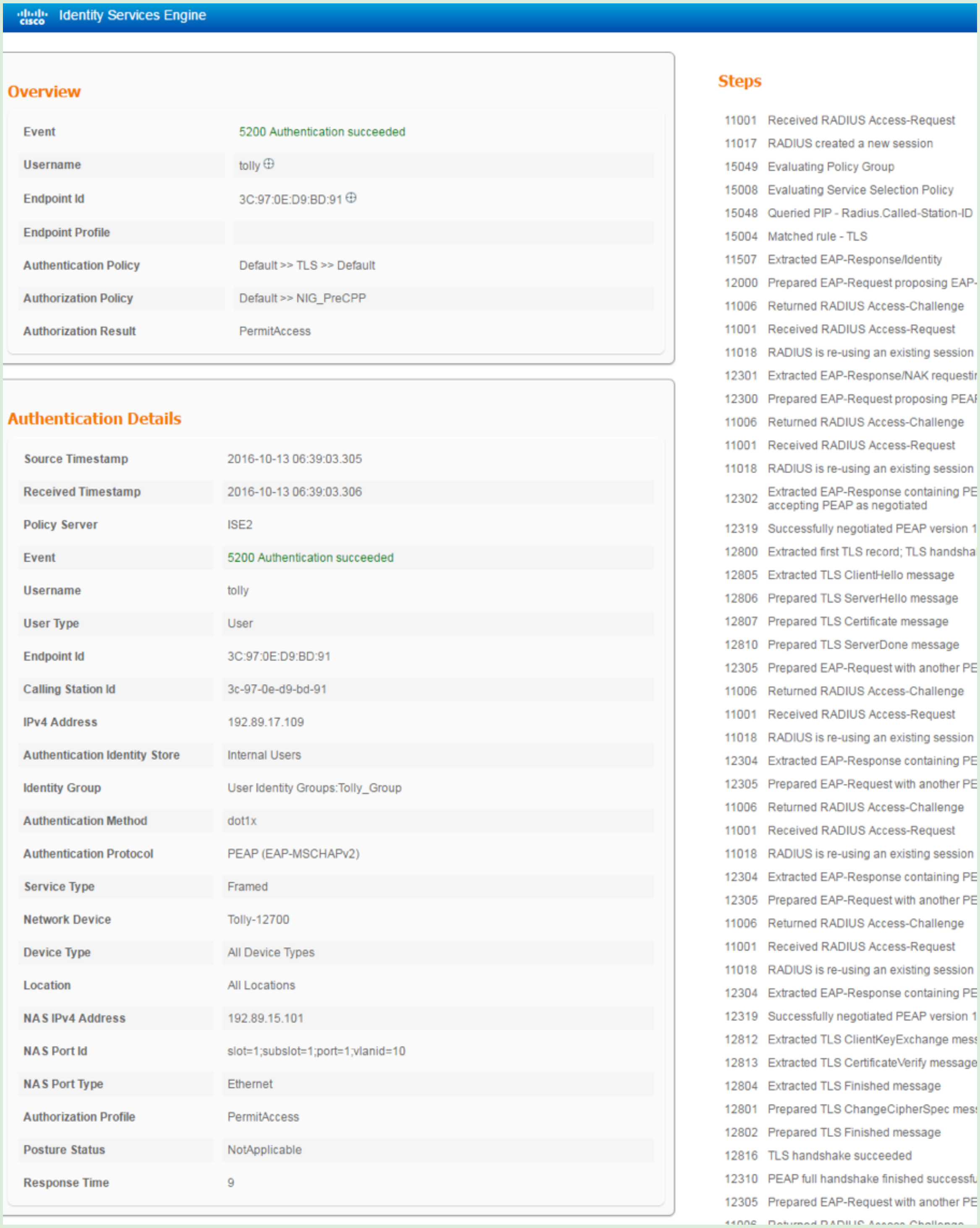
Test Results



Authentication Details

Source Timestamp	2016-10-13 06:39:03.305
Received Timestamp	2016-10-13 06:39:03.306
Policy Server	ISE2
Event	5200 Authentication succeeded
Username	tolly
User Type	User
Endpoint Id	3C:97:0E:D9:BD:91
Calling Station Id	3c-97-0e-d9-bd-91
IPv4 Address	192.89.17.109
Authentication Identity Store	Internal Users
Identity Group	User Identity Groups:Tolly_Group
Authentication Method	dot1x
Authentication Protocol	PEAP (EAP-MSCHAPv2)
Service Type	Framed
Network Device	Tolly-12700
Device Type	All Device Types
Location	All Locations
NAS IPv4 Address	192.89.15.101
NAS Port Id	slot=1;subslot=1;port=1;vlanid=10

Test Results



Identity Services Engine

Overview

Event	5200 Authentication succeeded
Username	tolly ⊕
Endpoint Id	3C:97:0E:D9:BD:91 ⊕
Endpoint Profile	
Authentication Policy	Default >> TLS >> Default
Authorization Policy	Default >> NIG_PreCPP
Authorization Result	PermitAccess

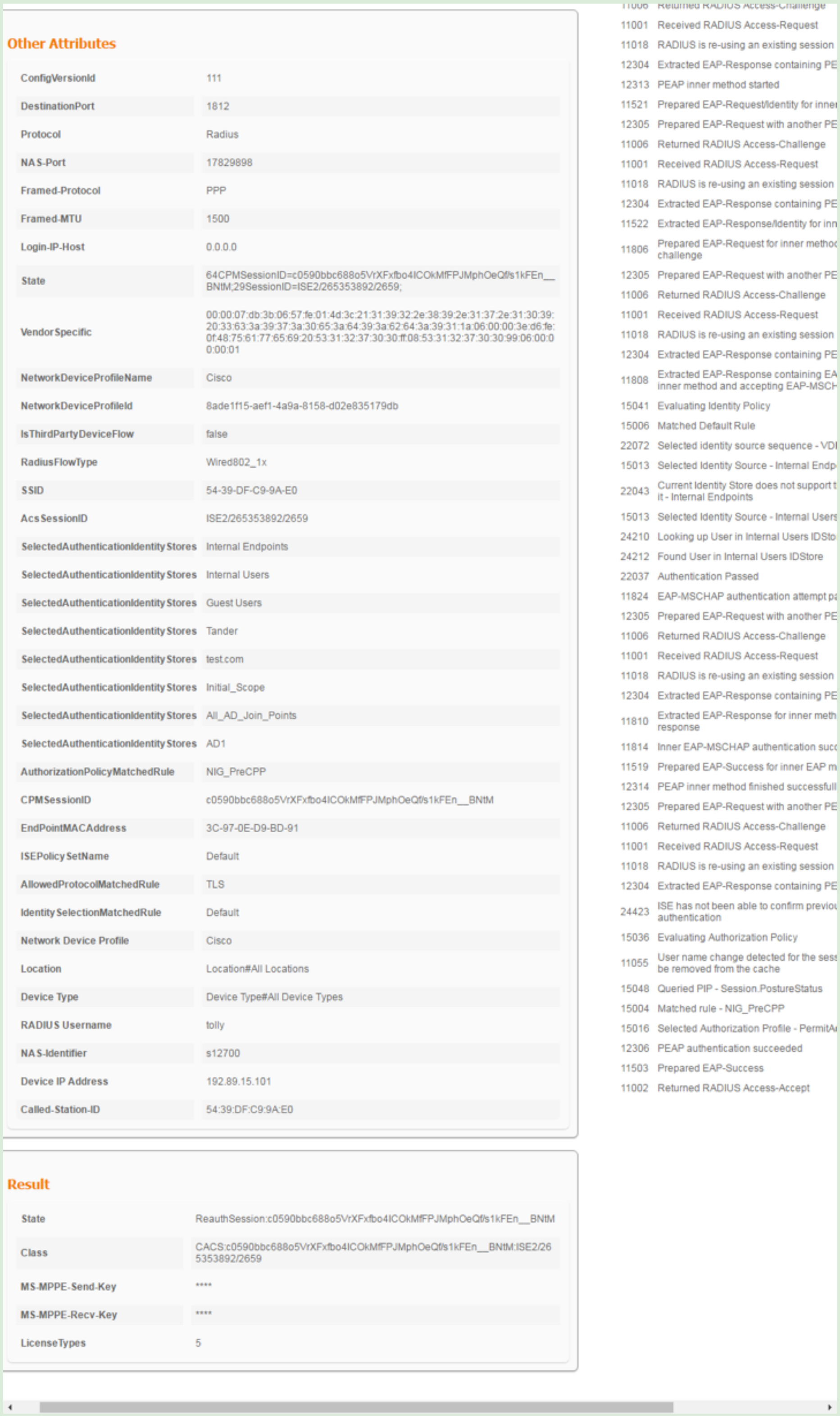
Authentication Details

Source Timestamp	2016-10-13 06:39:03.305
Received Timestamp	2016-10-13 06:39:03.306
Policy Server	ISE2
Event	5200 Authentication succeeded
Username	tolly
User Type	User
Endpoint Id	3C:97:0E:D9:BD:91
Calling Station Id	3c-97-0e-d9-bd-91
IPv4 Address	192.89.17.109
Authentication Identity Store	Internal Users
Identity Group	User Identity Groups:Tolly_Group
Authentication Method	dot1x
Authentication Protocol	PEAP (EAP-MSCHAPv2)
Service Type	Framed
Network Device	Tolly-12700
Device Type	All Device Types
Location	All Locations
NAS IPv4 Address	192.89.15.101
NAS Port Id	slot=1;subslot=1;port=1;vlanid=10
NAS Port Type	Ethernet
Authorization Profile	PermitAccess
Posture Status	NotApplicable
Response Time	9

Steps

11001	Received RADIUS Access-Request
11017	RADIUS created a new session
15049	Evaluating Policy Group
15008	Evaluating Service Selection Policy
15048	Queried PIP - Radius.Called-Station-ID
15004	Matched rule - TLS
11507	Extracted EAP-Response/Identity
12000	Prepared EAP-Request proposing EAP-
11006	Returned RADIUS Access-Challenge
11001	Received RADIUS Access-Request
11018	RADIUS is re-using an existing session
12301	Extracted EAP-Response/NAK requesti
12300	Prepared EAP-Request proposing PEAI
11006	Returned RADIUS Access-Challenge
11001	Received RADIUS Access-Request
11018	RADIUS is re-using an existing session
12302	Extracted EAP-Response containing PE accepting PEAP as negotiated
12319	Successfully negotiated PEAP version 1
12800	Extracted first TLS record; TLS handsha
12805	Extracted TLS ClientHello message
12806	Prepared TLS ServerHello message
12807	Prepared TLS Certificate message
12810	Prepared TLS ServerDone message
12305	Prepared EAP-Request with another PE
11006	Returned RADIUS Access-Challenge
11001	Received RADIUS Access-Request
11018	RADIUS is re-using an existing session
12304	Extracted EAP-Response containing PE
12305	Prepared EAP-Request with another PE
11006	Returned RADIUS Access-Challenge
11001	Received RADIUS Access-Request
11018	RADIUS is re-using an existing session
12304	Extracted EAP-Response containing PE
12305	Prepared EAP-Request with another PE
11006	Returned RADIUS Access-Challenge
11001	Received RADIUS Access-Request
11018	RADIUS is re-using an existing session
12304	Extracted EAP-Response containing PE
12319	Successfully negotiated PEAP version 1
12812	Extracted TLS ClientKeyExchange mess
12813	Extracted TLS CertificateVerify message
12804	Extracted TLS Finished message
12801	Prepared TLS ChangeCipherSpec mes
12802	Prepared TLS Finished message
12816	TLS handshake succeeded
12310	PEAP full handshake finished successfu
12305	Prepared EAP-Request with another PE
11006	Returned RADIUS Access-Challenge

Test Results



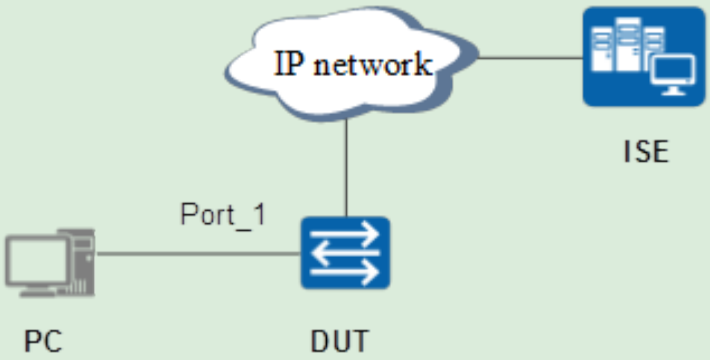
Other Attributes

ConfigVersionId	111
DestinationPort	1812
Protocol	Radius
NAS-Port	17829898
Framed-Protocol	PPP
Framed-MTU	1500
Login-IP-Host	0.0.0.0
State	64CPMSessionID=c0590bbc688o5VrXFxfbo4ICOkMfFPJMphOeQf/s1kFEn__BNtM;29SessionID=ISE2/265353892/2659;
VendorSpecific	00:00:07:db:3b:06:57:fe:01:4d:3c:21:31:39:32:2e:38:39:2e:31:37:2e:31:30:39:20:33:63:3a:39:37:3a:30:65:3a:64:39:3a:62:64:3a:39:31:1a:06:00:00:3e:d6:fe:0f:48:75:61:77:65:69:20:53:31:32:37:30:30:ff:08:53:31:32:37:30:30:99:06:00:00:00:01
NetworkDeviceProfileName	Cisco
NetworkDeviceProfileId	8ade1f15-aef1-4a9a-8158-d02e835179db
IsThirdPartyDeviceFlow	false
RadiusFlowType	Wired802_1x
SSID	54-39-DF-C9-9A-E0
AcsSessionID	ISE2/265353892/2659
SelectedAuthenticationIdentityStores	Internal Endpoints
SelectedAuthenticationIdentityStores	Internal Users
SelectedAuthenticationIdentityStores	Guest Users
SelectedAuthenticationIdentityStores	Tander
SelectedAuthenticationIdentityStores	test.com
SelectedAuthenticationIdentityStores	Initial_Scope
SelectedAuthenticationIdentityStores	All_AD_Join_Points
SelectedAuthenticationIdentityStores	AD1
AuthorizationPolicyMatchedRule	NIG_PreCPP
CPMSessionID	c0590bbc688o5VrXFxfbo4ICOkMfFPJMphOeQf/s1kFEn__BNtM
EndPointMACAddress	3C-97-0E-D9-BD-91
ISEPolicySetName	Default
AllowedProtocolMatchedRule	TLS
IdentitySelectionMatchedRule	Default
Network Device Profile	Cisco
Location	Location#All Locations
Device Type	Device Type#All Device Types
RADIUS Username	tolly
NAS-Identifier	s12700
Device IP Address	192.89.15.101
Called-Station-ID	54:39:DF:C9:9A:E0

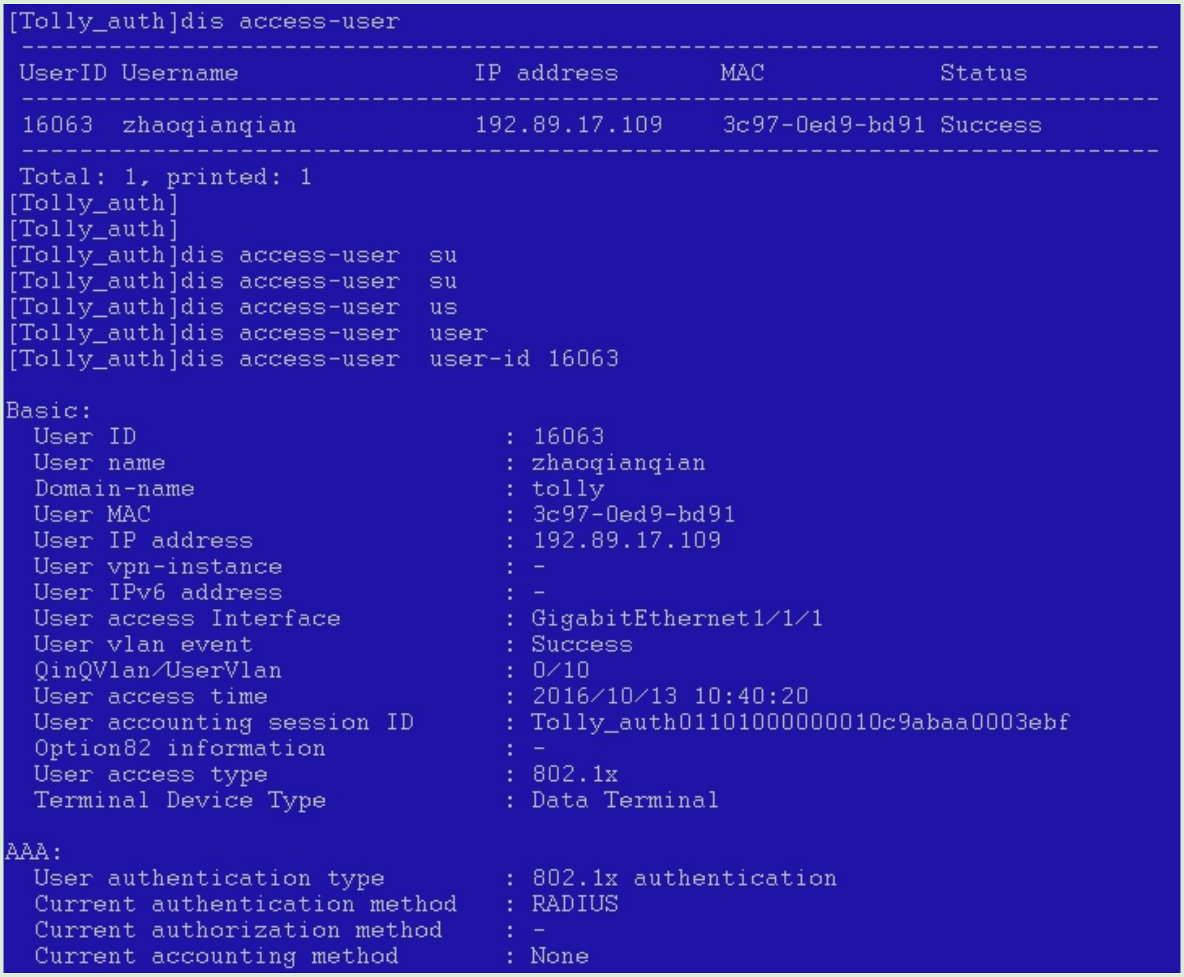
Result

State	ReauthSession:c0590bbc688o5VrXFxfbo4ICOkMfFPJMphOeQf/s1kFEn__BNtM
Class	CACS:c0590bbc688o5VrXFxfbo4ICOkMfFPJMphOeQf/s1kFEn__BNtM:ISE2/265353892/2659
MS-MPPE-Send-Key	****
MS-MPPE-Recv-Key	****
LicenseTypes	5

11006	Returned RADIUS Access-Challenge
11001	Received RADIUS Access-Request
11018	RADIUS is re-using an existing session
12304	Extracted EAP-Response containing PE
12313	PEAP inner method started
11521	Prepared EAP-Request/Identity for inner
12305	Prepared EAP-Request with another PE
11006	Returned RADIUS Access-Challenge
11001	Received RADIUS Access-Request
11018	RADIUS is re-using an existing session
12304	Extracted EAP-Response containing PE
11522	Extracted EAP-Response/Identity for inn
11806	Prepared EAP-Request for inner methoc challenge
12305	Prepared EAP-Request with another PE
11006	Returned RADIUS Access-Challenge
11001	Received RADIUS Access-Request
11018	RADIUS is re-using an existing session
12304	Extracted EAP-Response containing PE
11808	Extracted EAP-Response containing EA inner method and accepting EAP-MSCH
15041	Evaluating Identity Policy
15006	Matched Default Rule
22072	Selected identity source sequence - VDI
15013	Selected Identity Source - Internal Endp
22043	Current Identity Store does not support t it - Internal Endpoints
15013	Selected Identity Source - Internal Users
24210	Looking up User in Internal Users IDSto
24212	Found User in Internal Users IDStore
22037	Authentication Passed
11824	EAP-MSCHAP authentication attempt pa
12305	Prepared EAP-Request with another PE
11006	Returned RADIUS Access-Challenge
11001	Received RADIUS Access-Request
11018	RADIUS is re-using an existing session
12304	Extracted EAP-Response containing PE
11810	Extracted EAP-Response for inner meth response
11814	Inner EAP-MSCHAP authentication succ
11519	Prepared EAP-Success for inner EAP m
12314	PEAP inner method finished successfull
12305	Prepared EAP-Request with another PE
11006	Returned RADIUS Access-Challenge
11001	Received RADIUS Access-Request
11018	RADIUS is re-using an existing session
12304	Extracted EAP-Response containing PE
24423	ISE has not been able to confirm previou authentication
15036	Evaluating Authorization Policy
11055	User name change detected for the sess be removed from the cache
15048	Queried PIP - Session.PostureStatus
15004	Matched rule - NIG_PreCPP
15016	Selected Authorization Profile - PermitA
12306	PEAP authentication succeeded
11503	Prepared EAP-Success
11002	Returned RADIUS Access-Accept

Test 1.4	EAP-TLS
Objective	Verify the 802.1X authentication method with the EAP-TLS authentication protocol when a Huawei S switch works as the access control switch and the Cisco ISE server works as the authentication (RADIUS) server.
Procedure	1. Configure the Huawei S switch to ensure that the Huawei switch and the Cisco ISE server communicate with each other at Layer 3. 2. Create the Cisco ISE server profile and configure the related parameters, including IP address of the authentication server, port number, the RADIUS server key, and the retransmission time. Create an authentication scheme, and configure the authentication mode as RADIUS. Configure a domain name, and apply the authentication scheme to the domain. 3. Configure the Huawei switch 802.1X authentication mode as EAP. # dot1x-access-profile name tolly dot1x authentication-method eap # 4. Enable 802.1X authentication globally and on the interface Port_1. 5. Use the PC to initiate the 802.1X authentication in the EAP-TLS mode, and expected result 1 is displayed. 
Pass Criteria	The PC is authenticated to have network access.

Test Results

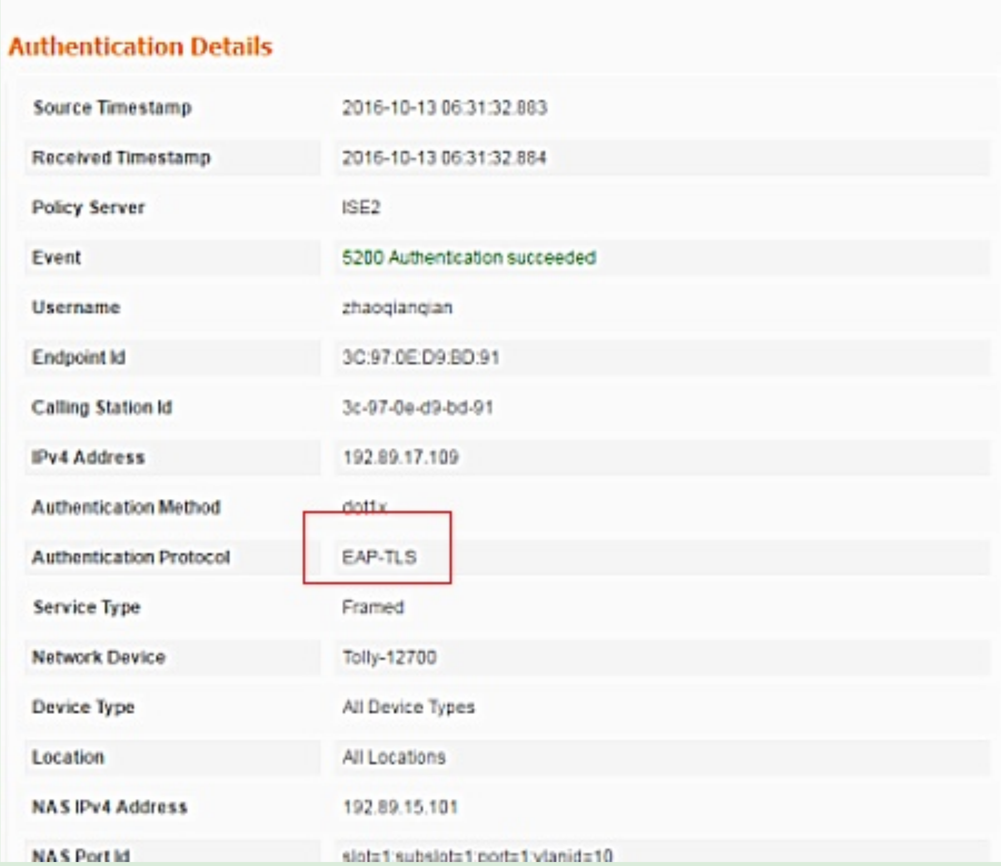


```
[Tolly_auth]dis access-user
 ------------------------------------------------------------------------------
 UserID Username                     IP address       MAC            Status
 ------------------------------------------------------------------------------
 16063  zhaoqianqian                 192.89.17.109    3c97-0ed9-bd91 Success
 ------------------------------------------------------------------------------
 Total: 1, printed: 1
[Tolly_auth]
[Tolly_auth]
[Tolly_auth]dis access-user  su
[Tolly_auth]dis access-user  su
[Tolly_auth]dis access-user  us
[Tolly_auth]dis access-user  user
[Tolly_auth]dis access-user  user-id 16063

Basic:
  User ID                          : 16063
  User name                        : zhaoqianqian
  Domain-name                      : tolly
  User MAC                         : 3c97-0ed9-bd91
  User IP address                  : 192.89.17.109
  User vpn-instance                : -
  User IPv6 address                : -
  User access Interface            : GigabitEthernet1/1/1
  User vlan event                  : Success
  QinQVlan/UserVlan                : 0/10
  User access time                 : 2016/10/13 10:40:20
  User accounting session ID       : Tolly_auth01101000000010c9abaa0003ebf
  Option82 information             : -
  User access type                 : 802.1x
  Terminal Device Type             : Data Terminal

AAA:
  User authentication type         : 802.1x authentication
  Current authentication method    : RADIUS
  Current authorization method     : -
  Current accounting method        : None
```

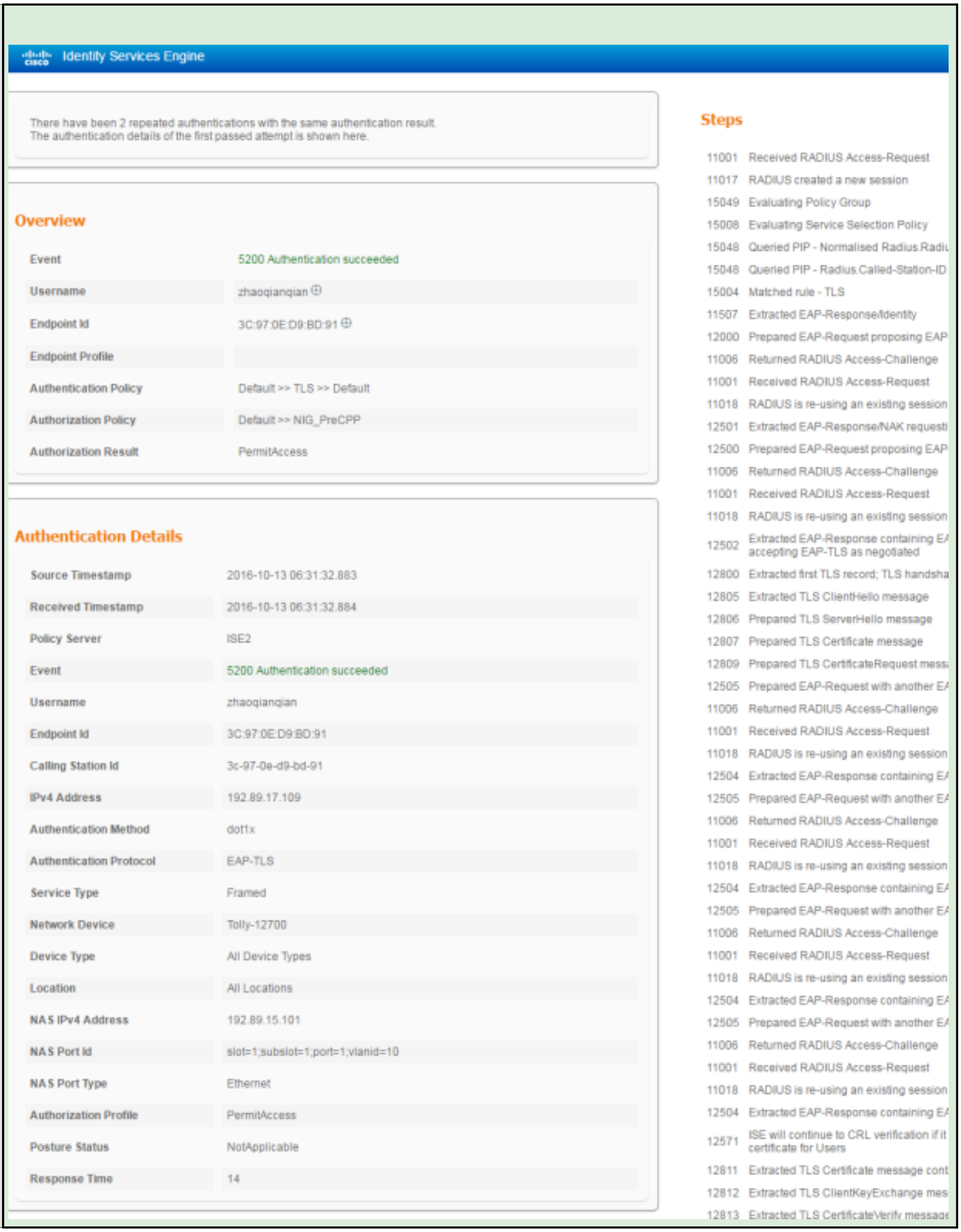
Test Results



Authentication Details

Source Timestamp	2016-10-13 06:31:32.883
Received Timestamp	2016-10-13 06:31:32.884
Policy Server	ISE2
Event	5200 Authentication succeeded
Username	zhaoqianqian
Endpoint Id	3C:97:0E:D9:BD:91
Calling Station Id	3c-97-0e-d9-bd-91
IPv4 Address	192.89.17.109
Authentication Method	dot1x
Authentication Protocol	EAP-TLS
Service Type	Framed
Network Device	Tolly-12700
Device Type	All Device Types
Location	All Locations
NAS IPv4 Address	192.89.15.101
NAS Port Id	slot=1;subslot=1;port=1;vlanid=10

Test Results



Identity Services Engine

There have been 2 repeated authentications with the same authentication result.
The authentication details of the first passed attempt is shown here.

Overview

Event	5200 Authentication succeeded
Username	zhaoqianqian ⊕
Endpoint Id	3C:97:0E:D9:BD:91 ⊕
Endpoint Profile	
Authentication Policy	Default >> TLS >> Default
Authorization Policy	Default >> NIG_PreCPP
Authorization Result	PermitAccess

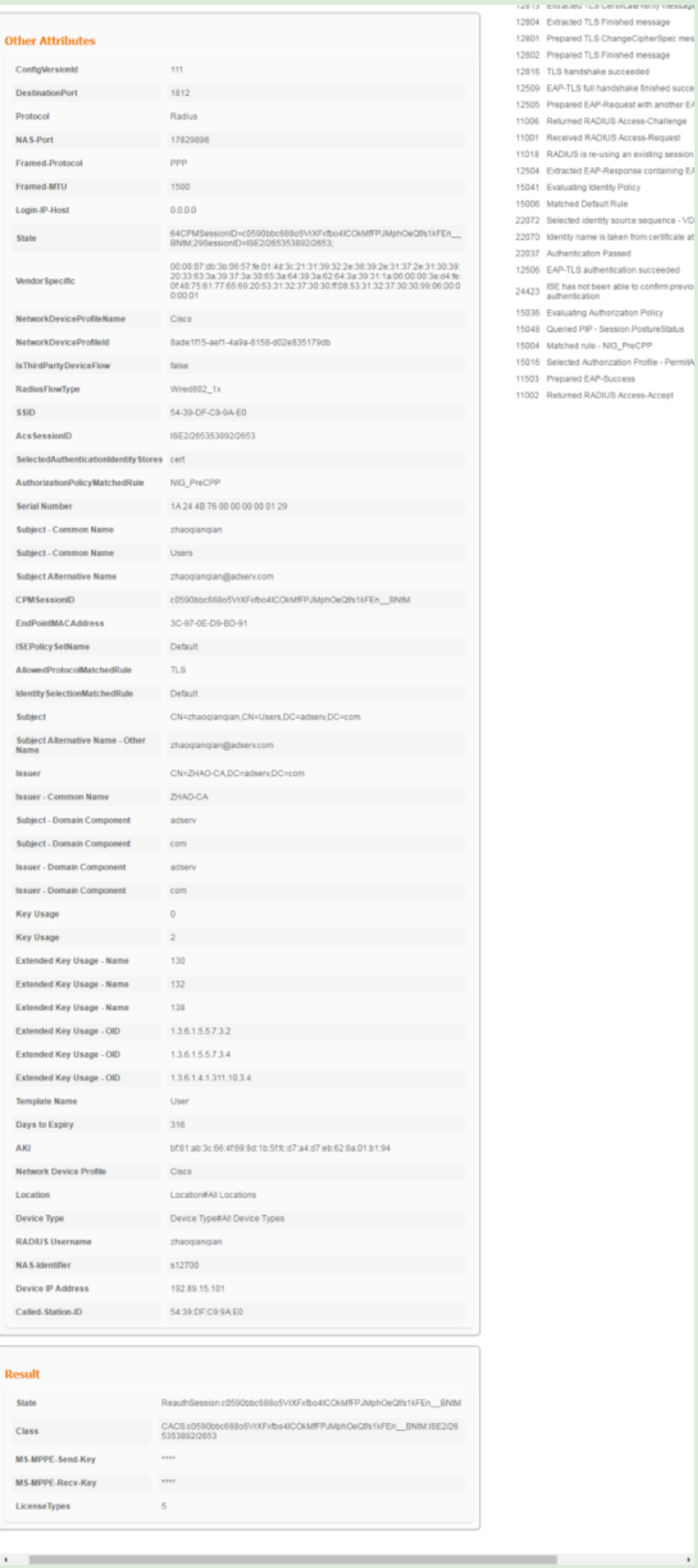
Authentication Details

Source Timestamp	2016-10-13 06:31:32.883
Received Timestamp	2016-10-13 06:31:32.884
Policy Server	ISE2
Event	5200 Authentication succeeded
Username	zhaoqianqian
Endpoint Id	3C:97:0E:D9:BD:91
Calling Station Id	3c-97-0e-d9-bd-91
IPv4 Address	192.89.17.109
Authentication Method	dot1x
Authentication Protocol	EAP-TLS
Service Type	Framed
Network Device	Tolly-12700
Device Type	All Device Types
Location	All Locations
NAS IPv4 Address	192.89.15.101
NAS Port Id	slot=1;subslot=1;port=1;vlanid=10
NAS Port Type	Ethernet
Authorization Profile	PermitAccess
Posture Status	NotApplicable
Response Time	14

Steps

11001	Received RADIUS Access-Request
11017	RADIUS created a new session
15049	Evaluating Policy Group
15008	Evaluating Service Selection Policy
15048	Queried PIP - Normalised Radius.Radiu
15048	Queried PIP - Radius.Called-Station-ID
15004	Matched rule - TLS
11507	Extracted EAP-Response/Identity
12000	Prepared EAP-Request proposing EAP
11006	Returned RADIUS Access-Challenge
11001	Received RADIUS Access-Request
11018	RADIUS is re-using an existing session
12501	Extracted EAP-Response/NAK requesti
12500	Prepared EAP-Request proposing EAP
11006	Returned RADIUS Access-Challenge
11001	Received RADIUS Access-Request
11018	RADIUS is re-using an existing session
12502	Extracted EAP-Response containing E/ accepting EAP-TLS as negotiated
12800	Extracted first TLS record; TLS handsha
12805	Extracted TLS ClientHello message
12806	Prepared TLS ServerHello message
12807	Prepared TLS Certificate message
12809	Prepared TLS CertificateRequest mess:
12505	Prepared EAP-Request with another E/
11006	Returned RADIUS Access-Challenge
11001	Received RADIUS Access-Request
11018	RADIUS is re-using an existing session
12504	Extracted EAP-Response containing E/
12505	Prepared EAP-Request with another E/
11006	Returned RADIUS Access-Challenge
11001	Received RADIUS Access-Request
11018	RADIUS is re-using an existing session
12504	Extracted EAP-Response containing E/
12505	Prepared EAP-Request with another E/
11006	Returned RADIUS Access-Challenge
11001	Received RADIUS Access-Request
11018	RADIUS is re-using an existing session
12504	Extracted EAP-Response containing E/
12505	Prepared EAP-Request with another E/
11006	Returned RADIUS Access-Challenge
11001	Received RADIUS Access-Request
11018	RADIUS is re-using an existing session
12504	Extracted EAP-Response containing E/
12571	ISE will continue to CRL verification if it certificate for Users
12811	Extracted TLS Certificate message cont
12812	Extracted TLS ClientKeyExchange mes:
12813	Extracted TLS CertificateVerify message

Test Results



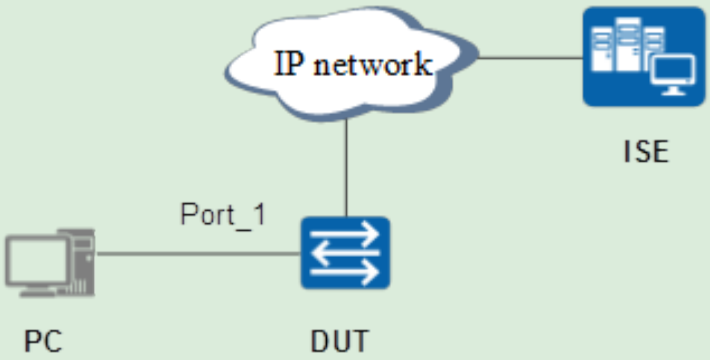
Other Attributes

ConfigVersionId	111
DestinationPort	1812
Protocol	Radius
NAS-Port	17829898
Framed-Protocol	PPP
Framed-MTU	1500
Login-IP-Host	0.0.0.0
State	64CPMSessionID=c0590bbc688o5VtXFxfbo4ICOkMfFPJMphOeQfls1kFEn__BNtM;29SessionID=ISE2/265353892/2653;
VendorSpecific	00:00:07:db:3b:06:57:fe:01:4d:3c:21:31:39:32:2e:38:39:2e:31:37:2e:31:30:39:20:33:63:3a:39:37:3a:30:65:3a:64:39:3a:62:64:3a:39:31:1a:06:00:00:3e:d4:fe:0f:48:75:61:77:65:69:20:53:31:32:37:30:30:ff:08:53:31:32:37:30:30:99:06:00:00:00:01
NetworkDeviceProfileName	Cisco
NetworkDeviceProfileId	8ade1f15-aef1-4a9a-8158-d02e835179db
IsThirdPartyDeviceFlow	false
RadiusFlowType	Wired802_1x
SSID	54-39-DF-C9-9A-E0
AcsSessionID	ISE2/265353892/2653
SelectedAuthenticationIdentityStores	cert
AuthorizationPolicyMatchedRule	NIG_PreCPP
Serial Number	1A 24 4B 76 00 00 00 00 01 29
Subject - Common Name	zhaoqianqian
Subject - Common Name	Users
Subject Alternative Name	zhaoqianqian@adserv.com
CPMSessionID	c0590bbc688o5VtXFxfbo4ICOkMfFPJMphOeQfls1kFEn__BNtM
EndPointMACAddress	3C-97-0E-D9-BD-91
ISEPolicySetName	Default
AllowedProtocolMatchedRule	TLS
IdentitySelectionMatchedRule	Default
Subject	CN=zhaoqianqian,CN=Users,DC=adserv,DC=com
Subject Alternative Name - Other Name	zhaoqianqian@adserv.com
Issuer	CN=ZHAO-CA,DC=adserv,DC=com
Issuer - Common Name	ZHAO-CA
Subject - Domain Component	adserv
Subject - Domain Component	com
Issuer - Domain Component	adserv
Issuer - Domain Component	com
Key Usage	0
Key Usage	2
Extended Key Usage - Name	130
Extended Key Usage - Name	132
Extended Key Usage - Name	138
Extended Key Usage - OID	1.3.6.1.5.5.7.3.2
Extended Key Usage - OID	1.3.6.1.5.5.7.3.4
Extended Key Usage - OID	1.3.6.1.4.1.311.10.3.4
Template Name	User
Days to Expiry	316
AKI	bf:81:ab:3c:66:4f:69:8d:1b:5f:fc:d7:a4:d7:eb:62:8a:01:b1:94
Network Device Profile	Cisco
Location	Location#All Locations
Device Type	Device Type#All Device Types
RADIUS Username	zhaoqianqian
NAS-Identifier	s12700
Device IP Address	192.89.15.101
Called-Station-ID	54:39:DF:C9:9A:E0

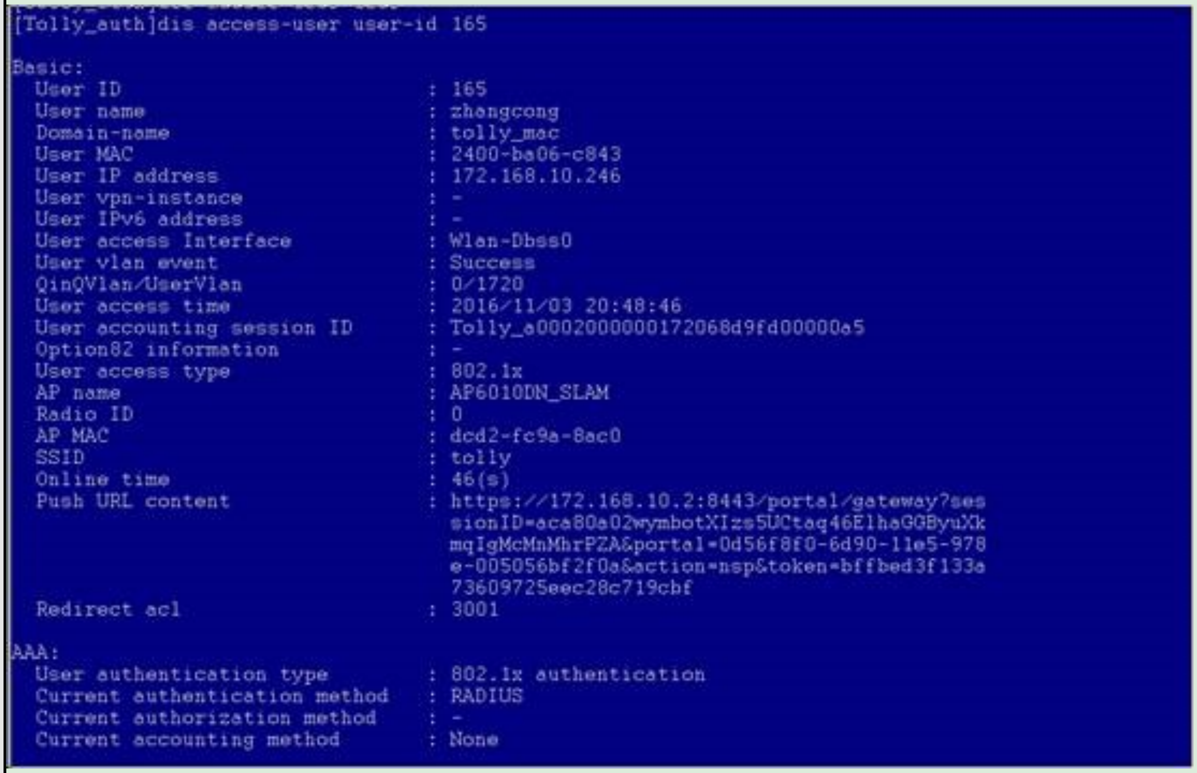
Result

State	ReauthSession:c0590bbc688o5VtXFxfbo4ICOkMfFPJMphOeQfls1kFEn__BNtM
Class	CACS:c0590bbc688o5VtXFxfbo4ICOkMfFPJMphOeQfls1kFEn__BNtM:ISE2/265353892/2653
MS-MPPE-Send-Key	****
MS-MPPE-Recv-Key	****
LicenseTypes	5

```
12813  Extracted TLS CertificateVerify message
12804  Extracted TLS Finished message
12801  Prepared TLS ChangeCipherSpec mes
12802  Prepared TLS Finished message
12816  TLS handshake succeeded
12509  EAP-TLS full handshake finished succe
12505  Prepared EAP-Request with another EA
11006  Returned RADIUS Access-Challenge
11001  Received RADIUS Access-Request
11018  RADIUS is re-using an existing session
12504  Extracted EAP-Response containing EA
15041  Evaluating Identity Policy
15006  Matched Default Rule
22072  Selected identity source sequence - VD
22070  Identity name is taken from certificate at
22037  Authentication Passed
12506  EAP-TLS authentication succeeded
24423  ISE has not been able to confirm previo
       authentication
15036  Evaluating Authorization Policy
15048  Queried PIP - Session.PostureStatus
15004  Matched rule - NIG_PreCPP
15016  Selected Authorization Profile - PermitA
11503  Prepared EAP-Success
11002  Returned RADIUS Access-Accept
```

Test 1.5	EAP-TTLS
Objective	Verify the 802.1X authentication method with the EAP-TTLS authentication protocol when a Huawei S switch works as the access control switch and the Cisco ISE server works as the authentication (RADIUS) server.
Procedure	1. Configure the Huawei S switch to ensure that the Huawei switch and the Cisco ISE server communicate with each other at Layer 3. 2. Create the Cisco ISE server profile and configure the related parameters, including IP address of the authentication server, port number, the RADIUS server key, and the retransmission time. Create an authentication scheme, and configure the authentication mode as RADIUS. Configure a domain name, and apply the authentication scheme to the domain. 3. Configure the Huawei switch 802.1X authentication mode as EAP. # dot1x-access-profile name tolly dot1x authentication-method eap # 4. Enable 802.1X authentication globally and on the interface Port_1. 5. Use the PC to initiate the 802.1X authentication in the EAP-TTLS mode, and expected result 1 is displayed. 
Pass Criteria	The PC is authenticated to have network access.

Test Results

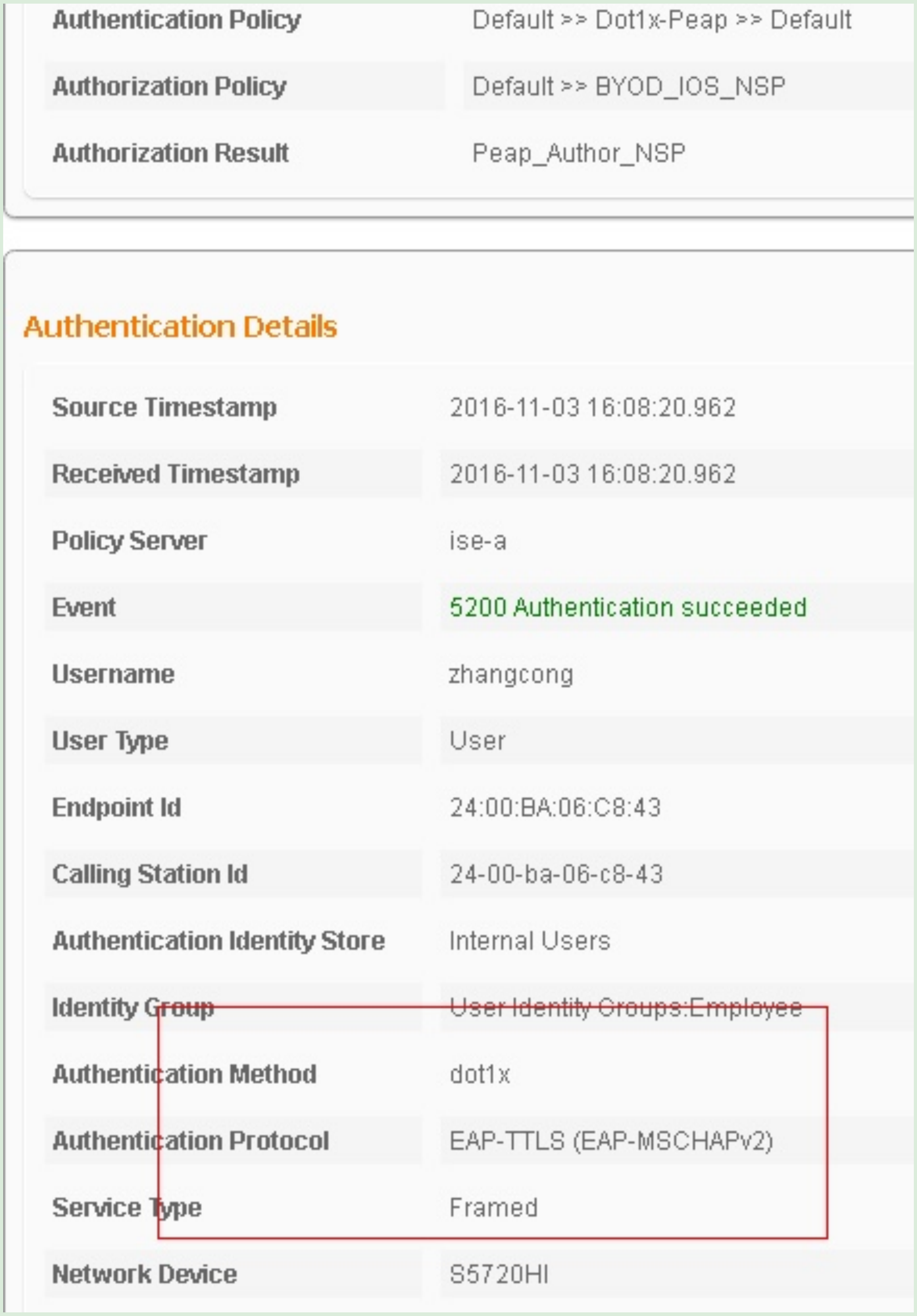


```
[Tolly_auth]dis access-user user-id 165

Basic:
  User ID                             : 165
  User name                           : zhangcong
  Domain-name                         : tolly_mac
  User MAC                            : 2400-ba06-c843
  User IP address                     : 172.168.10.246
  User vpn-instance                   : -
  User IPv6 address                   : -
  User access Interface               : Wlan-Dbss0
  User vlan event                     : Success
  QinQVlan/UserVlan                   : 0/1720
  User access time                    : 2016/11/03 20:48:46
  User accounting session ID          : Tolly_a00020000000172068d9fd00000a5
  Option82 information                : -
  User access type                    : 802.1x
  AP name                             : AP6010DN_SLAM
  Radio ID                            : 0
  AP MAC                              : dcd2-fc9a-8ac0
  SSID                                : tolly
  Online time                         : 46(s)
  Push URL content                    : https://172.168.10.2:8443/portal/gateway?ses
                                        sionID=aca80a02wymbotXIzs5UCtaq46ElhaGGByuXk
                                        mqIgMcMnMhrPZA&portal=0d56f8f0-6d90-11e5-978
                                        e-005056bf2f0a&action=nsp&token=bffbed3f133a
                                        73609725eec28c719cbf
  Redirect acl                        : 3001

AAA:
  User authentication type            : 802.1x authentication
  Current authentication method       : RADIUS
  Current authorization method        : -
  Current accounting method           : None
```

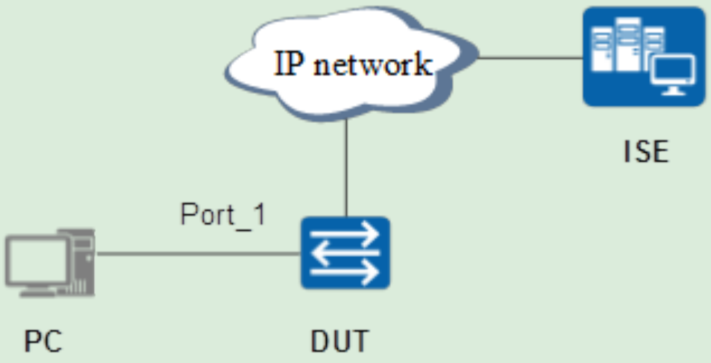
Test Results



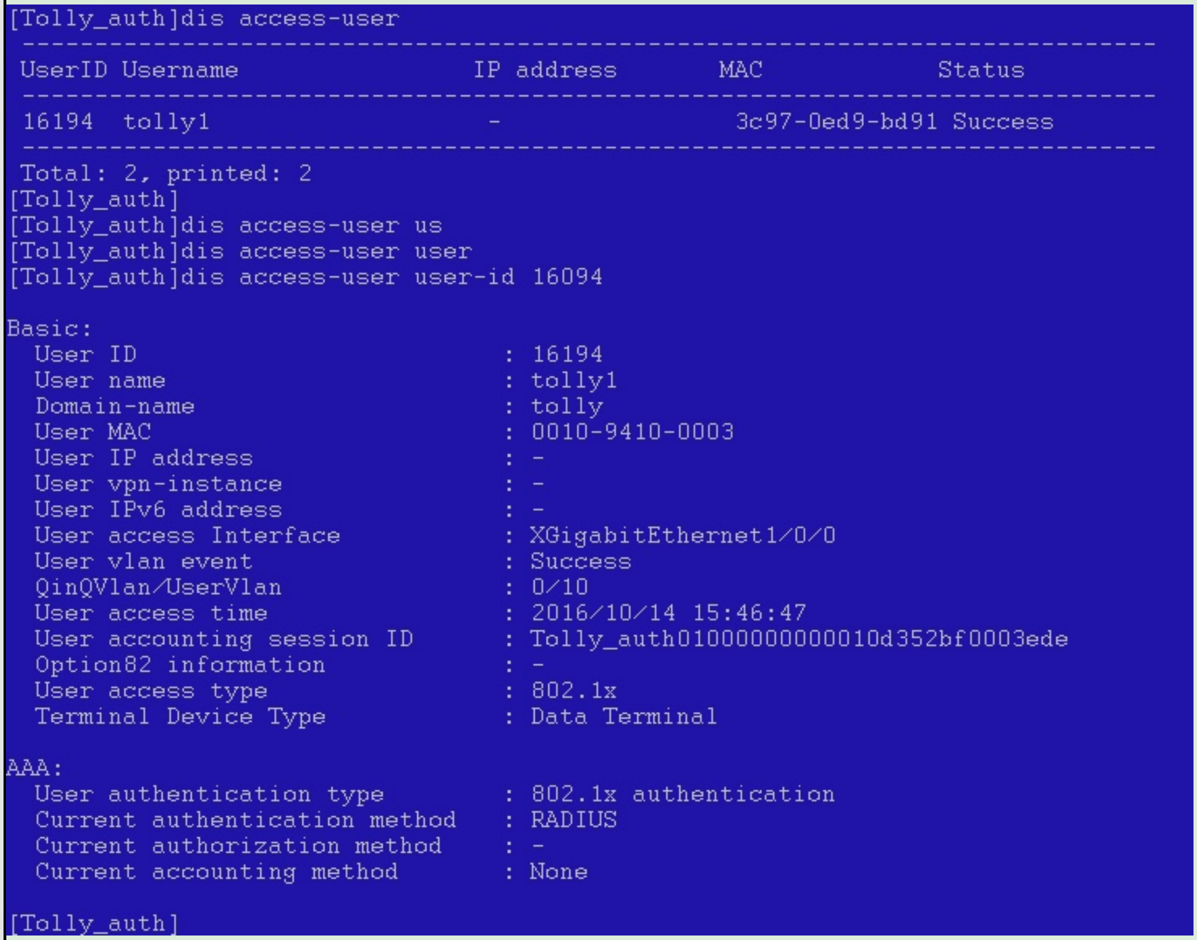
Authentication Policy	Default >> Dot1x-Peap >> Default
Authorization Policy	Default >> BYOD_IOS_NSP
Authorization Result	Peap_Author_NSP

Authentication Details

Source Timestamp	2016-11-03 16:08:20.962
Received Timestamp	2016-11-03 16:08:20.962
Policy Server	ise-a
Event	5200 Authentication succeeded
Username	zhangcong
User Type	User
Endpoint Id	24:00:BA:06:C8:43
Calling Station Id	24-00-ba-06-c8-43
Authentication Identity Store	Internal Users
Identity Group	User Identity Groups:Employee
Authentication Method	dot1x
Authentication Protocol	EAP-TTLS (EAP-MSCHAPv2)
Service Type	Framed
Network Device	S5720HI

Test 1.6	EAP-FAST
Objective	Verify the 802.1X authentication method with the EAP-FAST authentication protocol when a Huawei S switch works as the access control switch and the Cisco ISE server works as the authentication (RADIUS) server.
Procedure	1. Configure the Huawei S switch to ensure that the Huawei switch and the Cisco ISE server communicate with each other at Layer 3. 2. Create the Cisco ISE server profile and configure the related parameters, including IP address of the authentication server, port number, the RADIUS server key, and the retransmission time. Create an authentication scheme, and configure the authentication mode as RADIUS. Configure a domain name, and apply the authentication scheme to the domain. 3. Configure the Huawei switch 802.1X authentication mode as EAP. # dot1x-access-profile name tolly dot1x authentication-method eap # 4. Enable 802.1X authentication globally and on the interface Port_1. 5. Use the PC to initiate the 802.1X authentication in the EAP-FAST mode, and expected result 1 is displayed. 
Pass Criteria	The PC is authenticated to have network access.

Test Results



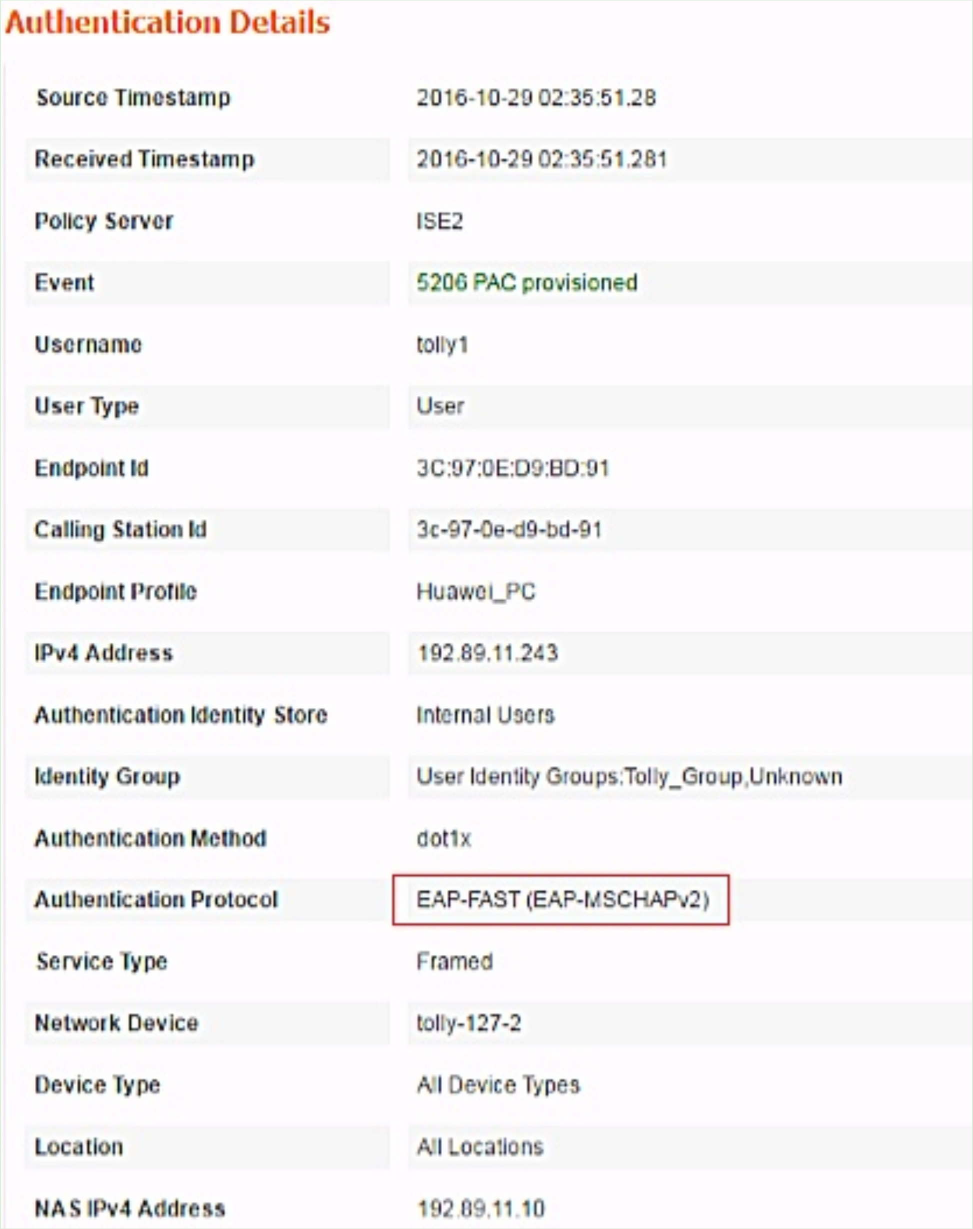
```
[Tolly_auth]dis access-user
 ------------------------------------------------------------------------------
 UserID Username                   IP address       MAC              Status
 ------------------------------------------------------------------------------
 16194  tolly1                      -                3c97-0ed9-bd91 Success
 ------------------------------------------------------------------------------
 Total: 2, printed: 2
[Tolly_auth]
[Tolly_auth]dis access-user us
[Tolly_auth]dis access-user user
[Tolly_auth]dis access-user user-id 16094

Basic:
  User ID                           : 16194
  User name                         : tolly1
  Domain-name                       : tolly
  User MAC                          : 0010-9410-0003
  User IP address                   : -
  User vpn-instance                 : -
  User IPv6 address                 : -
  User access Interface             : XGigabitEthernet1/0/0
  User vlan event                   : Success
  QinQVlan/UserVlan                 : 0/10
  User access time                  : 2016/10/14 15:46:47
  User accounting session ID        : Tolly_auth01000000000010d352bf0003ede
  Option82 information              : -
  User access type                  : 802.1x
  Terminal Device Type              : Data Terminal

AAA:
  User authentication type          : 802.1x authentication
  Current authentication method     : RADIUS
  Current authorization method      : -
  Current accounting method         : None

[Tolly_auth]
```

Test Results



Authentication Details

Source Timestamp	2016-10-29 02:35:51.28
Received Timestamp	2016-10-29 02:35:51.281
Policy Server	ISE2
Event	5206 PAC provisioned
Username	tolly1
User Type	User
Endpoint Id	3C:97:0E:D9:BD:91
Calling Station Id	3c-97-0e-d9-bd-91
Endpoint Profile	Huawei_PC
IPv4 Address	192.89.11.243
Authentication Identity Store	Internal Users
Identity Group	User Identity Groups:Tolly_Group,Unknown
Authentication Method	dot1x
Authentication Protocol	EAP-FAST (EAP-MSCHAPv2)
Service Type	Framed
Network Device	tolly-127-2
Device Type	All Device Types
Location	All Locations
NAS IPv4 Address	192.89.11.10

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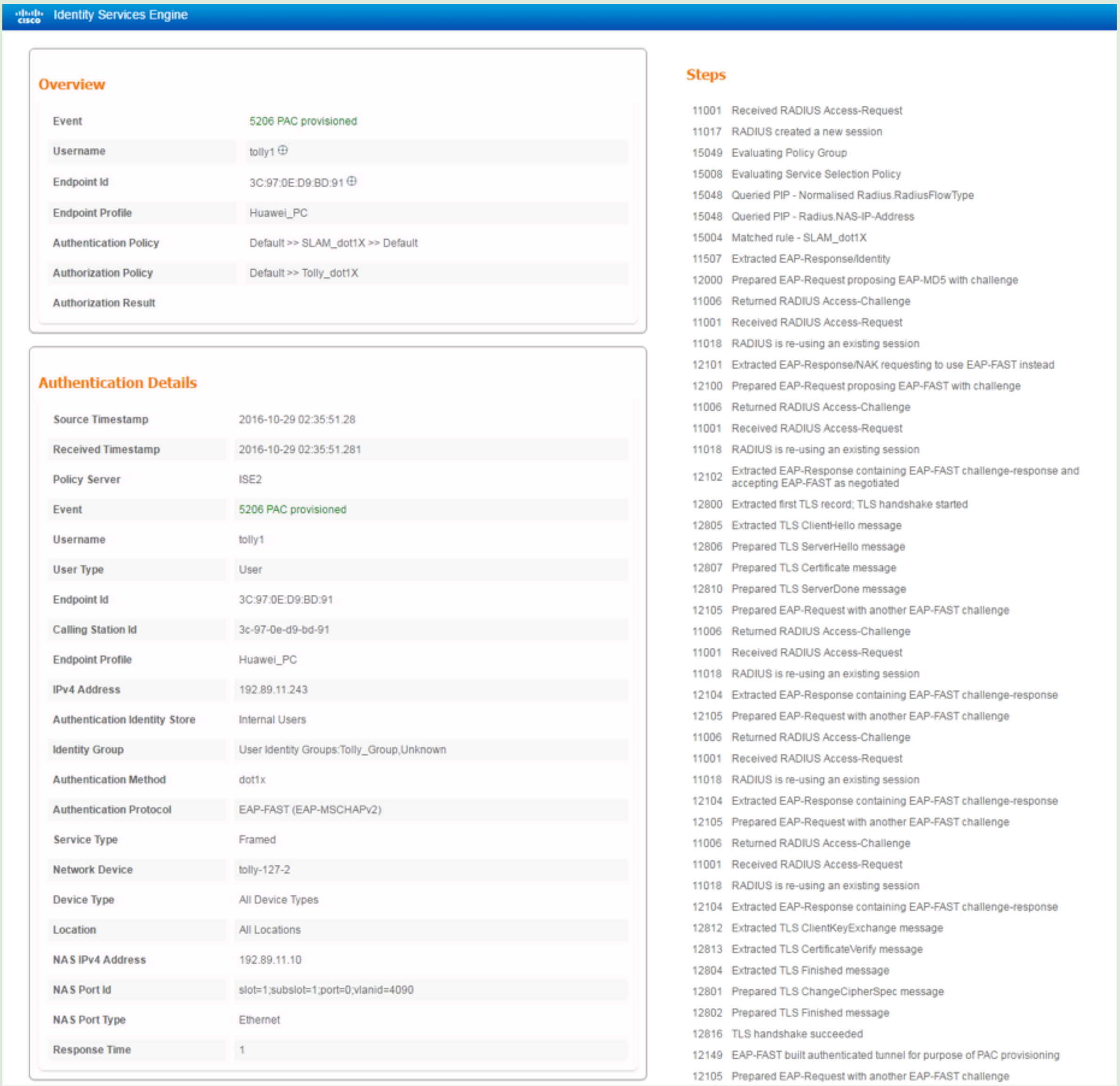
Test Results



Overview

Event	5206 PAC provisioned
Username	tolly1 ⊕
Endpoint Id	3C:97:0E:D9:BD:91 ⊕
Endpoint Profile	Huawei_PC
Authentication Policy	Default >> SLAM_dot1X >> Default
Authorization Policy	Default >> Tolly_dot1X
Authorization Result	

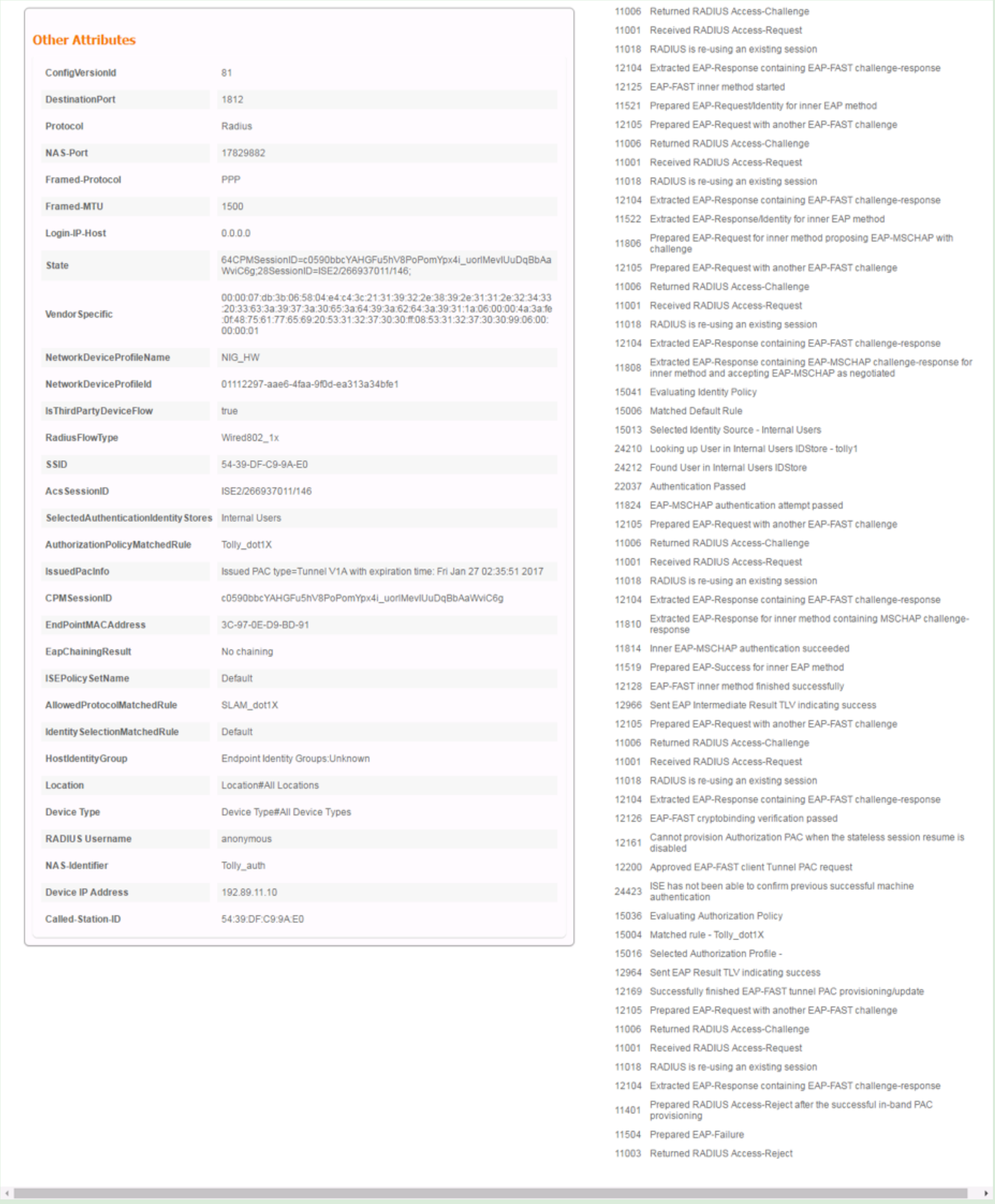
Authentication Details

Source Timestamp	2016-10-29 02:35:51.28
Received Timestamp	2016-10-29 02:35:51.281
Policy Server	ISE2
Event	5206 PAC provisioned
Username	tolly1
User Type	User
Endpoint Id	3C:97:0E:D9:BD:91
Calling Station Id	3c-97-0e-d9-bd-91
Endpoint Profile	Huawei_PC
IPv4 Address	192.89.11.243
Authentication Identity Store	Internal Users
Identity Group	User Identity Groups:Tolly_Group,Unknown
Authentication Method	dot1x
Authentication Protocol	EAP-FAST (EAP-MSCHAPv2)
Service Type	Framed
Network Device	tolly-127-2
Device Type	All Device Types
Location	All Locations
NAS IPv4 Address	192.89.11.10
NAS Port Id	slot=1;subslot=1;port=0;vlanid=4090
NAS Port Type	Ethernet
Response Time	1

Steps

```
11001   Received RADIUS Access-Request
11017   RADIUS created a new session
15049   Evaluating Policy Group
15008   Evaluating Service Selection Policy
15048   Queried PIP - Normalised Radius.RadiusFlowType
15048   Queried PIP - Radius.NAS-IP-Address
15004   Matched rule - SLAM_dot1X
11507   Extracted EAP-Response/Identity
12000   Prepared EAP-Request proposing EAP-MD5 with challenge
11006   Returned RADIUS Access-Challenge
11001   Received RADIUS Access-Request
11018   RADIUS is re-using an existing session
12101   Extracted EAP-Response/NAK requesting to use EAP-FAST instead
12100   Prepared EAP-Request proposing EAP-FAST with challenge
11006   Returned RADIUS Access-Challenge
11001   Received RADIUS Access-Request
11018   RADIUS is re-using an existing session
12102   Extracted EAP-Response containing EAP-FAST challenge-response and
        accepting EAP-FAST as negotiated
12800   Extracted first TLS record; TLS handshake started
12805   Extracted TLS ClientHello message
12806   Prepared TLS ServerHello message
12807   Prepared TLS Certificate message
12810   Prepared TLS ServerDone message
12105   Prepared EAP-Request with another EAP-FAST challenge
11006   Returned RADIUS Access-Challenge
11001   Received RADIUS Access-Request
11018   RADIUS is re-using an existing session
12104   Extracted EAP-Response containing EAP-FAST challenge-response
12105   Prepared EAP-Request with another EAP-FAST challenge
11006   Returned RADIUS Access-Challenge
11001   Received RADIUS Access-Request
11018   RADIUS is re-using an existing session
12104   Extracted EAP-Response containing EAP-FAST challenge-response
12105   Prepared EAP-Request with another EAP-FAST challenge
11006   Returned RADIUS Access-Challenge
11001   Received RADIUS Access-Request
11018   RADIUS is re-using an existing session
12104   Extracted EAP-Response containing EAP-FAST challenge-response
12812   Extracted TLS ClientKeyExchange message
12813   Extracted TLS CertificateVerify message
12804   Extracted TLS Finished message
12801   Prepared TLS ChangeCipherSpec message
12802   Prepared TLS Finished message
12816   TLS handshake succeeded
12149   EAP-FAST built authenticated tunnel for purpose of PAC provisioning
12105   Prepared EAP-Request with another EAP-FAST challenge
```

Test Results



Other Attributes

ConfigVersionId	81
DestinationPort	1812
Protocol	Radius
NAS-Port	17829882
Framed-Protocol	PPP
Framed-MTU	1500
Login-IP-Host	0.0.0.0
State	64CPMSessionID=c0590bbcYAHGFu5hV8PoPomYpx4i_uorlMevlUuDqBbAaWviC6g;28SessionID=ISE2/266937011/146;
Vendor Specific	00:00:07:db:3b:06:58:04:e4:c4:3c:21:31:39:32:2e:38:39:2e:31:31:2e:32:34:33:20:33:63:3a:39:37:3a:30:65:3a:64:39:3a:62:64:3a:39:31:1a:06:00:00:4a:3a:fe:0f:48:75:61:77:65:69:20:53:31:32:37:30:30:ff:08:53:31:32:37:30:30:99:06:00:00:00:01
NetworkDeviceProfileName	NIG_HW
NetworkDeviceProfileId	01112297-aae6-4faa-9f0d-ea313a34bfe1
IsThirdPartyDeviceFlow	true
RadiusFlowType	Wired802_1x
SSID	54-39-DF-C9-9A-E0
AcsSessionID	ISE2/266937011/146
SelectedAuthenticationIdentityStores	Internal Users
AuthorizationPolicyMatchedRule	Tolly_dot1X
IssuedPacInfo	Issued PAC type=Tunnel V1A with expiration time: Fri Jan 27 02:35:51 2017
CPMSessionID	c0590bbcYAHGFu5hV8PoPomYpx4i_uorlMevlUuDqBbAaWviC6g
EndPointMACAddress	3C-97-0E-D9-BD-91
EapChainingResult	No chaining
ISEPolicySetName	Default
AllowedProtocolMatchedRule	SLAM_dot1X
IdentitySelectionMatchedRule	Default
HostIdentityGroup	Endpoint Identity Groups:Unknown
Location	Location#All Locations
Device Type	Device Type#All Device Types
RADIUS Username	anonymous
NAS-Identifier	Tolly_auth
Device IP Address	192.89.11.10
Called-Station-ID	54:39:DF:C9:9A:E0

```
11006  Returned RADIUS Access-Challenge
11001  Received RADIUS Access-Request
11018  RADIUS is re-using an existing session
12104  Extracted EAP-Response containing EAP-FAST challenge-response
12125  EAP-FAST inner method started
11521  Prepared EAP-Request/Identity for inner EAP method
12105  Prepared EAP-Request with another EAP-FAST challenge
11006  Returned RADIUS Access-Challenge
11001  Received RADIUS Access-Request
11018  RADIUS is re-using an existing session
12104  Extracted EAP-Response containing EAP-FAST challenge-response
11522  Extracted EAP-Response/Identity for inner EAP method
11806  Prepared EAP-Request for inner method proposing EAP-MSCHAP with
       challenge
12105  Prepared EAP-Request with another EAP-FAST challenge
11006  Returned RADIUS Access-Challenge
11001  Received RADIUS Access-Request
11018  RADIUS is re-using an existing session
12104  Extracted EAP-Response containing EAP-FAST challenge-response
11808  Extracted EAP-Response containing EAP-MSCHAP challenge-response for
       inner method and accepting EAP-MSCHAP as negotiated
15041  Evaluating Identity Policy
15006  Matched Default Rule
15013  Selected Identity Source - Internal Users
24210  Looking up User in Internal Users IDStore - tolly1
24212  Found User in Internal Users IDStore
22037  Authentication Passed
11824  EAP-MSCHAP authentication attempt passed
12105  Prepared EAP-Request with another EAP-FAST challenge
11006  Returned RADIUS Access-Challenge
11001  Received RADIUS Access-Request
11018  RADIUS is re-using an existing session
12104  Extracted EAP-Response containing EAP-FAST challenge-response
11810  Extracted EAP-Response for inner method containing MSCHAP challenge-
       response
11814  Inner EAP-MSCHAP authentication succeeded
11519  Prepared EAP-Success for inner EAP method
12128  EAP-FAST inner method finished successfully
12966  Sent EAP Intermediate Result TLV indicating success
12105  Prepared EAP-Request with another EAP-FAST challenge
11006  Returned RADIUS Access-Challenge
11001  Received RADIUS Access-Request
11018  RADIUS is re-using an existing session
12104  Extracted EAP-Response containing EAP-FAST challenge-response
12126  EAP-FAST cryptobinding verification passed
12161  Cannot provision Authorization PAC when the stateless session resume is
       disabled
12200  Approved EAP-FAST client Tunnel PAC request
24423  ISE has not been able to confirm previous successful machine
       authentication
15036  Evaluating Authorization Policy
15004  Matched rule - Tolly_dot1X
15016  Selected Authorization Profile -
12964  Sent EAP Result TLV indicating success
12169  Successfully finished EAP-FAST tunnel PAC provisioning/update
12105  Prepared EAP-Request with another EAP-FAST challenge
11006  Returned RADIUS Access-Challenge
11001  Received RADIUS Access-Request
11018  RADIUS is re-using an existing session
12104  Extracted EAP-Response containing EAP-FAST challenge-response
11401  Prepared RADIUS Access-Reject after the successful in-band PAC
       provisioning
11504  Prepared EAP-Failure
11003  Returned RADIUS Access-Reject
```

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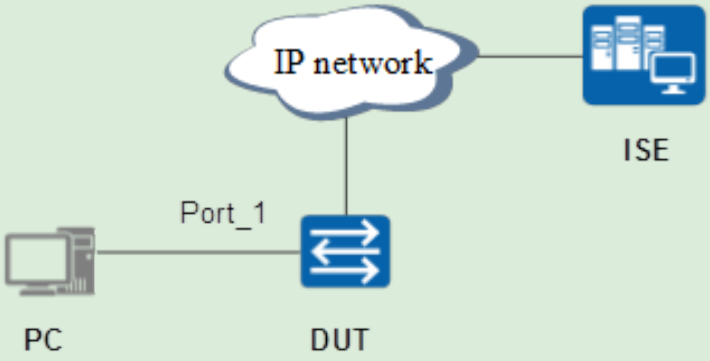
Test 2.1	Wired MAC Authentication
Objective	Verify the MAC authentication method for a wired PC when a Huawei S switch works as the access control switch and the Cisco ISE server works as the authentication (RADIUS) server.
Procedure	1. Configure the Huawei S switch to ensure that the Huawei switch and the Cisco ISE server communicate with each other at Layer 3. 2. Create the Cisco ISE server profile and configure the related parameters, including IP address of the authentication server, port number, the RADIUS server key, and the retransmission time. Create an authentication scheme, and configure the authentication mode as RADIUS. Configure a domain name, and apply the authentication scheme to the domain. Add the PC's MAC address to the user list. 3. Configure the Huawei switch's MAC authentication profile. 4. Connect the PC to the Huawei S Switch and expected result 1 is displayed. 
Pass Criteria	The PC is authenticated to have network access.

Test Results

1. Configure the switch's IP address so that the switch can communicate with the ISE server.
2. Configure the Huawei switch 802.1X authentication mode as EAP.

```
#
radius-server template tolly_mac
radius-server shared-key cipher huawei123
radius-server authentication 192.89.11.188 1812 weight 80
radius-server accounting 192.89.11.188 1813 weight 80
undo radius-server user-name domain-included
calling-station-id mac-format hyphen-split mode2
radius-attribute set Service-Type 10
#
domain tolly_mac
authentication-scheme tolly
authorization-scheme tolly
radius-server tolly_mac
#
```

3. Configure the aaa scheme.

```
#
aaa
authentication-scheme tolly
authentication-mode radius
authorization-scheme tolly
accounting-scheme tolly
accounting-mode radius
domain tolly_mac
authentication-scheme tolly
accounting-scheme tolly
radius-server tolly_mac
#
```

Test Results

4. Configure the MAC authentication profile on the device.

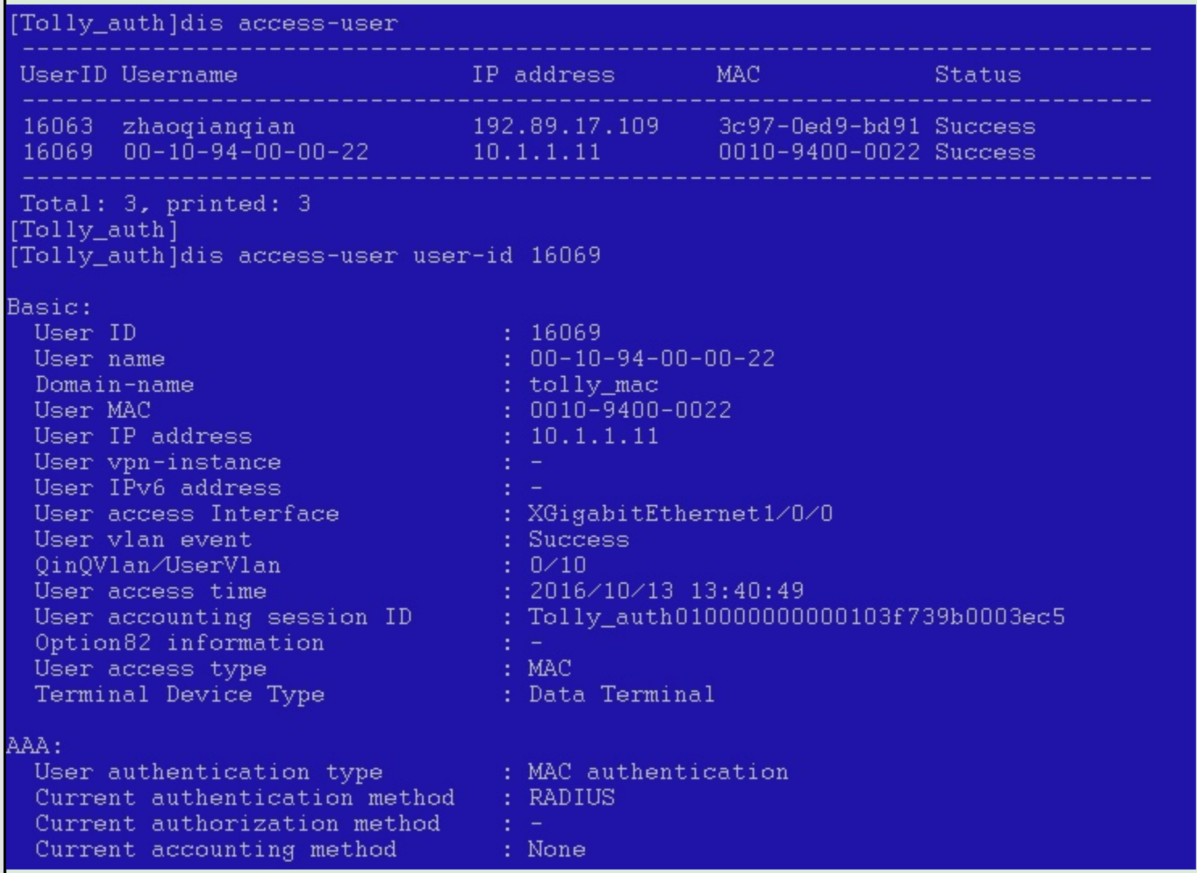
```
#
mac-access-profile name tolly
mac-authen username macaddress format with-hyphen normal uppercase
authentication-profile name tolly_mac
mac-access-profile tolly
access-domain tolly_mac
#
```

5. Configure the DHCP server on the device, and enable MAC authentication on the correspondent interface.

```
#
interface Vlanif4090
ip address 192.89.11.10 255.255.255.0
dhcp select interface
#
interface XGigabitEthernet1/0/0
port link-type hybrid
port hybrid pvid vlan 4090
port hybrid untagged vlan 4090
authentication-profile tolly_mac
#
```

6. Connect the user terminal to the DUT and enable the MAC-authenticated port. Expected result 1 is displayed.

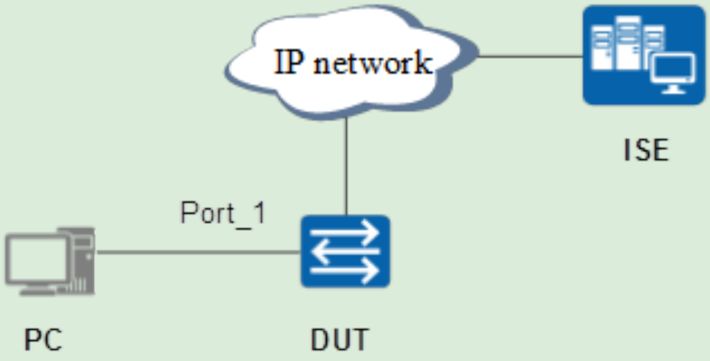
Test Results



```
[Tolly_auth]dis access-user
 ------------------------------------------------------------------------------
 UserID Username                     IP address       MAC            Status
 ------------------------------------------------------------------------------
 16063  zhaoqianqian                 192.89.17.109    3c97-0ed9-bd91 Success
 16069  00-10-94-00-00-22            10.1.1.11        0010-9400-0022 Success
 ------------------------------------------------------------------------------
 Total: 3, printed: 3
[Tolly_auth]
[Tolly_auth]dis access-user user-id 16069

Basic:
  User ID                           : 16069
  User name                         : 00-10-94-00-00-22
  Domain-name                       : tolly_mac
  User MAC                          : 0010-9400-0022
  User IP address                   : 10.1.1.11
  User vpn-instance                 : -
  User IPv6 address                 : -
  User access Interface             : XGigabitEthernet1/0/0
  User vlan event                   : Success
  QinQVlan/UserVlan                 : 0/10
  User access time                  : 2016/10/13 13:40:49
  User accounting session ID        : Tolly_auth010000000000103f739b0003ec5
  Option82 information              : -
  User access type                  : MAC
  Terminal Device Type              : Data Terminal

AAA:
  User authentication type          : MAC authentication
  Current authentication method     : RADIUS
  Current authorization method      : -
  Current accounting method         : None
```

Test 2.2	Wired 802.1X Authentication
Objective	Verify the 802.1X authentication method for a wired PC when a Huawei S switch works as the access control switch and the Cisco ISE server works as the authentication (RADIUS) server.
Procedure	1. Configure the Huawei S switch to ensure that the Huawei switch and the Cisco ISE server communicate with each other at Layer 3. 2. Create the Cisco ISE server profile and configure the related parameters, including IP address of the authentication server, port number, the RADIUS server key, and the retransmission time. Create an authentication scheme, and configure the authentication mode as RADIUS. Configure a domain name, and apply the authentication scheme to the domain. Add the PC's MAC address to the user list. 3. Configure the Huawei switch's 802.1X authentication profile. 4. Connect the PC to the Huawei S Switch and expected result 1 is displayed. 
Pass Criteria	The PC is authenticated to have network access.

Test Results

1. Configure the switch's IP address so that the switch can communicate with the ISE server.
2. Configure the RADIUS server profile and aaa profile on the switch.

```
#
radius-server template tolly
radius-server shared-key cipher huawei123
radius-server authentication 192.89.11.188 1812 weight 80
radius-server accounting 192.89.11.188 1813 weight 80
undo radius-server user-name domain-included
calling-station-id mac-format hyphen-split mode2
#
```

3. Configure the aaa scheme.

```
#
aaa
 authentication-scheme tolly
  authentication-mode radius
authorization-scheme tolly
 accounting-scheme tolly
  accounting-mode radius
domain tolly
  authentication-scheme tolly
  accounting-scheme tolly
  radius-server tolly
#
```

4. Configure the 802.1X authentication profile on the device.

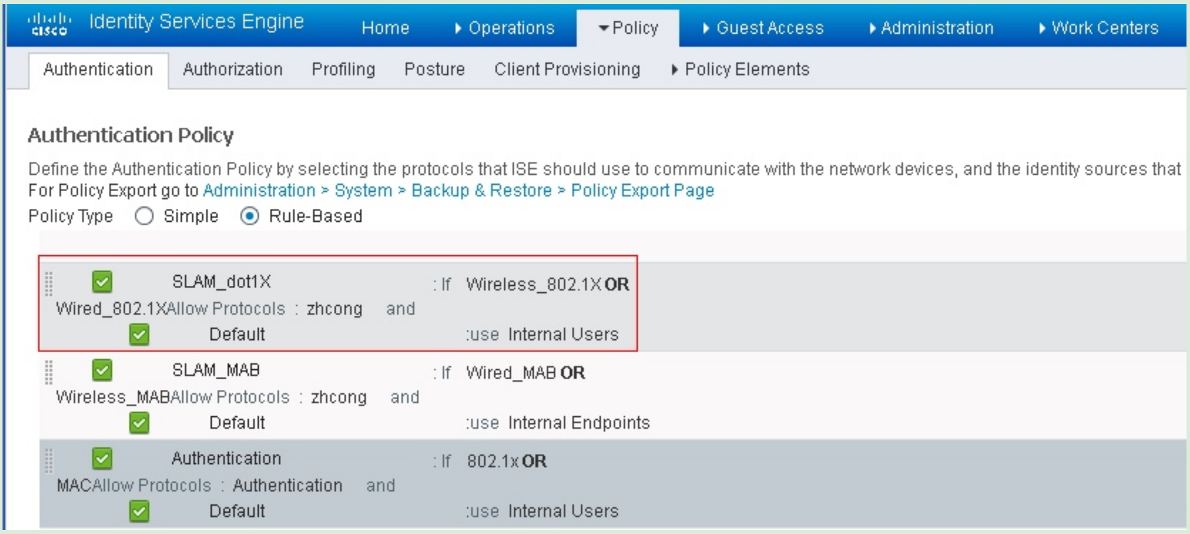
```
#
dot1x-access-profile name tolly
authentication-method eap
authentication-profile name tolly
dot1x-access-profile tolly
access-domain tolly dot1x force
#
```

Test Results

5. Configure the DHCP server on the device, and enable dot1x authentication on the correspondent interface.

```
#
interface Vlanif4090
ip address 192.89.6.202 255.255.255.0
dhcp select interface
interface GigabitEthernet1/1/0
port link-type hybrid
port hybrid pvid vlan 4090
port hybrid untagged vlan 4090
authentication-profile tolly
#
```

6. Enter the correct user name and password on the device for authentication. Check the user address and authentication information, and expected result 1 is displayed.



Authentication Policy

Define the Authentication Policy by selecting the protocols that ISE should use to communicate with the network devices, and the identity sources that
For Policy Export go to Administration > System > Backup & Restore > Policy Export Page

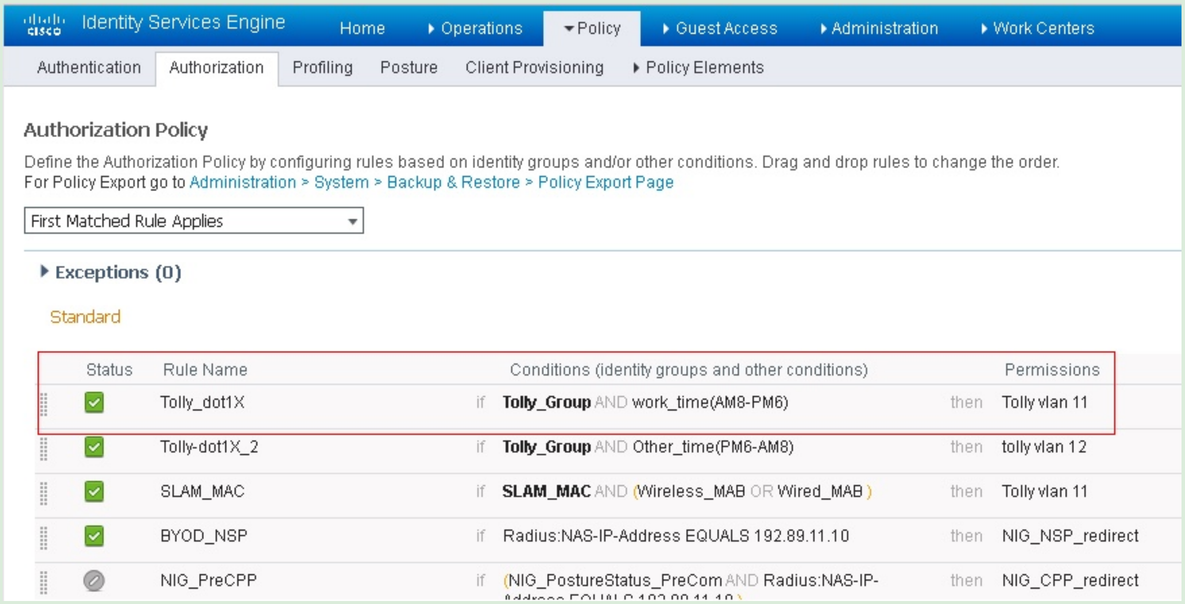
Policy Type ○ Simple ● Rule-Based

☑ SLAM_dot1X : If Wireless_802.1X OR Wired_802.1XAllow Protocols : zhcong and
☑ Default :use Internal Users

☑ SLAM_MAB : If Wired_MAB OR Wireless_MABAllow Protocols : zhcong and
☑ Default :use Internal Endpoints

☑ Authentication : If 802.1x OR MACAllow Protocols : Authentication and
☑ Default :use Internal Users

Test Results



Authorization Policy

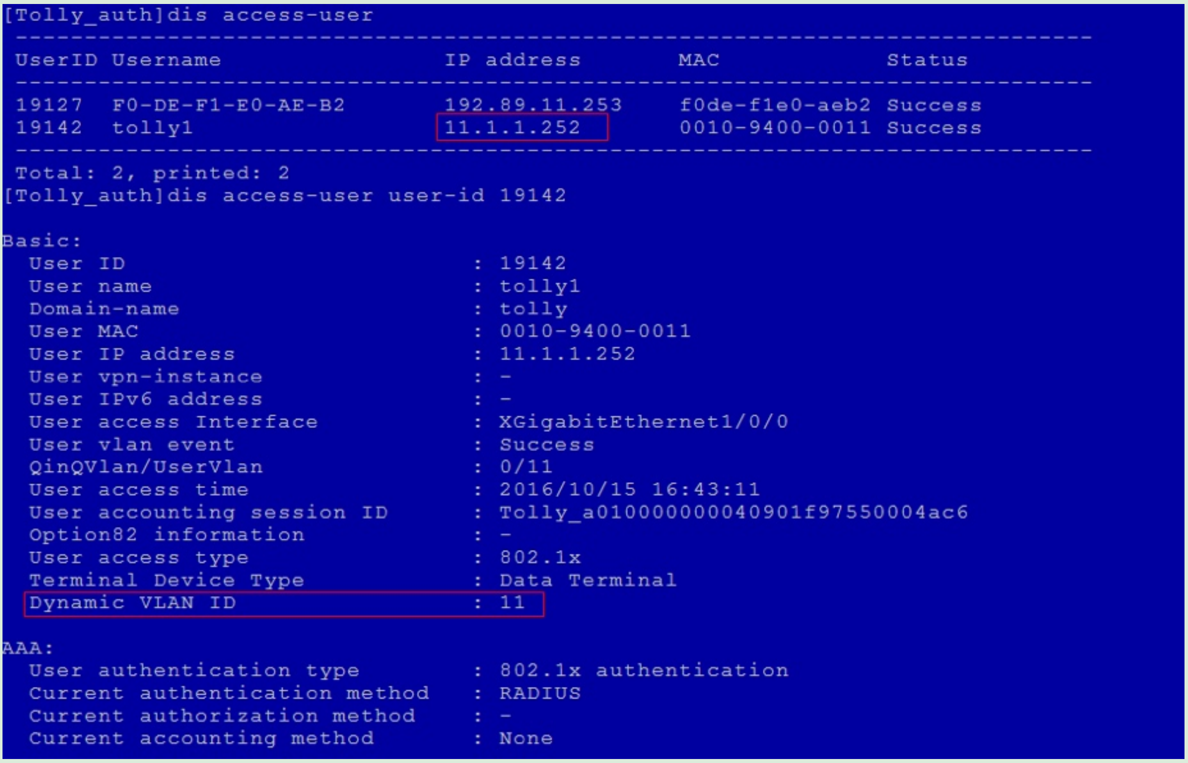
Define the Authorization Policy by configuring rules based on identity groups and/or other conditions. Drag and drop rules to change the order.
For Policy Export go to Administration > System > Backup & Restore > Policy Export Page

First Matched Rule Applies

Exceptions (0)

Standard

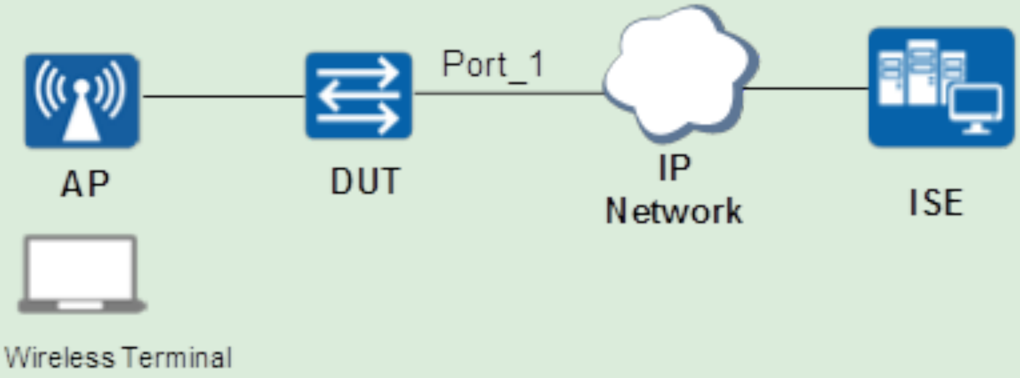
Status	Rule Name		Conditions (identity groups and other conditions)		Permissions
✓	Tolly_dot1X	if	**Tolly_Group** AND work_time(AM8-PM6)	then	Tolly vlan 11
✓	Tolly-dot1X_2	if	**Tolly_Group** AND Other_time(PM6-AM8)	then	tolly vlan 12
✓	SLAM_MAC	if	**SLAM_MAC** AND (Wireless_MAB OR Wired_MAB)	then	Tolly vlan 11
✓	BYOD_NSP	if	Radius:NAS-IP-Address EQUALS 192.89.11.10	then	NIG_NSP_redirect
⊘	NIG_PreCPP	if	(NIG_PostureStatus_PreCom AND Radius:NAS-IP-Address EQUALS 192.89.11.10)	then	NIG_CPP_redirect

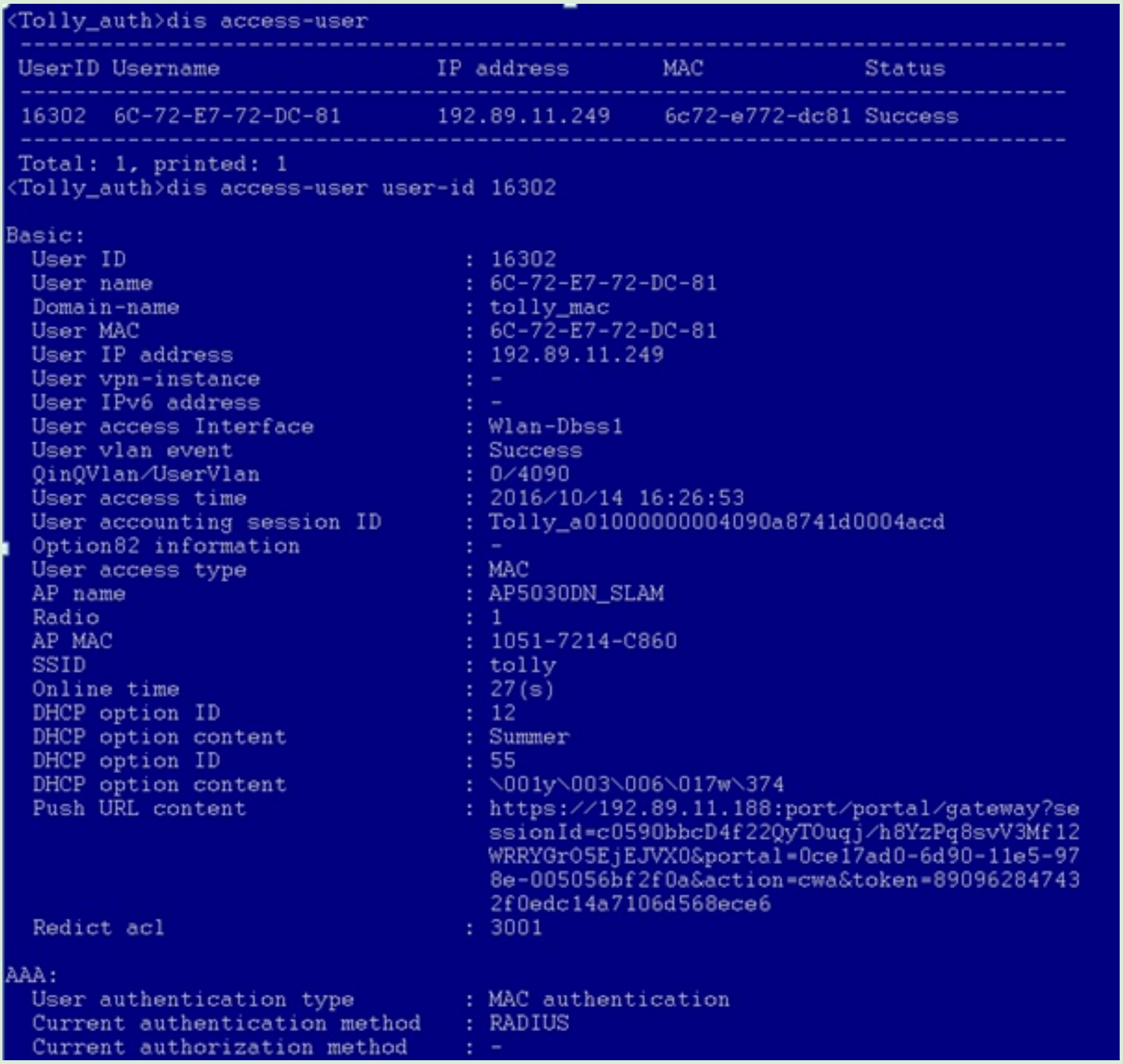


```
[Tolly_auth]dis access-user
 ------------------------------------------------------------------------------
 UserID Username                     IP address       MAC            Status
 ------------------------------------------------------------------------------
 19127  F0-DE-F1-E0-AE-B2            192.89.11.253    f0de-f1e0-aeb2 Success
 19142  tolly1                       11.1.1.252       0010-9400-0011 Success
 ------------------------------------------------------------------------------
 Total: 2, printed: 2
[Tolly_auth]dis access-user user-id 19142

Basic:
  User ID                         : 19142
  User name                       : tolly1
  Domain-name                     : tolly
  User MAC                        : 0010-9400-0011
  User IP address                 : 11.1.1.252
  User vpn-instance               : -
  User IPv6 address               : -
  User access Interface           : XGigabitEthernet1/0/0
  User vlan event                 : Success
  QinQVlan/UserVlan               : 0/11
  User access time                : 2016/10/15 16:43:11
  User accounting session ID      : Tolly_a010000000040901f97550004ac6
  Option82 information            : -
  User access type                : 802.1x
  Terminal Device Type            : Data Terminal
  Dynamic VLAN ID                 : 11

AAA:
  User authentication type        : 802.1x authentication
  Current authentication method   : RADIUS
  Current authorization method    : -
  Current accounting method       : None
```

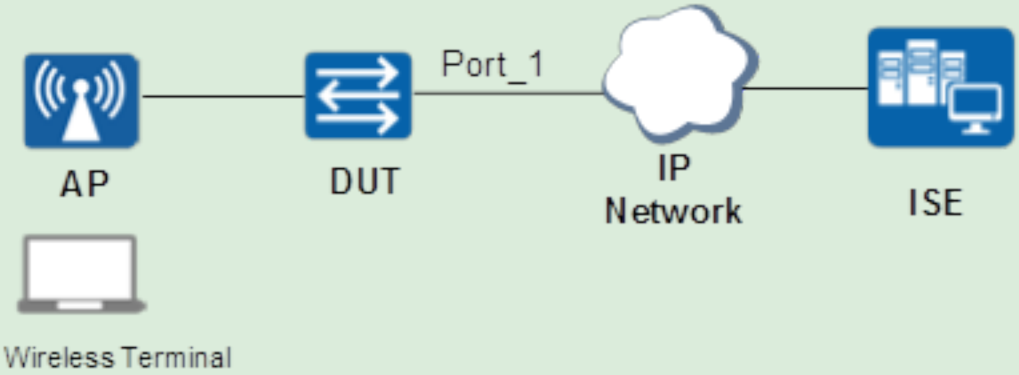
Test 2.3	Wireless MAC Authentication
Objective	Verify the MAC authentication method for a wireless client when a Huawei S switch works as the access control switch and the Cisco ISE server works as the authentication (RADIUS) server.
Procedure	1. Configure the switch's IP address so that the switch can communicate with the ISE server. 2. Configure the management VLAN10, and assign IP addresses to APs. Configure network access for APs. 3. Configure the RADIUS server profile and aaa profile on the switch. 4. Configure the MAC authentication profile on the device. 5. Configure the DHCP server on the device, and enable MAC authentication on the correspondent interface. 6. In the WLAN view, configure the security and SSID profiles. Bind the security and authentication profiles, service WLAN, forwarding mode, and SSID profile to the VAP profile. Configure the AP Group and bind it to the VAP profile. 7. The terminal accesses the wireless network through the SSID. Expected result 1 is displayed.  Port_1 AP DUT IP Network ISE Wireless Terminal
Pass Criteria	The wireless laptop is authenticated to have network access.

Test Results	

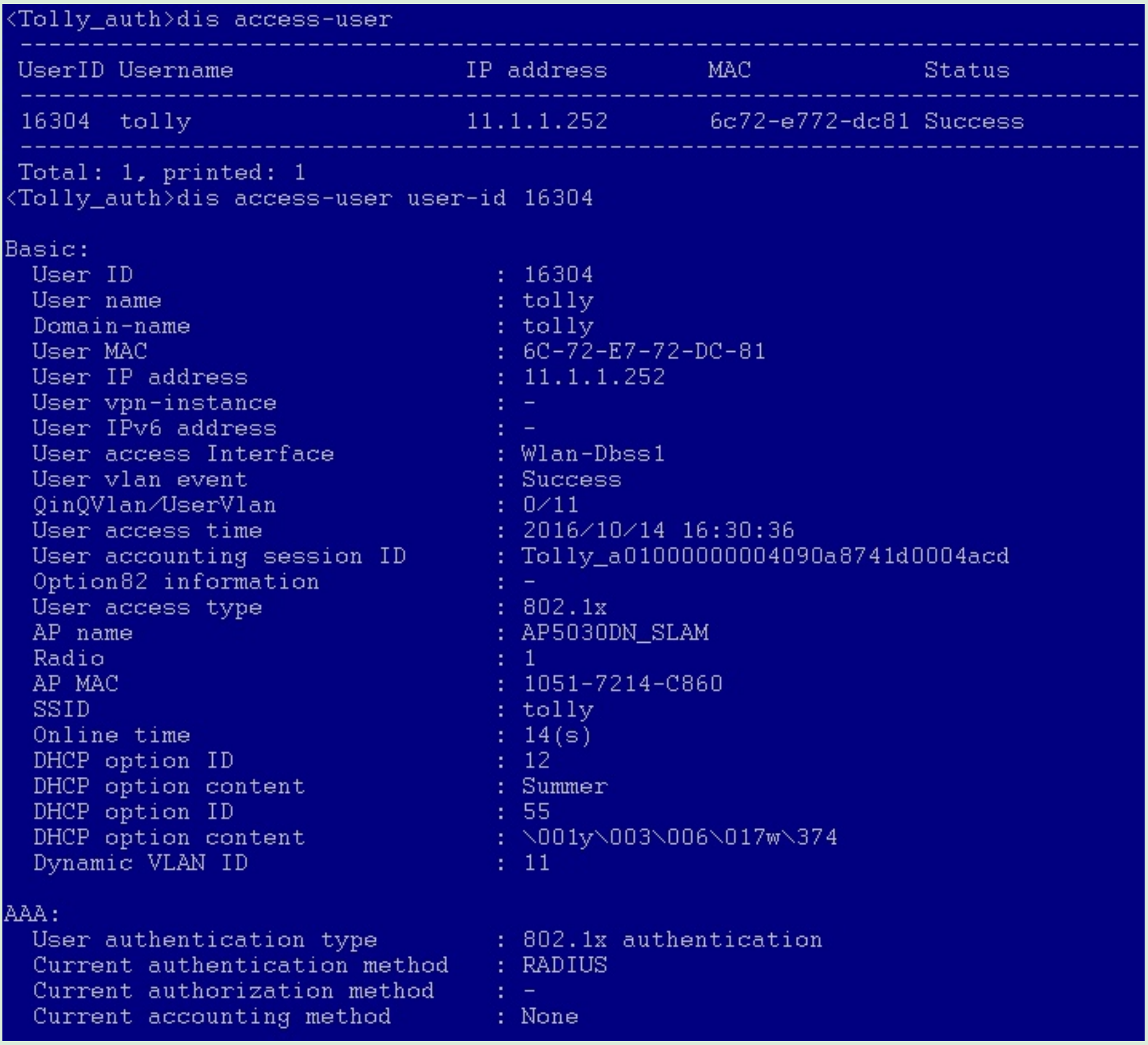
```
<Tolly_auth>dis access-user
 ------------------------------------------------------------------------------
 UserID Username                       IP address       MAC            Status
 ------------------------------------------------------------------------------
 16302  6C-72-E7-72-DC-81              192.89.11.249    6c72-e772-dc81 Success
 ------------------------------------------------------------------------------
 Total: 1, printed: 1
<Tolly_auth>dis access-user user-id 16302

Basic:
  User ID                           : 16302
  User name                         : 6C-72-E7-72-DC-81
  Domain-name                       : tolly_mac
  User MAC                          : 6C-72-E7-72-DC-81
  User IP address                   : 192.89.11.249
  User vpn-instance                 : -
  User IPv6 address                 : -
  User access Interface             : Wlan-Dbss1
  User vlan event                   : Success
  QinQVlan/UserVlan                 : 0/4090
  User access time                  : 2016/10/14 16:26:53
  User accounting session ID        : Tolly_a01000000004090a8741d0004acd
  Option82 information              : -
  User access type                  : MAC
  AP name                           : AP5030DN_SLAM
  Radio                             : 1
  AP MAC                            : 1051-7214-C860
  SSID                              : tolly
  Online time                       : 27(s)
  DHCP option ID                    : 12
  DHCP option content               : Summer
  DHCP option ID                    : 55
  DHCP option content               : \001y\003\006\017w\374
  Push URL content                  : https://192.89.11.188:port/portal/gateway?se
                                      ssionId=c0590bbcD4f22QyT0uqj/h8YzPq8svV3Mf12
                                      WRRYGr05EjEJVX0&portal=0ce17ad0-6d90-11e5-97
                                      8e-005056bf2f0a&action=cwa&token=89096284743
                                      2f0edc14a7106d568ece6
  Redict acl                        : 3001

AAA:
  User authentication type          : MAC authentication
  Current authentication method     : RADIUS
  Current authorization method      : -
```

Test 2.4	Wireless 802.1X Authentication
Objective	Verify the 802.1X authentication method for a wireless client when a Huawei S switch works as the access control switch and the Cisco ISE server works as the authentication (RADIUS) server.
Procedure	1. Configure the switch's IP address so that the switch can communicate with the ISE server. 2. Configure the management VLAN10, and assign IP addresses to APs. Configure network access for APs. 3. Configure the RADIUS server profile and aaa profile on the switch. 4. Configure the aaa scheme. 5. Configure the 802.1X authentication profile on the device. 6. Configure the DHCP server on the device, and enable dot1x authentication on the correspondent interface. 7. In the WLAN view, configure the security and SSID profiles. Bind the security and authentication profiles, service WLAN, forwarding mode, and SSID profile to the VAP profile. Configure the AP Group and bind it to the VAP profile. 8. The user accesses the wireless network through the SSID, and enters the user name and password for authentication. Expected result 1 is displayed.  Port_1 AP DUT IP Network ISE Wireless Terminal
Pass Criteria	The wireless laptop is authenticated to have network access.

Test Results

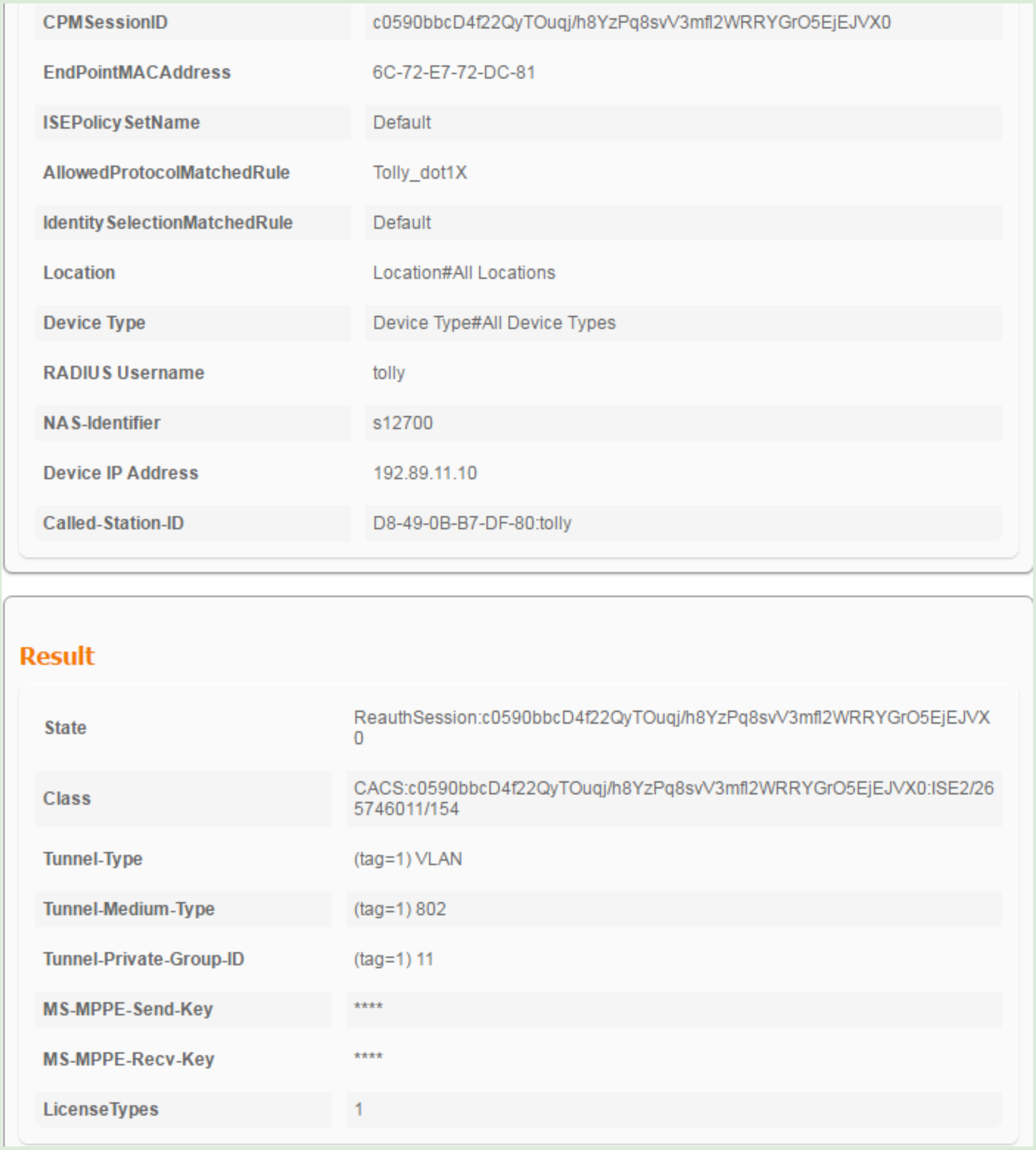


```
<Tolly_auth>dis access-user
 ------------------------------------------------------------------------------
 UserID Username                     IP address       MAC            Status
 ------------------------------------------------------------------------------
 16304  tolly                        11.1.1.252       6c72-e772-dc81 Success
 ------------------------------------------------------------------------------
 Total: 1, printed: 1
<Tolly_auth>dis access-user user-id 16304

Basic:
  User ID                           : 16304
  User name                         : tolly
  Domain-name                       : tolly
  User MAC                          : 6C-72-E7-72-DC-81
  User IP address                   : 11.1.1.252
  User vpn-instance                 : -
  User IPv6 address                 : -
  User access Interface             : Wlan-Dbss1
  User vlan event                   : Success
  QinQVlan/UserVlan                 : 0/11
  User access time                  : 2016/10/14 16:30:36
  User accounting session ID        : Tolly_a01000000004090a8741d0004acd
  Option82 information              : -
  User access type                  : 802.1x
  AP name                           : AP5030DN_SLAM
  Radio                             : 1
  AP MAC                            : 1051-7214-C860
  SSID                              : tolly
  Online time                       : 14(s)
  DHCP option ID                    : 12
  DHCP option content               : Summer
  DHCP option ID                    : 55
  DHCP option content               : \001y\003\006\017w\374
  Dynamic VLAN ID                   : 11

AAA:
  User authentication type          : 802.1x authentication
  Current authentication method     : RADIUS
  Current authorization method      : -
  Current accounting method         : None
```

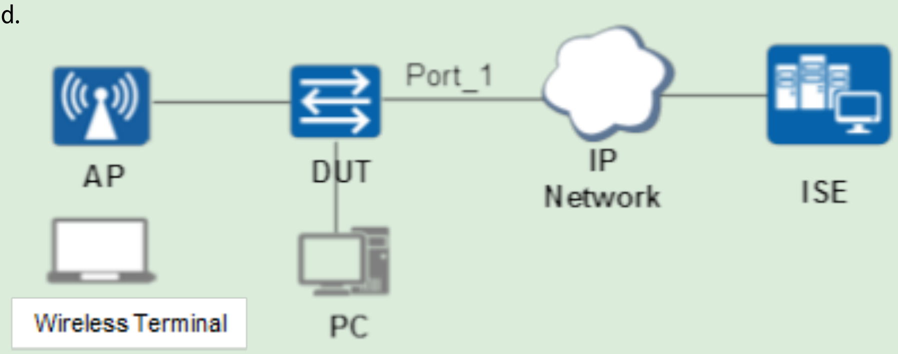
Test Results



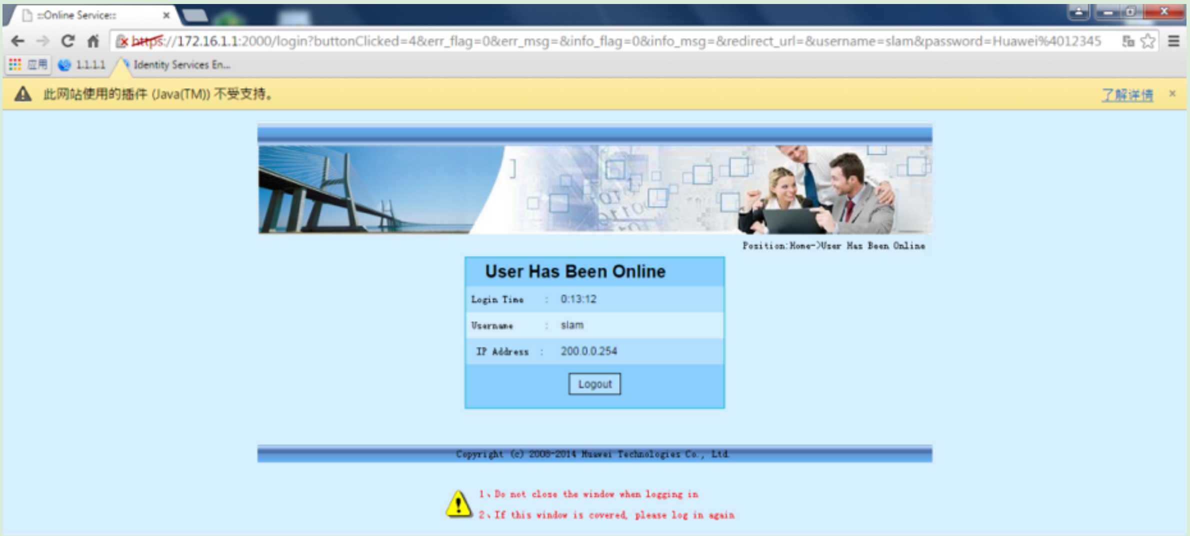
CPMSessionID	c0590bbcD4f22QyTOuqj/h8YzPq8svV3mfl2WRRYGrO5EjEJVX0
EndPointMACAddress	6C-72-E7-72-DC-81
ISEPolicySetName	Default
AllowedProtocolMatchedRule	Tolly_dot1X
IdentitySelectionMatchedRule	Default
Location	Location#All Locations
Device Type	Device Type#All Device Types
RADIUS Username	tolly
NAS-Identifier	s12700
Device IP Address	192.89.11.10
Called-Station-ID	D8-49-0B-B7-DF-80:tolly

Result

State	ReauthSession:c0590bbcD4f22QyTOuqj/h8YzPq8svV3mfl2WRRYGrO5EjEJVX0
Class	CACS:c0590bbcD4f22QyTOuqj/h8YzPq8svV3mfl2WRRYGrO5EjEJVX0:ISE2/265746011/154
Tunnel-Type	(tag=1) VLAN
Tunnel-Medium-Type	(tag=1) 802
Tunnel-Private-Group-ID	(tag=1) 11
MS-MPPE-Send-Key	****
MS-MPPE-Recv-Key	****
LicenseTypes	1

Test 2.5	Wired and Wireless Web Portal Authentication (Huawei S Switch as the Portal Server)
Objective	Verify the web portal authentication method for a wired client and a wireless client when a Huawei S switch works as the access control switch and the Cisco ISE server works as the authentication (RADIUS) server. The web portal is hosted on the Huawei S switch.
Procedure	1. Configure the switch's IP address so that the switch can communicate with the ISE server. 2. Configure the management VLAN10, and assign IP addresses to APs. Configure network access for APs. 3. Configure the RADIUS server profile and aaa profile on the switch. 4. Configure the aaa scheme. 5. Load the ipsec.pem and ipseckey.pem certificates to the security file, and configure the ssl profile. 6. Configure the built-in Portal server on the switch, and obtain the URL address on the ISE server. 7. Configure the Portal authentication profile. 8. Configure the DHCP server on the device. 9. In the WLAN view, configure the security and SSID profiles. Bind the security and authentication profiles, service WLAN, forwarding mode, and SSID profile to the VAP profile. Configure the AP Group and bind it to the VAP profile. 10. The user accesses the wireless network through the SSID. Open a webpage and enter any address in the address bar. Expected result 1 is displayed. 11. Configure the Portal authentication profile on the correspondent interface. The user accesses the network in wired mode. Open a webpage and enter any address in the address bar on the PC. Expected result 1 is displayed.  Port_1 AP DUT IP Network ISE Wireless Terminal PC
Pass Criteria	The wired PC and the wireless laptop are both authenticated to have network access.

Test Results



::Online Service::
https://172.16.1.1:2000/login?buttonClicked=4&err_flag=0&err_msg=&info_flag=0&info_msg=&redirect_url=&username=slam&password=Huawei%4012345
应用 1.1.1.1 Identity Services En...
了解详情
Logout

此网站使用的插件 (Java(TM)) 不受支持。

Position:Home->User Has Been Online

User Has Been Online

Login Time : 0:13:12

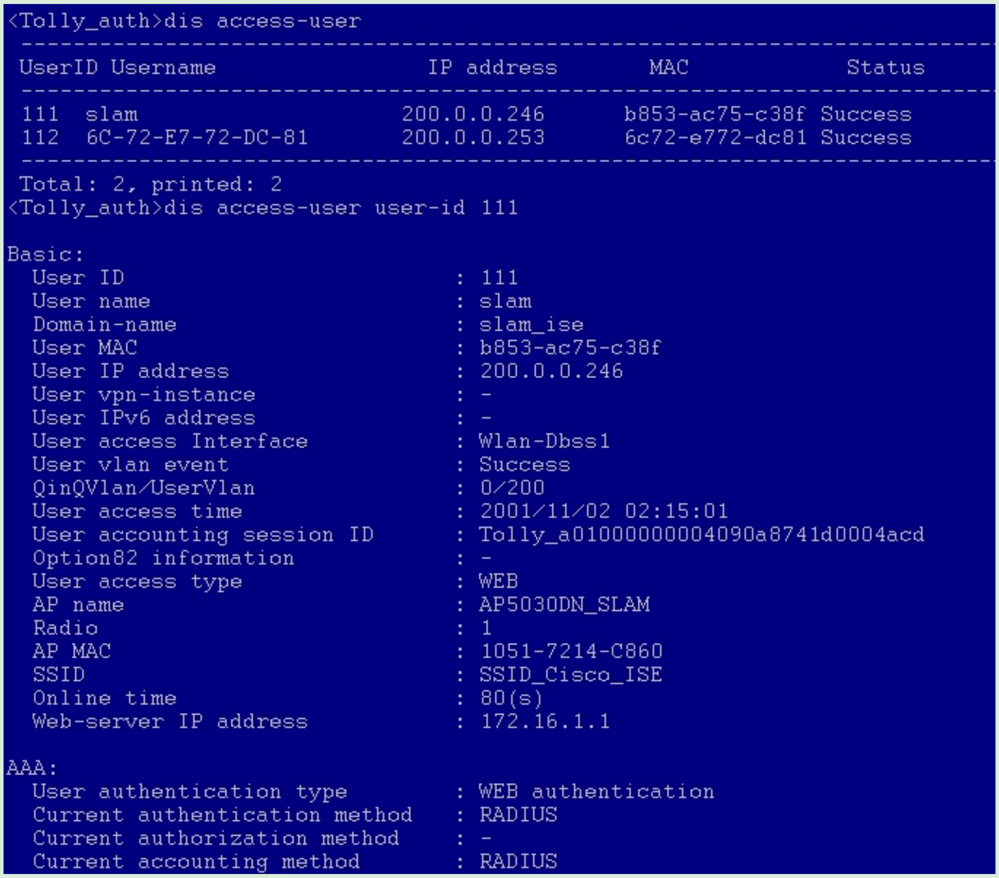
Username : slam

IP Address : 200.0.0.254

Copyright (c) 2008-2014 Huawei Technologies Co., Ltd.

1、Do not close the window when logging in

2、If this window is covered, please log in again

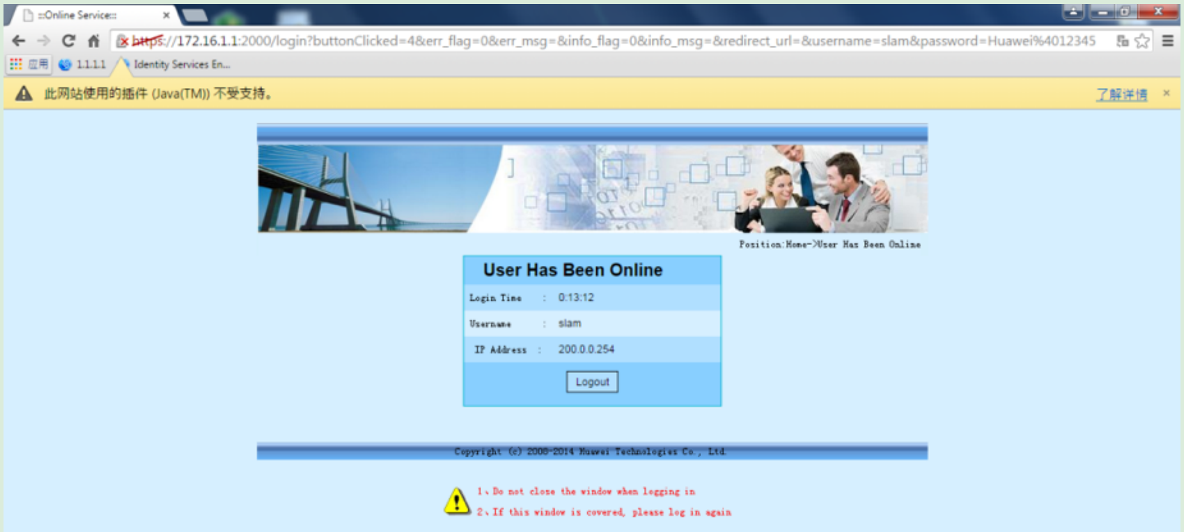


```
<Tolly_auth>dis access-user
 ------------------------------------------------------------------------------
 UserID Username                        IP address        MAC            Status
 ------------------------------------------------------------------------------
 111   slam                           200.0.0.246      b853-ac75-c38f Success
 112   6C-72-E7-72-DC-81              200.0.0.253      6c72-e772-dc81 Success
 ------------------------------------------------------------------------------
 Total: 2, printed: 2
<Tolly_auth>dis access-user user-id 111

Basic:
  User ID                              : 111
  User name                            : slam
  Domain-name                          : slam_ise
  User MAC                             : b853-ac75-c38f
  User IP address                      : 200.0.0.246
  User vpn-instance                    : -
  User IPv6 address                    : -
  User access Interface                : Wlan-Dbss1
  User vlan event                      : Success
  QinQVlan/UserVlan                    : 0/200
  User access time                     : 2001/11/02 02:15:01
  User accounting session ID           : Tolly_a01000000004090a8741d0004acd
  Option82 information                 : -
  User access type                     : WEB
  AP name                              : AP5030DN_SLAM
  Radio                                : 1
  AP MAC                               : 1051-7214-C860
  SSID                                 : SSID_Cisco_ISE
  Online time                          : 80(s)
  Web-server IP address                : 172.16.1.1

AAA:
  User authentication type             : WEB authentication
  Current authentication method        : RADIUS
  Current authorization method         : -
  Current accounting method            : RADIUS
```

Test Results



::Online Service::

~~https~~://172.16.1.1:2000/login?buttonClicked=4&err_flag=0&err_msg=&info_flag=0&info_msg=&redirect_url=&username=slam&password=Huawei%4012345

此网站使用的插件 (Java(TM)) 不受支持。 了解详情

Position:Home->User Has Been Online

User Has Been Online

Login Time : 0:13:12

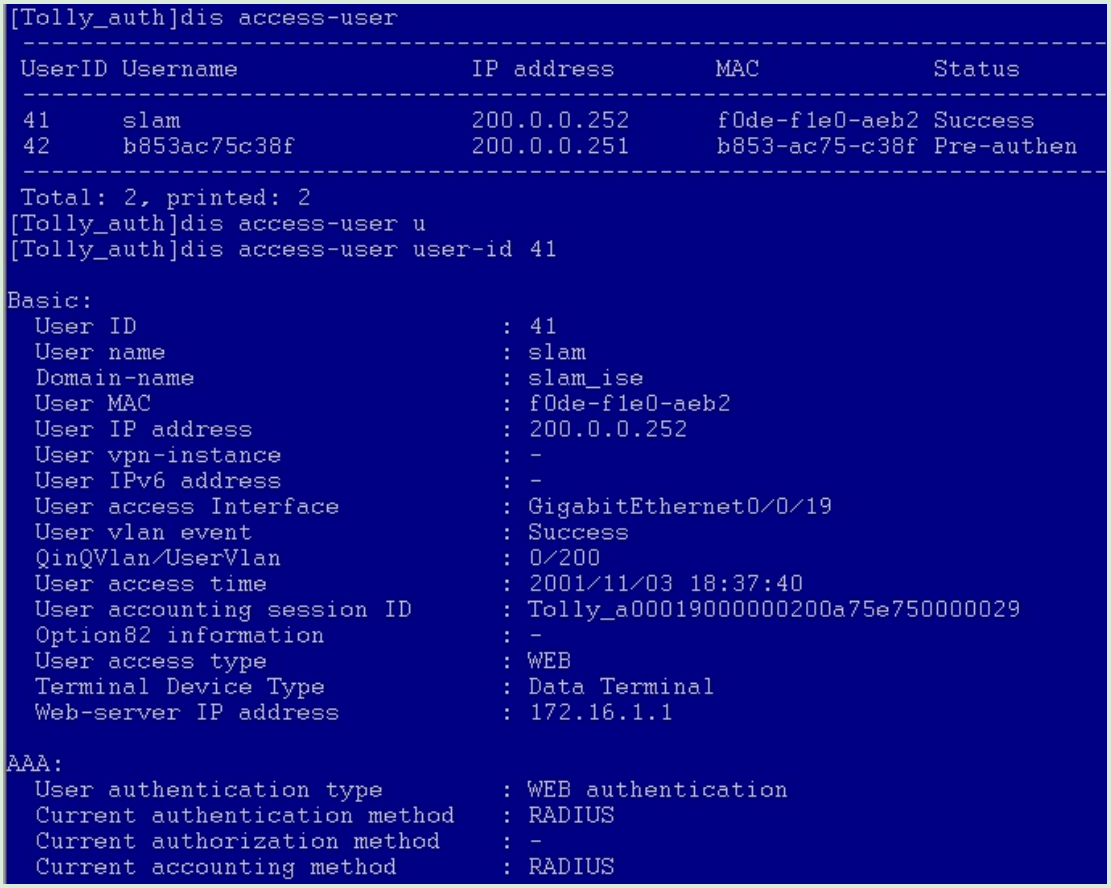
Username : slam

IP Address : 200.0.0.254

Copyright (c) 2008-2014 Huawei Technologies Co., Ltd.

1、Do not close the window when logging in

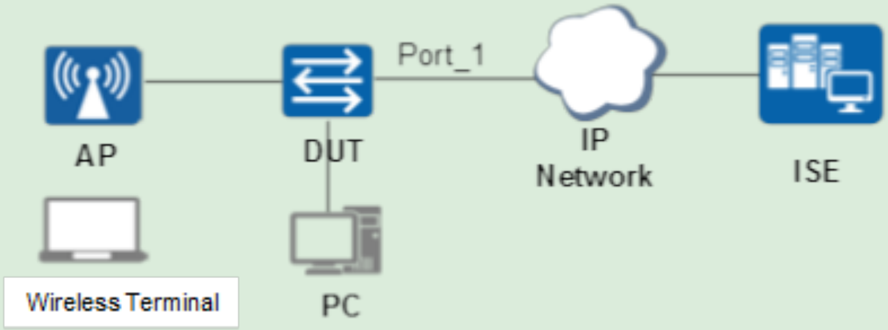
2、If this window is covered, please log in again



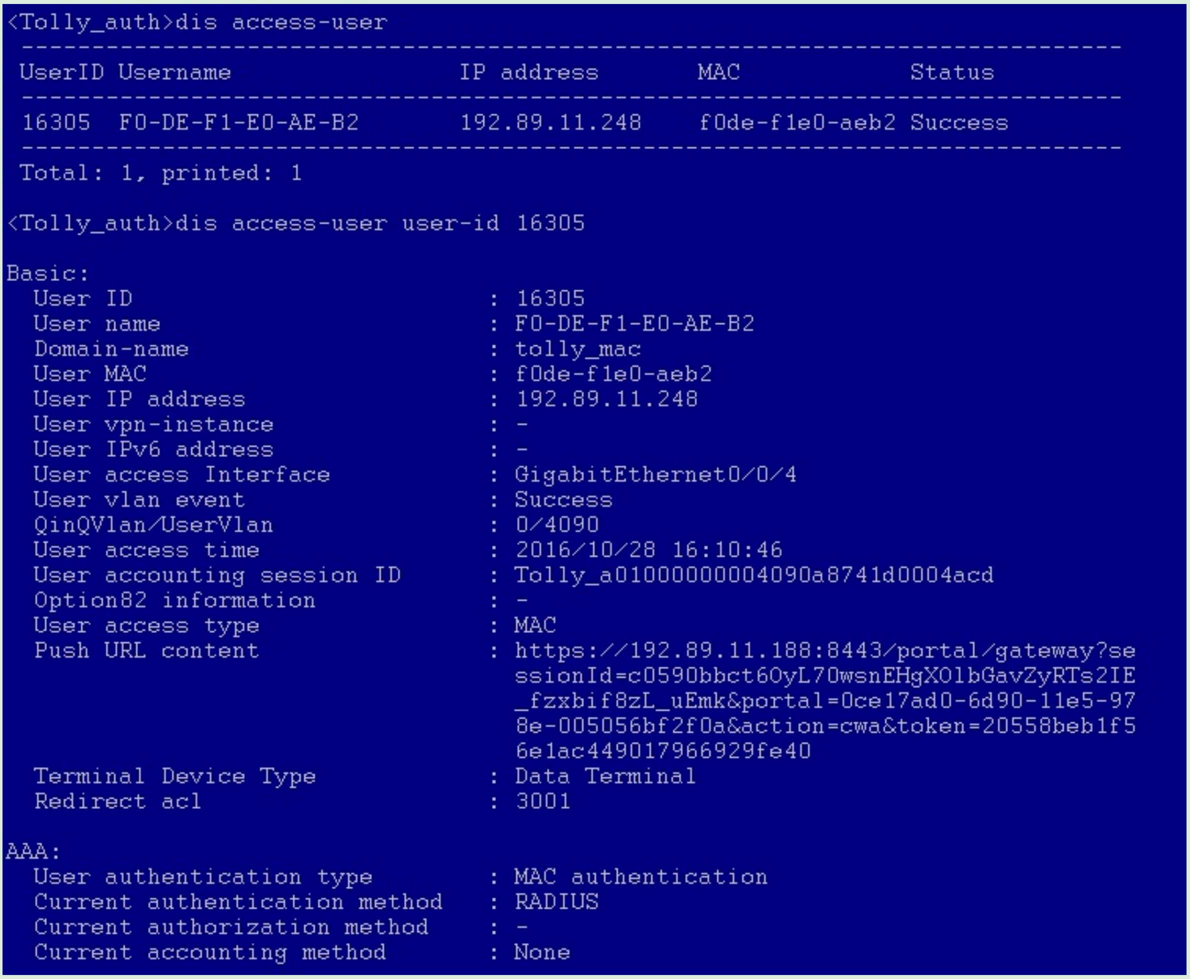
```
[Tolly_auth]dis access-user
 ------------------------------------------------------------------------------
 UserID Username                  IP address       MAC             Status
 ------------------------------------------------------------------------------
 41     slam                      200.0.0.252      f0de-f1e0-aeb2 Success
 42     b853ac75c38f              200.0.0.251      b853-ac75-c38f Pre-authen
 ------------------------------------------------------------------------------
 Total: 2, printed: 2
[Tolly_auth]dis access-user u
[Tolly_auth]dis access-user user-id 41

Basic:
  User ID                          : 41
  User name                        : slam
  Domain-name                      : slam_ise
  User MAC                         : f0de-f1e0-aeb2
  User IP address                  : 200.0.0.252
  User vpn-instance                : -
  User IPv6 address                : -
  User access Interface            : GigabitEthernet0/0/19
  User vlan event                  : Success
  QinQVlan/UserVlan                : 0/200
  User access time                 : 2001/11/03 18:37:40
  User accounting session ID       : Tolly_a00019000000200a75e750000029
  Option82 information             : -
  User access type                 : WEB
  Terminal Device Type             : Data Terminal
  Web-server IP address            : 172.16.1.1

AAA:
  User authentication type         : WEB authentication
  Current authentication method    : RADIUS
  Current authorization method     : -
  Current accounting method        : RADIUS
```

Test 2.6	Wired and Wireless Web Portal Authentication (Cisco ISE Server as the Portal Server)
Objective	Verify the web portal authentication method for a wired client and a wireless client when a Huawei S switch works as the access control switch and the Cisco ISE server works as the authentication (RADIUS) server. The web portal is hosted on the Cisco ISE server.
Procedure	1. All devices are working properly. The test environment has been set up according to the networking diagram. 2. Related configuration has been completed on the ISE authentication server. 3. Configure the switch's IP address so that the switch can communicate with the ISE server. 4. Configure the management VLAN10, and assign IP addresses to APs. Configure network access for APs. 5. Configure the RADIUS server on the switch. 6. Configure the aaa profile. 7. Configure the MAC authentication profile. 8. Configure the CoA authorization server. 9. Configure the ACL redirection on the switch. 10. Users access the network in wired mode for MAC authentication. Expected result 1 is displayed. 11. Open a web page and access any website. Enter the user name and password for authentication. Expected result 2 is displayed.  Port_1 AP DUT IP Network ISE Wireless Terminal PC
Pass Criteria	1. When the user accesses the network for MAC authentication, the server delivers URL and redirection ACL. Open a browser and enter any IP address in the address bar, the page is redirected to the Portal authentication page. 2. After entering the user name and password, the user passes the Portal authentication successfully.

Test Results



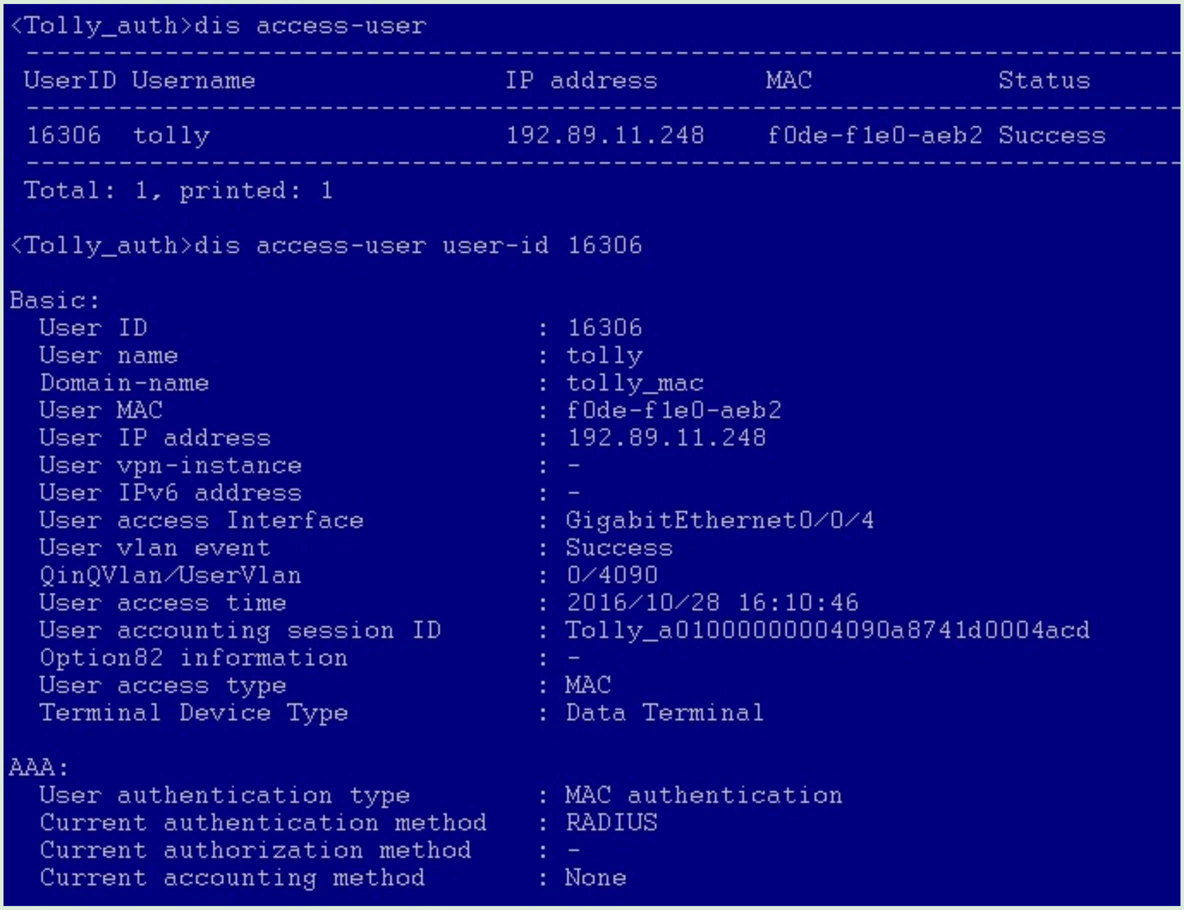
```
<Tolly_auth>dis access-user
 ------------------------------------------------------------------------------
 UserID Username                IP address       MAC            Status
 ------------------------------------------------------------------------------
 16305  F0-DE-F1-E0-AE-B2       192.89.11.248    f0de-f1e0-aeb2 Success
 ------------------------------------------------------------------------------
 Total: 1, printed: 1

<Tolly_auth>dis access-user user-id 16305

Basic:
  User ID                           : 16305
  User name                         : F0-DE-F1-E0-AE-B2
  Domain-name                       : tolly_mac
  User MAC                          : f0de-f1e0-aeb2
  User IP address                   : 192.89.11.248
  User vpn-instance                 : -
  User IPv6 address                 : -
  User access Interface             : GigabitEthernet0/0/4
  User vlan event                   : Success
  QinQVlan/UserVlan                 : 0/4090
  User access time                  : 2016/10/28 16:10:46
  User accounting session ID        : Tolly_a01000000004090a8741d0004acd
  Option82 information              : -
  User access type                  : MAC
  Push URL content                  : https://192.89.11.188:8443/portal/gateway?se
                                      ssionId=c0590bbct60yL70wsnEHgX0lbGavZyRTs2IE
                                      _fzxbif8zL_uEmk&portal=0ce17ad0-6d90-11e5-97
                                      8e-005056bf2f0a&action=cwa&token=20558beb1f5
                                      6e1ac449017966929fe40
  Terminal Device Type              : Data Terminal
  Redirect acl                      : 3001

AAA:
  User authentication type          : MAC authentication
  Current authentication method     : RADIUS
  Current authorization method      : -
  Current accounting method         : None
```

Test Results



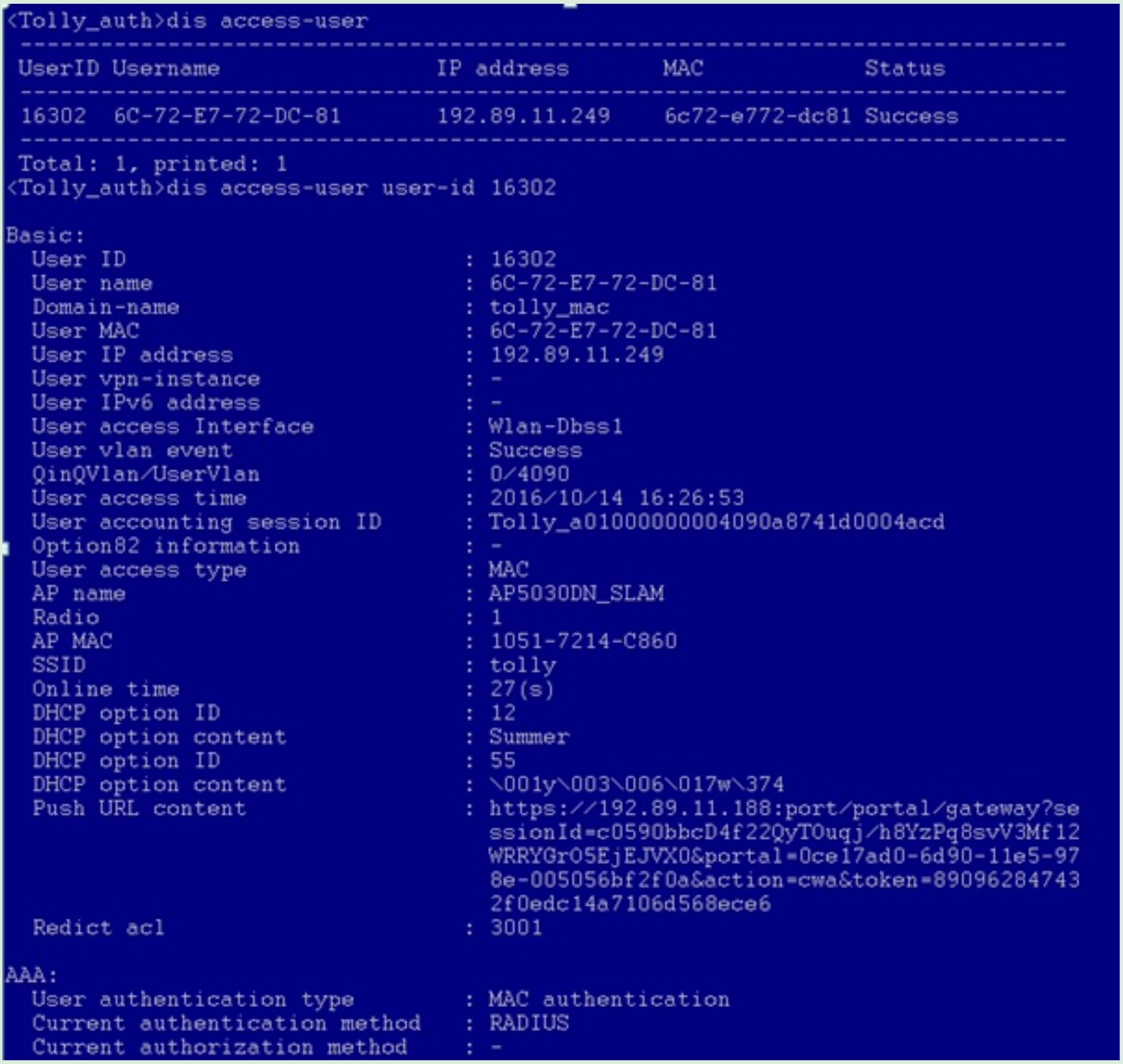
```
<Tolly_auth>dis access-user
 ------------------------------------------------------------------------------
 UserID Username                     IP address       MAC            Status
 ------------------------------------------------------------------------------
 16306  tolly                        192.89.11.248    f0de-f1e0-aeb2 Success
 ------------------------------------------------------------------------------
 Total: 1, printed: 1

<Tolly_auth>dis access-user user-id 16306

Basic:
  User ID                           : 16306
  User name                         : tolly
  Domain-name                       : tolly_mac
  User MAC                          : f0de-f1e0-aeb2
  User IP address                   : 192.89.11.248
  User vpn-instance                 : -
  User IPv6 address                 : -
  User access Interface             : GigabitEthernet0/0/4
  User vlan event                   : Success
  QinQVlan/UserVlan                 : 0/4090
  User access time                  : 2016/10/28 16:10:46
  User accounting session ID        : Tolly_a01000000004090a8741d0004acd
  Option82 information              : -
  User access type                  : MAC
  Terminal Device Type              : Data Terminal

AAA:
  User authentication type          : MAC authentication
  Current authentication method     : RADIUS
  Current authorization method      : -
  Current accounting method         : None
```

Test Results

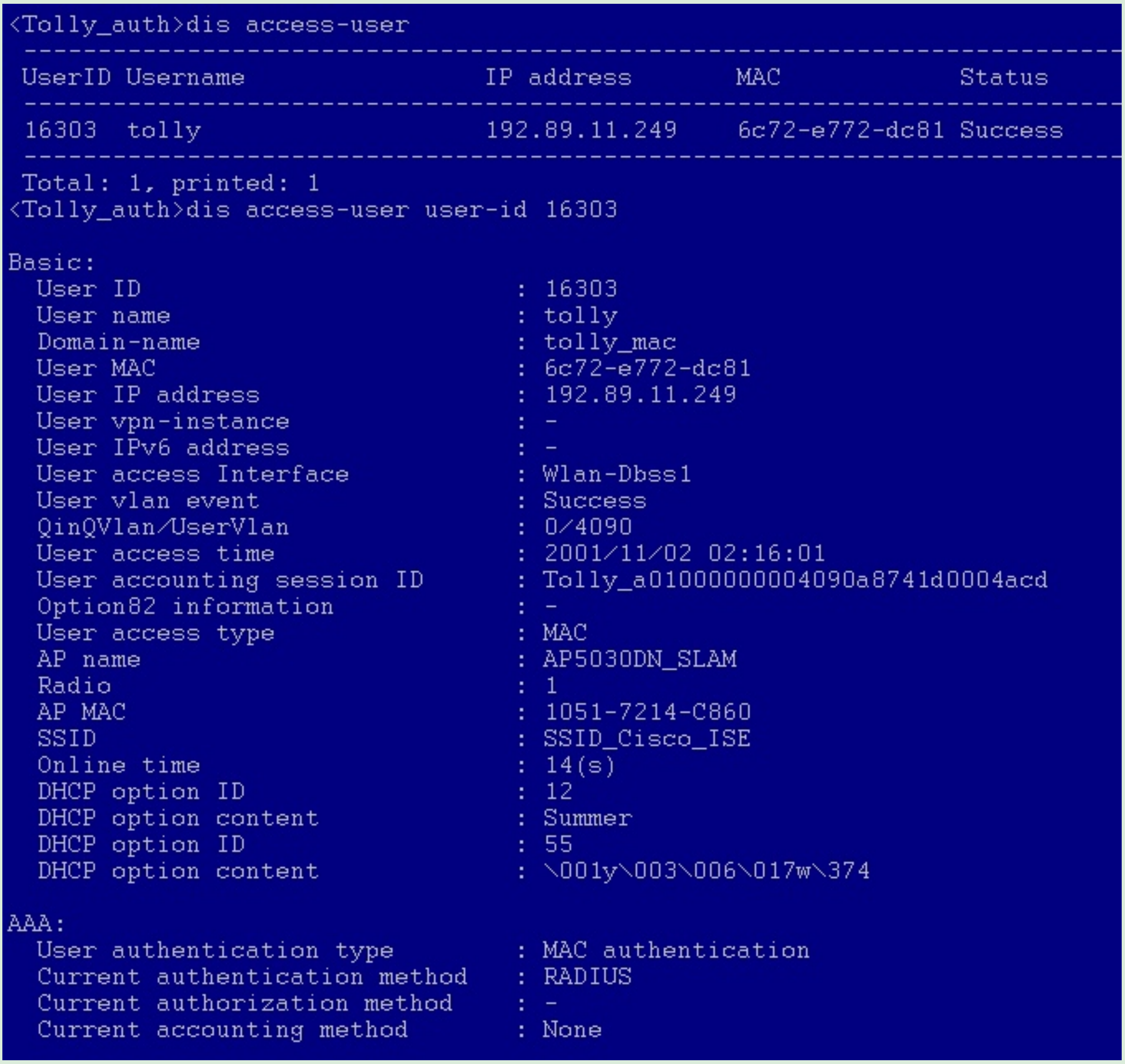


```
<Tolly_auth>dis access-user
 ------------------------------------------------------------------------------
 UserID Username                    IP address       MAC            Status
 ------------------------------------------------------------------------------
 16302  6C-72-E7-72-DC-81           192.89.11.249    6c72-e772-dc81 Success
 ------------------------------------------------------------------------------
 Total: 1, printed: 1
<Tolly_auth>dis access-user user-id 16302

Basic:
  User ID                           : 16302
  User name                         : 6C-72-E7-72-DC-81
  Domain-name                       : tolly_mac
  User MAC                          : 6C-72-E7-72-DC-81
  User IP address                   : 192.89.11.249
  User vpn-instance                 : -
  User IPv6 address                 : -
  User access Interface             : Wlan-Dbss1
  User vlan event                   : Success
  QinQVlan/UserVlan                 : 0/4090
  User access time                  : 2016/10/14 16:26:53
  User accounting session ID        : Tolly_a01000000004090a8741d0004acd
  Option82 information              : -
  User access type                  : MAC
  AP name                           : AP5030DN_SLAM
  Radio                             : 1
  AP MAC                            : 1051-7214-C860
  SSID                              : tolly
  Online time                       : 27(s)
  DHCP option ID                    : 12
  DHCP option content               : Summer
  DHCP option ID                    : 55
  DHCP option content               : \001y\003\006\017w\374
  Push URL content                  : https://192.89.11.188:port/portal/gateway?se
                                      ssionId=c0590bbcD4f22QyTOuqj/h8YzPq8svV3Mf12
                                      WRRYGrO5EjEJVX0&portal=0ce17ad0-6d90-11e5-97
                                      8e-005056bf2f0a&action=cwa&token=89096284743
                                      2f0edc14a7106d568ece6
  Redict acl                        : 3001

AAA:
  User authentication type          : MAC authentication
  Current authentication method     : RADIUS
  Current authorization method      : -
```

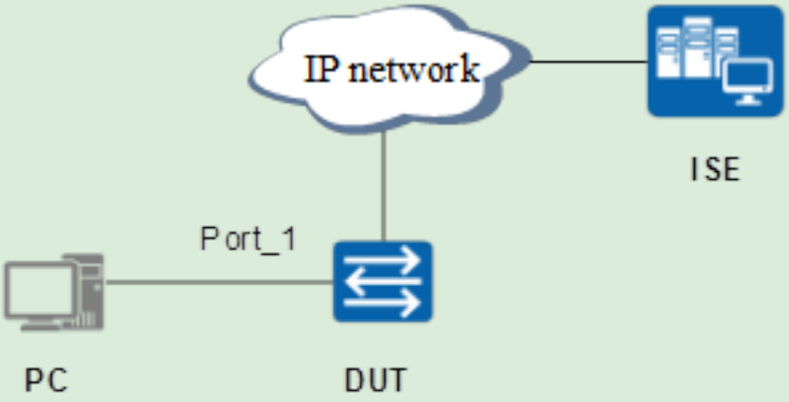
Test Results



```
<Tolly_auth>dis access-user
 ------------------------------------------------------------------------------
 UserID Username                       IP address       MAC             Status
 ------------------------------------------------------------------------------
 16303  tolly                          192.89.11.249    6c72-e772-dc81 Success
 ------------------------------------------------------------------------------
 Total: 1, printed: 1
<Tolly_auth>dis access-user user-id 16303

Basic:
  User ID                             : 16303
  User name                           : tolly
  Domain-name                         : tolly_mac
  User MAC                            : 6c72-e772-dc81
  User IP address                     : 192.89.11.249
  User vpn-instance                   : -
  User IPv6 address                   : -
  User access Interface               : Wlan-Dbss1
  User vlan event                     : Success
  QinQVlan/UserVlan                   : 0/4090
  User access time                    : 2001/11/02 02:16:01
  User accounting session ID          : Tolly_a01000000004090a8741d0004acd
  Option82 information                : -
  User access type                    : MAC
  AP name                             : AP5030DN_SLAM
  Radio                               : 1
  AP MAC                              : 1051-7214-C860
  SSID                                : SSID_Cisco_ISE
  Online time                         : 14(s)
  DHCP option ID                      : 12
  DHCP option content                 : Summer
  DHCP option ID                      : 55
  DHCP option content                 : \001y\003\006\017w\374

AAA:
  User authentication type            : MAC authentication
  Current authentication method       : RADIUS
  Current authorization method        : -
  Current accounting method           : None
```

Test 2.7	Wired Mixed Authentication
Objective	Verify the mixed MAC and 802.1X authentication methods for a wired client when a Huawei S switch works as the access control switch and the Cisco ISE server works as the authentication (RADIUS) server. The web portal is hosted on the Cisco ISE server.
Procedure	1. Configure the switch's IP address so that the switch can communicate with the ISE server. 2. Configure the RADIUS server profile and aaa profile on the switch. 3. Configure the aaa scheme. 4. Configure the MAC authentication and dot1x authentication profiles on the device. 5. Configure the DHCP server on the device, and enable MAC authentication on the correspondent interface. 6. Use the tester interface as the user terminal to connect to the DUT and enable the MAC-authenticated and 802.1X-authenticated ports. Expected result 1 is displayed  Simulated by Spirent TestCenter
Pass Criteria	Create two device users on the Spirent TestCenter interface for MAC authentication and 802.1X authentication respectively. After passing the authentication, the user obtains the IP address. The device shows that the authentication succeeds.

Test Results

Configuration Steps:

1. Configure the switch's IP address so that the switch can communicate with the ISE server.
2. Configure the RADIUS server profile and aaa profile on the switch.

```
#
radius-server template tolly
radius-server shared-key cipher huawei123
radius-server authentication 192.89.11.188 1812 weight 80
radius-server accounting 192.89.11.188 1813 weight 80
undo radius-server user-name domain-included
calling-station-id mac-format hyphen-split mode2
#
radius-server template tolly_mac
radius-server shared-key cipher huawei123
radius-server authentication 192.89.11.188 1812 weight 80
radius-server accounting 192.89.11.188 1813 weight 80
undo radius-server user-name domain-included
calling-station-id mac-format hyphen-split mode2
radius-attribute set Service-Type 10
#
domain tolly_mac
authentication-scheme tolly
authorization-scheme tolly
radius-server tolly_mac
#
```

Test Results

3. Configure the aaa scheme.

```
#
aaa
authentication-scheme tolly
authentication-mode radius
authorization-scheme tolly
accounting-scheme tolly
accounting-mode radius
domain tolly_mac
authentication-scheme tolly
accounting-scheme tolly
radius-server tolly_mac
domain tolly
authentication-scheme tolly
accounting-scheme tolly
radius-server tolly
#
```

4. Configure the MAC authentication and dot1x authentication profiles on the device.

```
#
mac-access-profile name tolly
mac-authen username macaddress format with-hyphen normal uppercase
dot1x-access-profile name tolly
authentication-method eap
dot1x-access-profile tolly
mac-access-profile tolly
access-domain tolly dot1x force
access-domain tolly_mac mac-authen force
access-domain tolly force
#
```

Test Results

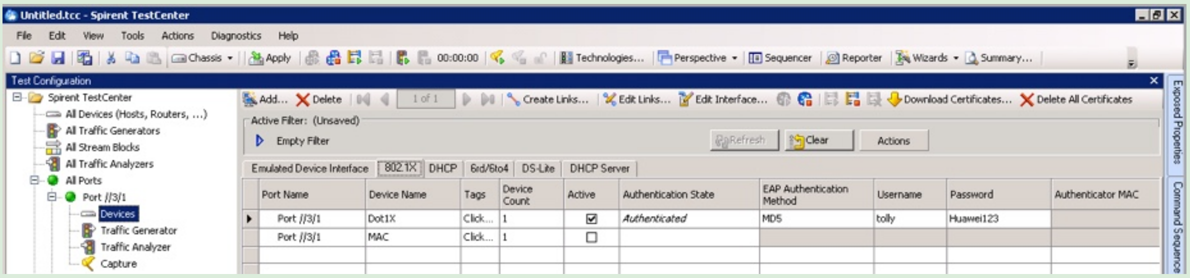
5. Configure the DHCP server on the device, and enable MAC authentication on the correspondent interface.

```
#
interface Vlanif4090
ip address 192.89.11.10 255.255.255.0
dhcp select interface
#
interface XGigabitEthernet1/0/0
port link-type hybrid
port hybrid pvid vlan 4090
port hybrid untagged vlan 4090
authentication-profile tolly
#
```

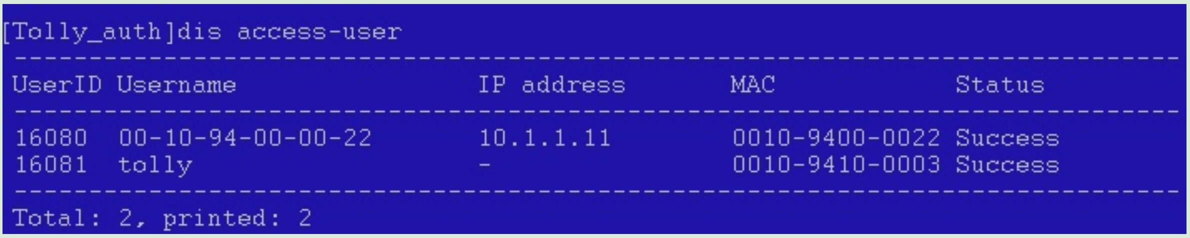
6. Use the tester interface as the user terminal to connect to the DUT and enable the MAC-authenticated and 802.1X-authenticated ports. Expected result 1 is displayed

Results:

Create two device users on the tester interface for MAC authentication and 802.1X authentication respectively. After passing the authentication, the user obtains the IP address. The device shows that the authentication succeeds.

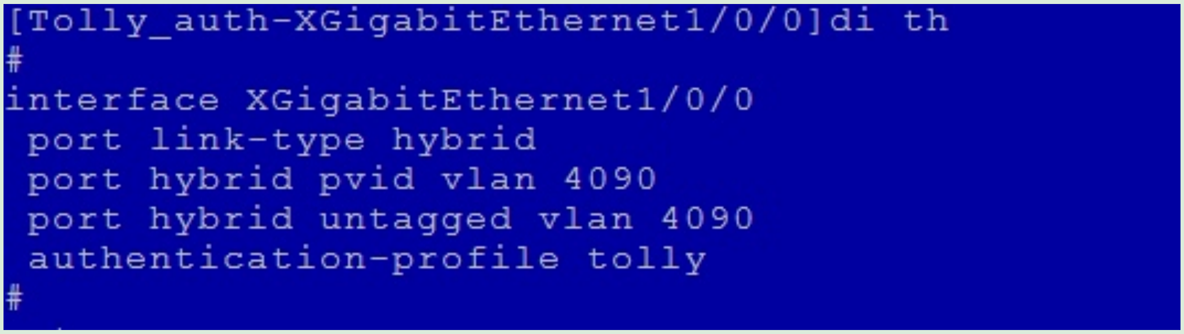

Untitled.tcc - Spirent TestCenter
File Edit View Tools Actions Diagnostics Help
Chassis Apply 00:00:00 Technologies... Perspective Sequencer Reporter Wizards Summary...
Test Configuration
Spirent TestCenter
All Devices (Hosts, Routers, ...)
All Traffic Generators
All Stream Blocks
All Traffic Analyzers
All Ports
Port //3/1
Devices
Traffic Generator
Traffic Analyzer
Capture
Add... Delete 1 of 1 Create Links... Edit Links... Edit Interface... Download Certificates... Delete All Certificates
Active Filter: (Unsaved)
Empty Filter
Refresh Clear Actions
Emulated Device Interface 802.1X DHCP 6rd/6to4 DS-Lite DHCP Server
Exposed Properties Command Sequence

Port Name	Device Name	Tags	Device Count	Active	Authentication State	EAP Authentication Method	Username	Password	Authenticator MAC
Port //3/1	Dot1X	Click...	1	☑	*Authenticated*	MD5	tolly	Huawei123	
Port //3/1	MAC	Click...	1	☐					

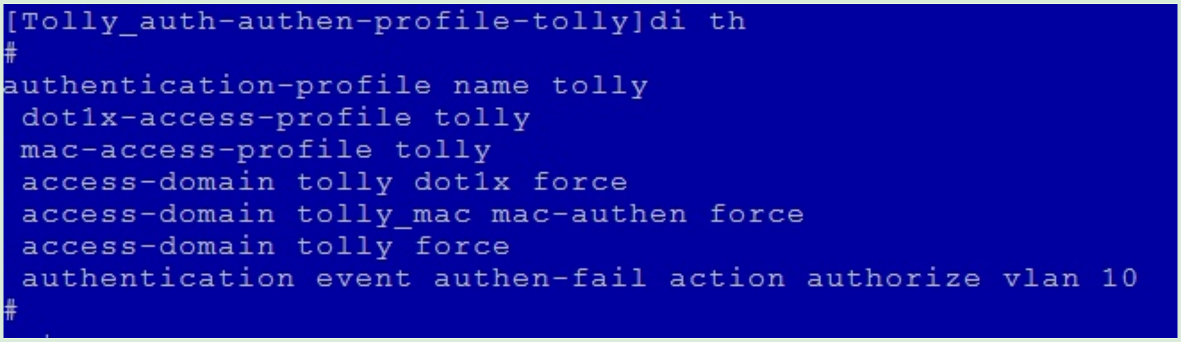


```
[Tolly_auth]dis access-user
 ------------------------------------------------------------------------------
 UserID Username                    IP address       MAC            Status
 ------------------------------------------------------------------------------
 16080  00-10-94-00-00-22           10.1.1.11        0010-9400-0022 Success
 16081  tolly                       -                0010-9410-0003 Success
 ------------------------------------------------------------------------------
 Total: 2, printed: 2
```

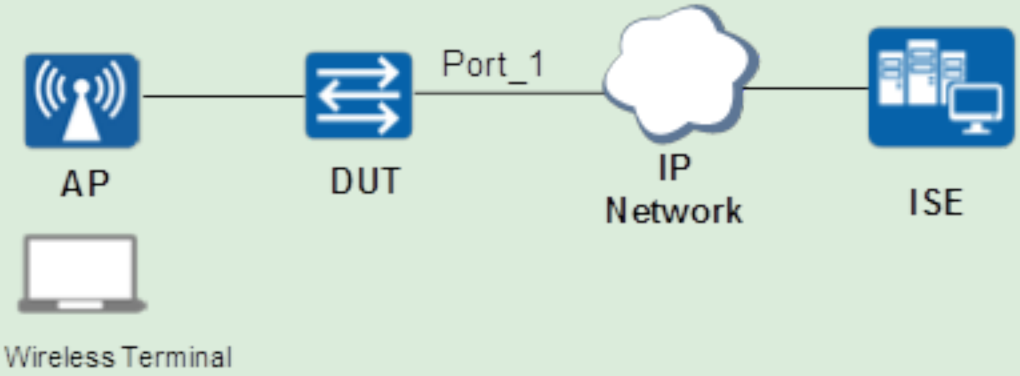
Test Results



```
[Tolly_auth-XGigabitEthernet1/0/0]di th
#
interface XGigabitEthernet1/0/0
 port link-type hybrid
 port hybrid pvid vlan 4090
 port hybrid untagged vlan 4090
 authentication-profile tolly
#
```

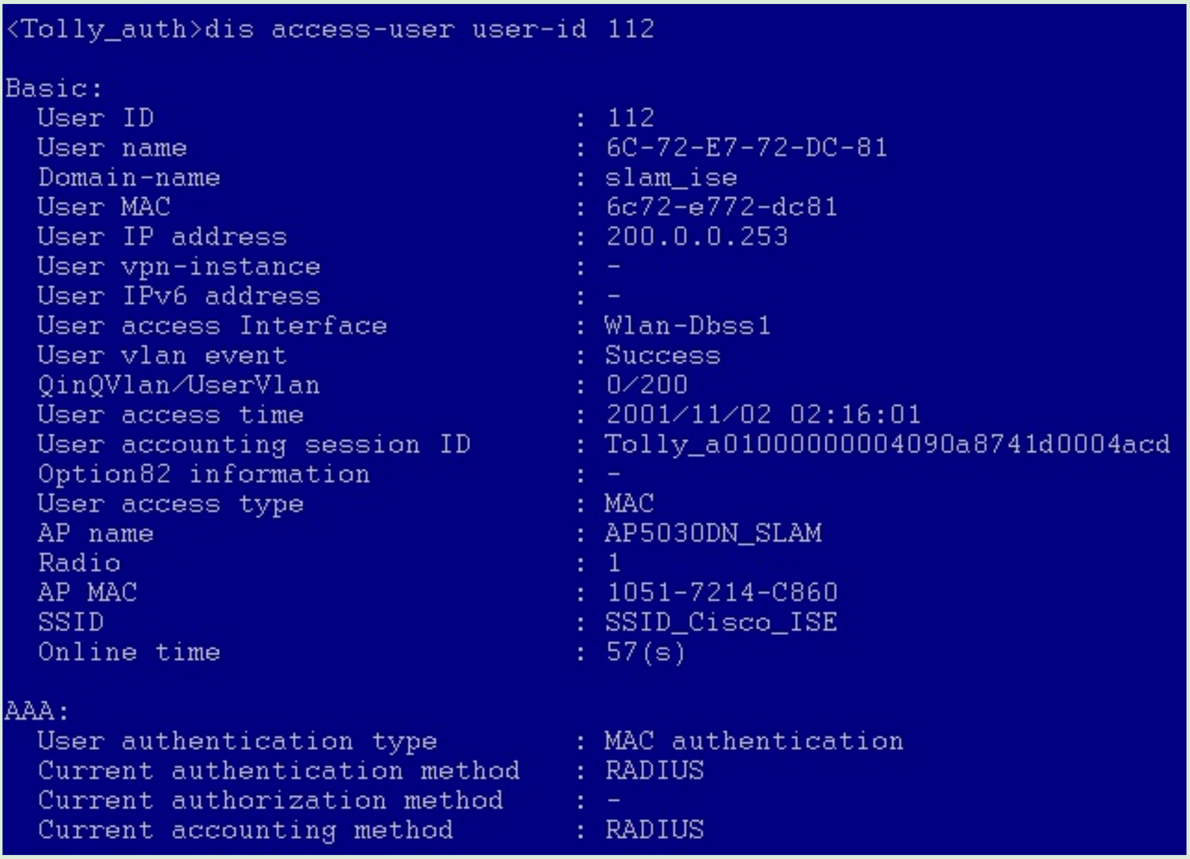


```
[Tolly_auth-authen-profile-tolly]di th
#
authentication-profile name tolly
 dot1x-access-profile tolly
 mac-access-profile tolly
 access-domain tolly dot1x force
 access-domain tolly_mac mac-authen force
 access-domain tolly force
 authentication event authen-fail action authorize vlan 10
#
```

Test 2.7	Wireless Mixed Authentication
Objective	Verify the mixed MAC and Web Portal authentication methods for a wired client when a Huawei S switch works as the access control switch and the Cisco ISE server works as the authentication (RADIUS) server. The web portal is hosted on the Cisco ISE server.
Procedure	1. Configure the switch's IP address so that the switch can communicate with the ISE server. 2. Configure the management VLAN, and assign IP addresses to APs. Configure network access for APs. 3. Configure the RADIUS server profile and aaa profile on the switch. 4. Configure the MAC authentication and Portal authentication profiles on the device. 5. Configure the DHCP server on the device, and enable combined MAC authentication and Portal authentication on the correspondent interface. 6. In the WLAN view, configure the security and SSID profiles. Bind the security and authentication profiles, service WLAN, forwarding mode, and SSID profile to the VAP profile. Configure the AP Group and bind it to the VAP profile. 7. The wireless terminal accesses the network through the SSID for MAC authentication. Expected result 1 is displayed. 8. For users who fail to pass the MAC authentication, allow them to perform the Portal authentication. Expected result 2 is displayed.  Port_1 AP DUT IP Network ISE Wireless Terminal
Pass Criteria	Result 1: The user passes the authentication successfully and obtains the correspondent IP address. The device shows that the authentication succeeds. Result 2: The user opens the browser and enters any IP address for Portal authentication. Enter the user name and password, and the device shows that the authentication succeeds.

Test Results

1. The user goes online for MAC authentication, and obtains the correspondent VLAN address.



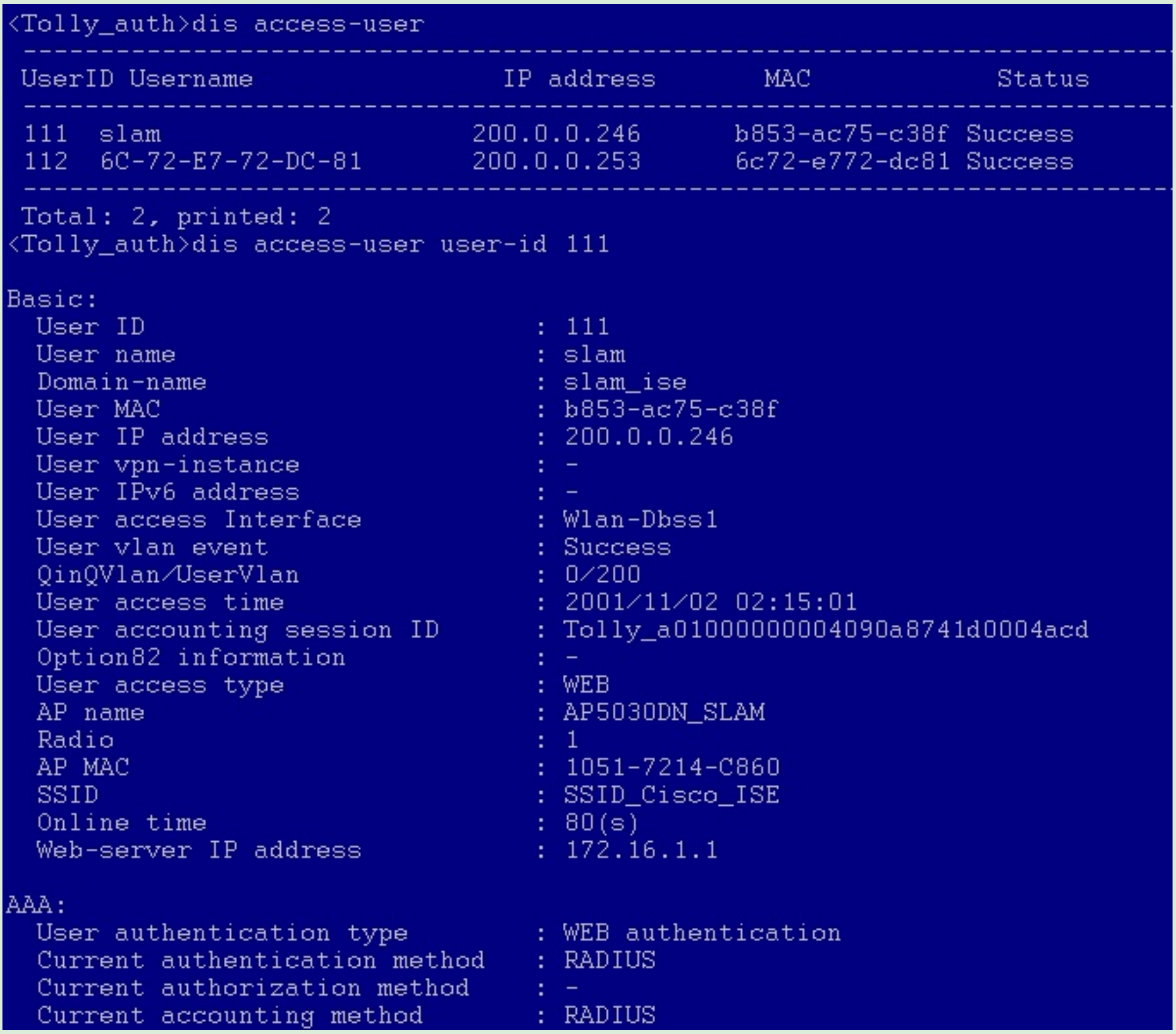
```
<Tolly_auth>dis access-user user-id 112

Basic:
  User ID                           : 112
  User name                         : 6C-72-E7-72-DC-81
  Domain-name                       : slam_ise
  User MAC                          : 6c72-e772-dc81
  User IP address                   : 200.0.0.253
  User vpn-instance                 : -
  User IPv6 address                 : -
  User access Interface             : Wlan-Dbss1
  User vlan event                   : Success
  QinQVlan/UserVlan                 : 0/200
  User access time                  : 2001/11/02 02:16:01
  User accounting session ID        : Tolly_a01000000004090a8741d0004acd
  Option82 information              : -
  User access type                  : MAC
  AP name                           : AP5030DN_SLAM
  Radio                             : 1
  AP MAC                            : 1051-7214-C860
  SSID                              : SSID_Cisco_ISE
  Online time                       : 57(s)

AAA:
  User authentication type          : MAC authentication
  Current authentication method     : RADIUS
  Current authorization method      : -
  Current accounting method         : RADIUS
```

Test Results

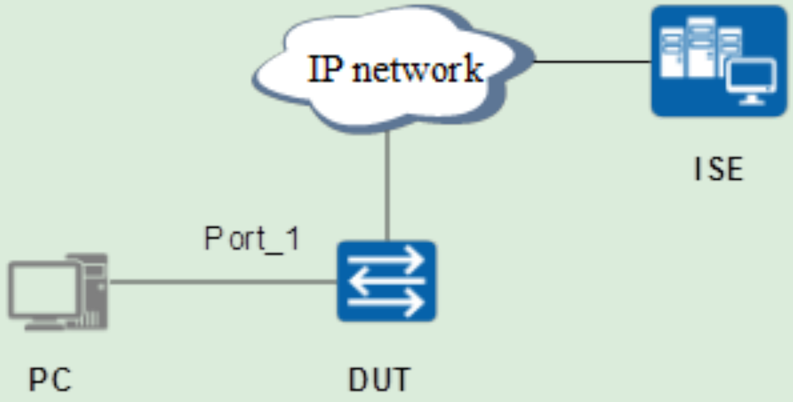
2. The user goes online for Portal authentication, and obtains the correspondent VLAN address.



```
<Tolly_auth>dis access-user
 ------------------------------------------------------------------------------
 UserID Username                       IP address       MAC            Status
 ------------------------------------------------------------------------------
 111   slam                          200.0.0.246      b853-ac75-c38f  Success
 112   6C-72-E7-72-DC-81             200.0.0.253      6c72-e772-dc81  Success
 ------------------------------------------------------------------------------
 Total: 2, printed: 2
<Tolly_auth>dis access-user user-id 111

Basic:
  User ID                           : 111
  User name                         : slam
  Domain-name                       : slam_ise
  User MAC                          : b853-ac75-c38f
  User IP address                   : 200.0.0.246
  User vpn-instance                 : -
  User IPv6 address                 : -
  User access Interface             : Wlan-Dbss1
  User vlan event                   : Success
  QinQVlan/UserVlan                 : 0/200
  User access time                  : 2001/11/02 02:15:01
  User accounting session ID        : Tolly_a01000000004090a8741d0004acd
  Option82 information              : -
  User access type                  : WEB
  AP name                           : AP5030DN_SLAM
  Radio                             : 1
  AP MAC                            : 1051-7214-C860
  SSID                              : SSID_Cisco_ISE
  Online time                       : 80(s)
  Web-server IP address             : 172.16.1.1

AAA:
  User authentication type          : WEB authentication
  Current authentication method     : RADIUS
  Current authorization method      : -
  Current accounting method         : RADIUS
```

Test 3.1	Built-in Authentication Attribute: Dynamic VLAN
Objective	Verify the built-in authentication attribute Dynamic VLAN when a Huawei S switch works as the access control switch and the Cisco ISE server works as the authentication (RADIUS) server.
Procedure	1. Configure DUT to ensure that DUT and RADIUS server communicate with each other at Layer 3. 2. Create a RADIUS server profile and configure the related parameters, including IP address of the authentication server, port number, the RADIUS server key, and the retransmission time. Create an authentication scheme, and configure the authentication mode as RADIUS. Configure a domain name, and apply the authentication scheme to the domain. 3. Enable 802.1X authentication globally and on the interface Port_1. 4. Configure the authorization policy on the ISE server: Deliver the dynamic VLAN11. Create VLAN11 on the device, and configure VLANIF11 as the DHCP IP address pool. 5. Use the PC to initiate the 802.1X authentication, and expected result 1 is displayed. 
Pass Criteria	The tested device displays 802.1X authentication statistics information, which indicates that the authentication succeeds. Dynamic VLAN11 and IP address can be obtained.

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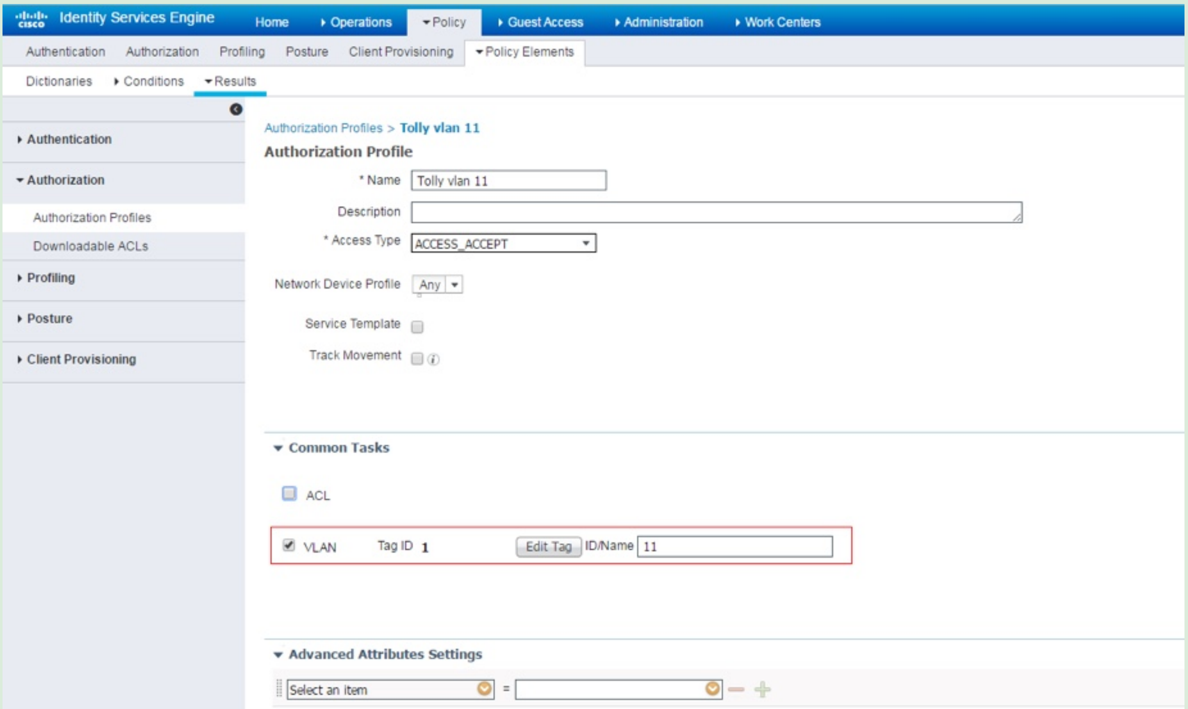
Test Results

1. Configure the dynamic VLAN11 authorization in the ISE server authorization policy.



Authorization Profiles > Tolly vlan 11

Authorization Profile

* Name: Tolly vlan 11

Description:

* Access Type: ACCESS_ACCEPT

Network Device Profile: Any

Service Template □

Track Movement □

Common Tasks

□ ACL

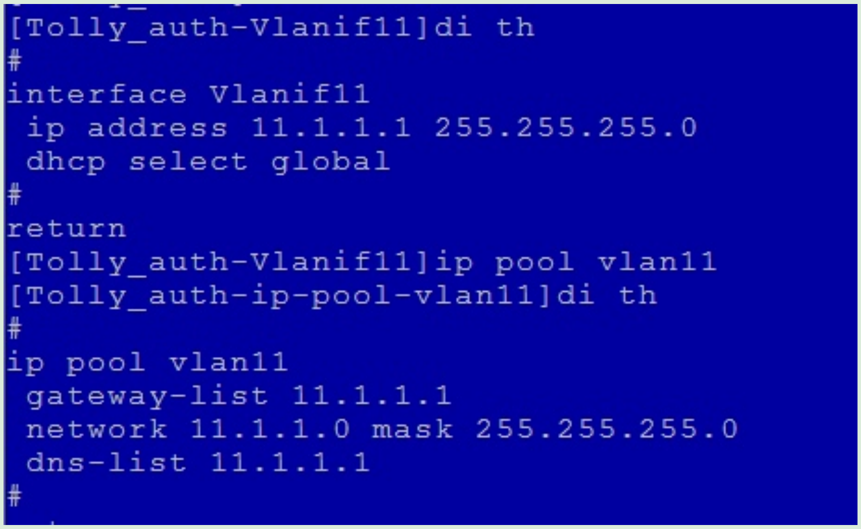
☑ VLAN Tag ID 1 Edit Tag ID/Name 11

Advanced Attributes Settings

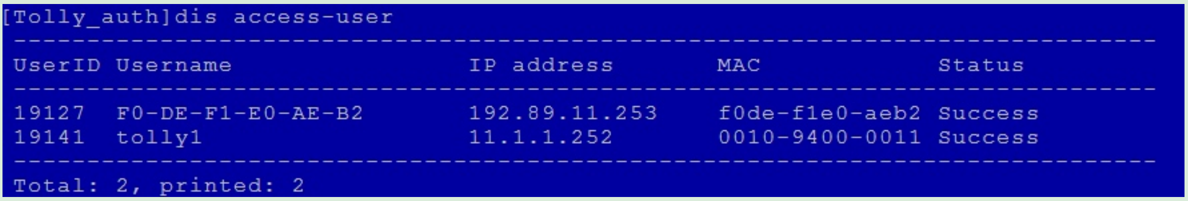
Select an item =

Test Results

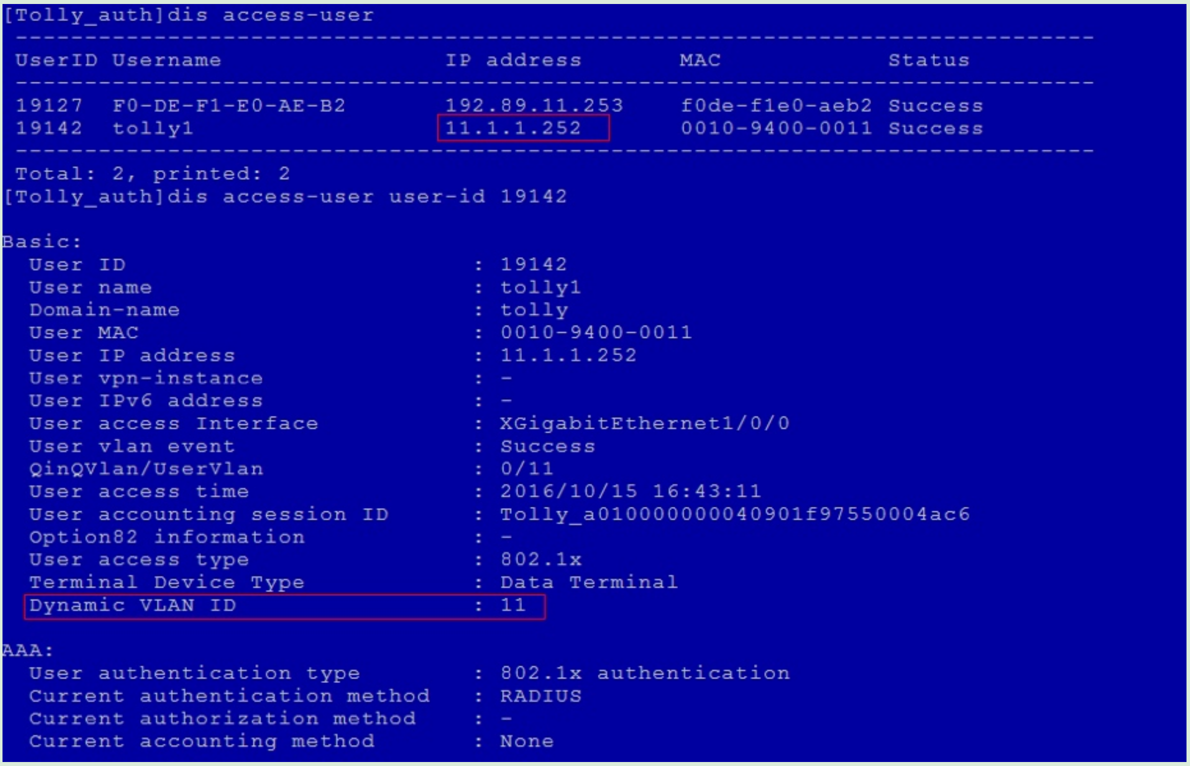
2. Create VLAN11 on the device. The device goes online after passing the authentication successfully, and obtains the dynamic VLAN11.



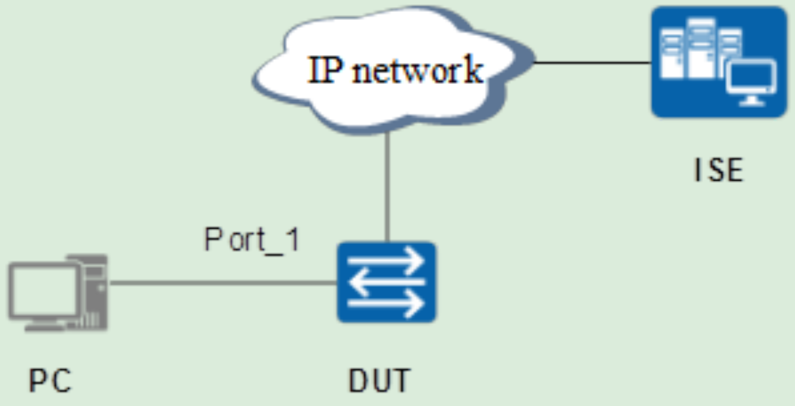
```
[Tolly_auth-Vlanif11]di th
#
interface Vlanif11
 ip address 11.1.1.1 255.255.255.0
 dhcp select global
#
return
[Tolly_auth-Vlanif11]ip pool vlan11
[Tolly_auth-ip-pool-vlan11]di th
#
ip pool vlan11
 gateway-list 11.1.1.1
 network 11.1.1.0 mask 255.255.255.0
 dns-list 11.1.1.1
#
```



```
[Tolly_auth]dis access-user
 ------------------------------------------------------------------------------
 UserID Username                        IP address       MAC             Status
 ------------------------------------------------------------------------------
 19127  F0-DE-F1-E0-AE-B2               192.89.11.253    f0de-f1e0-aeb2  Success
 19141  tolly1                          11.1.1.252       0010-9400-0011  Success
 ------------------------------------------------------------------------------
 Total: 2, printed: 2
```

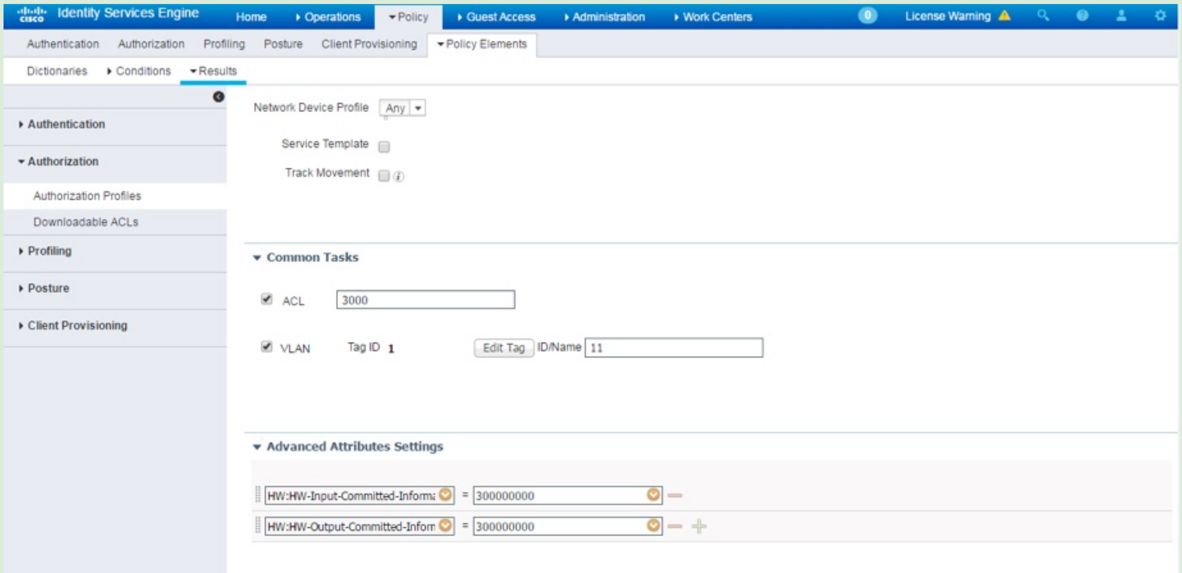


```
[Tolly_auth]dis access-user
 ------------------------------------------------------------------------------
 UserID Username                        IP address       MAC             Status
 ------------------------------------------------------------------------------
 19127  F0-DE-F1-E0-AE-B2               192.89.11.253    f0de-f1e0-aeb2  Success
 19142  tolly1                          11.1.1.252       0010-9400-0011  Success
 ------------------------------------------------------------------------------
 Total: 2, printed: 2
[Tolly_auth]dis access-user user-id 19142

Basic:
  User ID                           : 19142
  User name                         : tolly1
  Domain-name                       : tolly
  User MAC                          : 0010-9400-0011
  User IP address                   : 11.1.1.252
  User vpn-instance                 : -
  User IPv6 address                 : -
  User access Interface             : XGigabitEthernet1/0/0
  User vlan event                   : Success
  QinQVlan/UserVlan                 : 0/11
  User access time                  : 2016/10/15 16:43:11
  User accounting session ID        : Tolly_a010000000040901f97550004ac6
  Option82 information              : -
  User access type                  : 802.1x
  Terminal Device Type              : Data Terminal
  Dynamic VLAN ID                   : 11

AAA:
  User authentication type          : 802.1x authentication
  Current authentication method     : RADIUS
  Current authorization method      : -
  Current accounting method         : None
```

Test 3.2	Built-in Authentication Attribute: Dynamic ACL
Objective	Verify the built-in authentication attribute Dynamic ACL when a Huawei S switch works as the access control switch and the Cisco ISE server works as the authentication (RADIUS) server.
Procedure	1. Configure DUT to ensure that DUT and RADIUS server communicate with each other at Layer 3. 2. Create a RADIUS server profile and configure the related parameters, including IP address of the authentication server, port number, the RADIUS server key, and the retransmission time. Create an authentication scheme, and configure the authentication mode as RADIUS. Configure a domain name, and apply the authentication scheme to the domain. 3. Enable 802.1X authentication globally and on the interface Port_1. 4. Configure the ACL 3000 authorization on the ISE server, and configure the correspondent ACL 3000 description 3000.in on the device. 5. Use the PC to initiate the 802.1X authentication, and expected result 1 is displayed. 6. Use the tester to send packets to the destination address 100.1.1.10, and expected result 2 is displayed. 
Pass Criteria	Result 1: The tested device displays 802.1X authentication statistics information, which indicates that the authentication succeeds. Result 2: The tester sends packets to the destination address 100.1.1.10, and the traffic is denied.

Test Results

1. Configure the ACL 3000 dynamic authorization in the ISE server authorization policy.



Network Device Profile: Any

Service Template □

Track Movement □

Common Tasks

☑ ACL 3000

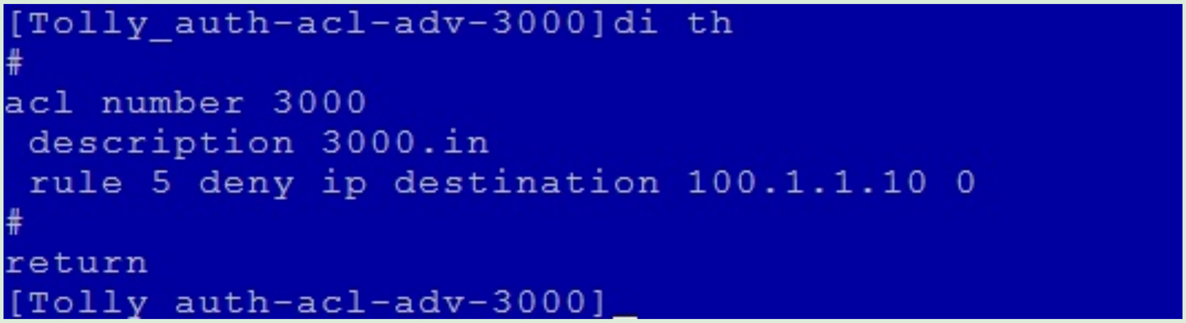
☑ VLAN Tag ID 1 ID/Name 11

Advanced Attributes Settings

HW:HW-Input-Committed-Inform: = 300000000

HW:HW-Output-Committed-Inforr = 300000000

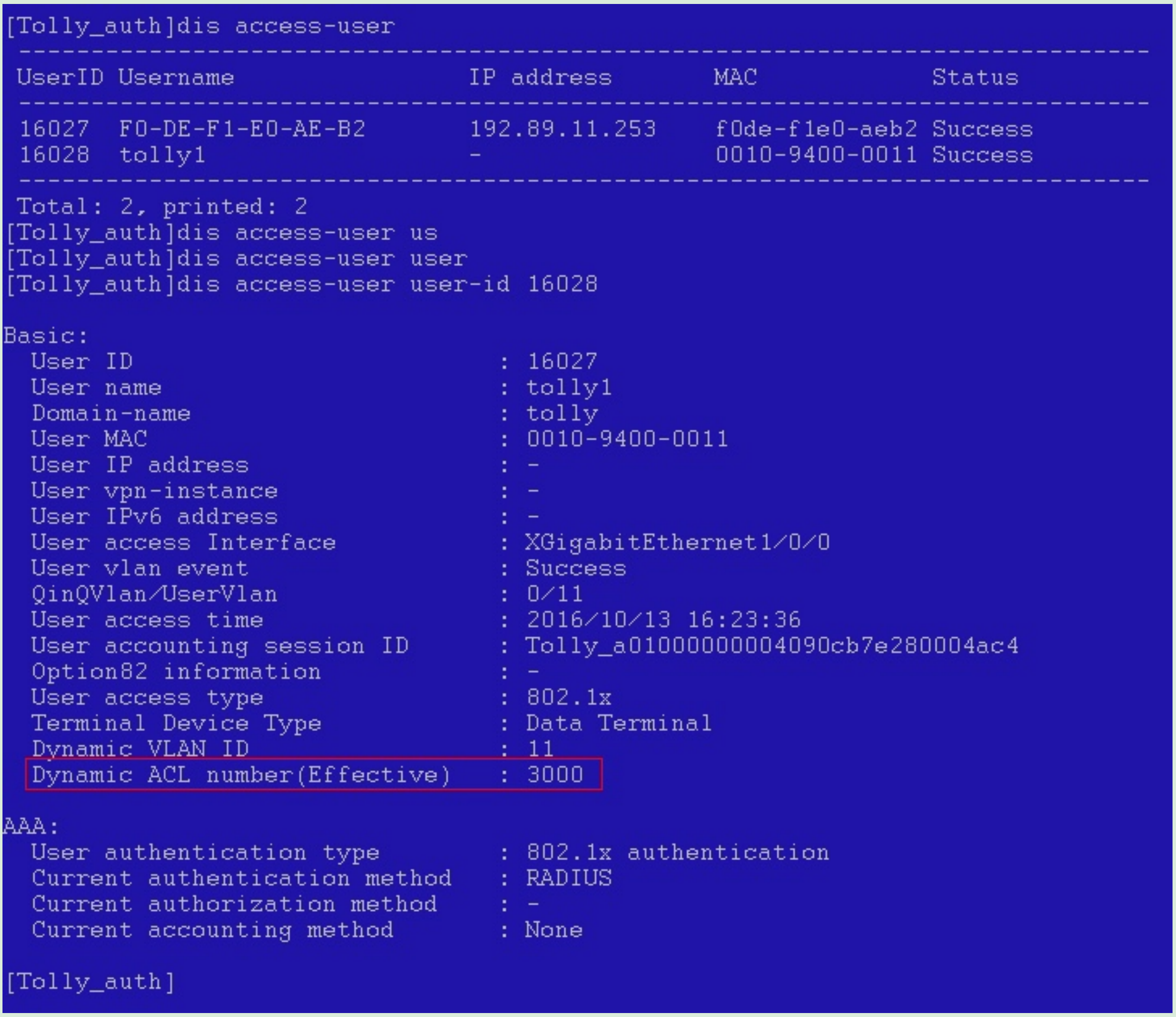
2. Configure the ACL 3000 on the device.



```
[Tolly_auth-acl-adv-3000]di th
#
acl number 3000
 description 3000.in
 rule 5 deny ip destination 100.1.1.10 0
#
return
[Tolly_auth-acl-adv-3000]_
```

Test Results

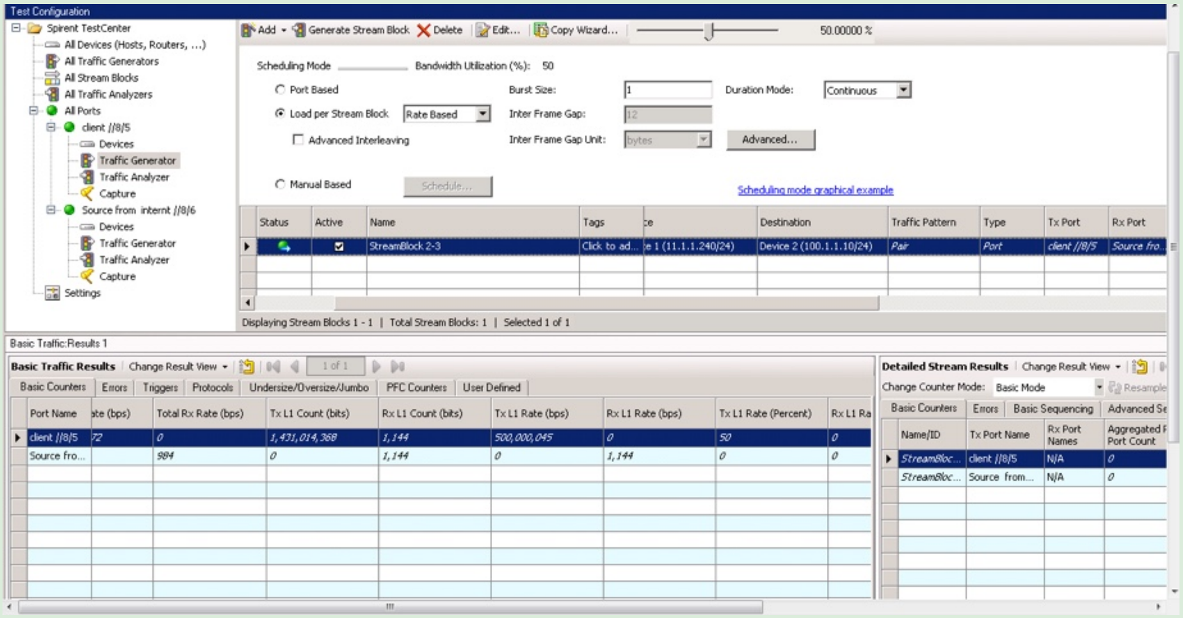
3. The device goes online after passing the authentication successfully, and obtains the dynamic ACL.



```
[Tolly_auth]dis access-user
 ------------------------------------------------------------------------------
 UserID Username                      IP address       MAC            Status
 ------------------------------------------------------------------------------
 16027  F0-DE-F1-E0-AE-B2             192.89.11.253    f0de-f1e0-aeb2 Success
 16028  tolly1                        -                0010-9400-0011 Success
 ------------------------------------------------------------------------------
 Total: 2, printed: 2
[Tolly_auth]dis access-user us
[Tolly_auth]dis access-user user
[Tolly_auth]dis access-user user-id 16028

Basic:
  User ID                          : 16027
  User name                        : tolly1
  Domain-name                      : tolly
  User MAC                         : 0010-9400-0011
  User IP address                  : -
  User vpn-instance                : -
  User IPv6 address                : -
  User access Interface            : XGigabitEthernet1/0/0
  User vlan event                  : Success
  QinQVlan/UserVlan                : 0/11
  User access time                 : 2016/10/13 16:23:36
  User accounting session ID       : Tolly_a01000000004090cb7e280004ac4
  Option82 information             : -
  User access type                 : 802.1x
  Terminal Device Type             : Data Terminal
  Dynamic VLAN ID                  : 11
  Dynamic ACL number(Effective)    : 3000

AAA:
  User authentication type         : 802.1x authentication
  Current authentication method    : RADIUS
  Current authorization method     : -
  Current accounting method        : None

[Tolly_auth]
```

Test Results

4. The tester sends packets to the destination address 100.1.1.10, and the traffic is denied.



50.00000 %

Scheduling Mode

Bandwidth Utilization (%): 50

○ Port Based

● Load per Stream Block: Rate Based

□ Advanced Interleaving

○ Manual Based

Burst Size: 1

Inter Frame Gap: 12

Inter Frame Gap Unit: bytes

Duration Mode: Continuous

Status	Active	Name	Tags	:e	Destination	Traffic Pattern	Type	Tx Port	Rx Port
	☑	StreamBlock 2-3	Click to ad...	:e 1 (11.1.1.240/24)	Device 2 (100.1.1.10/24)	Pair	Port	client //8/5	Source fro...

Displaying Stream Blocks 1 - 1 | Total Stream Blocks: 1 | Selected 1 of 1

Basic Traffic:Results 1

Basic Traffic Results

Basic Counters | Errors | Triggers | Protocols | Undersize/Oversize/Jumbo | PFC Counters | User Defined

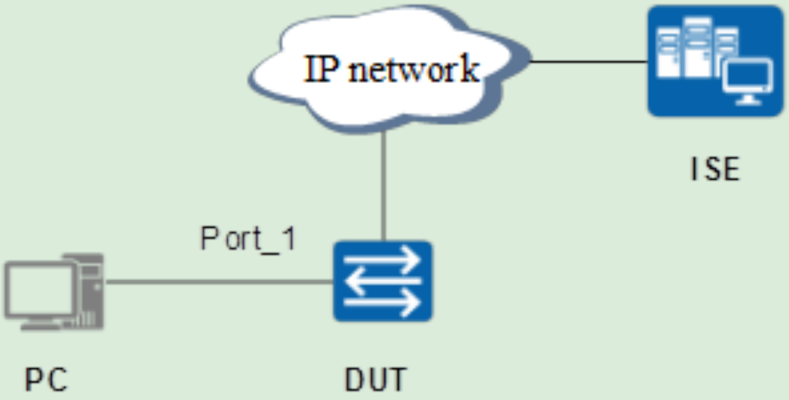
Port Name	ate (bps)	Total Rx Rate (bps)	Tx L1 Count (bits)	Rx L1 Count (bits)	Tx L1 Rate (bps)	Rx L1 Rate (bps)	Tx L1 Rate (Percent)	Rx L1 Ra
client //8/5	72	0	1,431,014,368	1,144	500,000,045	0	50	0
Source fro...		984	0	1,144	0	1,144	0	0

Detailed Stream Results

Change Counter Mode: Basic Mode

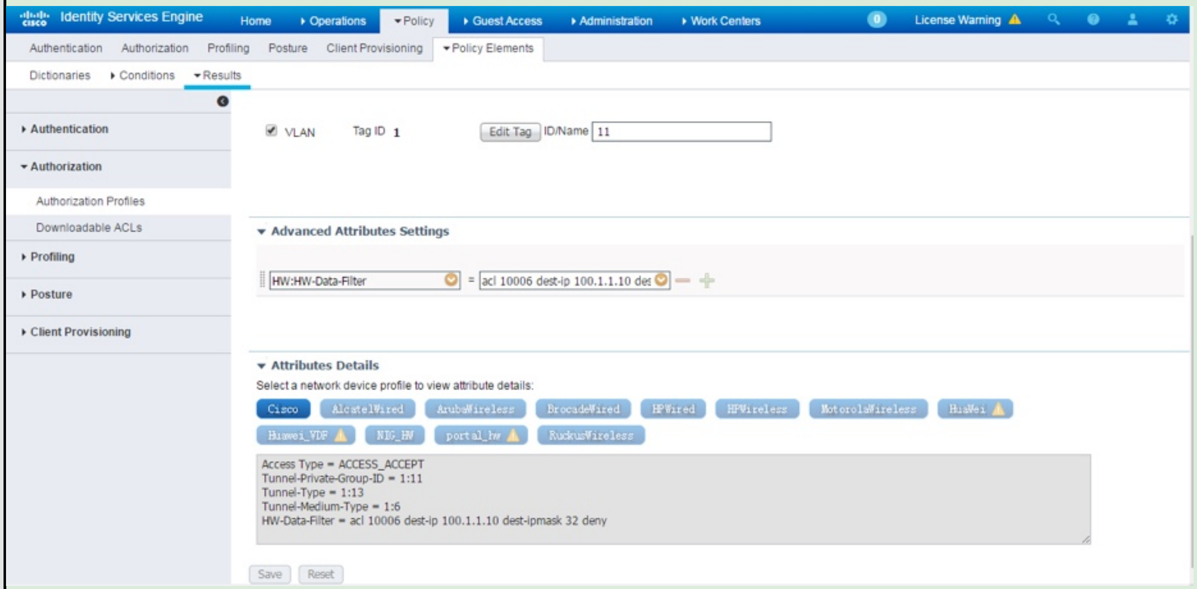
Basic Counters | Errors | Basic Sequencing | Advanced Se

Name/ID	Tx Port Name	Rx Port Names	Aggregated F Port Count
StreamBloc...	client //8/5	N/A	0
StreamBloc...	Source from...	N/A	0

Test 3.3	Huawei Authentication Attribute: Dynamic ACL Rule
Objective	Verify the Huawei authentication attribute Dynamic ACL Rule when a Huawei S switch works as the access control switch and the Cisco ISE server works as the authentication (RADIUS) server. Huawei attributes can be imported to the Cisco ISE server.
Procedure	1. Configure DUT to ensure that DUT and RADIUS server communicate with each other at Layer 3. 2. Create a RADIUS server profile and configure the related parameters, including IP address of the authentication server, port number, the RADIUS server key, and the retransmission time. Create an authentication scheme, and configure the authentication mode as RADIUS. Configure a domain name, and apply the authentication scheme to the domain. 3. Enable 802.1X authentication globally and on the interface Port_1. 4. Configure the DACL authorization on the ISE server. 5. Use the PC to initiate the 802.1X authentication, and expected result 1 is displayed. 6. Use the tester to send packets to the destination address 100.1.1.10, and expected result 2 is displayed. 
Pass Criteria	Result 1: The tested device displays 802.1X authentication statistics information, which indicates that the authentication succeeds. Result 2: The tester sends packets to the destination address 100.1.1.10, and the traffic is denied.

Test Results

1. Configure the DACL dynamic authorization in the ISE server authorization policy.



☑ VLAN Tag ID 1 ID/Name 11

Advanced Attributes Settings

HW:HW-Data-Filter = acl 10006 dest-ip 100.1.1.10 des

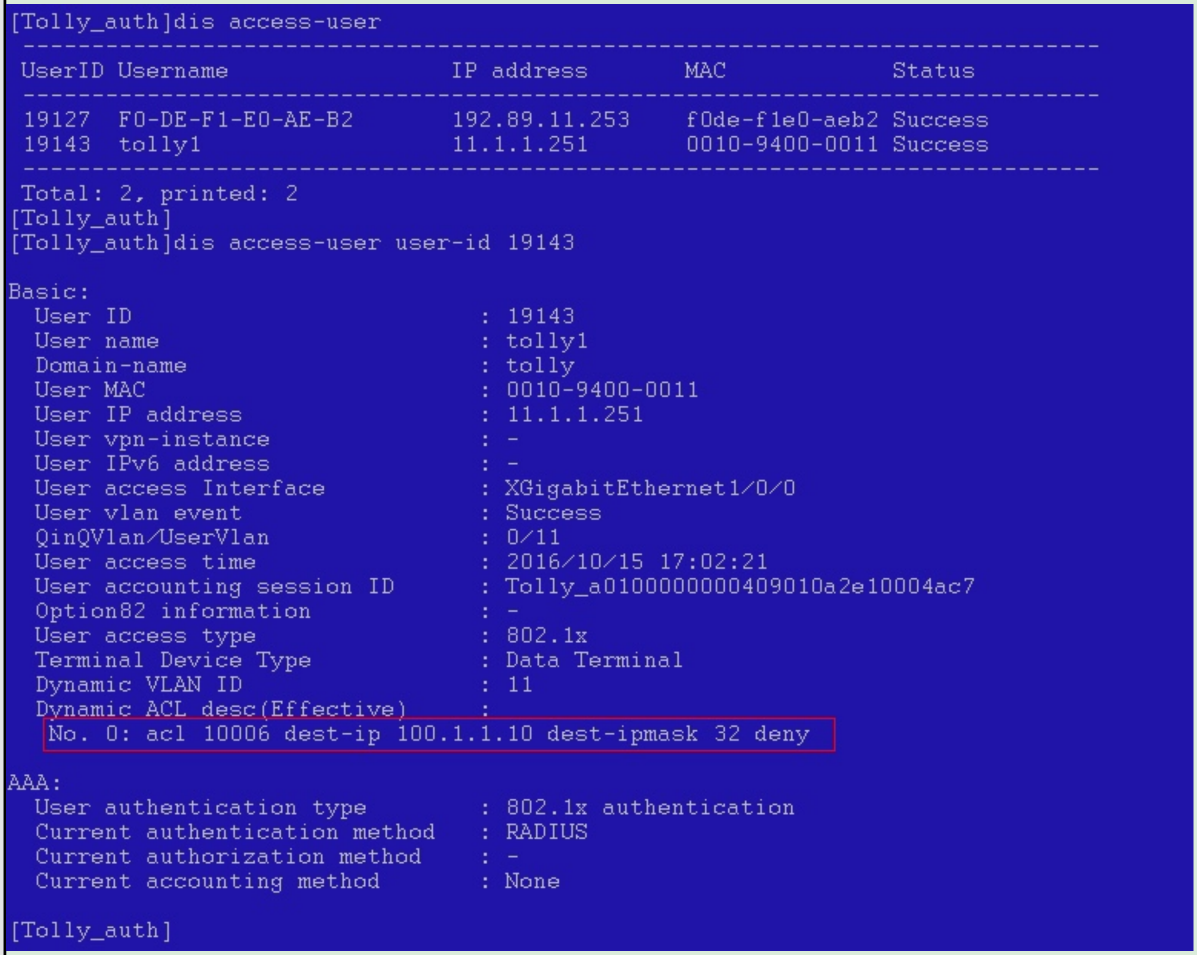
Attributes Details

Select a network device profile to view attribute details:

```
Access Type = ACCESS_ACCEPT
Tunnel-Private-Group-ID = 1:11
Tunnel-Type = 1:13
Tunnel-Medium-Type = 1:6
HW-Data-Filter = acl 10006 dest-ip 100.1.1.10 dest-ipmask 32 deny
```

Test Results

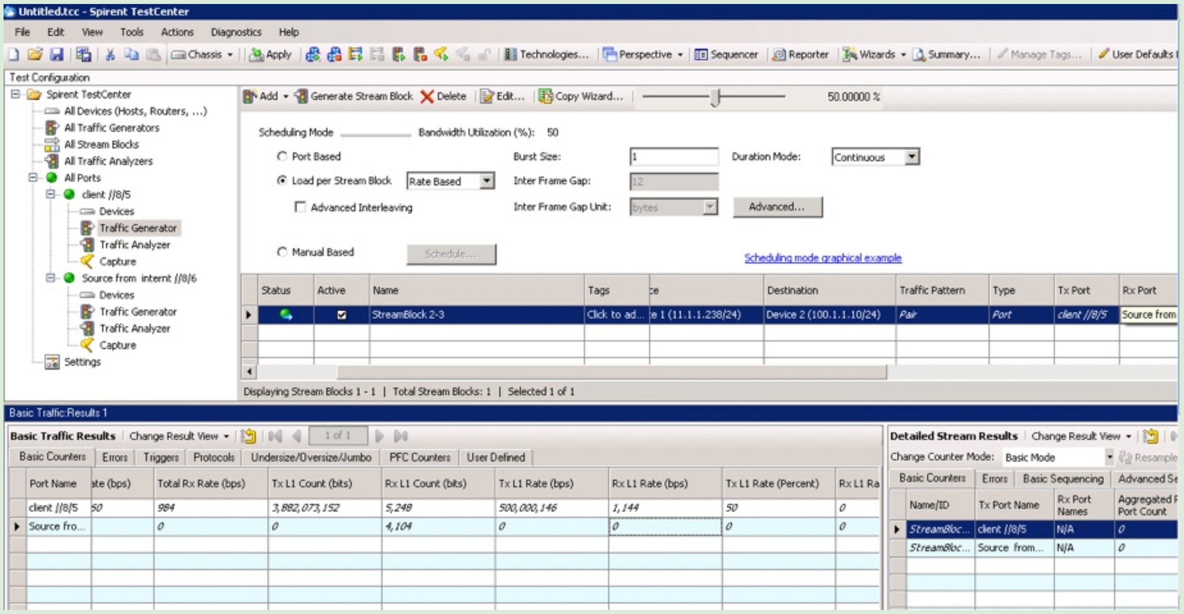
2. The device goes online after passing the authentication successfully, and obtains the dynamic DACL.



```
[Tolly_auth]dis access-user
 ------------------------------------------------------------------------------
 UserID Username                    IP address       MAC            Status
 ------------------------------------------------------------------------------
 19127  F0-DE-F1-E0-AE-B2           192.89.11.253    f0de-f1e0-aeb2 Success
 19143  tolly1                      11.1.1.251       0010-9400-0011 Success
 ------------------------------------------------------------------------------
 Total: 2, printed: 2
[Tolly_auth]
[Tolly_auth]dis access-user user-id 19143

Basic:
  User ID                           : 19143
  User name                         : tolly1
  Domain-name                       : tolly
  User MAC                          : 0010-9400-0011
  User IP address                   : 11.1.1.251
  User vpn-instance                 : -
  User IPv6 address                 : -
  User access Interface             : XGigabitEthernet1/0/0
  User vlan event                   : Success
  QinQVlan/UserVlan                 : 0/11
  User access time                  : 2016/10/15 17:02:21
  User accounting session ID        : Tolly_a0100000000409010a2e10004ac7
  Option82 information              : -
  User access type                  : 802.1x
  Terminal Device Type              : Data Terminal
  Dynamic VLAN ID                   : 11
  Dynamic ACL desc(Effective)       :
   No. 0: acl 10006 dest-ip 100.1.1.10 dest-ipmask 32 deny

AAA:
  User authentication type          : 802.1x authentication
  Current authentication method     : RADIUS
  Current authorization method      : -
  Current accounting method         : None

[Tolly_auth]
```

Test Results

3. The tester sends packets to the destination address 100.1.1.10, and the traffic is denied.


Untitled.tcc - Spirent TestCenter
File Edit View Tools Actions Diagnostics Help
Chassis Apply Technologies... Perspective Sequencer Reporter Wizards Summary... Manage Tags... User Defaults
Test Configuration
Spirent TestCenter
All Devices (Hosts, Routers, ...)
All Traffic Generators
All Stream Blocks
All Traffic Analyzers
All Ports
client //8/5
Devices
Traffic Generator
Traffic Analyzer
Capture
Source from internt //8/6
Devices
Traffic Generator
Traffic Analyzer
Capture
Settings
Add Generate Stream Block Delete Edit... Copy Wizard...
Advanced...
Schedule...
Scheduling mode graphical example
Basic Traffic:Results 1
Basic Traffic Results Change Result View 1 of 1
Basic Counters Errors Triggers Protocols Undersize/Oversize/Jumbo PFC Counters User Defined
Detailed Stream Results Change Result View
Resample
Basic Counters Errors Basic Sequencing Advanced Se

50.00000 %

Scheduling Mode

Bandwidth Utilization (%): 50

○ Port Based

● Load per Stream Block: Rate Based

□ Advanced Interleaving

○ Manual Based

Burst Size: 1

Inter Frame Gap: 12

Inter Frame Gap Unit: bytes

Duration Mode: Continuous

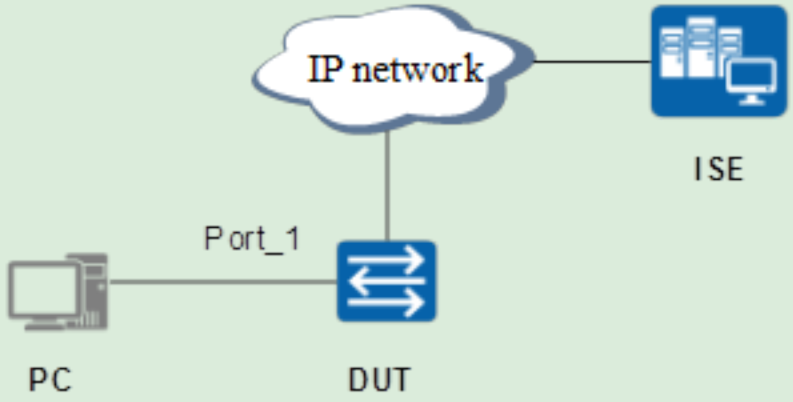
Status	Active	Name	Tags	ce	Destination	Traffic Pattern	Type	Tx Port	Rx Port
	☑	StreamBlock 2-3	Click to ad...	e 1 (11.1.1.238/24)	Device 2 (100.1.1.10/24)	Pair	Port	client //8/5	Source from

Displaying Stream Blocks 1 - 1 | Total Stream Blocks: 1 | Selected 1 of 1

Port Name	ate (bps)	Total Rx Rate (bps)	Tx L1 Count (bits)	Rx L1 Count (bits)	Tx L1 Rate (bps)	Rx L1 Rate (bps)	Tx L1 Rate (Percent)	Rx L1 Ra
client //8/5	50	984	3,882,073,152	5,248	500,000,146	1,144	50	0
Source fro...		0	0	4,104	0	0	0	0

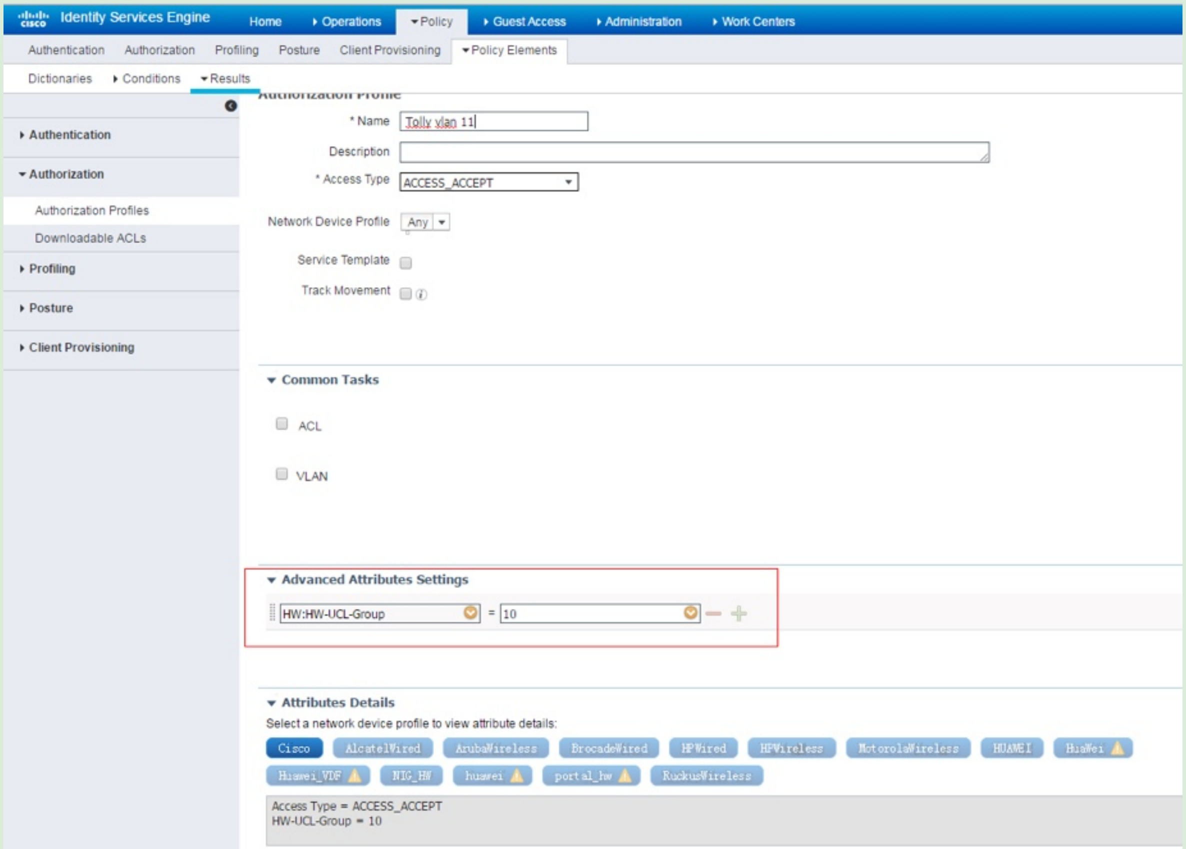
Change Counter Mode: Basic Mode

Name/ID	Tx Port Name	Rx Port Names	Aggregated F Port Count
StreamBloc...	client //8/5	N/A	0
StreamBloc...	Source from...	N/A	0

Test 3.4	Huawei Authentication Attribute: Dynamic UCL Group
Objective	Verify the Huawei authentication attribute Dynamic UCL Group when a Huawei S switch works as the access control switch and the Cisco ISE server works as the authentication (RADIUS) server. Huawei attributes can be imported to the Cisco ISE server.
Procedure	1. Configure DUT to ensure that DUT and RADIUS server communicate with each other at Layer 3. 2. Create a RADIUS server profile and configure the related parameters, including IP address of the authentication server, port number, the RADIUS server key, and the retransmission time. Create an authentication scheme, and configure the authentication mode as RADIUS. Configure a domain name, and apply the authentication scheme to the domain. 3. Enable 802.1X authentication globally and on the interface Port_1. 4. Configure the UCL-group 10 authorization on the ISE server, and create UCL-group 10 on the device. Create and bind ACL 6000 to UCL-group 10. 5. Use the tester as a host to initiate the 802.1X authentication, and expected result 1 is displayed. 6. Use the tester to send traffic that matches ACL6000, and expected result 2 is displayed. 
Pass Criteria	Result 1: The tested device displays 802.1X authentication statistics information, which indicates that the authentication succeeds. The device can obtain the UCL-group 10. Result 2: The tester sends traffic that matches ACL6000, and the traffic is denied.

Test Results

1. Configure the UCL-group 10 dynamic authorization in the ISE server authorization policy.



* Name: Tolly vlan 11

Description:

* Access Type: ACCESS_ACCEPT

Network Device Profile: Any

Service Template □

Track Movement □

□ ACL

□ VLAN

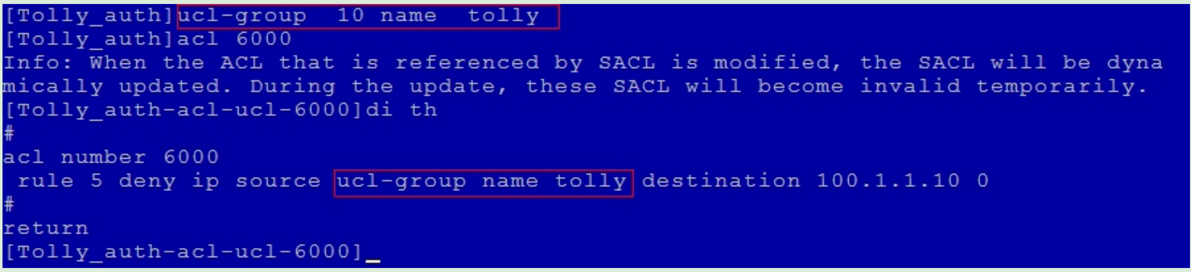
HW:HW-UCL-Group = 10

Select a network device profile to view attribute details:

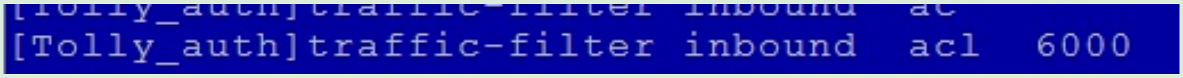
Access Type = ACCESS_ACCEPT
HW-UCL-Group = 10

Test Results

2. Configure UCL-group 10 on the device. Create ACL 6000, bind it to UCL-group 10, and apply it.



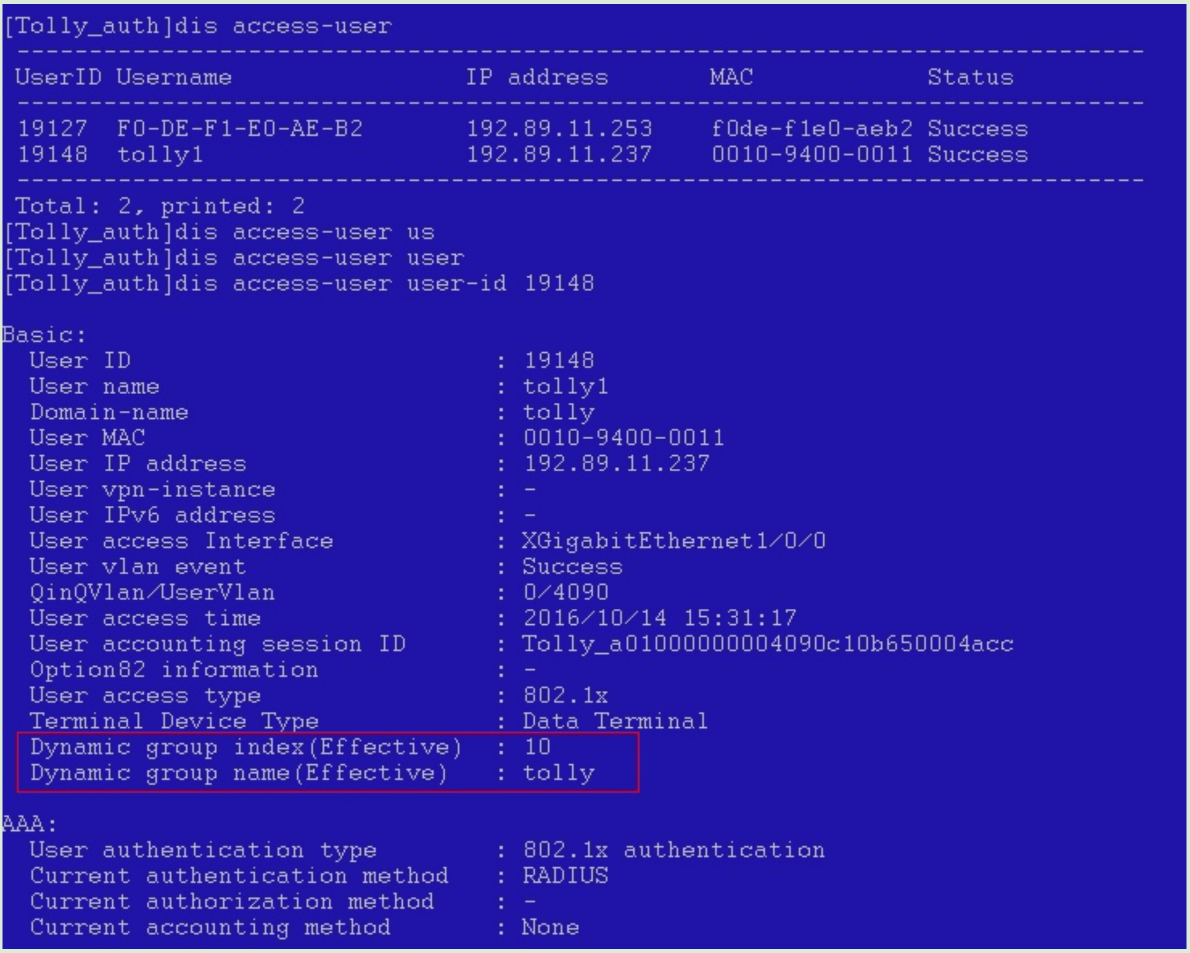
```
[Tolly_auth]ucl-group  10 name  tolly
[Tolly_auth]acl 6000
Info: When the ACL that is referenced by SACL is modified, the SACL will be dyna
mically updated. During the update, these SACL will become invalid temporarily.
[Tolly_auth-acl-ucl-6000]di th
#
acl number 6000
 rule 5 deny ip source ucl-group name tolly destination 100.1.1.10 0
#
return
[Tolly_auth-acl-ucl-6000]_
```



```
[Tolly_auth]traffic-filter inbound  acl  6000
```

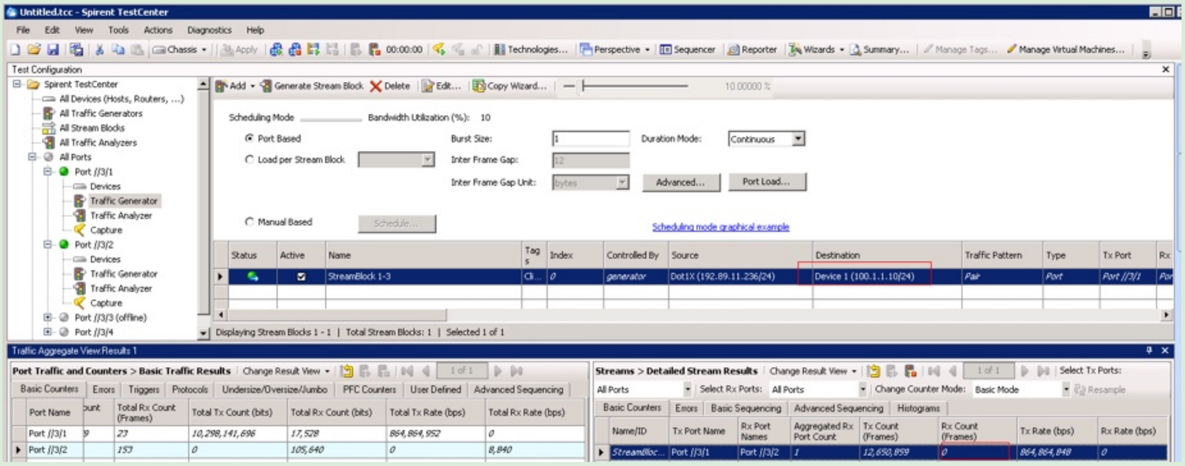
Test Results

3. The user goes online after passing the authentication, and obtains the UCL-group successfully.



```
[Tolly_auth]dis access-user
 ------------------------------------------------------------------------------
 UserID Username                       IP address        MAC            Status
 ------------------------------------------------------------------------------
 19127  F0-DE-F1-E0-AE-B2              192.89.11.253     f0de-f1e0-aeb2 Success
 19148  tolly1                         192.89.11.237     0010-9400-0011 Success
 ------------------------------------------------------------------------------
 Total: 2, printed: 2
[Tolly_auth]dis access-user us
[Tolly_auth]dis access-user user
[Tolly_auth]dis access-user user-id 19148

Basic:
  User ID                             : 19148
  User name                           : tolly1
  Domain-name                         : tolly
  User MAC                            : 0010-9400-0011
  User IP address                     : 192.89.11.237
  User vpn-instance                   : -
  User IPv6 address                   : -
  User access Interface               : XGigabitEthernet1/0/0
  User vlan event                     : Success
  QinQVlan/UserVlan                   : 0/4090
  User access time                    : 2016/10/14 15:31:17
  User accounting session ID          : Tolly_a01000000004090c10b650004acc
  Option82 information                : -
  User access type                    : 802.1x
  Terminal Device Type                : Data Terminal
  Dynamic group index(Effective)      : 10
  Dynamic group name(Effective)       : tolly

AAA:
  User authentication type            : 802.1x authentication
  Current authentication method       : RADIUS
  Current authorization method        : -
  Current accounting method           : None
```

4. The tester sends traffic that matches ACL6000, and the traffic is denied.



Untitled.tcc - Spirent TestCenter
File Edit View Tools Actions Diagnostics Help
Chassis Apply 00:00:00 Technologies... Perspective Sequencer Reporter Wizards Summary... Manage Tags... Manage Virtual Machines...
Test Configuration
Spirent TestCenter
All Devices (Hosts, Routers, ...)
All Traffic Generators
All Stream Blocks
All Traffic Analyzers
All Ports
Port //3/1
Devices
Traffic Generator
Traffic Analyzer
Capture
Port //3/2
Devices
Traffic Generator
Traffic Analyzer
Capture
Port //3/3 (offline)
Port //3/4
Add Generate Stream Block Delete Edit... Copy Wizard...
10.00000 %
Advanced... Port Load... Schedule...
Scheduling mode graphical example
Traffic Aggregate View:Results 1
Change Result View
1 of 1

Scheduling Mode   Bandwidth Utilization (%): 10

● Port Based   Burst Size: 1   Duration Mode: Continuous

○ Load per Stream Block   Inter Frame Gap: 12

Inter Frame Gap Unit: bytes

○ Manual Based

	Status	Active	Name	Tags	Index	Controlled By	Source	Destination	Traffic Pattern	Type	Tx Port	Rx
▶	●	☑	StreamBlock 1-3	Cl...	0	generator	Dot1X (192.89.11.236/24)	Device 1 (100.1.1.10/24)	Pair	Port	Port //3/1	Por

Displaying Stream Blocks 1 - 1 | Total Stream Blocks: 1 | Selected 1 of 1

Port Traffic and Counters > Basic Traffic Results

Basic Counters | Errors | Triggers | Protocols | Undersize/Oversize/Jumbo | PFC Counters | User Defined | Advanced Sequencing

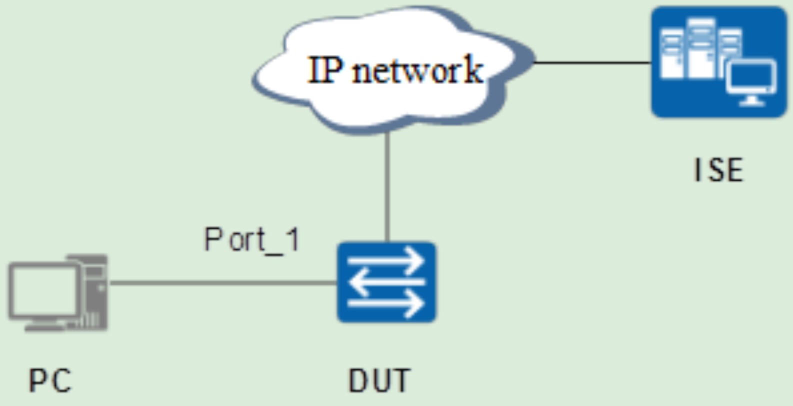
	Port Name	ount	Total Rx Count (Frames)	Total Tx Count (bits)	Total Rx Count (bits)	Total Tx Rate (bps)	Total Rx Rate (bps)
	Port //3/1	9	23	10,298,141,696	17,528	864,864,952	0
▶	Port //3/2		153	0	105,640	0	8,840

Streams > Detailed Stream Results

Select Tx Ports: All Ports   Select Rx Ports: All Ports   Change Counter Mode: Basic Mode   Resample

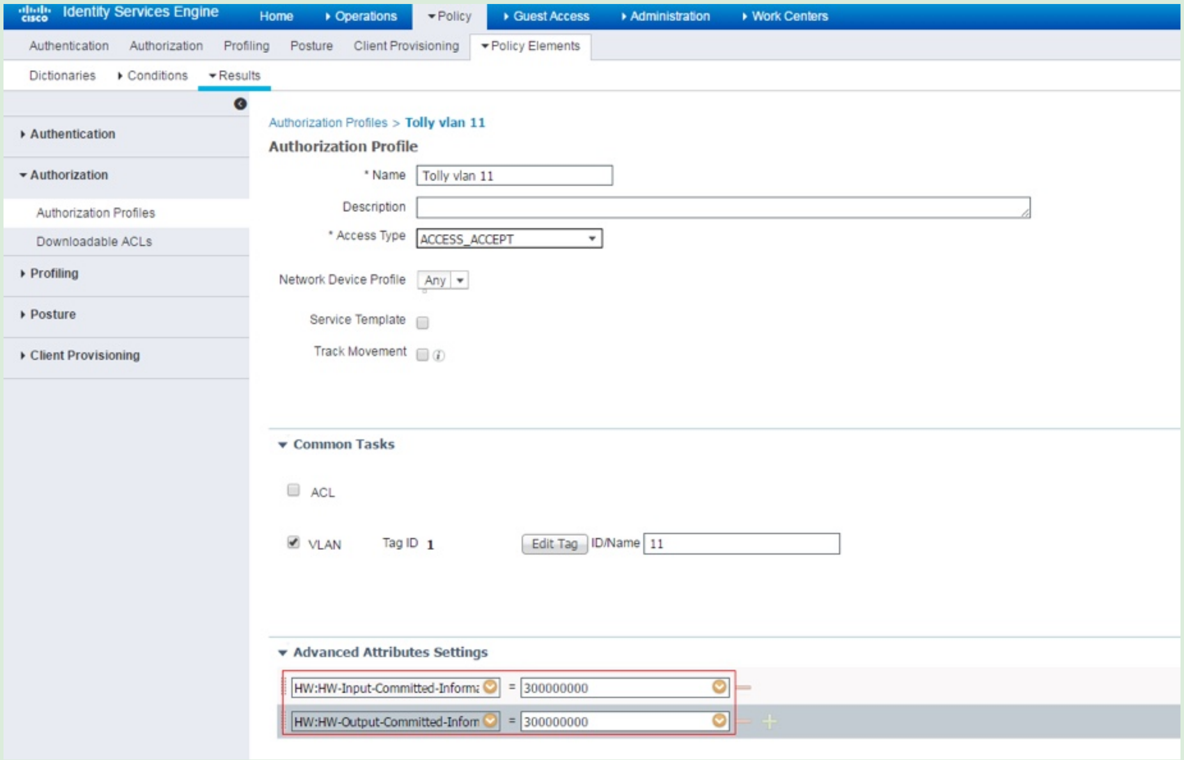
Basic Counters | Errors | Basic Sequencing | Advanced Sequencing | Histograms

	Name/ID	Tx Port Name	Rx Port Names	Aggregated Rx Port Count	Tx Count (Frames)	Rx Count (Frames)	Tx Rate (bps)	Rx Rate (bps)
▶	StreamBloc...	Port //3/1	Port //3/2	1	12,650,859	0	864,864,848	0

Test 3.5	Huawei Authentication Attribute: Dynamic CAR CIR (Rate Limiting)
Objective	Verify the Huawei authentication attribute Dynamic CAR CIR when a Huawei S switch works as the access control switch and the Cisco ISE server works as the authentication (RADIUS) server. Huawei attributes can be imported to the Cisco ISE server.
Procedure	1. Configure DUT to ensure that DUT and RADIUS server communicate with each other at Layer 3. 2. Create a RADIUS server profile and configure the related parameters, including IP address of the authentication server, port number, the RADIUS server key, and the retransmission time. Create an authentication scheme, and configure the authentication mode as RADIUS. Configure a domain name, and apply the authentication scheme to the domain. 3. Enable 802.1X authentication globally and on the interface Port_1. 4. Configure the upstream and downstream CAR authorization on the ISE server. 5. Use the PC to initiate the 802.1X authentication, and expected result 1 is displayed. 6. Use the tester to send upstream and downstream test traffic, and expected result 2 is displayed. 
Pass Criteria	Result 1: The tested device displays 802.1X authentication statistics information, which indicates that the authentication succeeds. Result 2: The tester sends upstream and downstream traffic that is limited to a certain rate.

Test Results

1. Configure upstream and downstream CAR dynamic authorization in the ISE server authorization policy; the CAR is limited to 300 Mbit/s.



Authorization Profiles > Tolly vlan 11

Authorization Profile

* Name: Tolly vlan 11

Description:

* Access Type: ACCESS_ACCEPT

Network Device Profile: Any

Service Template: □

Track Movement: □

Common Tasks

□ ACL

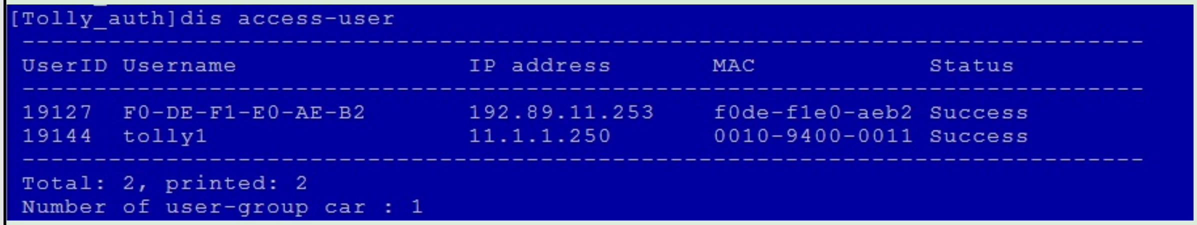
☑ VLAN Tag ID 1 ID/Name 11

Advanced Attributes Settings

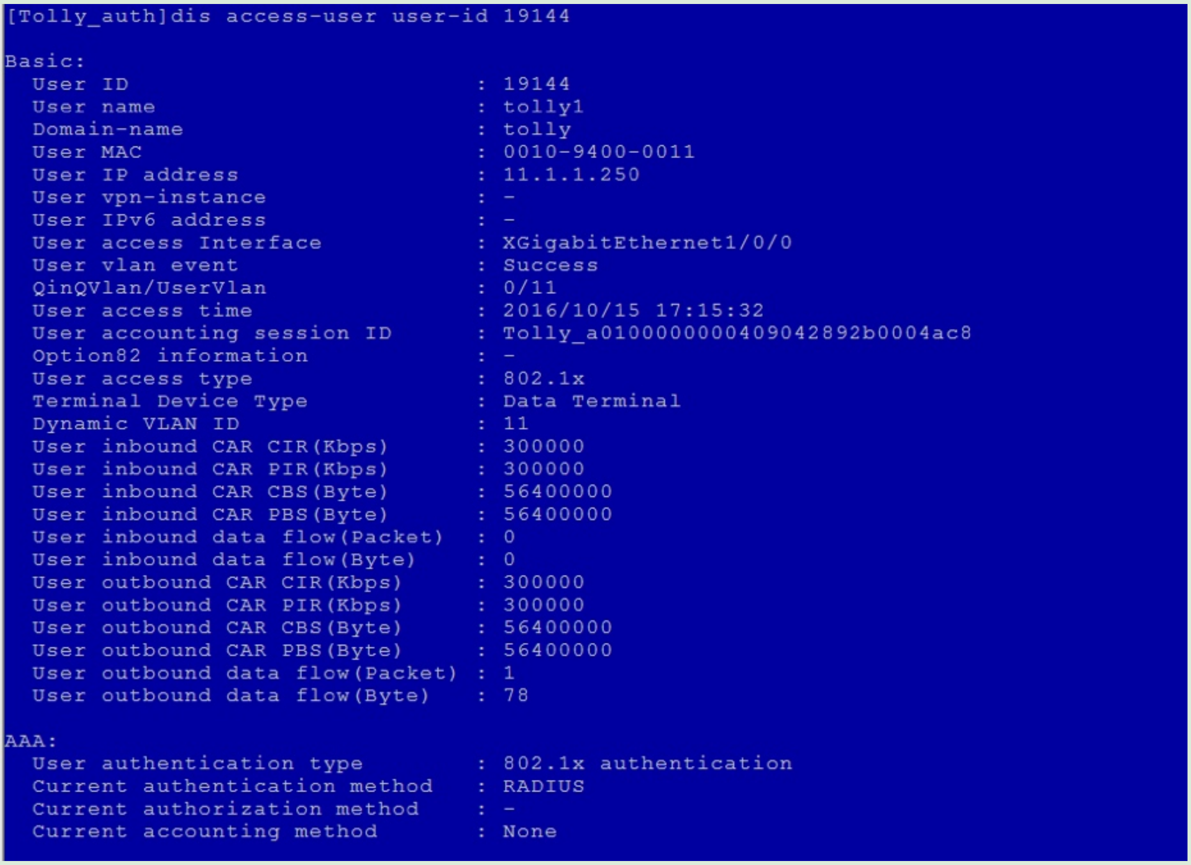
HW:HW-Input-Committed-Informa = 300000000

HW:HW-Output-Committed-Inform = 300000000

Test Results	2. The device goes online after passing the authentication successfully, and obtains the authorized CAR.



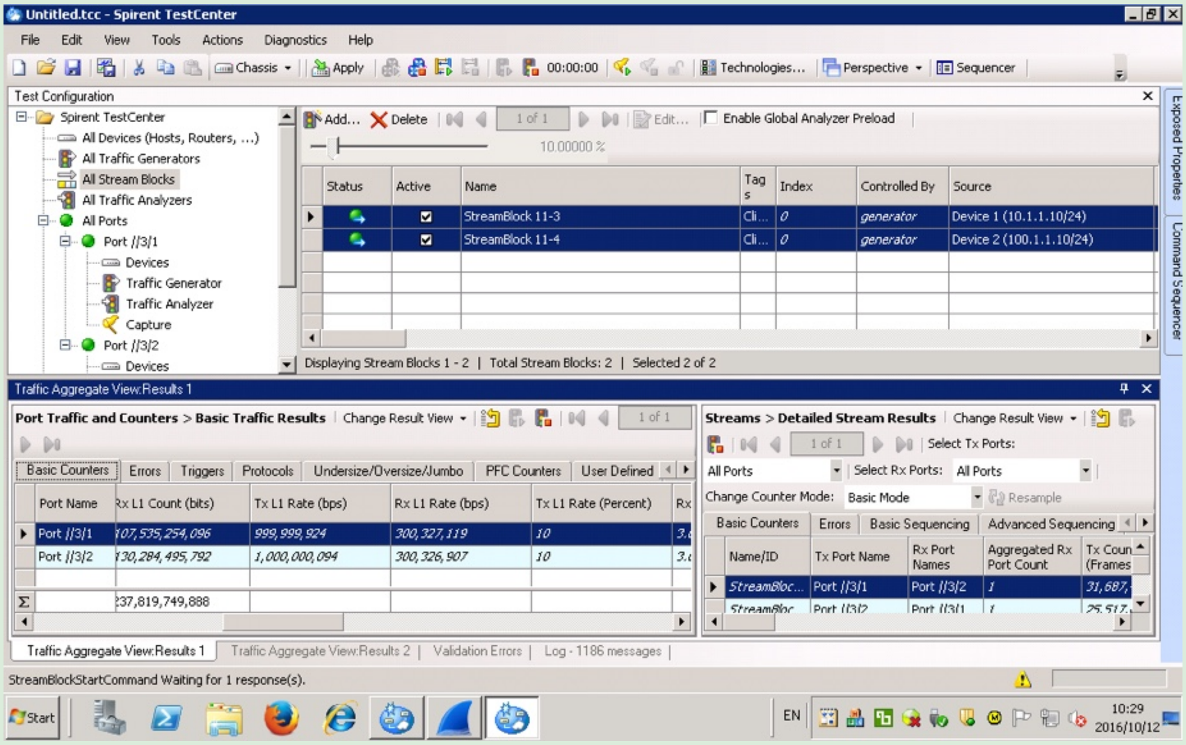
```
[Tolly_auth]dis access-user
 ------------------------------------------------------------------------------
 UserID Username                      IP address        MAC            Status
 ------------------------------------------------------------------------------
 19127  F0-DE-F1-E0-AE-B2             192.89.11.253     f0de-f1e0-aeb2 Success
 19144  tolly1                        11.1.1.250        0010-9400-0011 Success
 ------------------------------------------------------------------------------
 Total: 2, printed: 2
 Number of user-group car : 1
```



```
[Tolly_auth]dis access-user user-id 19144

Basic:
  User ID                           : 19144
  User name                         : tolly1
  Domain-name                       : tolly
  User MAC                          : 0010-9400-0011
  User IP address                   : 11.1.1.250
  User vpn-instance                 : -
  User IPv6 address                 : -
  User access Interface             : XGigabitEthernet1/0/0
  User vlan event                   : Success
  QinQVlan/UserVlan                 : 0/11
  User access time                  : 2016/10/15 17:15:32
  User accounting session ID        : Tolly_a0100000000409042892b0004ac8
  Option82 information              : -
  User access type                  : 802.1x
  Terminal Device Type              : Data Terminal
  Dynamic VLAN ID                   : 11
  User inbound CAR CIR(Kbps)        : 300000
  User inbound CAR PIR(Kbps)        : 300000
  User inbound CAR CBS(Byte)        : 56400000
  User inbound CAR PBS(Byte)        : 56400000
  User inbound data flow(Packet)    : 0
  User inbound data flow(Byte)      : 0
  User outbound CAR CIR(Kbps)       : 300000
  User outbound CAR PIR(Kbps)       : 300000
  User outbound CAR CBS(Byte)       : 56400000
  User outbound CAR PBS(Byte)       : 56400000
  User outbound data flow(Packet)   : 1
  User outbound data flow(Byte)     : 78

AAA:
  User authentication type          : 802.1x authentication
  Current authentication method     : RADIUS
  Current authorization method      : -
  Current accounting method         : None
```

Test Results

3. The tester sends upstream and downstream test traffic at a rate of 1000 Mbit/s, and the traffic is limited to 300 Mbit/s.



□ Enable Global Analyzer Preload

10.00000 %

	Status	Active	Name	Tags	Index	Controlled By	Source
▶		☑	StreamBlock 11-3	Cli...	0	generator	Device 1 (10.1.1.10/24)
		☑	StreamBlock 11-4	Cli...	0	generator	Device 2 (100.1.1.10/24)

Displaying Stream Blocks 1 - 2 | Total Stream Blocks: 2 | Selected 2 of 2

Traffic Aggregate View:Results 1

Port Traffic and Counters > Basic Traffic Results | Change Result View | 1 of 1

Basic Counters | Errors | Triggers | Protocols | Undersize/Oversize/Jumbo | PFC Counters | User Defined

	Port Name	Rx L1 Count (bits)	Tx L1 Rate (bps)	Rx L1 Rate (bps)	Tx L1 Rate (Percent)	Rx
▶	Port //3/1	107,535,254,096	999,999,924	300,327,119	10	3.
	Port //3/2	130,284,495,792	1,000,000,094	300,326,907	10	3.
Σ		237,819,749,888				

Streams > Detailed Stream Results | Change Result View | 1 of 1

Select Tx Ports: All Ports | Select Rx Ports: All Ports

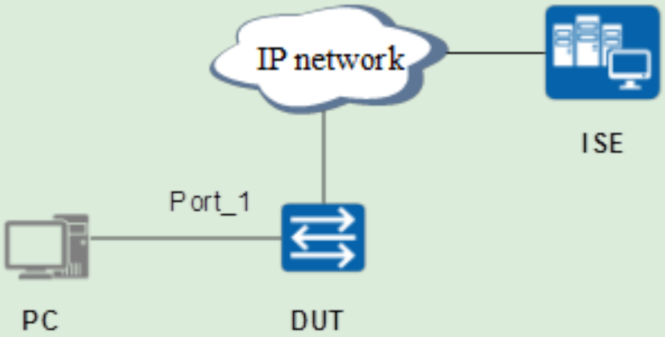
Change Counter Mode: Basic Mode | Resample

Basic Counters | Errors | Basic Sequencing | Advanced Sequencing

	Name/ID	Tx Port Name	Rx Port Names	Aggregated Rx Port Count	Tx Coun (Frames
▶	StreamBloc...	Port //3/1	Port //3/2	1	31,687,
	StreamBloc	Port //3/2	Port //3/1	1	25,517,

Traffic Aggregate View:Results 1 | Traffic Aggregate View:Results 2 | Validation Errors | Log - 1186 messages |

StreamBlockStartCommand Waiting for 1 response(s).

Test 3.6	Huawei Authentication Attribute: Service Scheme; Generic RADIUS Attribute: Framed-IP-Address (On-demand DHCP IP Address) Generic RADIUS Attribute: Framed-Pool (On-demand DHCP Pool)
Objective	Verify the Huawei authentication attribute HW-Service-Scheme, the generic RADIUS attribute Framed-IP-Address and the generic RADIUS attribute Framed-Pool when a Huawei S switch works as the access control switch and the Cisco ISE server works as the authentication (RADIUS) server. Huawei attributes can be imported to the Cisco ISE server.
Procedure	1. Configure DUT to ensure that DUT and RADIUS server communicate with each other at Layer 3. 2. Create a RADIUS server profile and configure the related parameters, including IP address of the authentication server, port number, the RADIUS server key, and the retransmission time. Create an authentication scheme, and configure the authentication mode as RADIUS. Configure a domain name, and apply the authentication scheme to the domain. 3. Configure PPP authentication on the device so that the host can access the network after passing PPPoE authentication. 4. Configure HW-Service-Scheme: pppoe authorization on the ISE server. Create Service-Scheme: pppoe in the AAA view. Bind Service-Scheme to the address pool vlan44. 5. After the PC dials in through PPPoE authentication, expected result 1 is displayed. 6. Add the service scheme pppoe in the default domain. Configure the frame-ip-address attribute in the ISE authorization policy, and assign fixed IP addresses to users. Expected result 2 is displayed. 7. Add the service scheme pppoe in the default domain. Configure the frame-pool attribute in the ISE authorization policy, and assign the IP address pool to users. Expected result 3 is displayed. 
Pass Criteria	Result 1: The tested device displays authentication statistics information, which indicates that the PPP authentication succeeds. The device can obtain addresses from the VLAN44 IP address pool. Result 2: The PC goes online after passing authentication successfully, and obtains the fixed IP address assigned by the ISE server. Result 3: The PC goes online after passing authentication successfully, and obtains the IP address from the IP address pool delivered by the ISE server.

Test Results	Configuration: 1. Configure DUT to ensure that DUT and RADIUS server communicate with each other at Layer 3. 2. Create a RADIUS server profile and configure the related parameters, including IP address of the authentication server, port number, the RADIUS server key, and the retransmission time. Create an authentication scheme, and configure the authentication mode as RADIUS. Configure a domain name, and apply the authentication scheme to the domain. 3. Configure PPP authentication on the device so that the host can access the network after passing PPPoE authentication. # interface Virtual-Template1 ppp keepalive retransmit 4 ppp mru 1400 ppp authentication-mode pap ppp timer negotiate 5 ip address 44.4.4.1 255.255.255.0 # # interface Vlanif44 pppoe-server bind virtual-template 1 # # ip pool vlan44 gateway-list 44.4.4.1 network 44.4.4.0 mask 255.255.255.0 #

Test Results

4. Configure HW-Service-Scheme: pppoe authorization on the ISE server. Create Service-Scheme: pppoe in the AAA view. Bind Service-Scheme to the address pool vlan44.

```
#
ip pool vlan44
gateway-list 44.4.4.1
network 44.4.4.0 mask 255.255.255.0
#
#
aaa
service-scheme pppoe
ip-pool vlan44
domain default
authentication-scheme radius
radius-server tolly
#
```

5. After the PC dials in through PPPoE authentication, expected result 1 is displayed.
6. Add the service scheme pppoe in the default domain. Configure the frame-ip-address attribute in the ISE authorization policy, and assign fixed IP addresses to users. Expected result 2 is displayed.

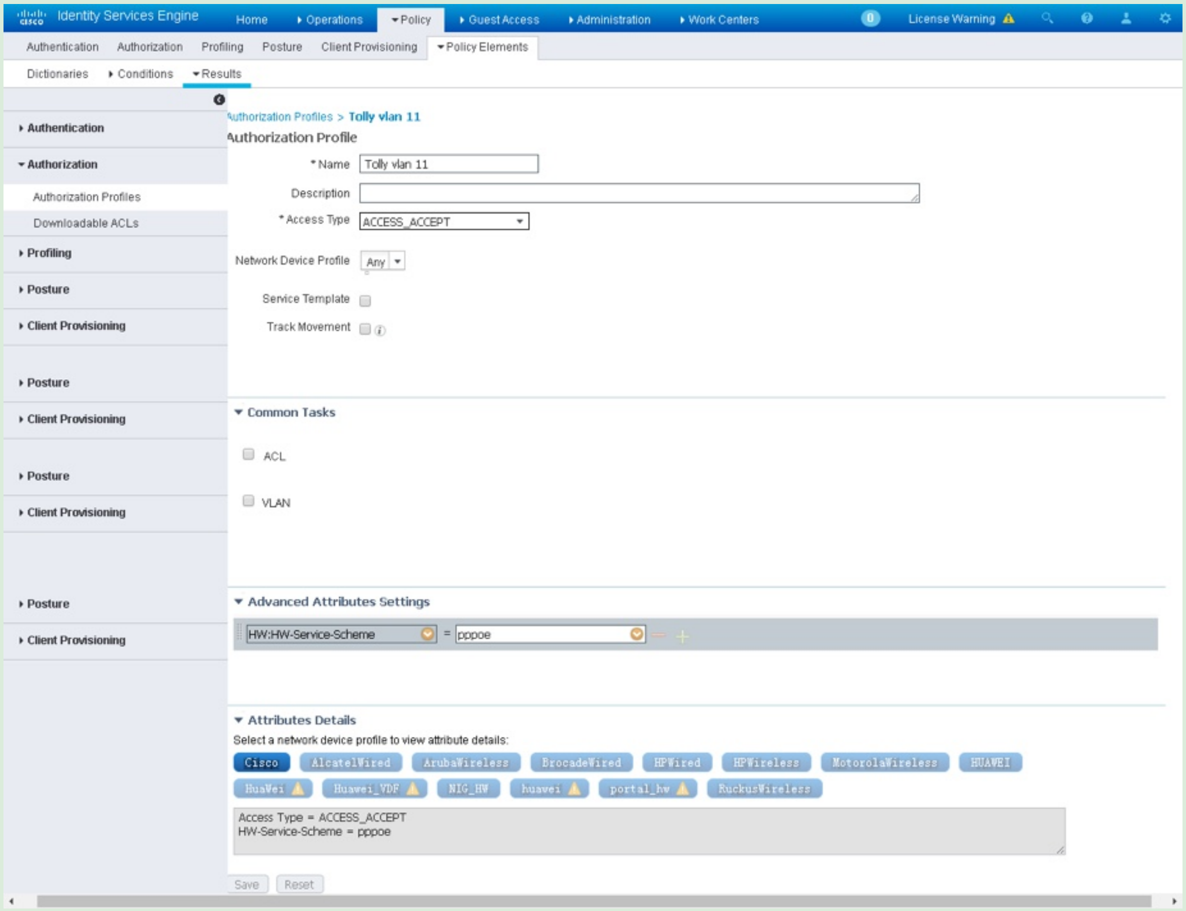
```
#
aaa
service-scheme pppoe
ip-pool vlan44
domain default
authentication-scheme radius
radius-server tolly
service-scheme pppoe
#
```

7. Add the service scheme pppoe in the default domain. Configure the frame-pool attribute in the ISE authorization policy, and assign the IP address pool to users. Expected result 3 is displayed.

Test Results

Results:

1. Configure HW-Service-Scheme: pppoe authorization on the ISE server.



Authorization Profile

* Name: Tolly vlan 11

Description:

* Access Type: ACCESS_ACCEPT

Network Device Profile: Any

Service Template □

Track Movement □

Common Tasks

□ ACL

□ VLAN

Advanced Attributes Settings

HW:HW-Service-Scheme = pppoe

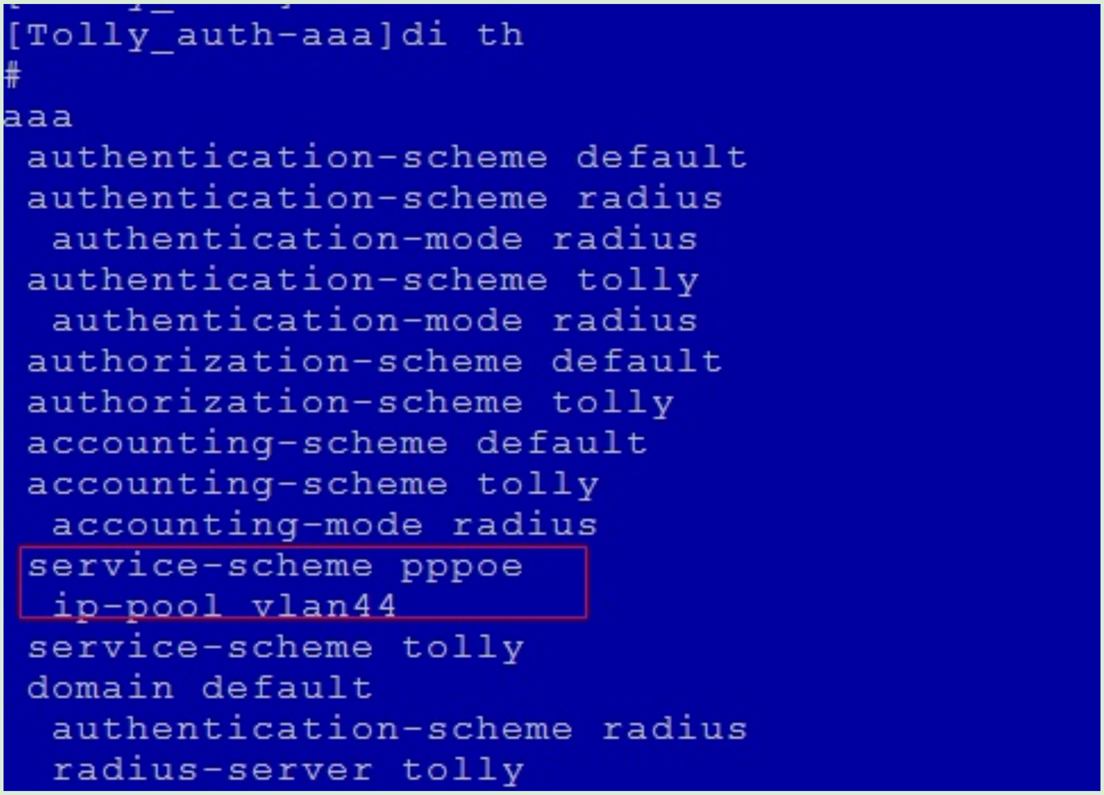
Attributes Details

Select a network device profile to view attribute details:

```
Access Type = ACCESS_ACCEPT
HW-Service-Scheme = pppoe
```

Test Results

2. Configure the service scheme pppoe in the AAA view, and bind vlan44 IP address pool to pppoe. The user goes online after passing authentication successfully, and obtains the pppoe service scheme and IP address.



```
[Tolly_auth-aaa]di th
#
aaa
 authentication-scheme default
 authentication-scheme radius
  authentication-mode radius
 authentication-scheme tolly
  authentication-mode radius
 authorization-scheme default
 authorization-scheme tolly
 accounting-scheme default
 accounting-scheme tolly
  accounting-mode radius
 service-scheme pppoe
  ip-pool vlan44
 service-scheme tolly
 domain default
  authentication-scheme radius
  radius-server tolly
```

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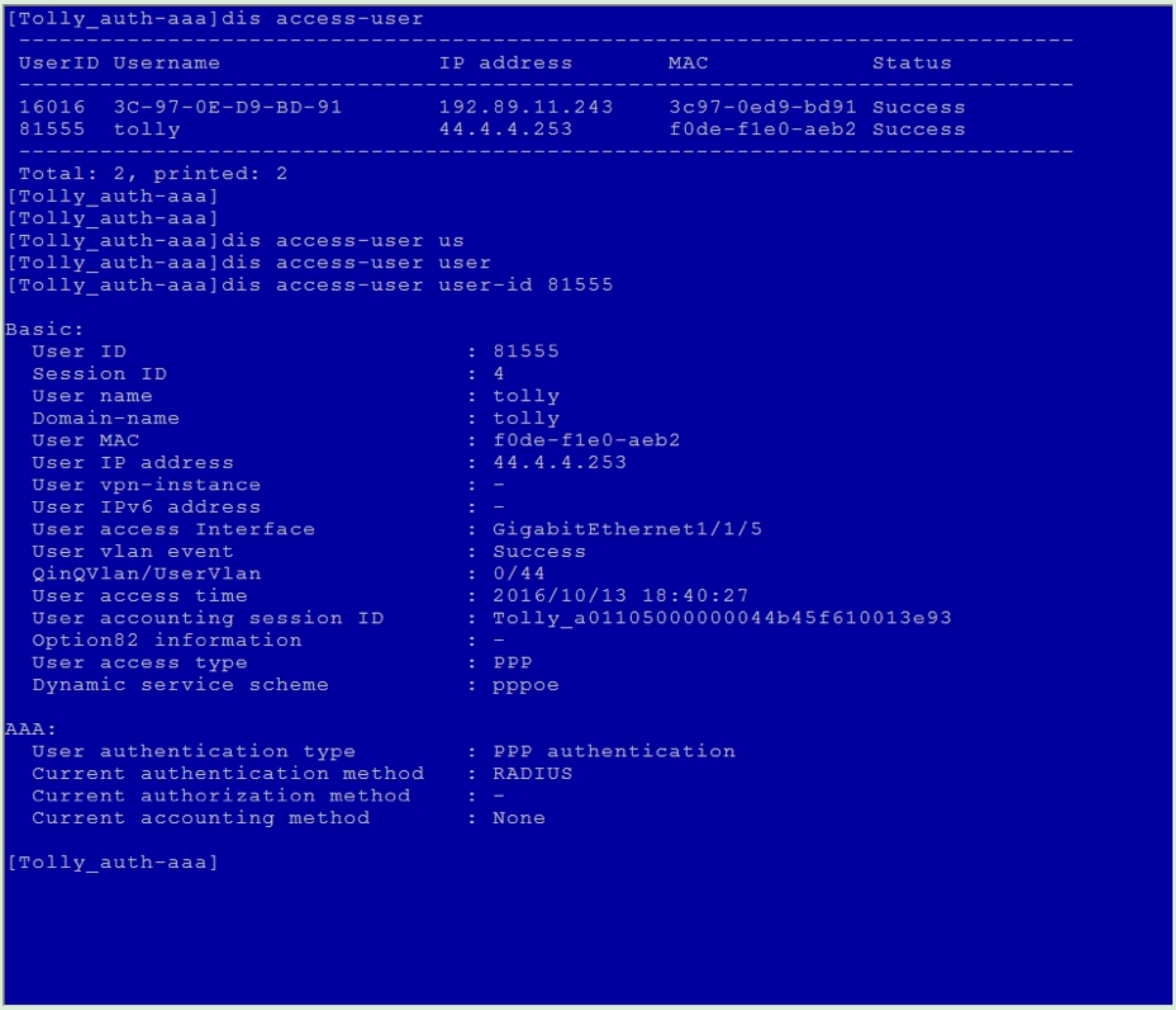
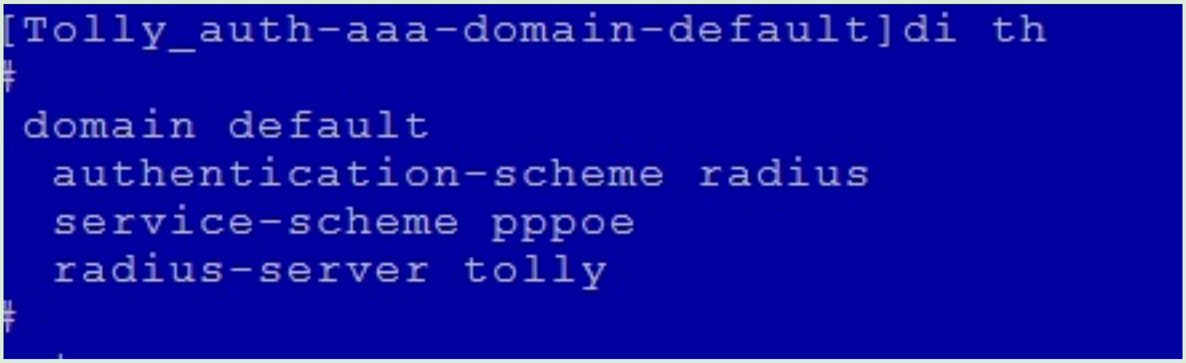
Test Results

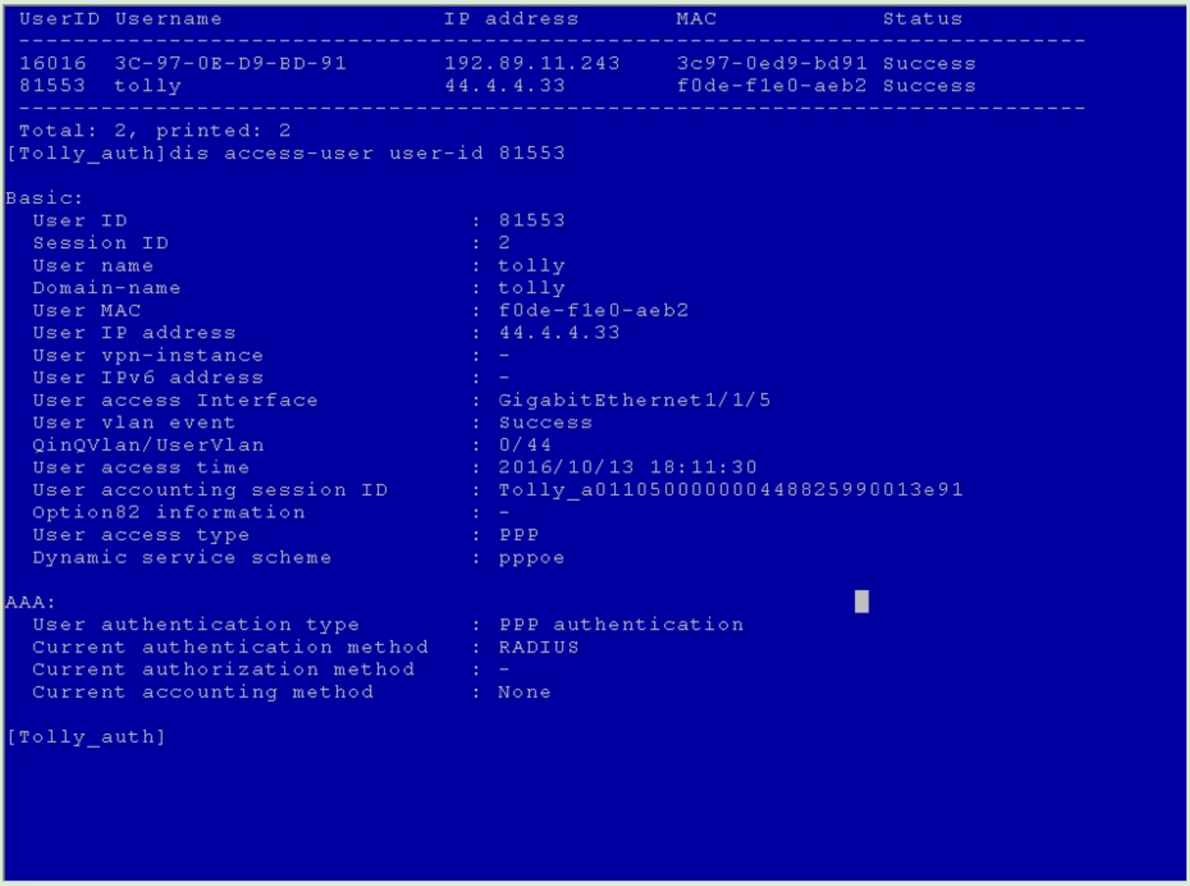


```
[Tolly_auth-aaa]dis access-user
 ------------------------------------------------------------------------------
 UserID Username                IP address       MAC            Status
 ------------------------------------------------------------------------------
 16016  3C-97-0E-D9-BD-91       192.89.11.243    3c97-0ed9-bd91 Success
 81555  tolly                   44.4.4.253       f0de-f1e0-aeb2 Success
 ------------------------------------------------------------------------------
 Total: 2, printed: 2
[Tolly_auth-aaa]
[Tolly_auth-aaa]
[Tolly_auth-aaa]dis access-user us
[Tolly_auth-aaa]dis access-user user
[Tolly_auth-aaa]dis access-user user-id 81555

Basic:
  User ID                          : 81555
  Session ID                       : 4
  User name                        : tolly
  Domain-name                      : tolly
  User MAC                         : f0de-f1e0-aeb2
  User IP address                  : 44.4.4.253
  User vpn-instance                : -
  User IPv6 address                : -
  User access Interface            : GigabitEthernet1/1/5
  User vlan event                  : Success
  QinQVlan/UserVlan                : 0/44
  User access time                 : 2016/10/13 18:40:27
  User accounting session ID       : Tolly_a01105000000044b45f610013e93
  Option82 information             : -
  User access type                 : PPP
  Dynamic service scheme           : pppoe

AAA:
  User authentication type         : PPP authentication
  Current authentication method    : RADIUS
  Current authorization method     : -
  Current accounting method        : None

[Tolly_auth-aaa]
```

Test Results	3. Configure the frame-ip-address attribute in the ISE authorization policy, and users can obtain fixed IP addresses.

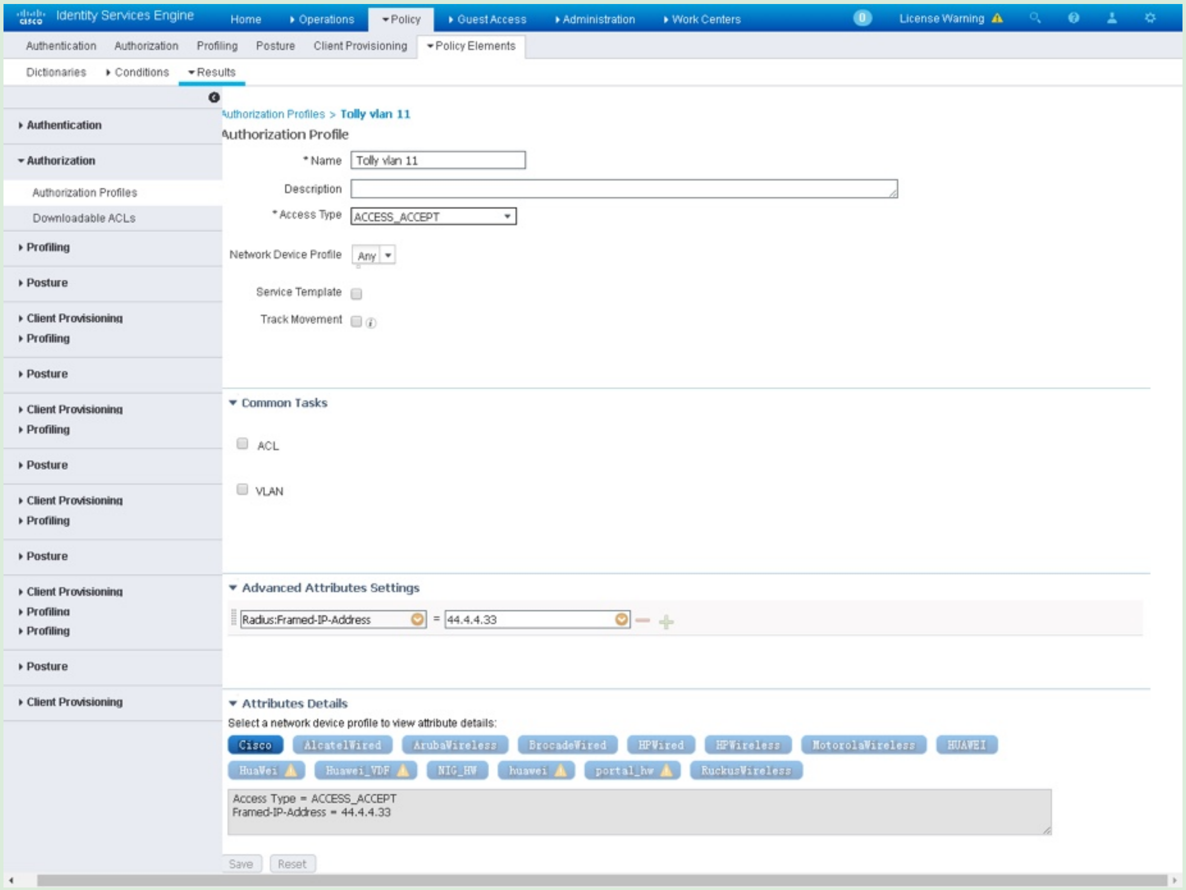


```
[Tolly_auth-aaa-domain-default]di th
#
 domain default
  authentication-scheme radius
  service-scheme pppoe
  radius-server tolly
#
```



```
 UserID Username                     IP address        MAC            Status
 -------------------------------------------------------------------------------
 16016  3C-97-0E-D9-BD-91            192.89.11.243     3c97-0ed9-bd91 Success
 81553  tolly                        44.4.4.33         f0de-f1e0-aeb2 Success
 -------------------------------------------------------------------------------
 Total: 2, printed: 2
[Tolly_auth]dis access-user user-id 81553

Basic:
  User ID                           : 81553
  Session ID                        : 2
  User name                         : tolly
  Domain-name                       : tolly
  User MAC                          : f0de-f1e0-aeb2
  User IP address                   : 44.4.4.33
  User vpn-instance                 : -
  User IPv6 address                 : -
  User access Interface             : GigabitEthernet1/1/5
  User vlan event                   : Success
  QinQVlan/UserVlan                 : 0/44
  User access time                  : 2016/10/13 18:11:30
  User accounting session ID        : Tolly_a011050000000448825990013e91
  Option82 information              : -
  User access type                  : PPP
  Dynamic service scheme            : pppoe

AAA:
  User authentication type          : PPP authentication
  Current authentication method     : RADIUS
  Current authorization method      : -
  Current accounting method         : None

[Tolly_auth]
```

Test Results



Authorization Profile

* Name: Tolly vlan 11

Description:

* Access Type: ACCESS_ACCEPT

Network Device Profile: Any

Service Template □

Track Movement □

Common Tasks

□ ACL

□ VLAN

Advanced Attributes Settings

Radius:Framed-IP-Address = 44.4.4.33

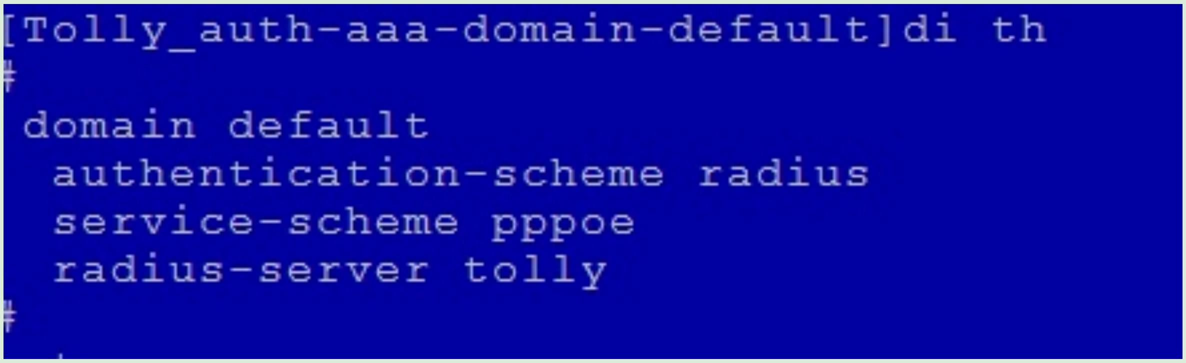
Attributes Details

Select a network device profile to view attribute details:

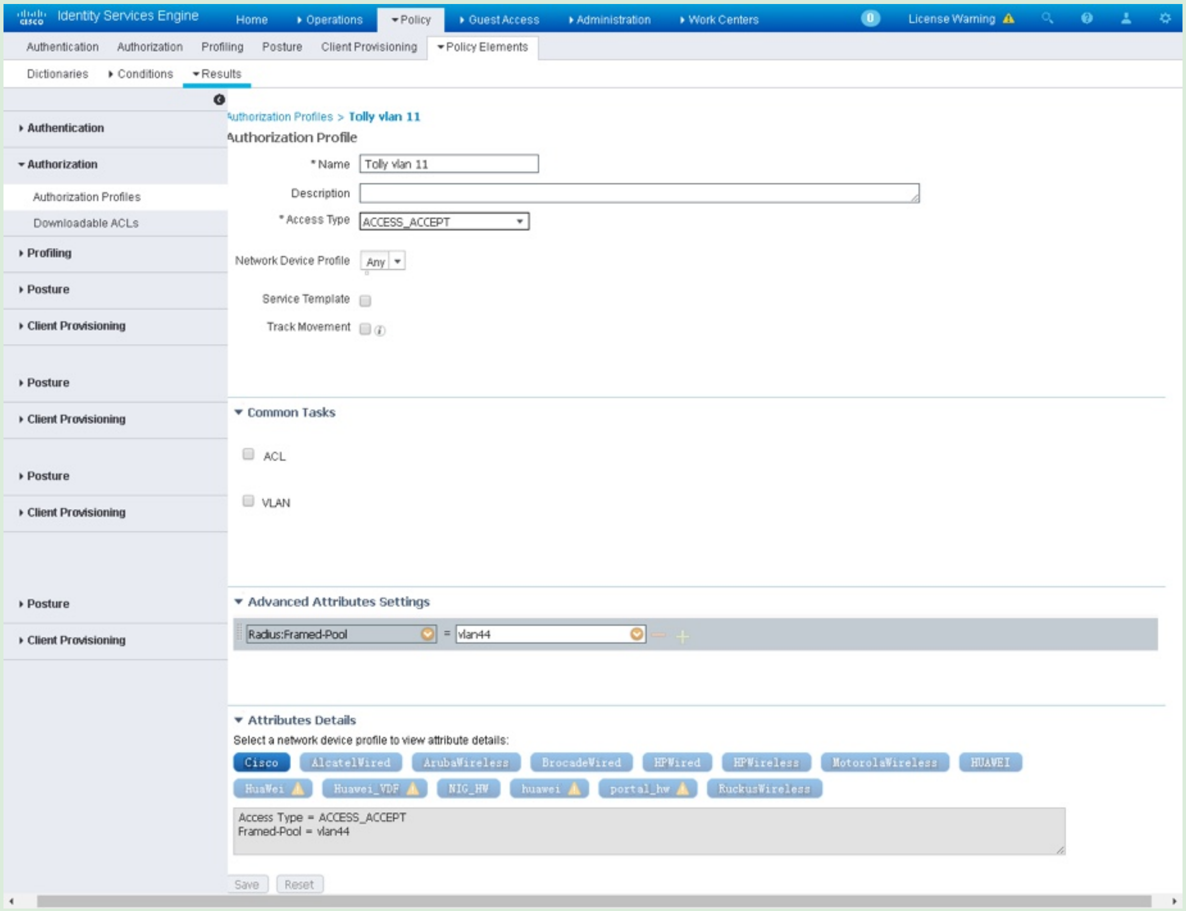
```
Access Type = ACCESS_ACCEPT
Framed-IP-Address = 44.4.4.33
```

Test Results

4. Configure the frame-pool attribute in the ISE authorization policy, and users can obtain IP addresses from the assigned IP address pool.



```
[Tolly_auth-aaa-domain-default]di th
#
 domain default
  authentication-scheme radius
  service-scheme pppoe
  radius-server tolly
#
```



uthorization Profiles > Tolly vlan 11

Authorization Profile

* Name: Tolly vlan 11

Description:

* Access Type: ACCESS_ACCEPT

Network Device Profile: Any

Service Template □

Track Movement □

Common Tasks

□ ACL

□ VLAN

Advanced Attributes Settings

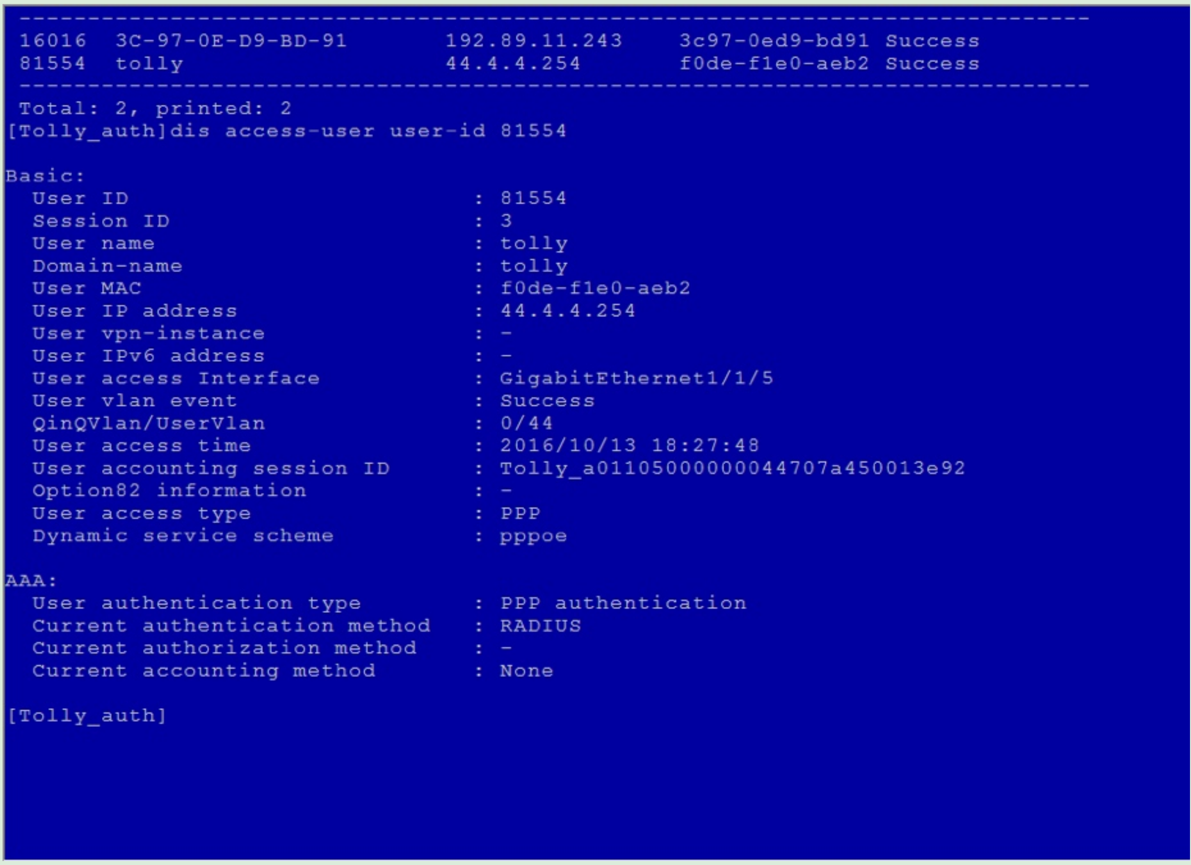
Radius:Framed-Pool = vlan44

Attributes Details

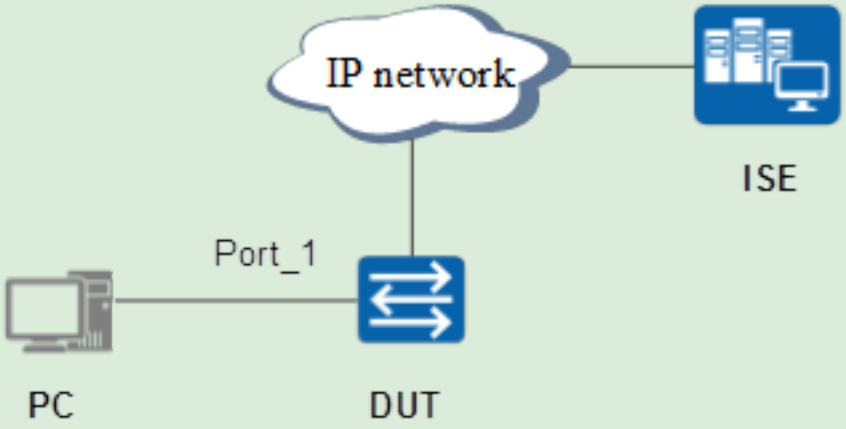
Select a network device profile to view attribute details:

```
Access Type = ACCESS_ACCEPT
Framed-Pool = vlan44
```

Test Results



```
 ------------------------------------------------------------------------------
 16016  3C-97-0E-D9-BD-91       192.89.11.243     3c97-0ed9-bd91 Success
 81554  tolly                   44.4.4.254        f0de-f1e0-aeb2 Success
 ------------------------------------------------------------------------------
 Total: 2, printed: 2
[Tolly_auth]dis access-user user-id 81554

Basic:
  User ID                           : 81554
  Session ID                        : 3
  User name                         : tolly
  Domain-name                       : tolly
  User MAC                          : f0de-f1e0-aeb2
  User IP address                   : 44.4.4.254
  User vpn-instance                 : -
  User IPv6 address                 : -
  User access Interface             : GigabitEthernet1/1/5
  User vlan event                   : Success
  QinQVlan/UserVlan                 : 0/44
  User access time                  : 2016/10/13 18:27:48
  User accounting session ID        : Tolly_a01105000000044707a450013e92
  Option82 information              : -
  User access type                  : PPP
  Dynamic service scheme            : pppoe

AAA:
  User authentication type          : PPP authentication
  Current authentication method     : RADIUS
  Current authorization method      : -
  Current accounting method         : None

[Tolly_auth]
```

Test 3.7	Generic RADIUS Attribute: NAS-Port
Objective	Verify the generic RADIUS attribute NAS-Port when a Huawei S switch works as the access control switch and the Cisco ISE server works as the authentication (RADIUS) server.
Procedure	1. Configure DUT to ensure that DUT and RADIUS server communicate with each other at Layer 3. 2. Create a RADIUS server profile and configure the related parameters, including IP address of the authentication server, port number, the RADIUS server key, and the retransmission time. Create an authentication scheme, and configure the authentication mode as RADIUS. Configure a domain name, and apply the authentication scheme to the domain. 3. Enable 802.1X authentication globally and on the interface Port_1. 4. Use the PC to initiate the 802.1X authentication, and expected result 1 is displayed. 
Pass Criteria	Result 1: The tested device displays 802.1X authentication statistics information, which indicates that the PC passes authentication successfully. The access user's physical port number can be viewed on the ISE server through the NAS-Port attribute.

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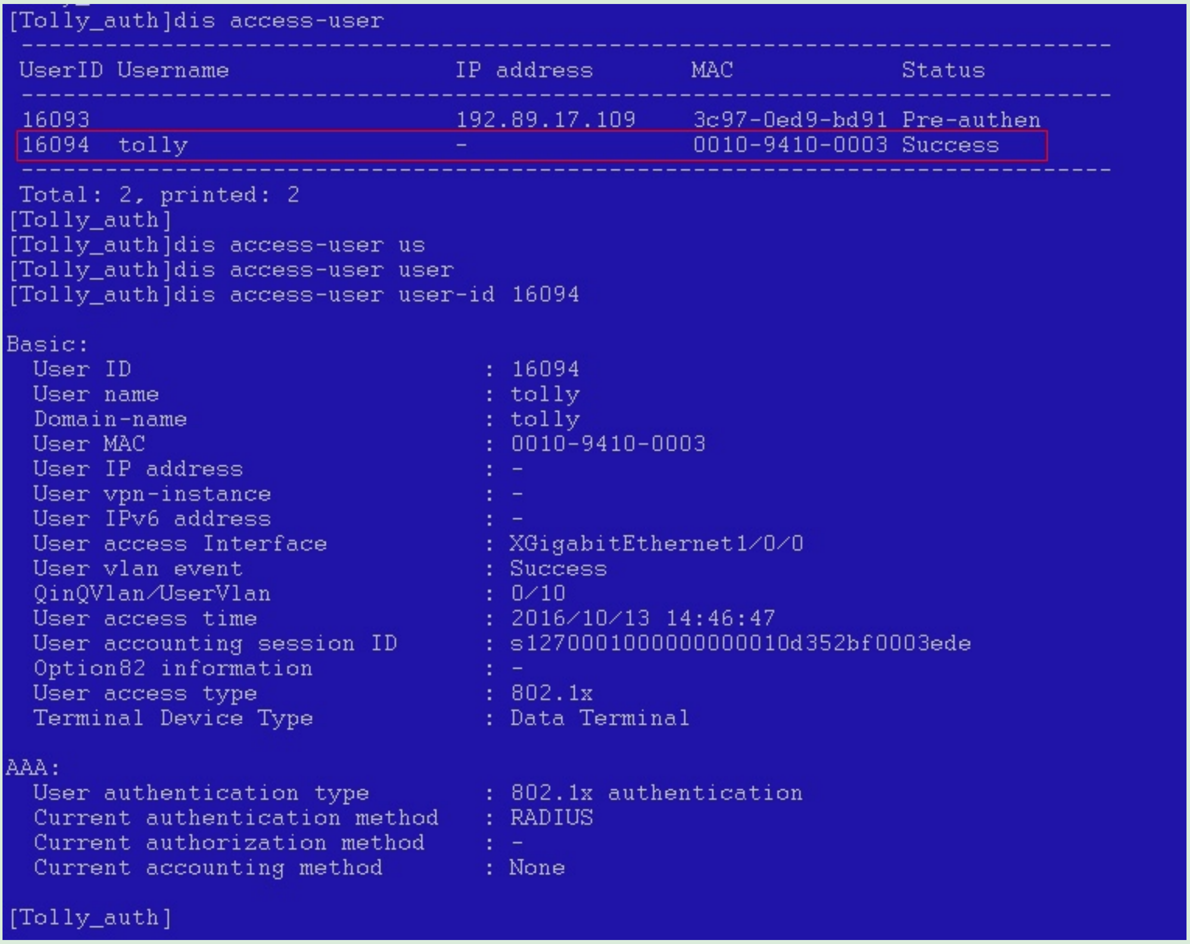
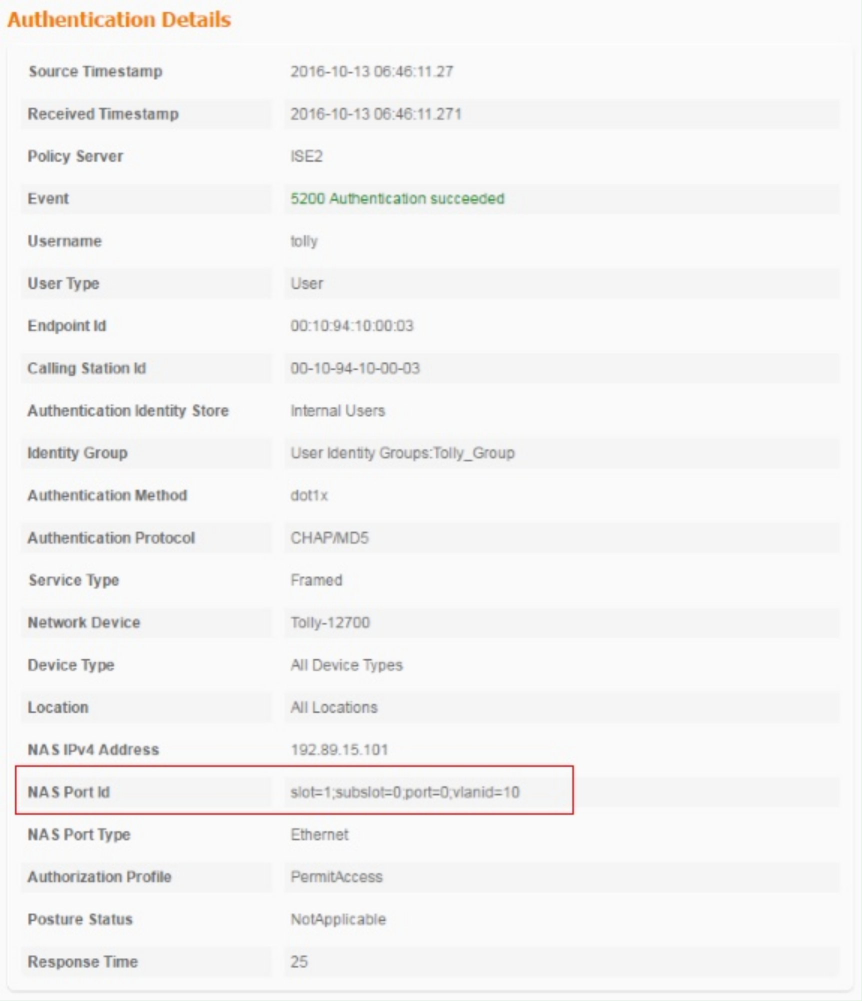
Test Results

1. The tested device displays 802.1X authentication statistics information, which indicates that the PC passes authentication successfully. The access user's physical port number can be viewed on the ISE server through the NAS-Port attribute.



```
[Tolly_auth]dis access-user
 ------------------------------------------------------------------------------
 UserID Username                 IP address       MAC            Status
 ------------------------------------------------------------------------------
 16093                           192.89.17.109    3c97-0ed9-bd91 Pre-authen
 16094  tolly                    -                0010-9410-0003 Success
 ------------------------------------------------------------------------------
 Total: 2, printed: 2
[Tolly_auth]
[Tolly_auth]dis access-user us
[Tolly_auth]dis access-user user
[Tolly_auth]dis access-user user-id 16094

Basic:
  User ID                          : 16094
  User name                        : tolly
  Domain-name                      : tolly
  User MAC                         : 0010-9410-0003
  User IP address                  : -
  User vpn-instance                : -
  User IPv6 address                : -
  User access Interface            : XGigabitEthernet1/0/0
  User vlan event                  : Success
  QinQVlan/UserVlan                : 0/10
  User access time                 : 2016/10/13 14:46:47
  User accounting session ID       : s12700010000000000010d352bf0003ede
  Option82 information             : -
  User access type                 : 802.1x
  Terminal Device Type             : Data Terminal

AAA:
  User authentication type         : 802.1x authentication
  Current authentication method    : RADIUS
  Current authorization method     : -
  Current accounting method        : None

[Tolly_auth]
```

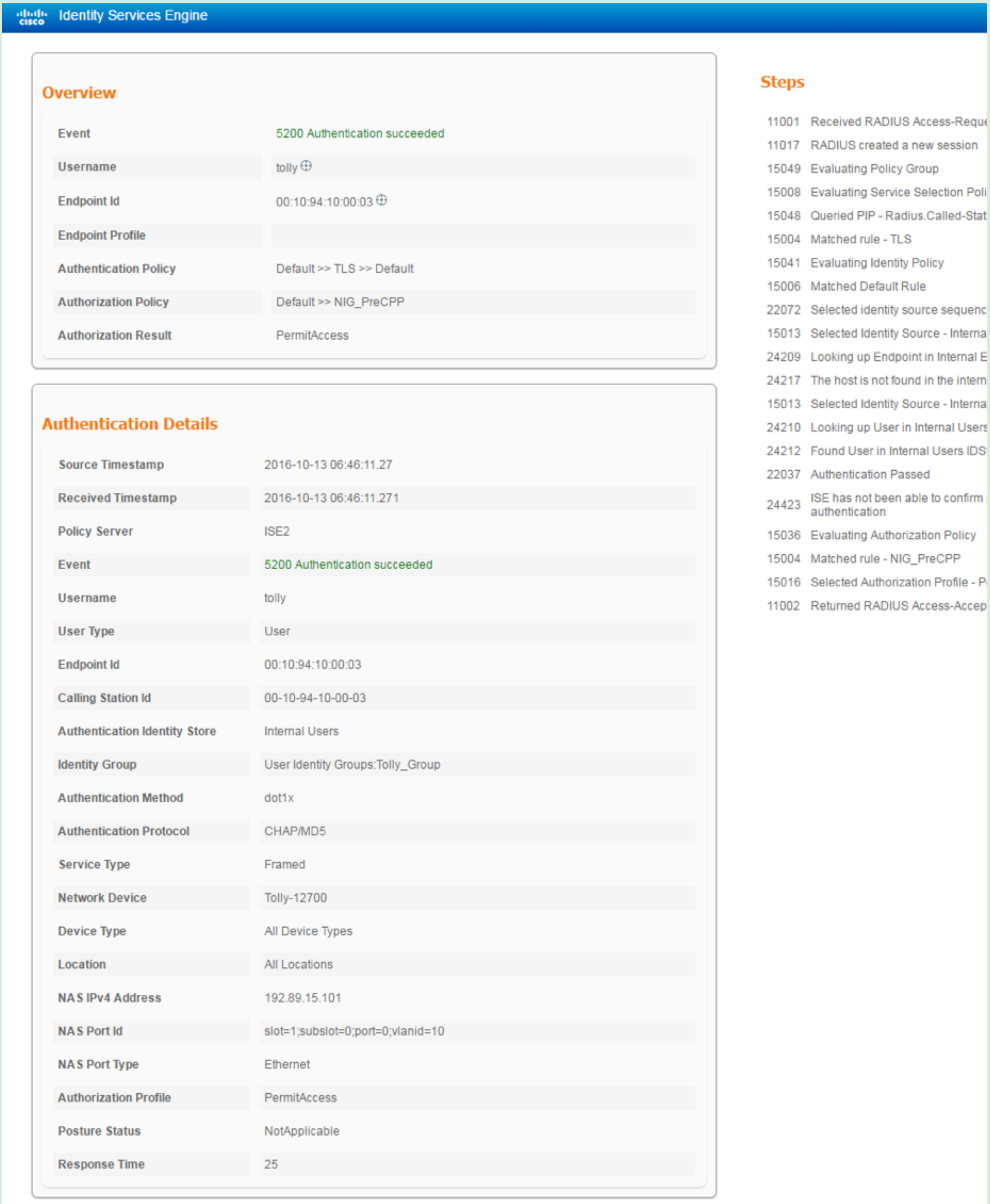
Test Results



Authentication Details

Source Timestamp	2016-10-13 06:46:11.27
Received Timestamp	2016-10-13 06:46:11.271
Policy Server	ISE2
Event	5200 Authentication succeeded
Username	tolly
User Type	User
Endpoint Id	00:10:94:10:00:03
Calling Station Id	00-10-94-10-00-03
Authentication Identity Store	Internal Users
Identity Group	User Identity Groups:Tolly_Group
Authentication Method	dot1x
Authentication Protocol	CHAP/MD5
Service Type	Framed
Network Device	Tolly-12700
Device Type	All Device Types
Location	All Locations
NAS IPv4 Address	192.89.15.101
NAS Port Id	slot=1;subslot=0;port=0;vlanid=10
NAS Port Type	Ethernet
Authorization Profile	PermitAccess
Posture Status	NotApplicable
Response Time	25

Test Results



Identity Services Engine

Overview

Event	5200 Authentication succeeded
Username	tolly ⊕
Endpoint Id	00:10:94:10:00:03 ⊕
Endpoint Profile	
Authentication Policy	Default >> TLS >> Default
Authorization Policy	Default >> NIG_PreCPP
Authorization Result	PermitAccess

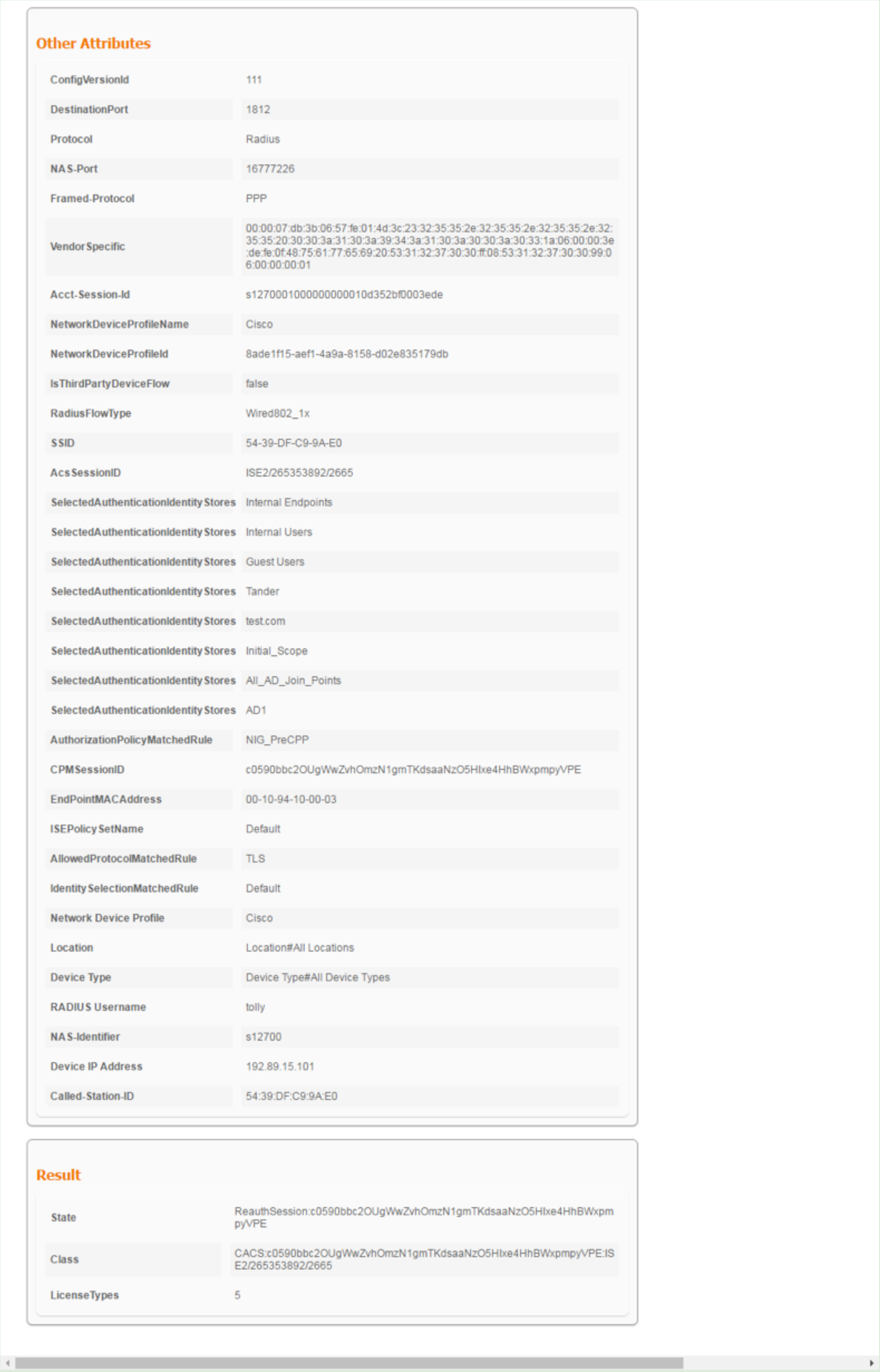
Authentication Details

Source Timestamp	2016-10-13 06:46:11.27
Received Timestamp	2016-10-13 06:46:11.271
Policy Server	ISE2
Event	5200 Authentication succeeded
Username	tolly
User Type	User
Endpoint Id	00:10:94:10:00:03
Calling Station Id	00-10-94-10-00-03
Authentication Identity Store	Internal Users
Identity Group	User Identity Groups:Tolly_Group
Authentication Method	dot1x
Authentication Protocol	CHAP/MD5
Service Type	Framed
Network Device	Tolly-12700
Device Type	All Device Types
Location	All Locations
NAS IPv4 Address	192.89.15.101
NAS Port Id	slot=1;subslot=0;port=0;vlanid=10
NAS Port Type	Ethernet
Authorization Profile	PermitAccess
Posture Status	NotApplicable
Response Time	25

Steps

11001	Received RADIUS Access-Reque
11017	RADIUS created a new session
15049	Evaluating Policy Group
15008	Evaluating Service Selection Poli
15048	Queried PIP - Radius.Called-Stat
15004	Matched rule - TLS
15041	Evaluating Identity Policy
15006	Matched Default Rule
22072	Selected identity source sequenc
15013	Selected Identity Source - Interna
24209	Looking up Endpoint in Internal E
24217	The host is not found in the intern
15013	Selected Identity Source - Interna
24210	Looking up User in Internal Users
24212	Found User in Internal Users IDS
22037	Authentication Passed
24423	ISE has not been able to confirm authentication
15036	Evaluating Authorization Policy
15004	Matched rule - NIG_PreCPP
15016	Selected Authorization Profile - P
11002	Returned RADIUS Access-Accep

Test Results

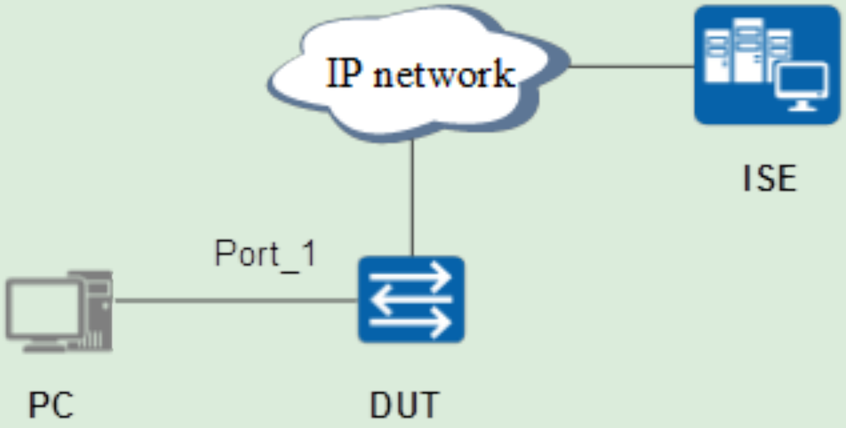


Other Attributes

ConfigVersionId	111
DestinationPort	1812
Protocol	Radius
NAS-Port	16777226
Framed-Protocol	PPP
Vendor Specific	00:00:07:db:3b:06:57:fe:01:4d:3c:23:32:35:35:2e:32:35:35:2e:32:35:35:2e:32:35:35:20:30:30:3a:31:30:3a:39:34:3a:31:30:3a:30:30:3a:30:33:1a:06:00:00:3e:de:fe:0f:48:75:61:77:65:69:20:53:31:32:37:30:30:ff:08:53:31:32:37:30:30:99:06:00:00:00:01
Acct-Session-Id	s1270001000000000010d352bf0003ede
NetworkDeviceProfileName	Cisco
NetworkDeviceProfileId	8ade1f15-aef1-4a9a-8158-d02e835179db
IsThirdPartyDeviceFlow	false
RadiusFlowType	Wired802_1x
SSID	54-39-DF-C9-9A-E0
AcsSessionID	ISE2/265353892/2665
SelectedAuthenticationIdentityStores	Internal Endpoints
SelectedAuthenticationIdentityStores	Internal Users
SelectedAuthenticationIdentityStores	Guest Users
SelectedAuthenticationIdentityStores	Tander
SelectedAuthenticationIdentityStores	test.com
SelectedAuthenticationIdentityStores	Initial_Scope
SelectedAuthenticationIdentityStores	All_AD_Join_Points
SelectedAuthenticationIdentityStores	AD1
AuthorizationPolicyMatchedRule	NIG_PreCPP
CPMSessionID	c0590bbc2OUgWwZvhOmzN1gmTKdsaaNzO5HIxe4HhBWxpmpyVPE
EndPointMACAddress	00-10-94-10-00-03
ISEPolicy SetName	Default
AllowedProtocolMatchedRule	TLS
Identity SelectionMatchedRule	Default
Network Device Profile	Cisco
Location	Location#All Locations
Device Type	Device Type#All Device Types
RADIUS Username	tolly
NAS-Identifier	s12700
Device IP Address	192.89.15.101
Called-Station-ID	54:39:DF:C9:9A:E0

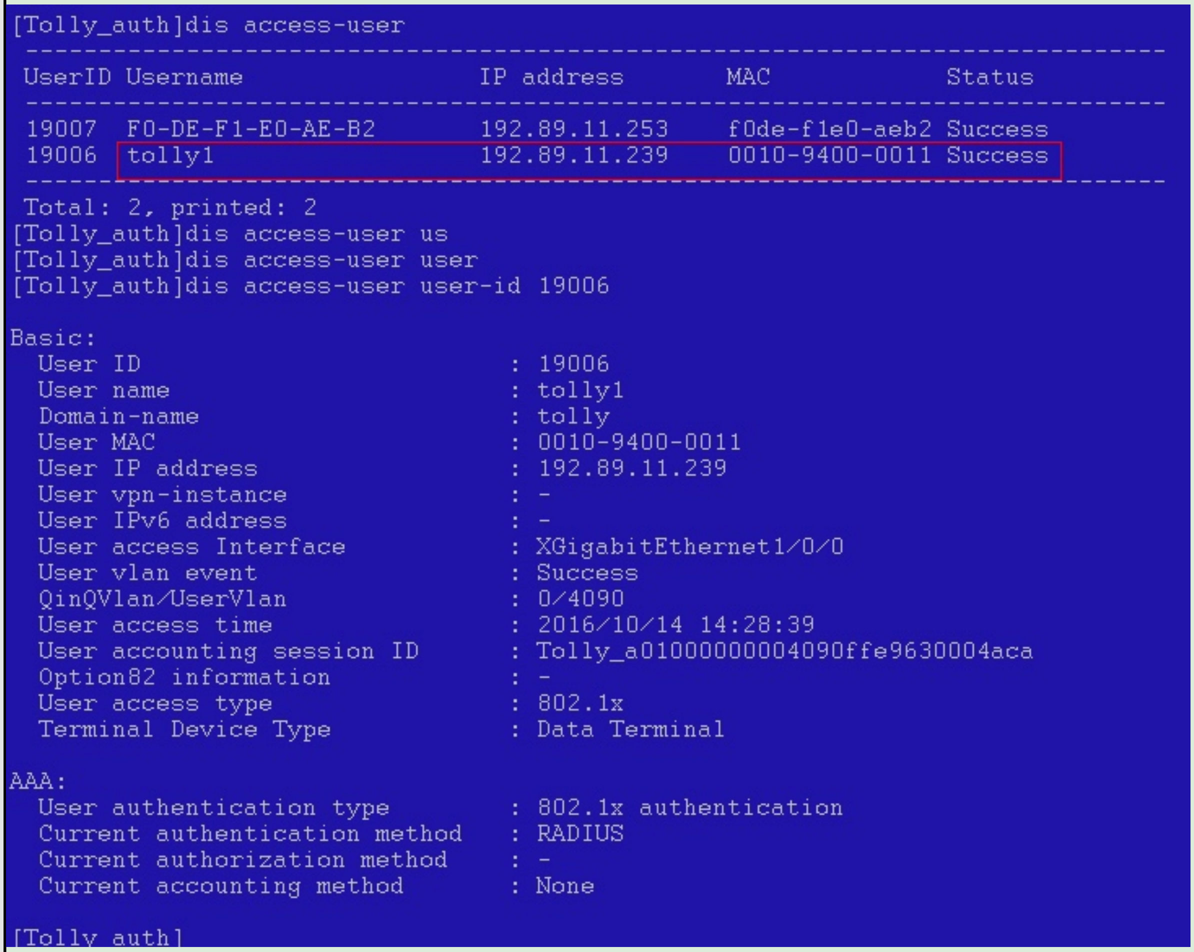
Result

State	ReauthSession:c0590bbc2OUgWwZvhOmzN1gmTKdsaaNzO5HIxe4HhBWxpmpyVPE
Class	CACS:c0590bbc2OUgWwZvhOmzN1gmTKdsaaNzO5HIxe4HhBWxpmpyVPE:ISE2/265353892/2665
LicenseTypes	5

Test 3.8	Post-rejection Authentication
Objective	Verify the post-rejection authentication when a Huawei S switch works as the access control switch and the Cisco ISE server works as the authentication (RADIUS) server.
Procedure	1. Configure DUT to ensure that DUT and RADIUS server communicate with each other at Layer 3. 2. Create a RADIUS server profile and configure the related parameters, including IP address of the authentication server, port number, the RADIUS server key, and the retransmission time. Create an authentication scheme, and configure the authentication mode as RADIUS. Configure a domain name, and apply the authentication scheme to the domain. 3. Enable 802.1X authentication globally and on the interface Port_1. 4. Enter the correct user name and password on the PC to initiate 802.1X authentication. Expected result 1 is displayed. 5. Configure the event on the device that if authentication fails, authorize VLAN10 to users. Configure VLANIF10 IP address pool. 6. Enter the wrong password for authentication on the PC. Expected result 2 is displayed. 
Pass Criteria	Result 1: The tested device displays 802.1X authentication statistics information, which indicates that the authentication succeeds. Result 2: The PC authentication fails, and the PC obtains the VLANIF10 IP address.

Test Results

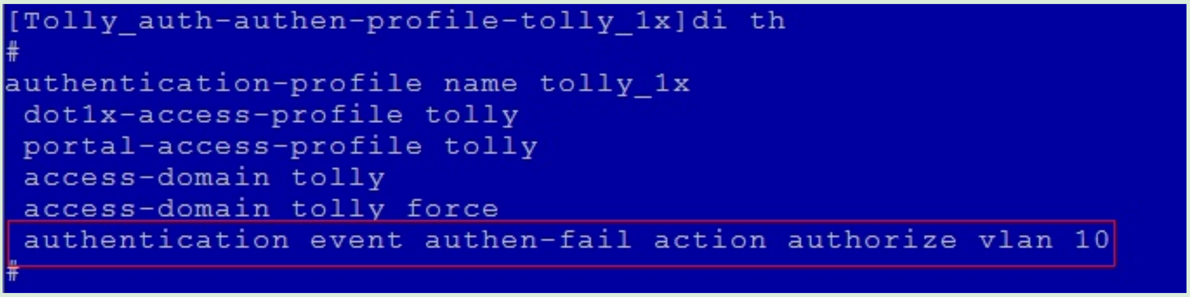
1. Enter the correct user name and password, and the PC can go online after passing the authentication successfully.



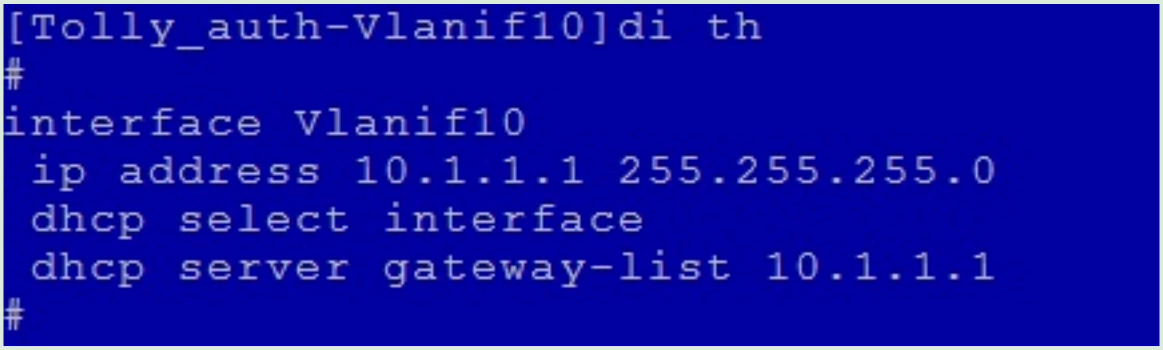
```
[Tolly_auth]dis access-user
 ------------------------------------------------------------------------------
 UserID Username                      IP address       MAC              Status
 ------------------------------------------------------------------------------
 19007  F0-DE-F1-E0-AE-B2             192.89.11.253    f0de-f1e0-aeb2 Success
 19006  tolly1                        192.89.11.239    0010-9400-0011 Success
 ------------------------------------------------------------------------------
 Total: 2, printed: 2
[Tolly_auth]dis access-user us
[Tolly_auth]dis access-user user
[Tolly_auth]dis access-user user-id 19006

Basic:
  User ID                            : 19006
  User name                          : tolly1
  Domain-name                        : tolly
  User MAC                           : 0010-9400-0011
  User IP address                    : 192.89.11.239
  User vpn-instance                  : -
  User IPv6 address                  : -
  User access Interface              : XGigabitEthernet1/0/0
  User vlan event                    : Success
  QinQVlan/UserVlan                  : 0/4090
  User access time                   : 2016/10/14 14:28:39
  User accounting session ID         : Tolly_a01000000004090ffe9630004aca
  Option82 information               : -
  User access type                   : 802.1x
  Terminal Device Type               : Data Terminal

AAA:
  User authentication type           : 802.1x authentication
  Current authentication method      : RADIUS
  Current authorization method       : -
  Current accounting method          : None

[Tolly_auth]
```

Test Results

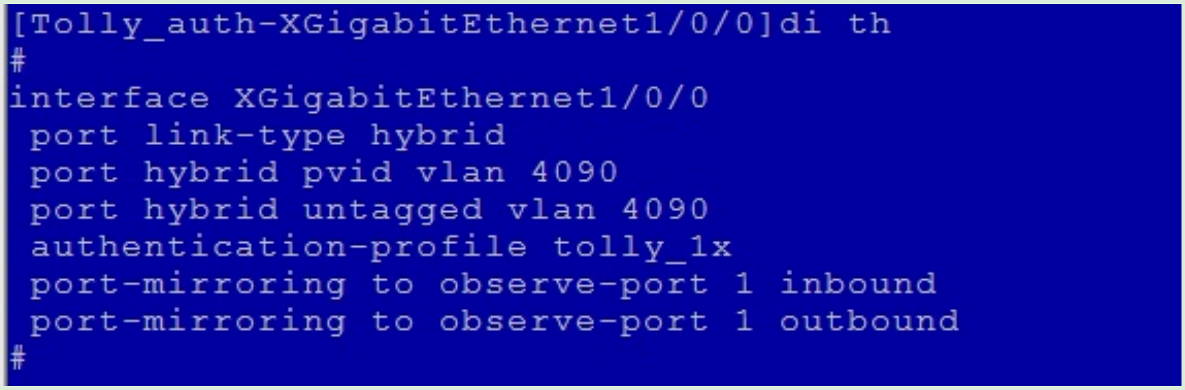
2. Configure the event on the device that if authentication fails, authorize VLAN10.



```
[Tolly_auth-authen-profile-tolly_1x]di th
#
authentication-profile name tolly_1x
 dot1x-access-profile tolly
 portal-access-profile tolly
 access-domain tolly
 access-domain tolly force
 authentication event authen-fail action authorize vlan 10
#
```



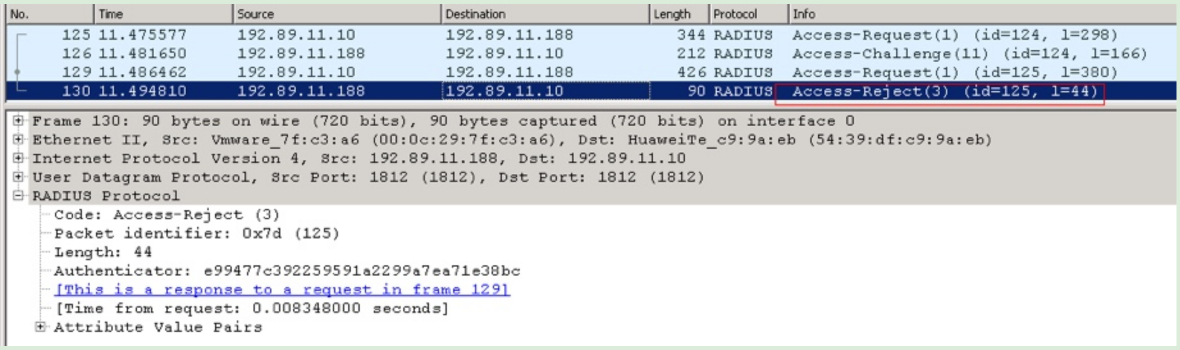
```
[Tolly_auth-Vlanif10]di th
#
interface Vlanif10
 ip address 10.1.1.1 255.255.255.0
 dhcp select interface
 dhcp server gateway-list 10.1.1.1
#
```



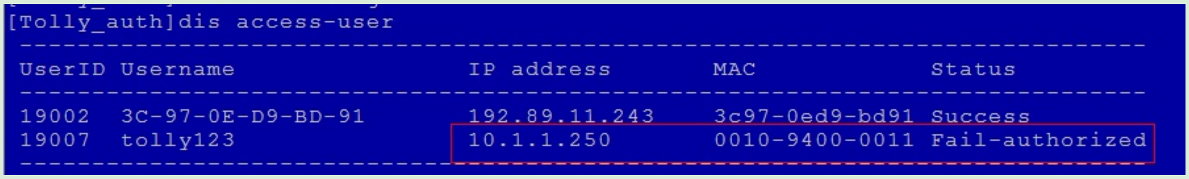
```
[Tolly_auth-XGigabitEthernet1/0/0]di th
#
interface XGigabitEthernet1/0/0
 port link-type hybrid
 port hybrid pvid vlan 4090
 port hybrid untagged vlan 4090
 authentication-profile tolly_1x
 port-mirroring to observe-port 1 inbound
 port-mirroring to observe-port 1 outbound
#
```

Test Results

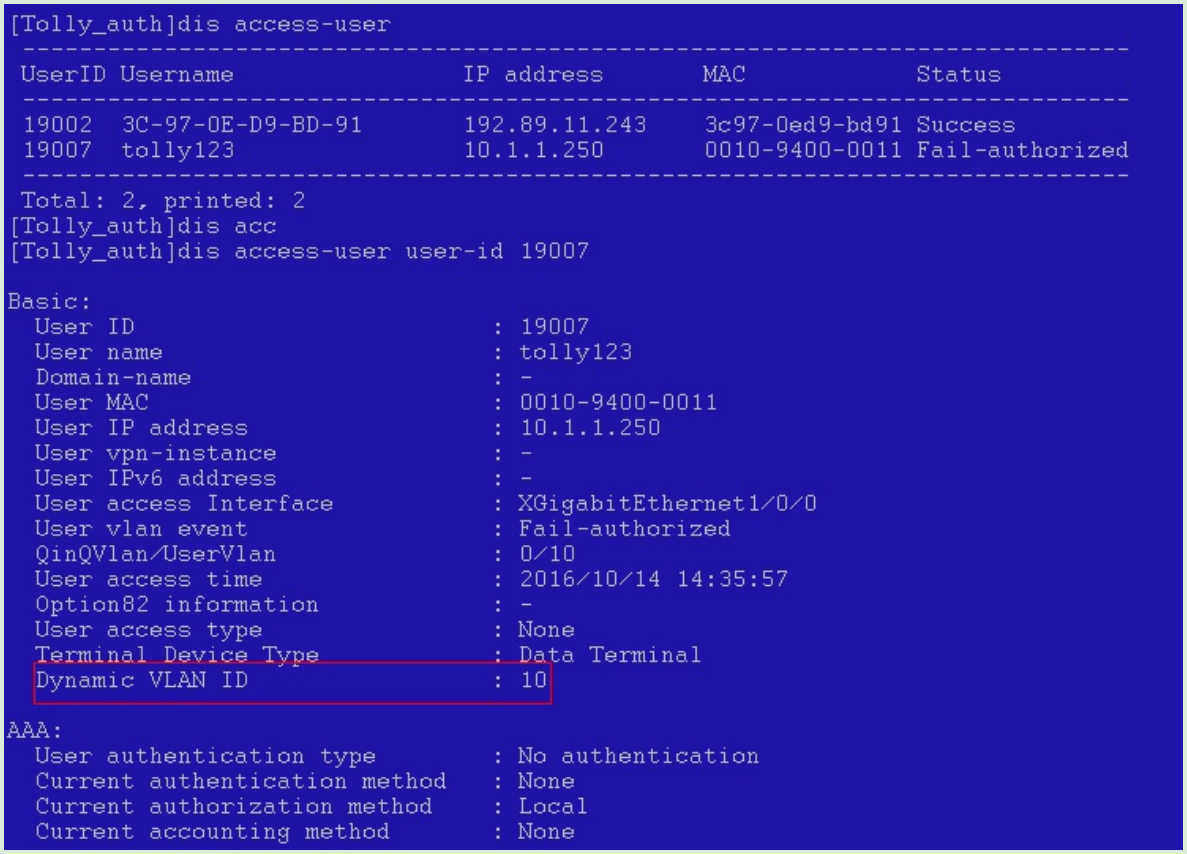
3. The PC authentication fails, and the PC obtains the VLANIF10 IP address.



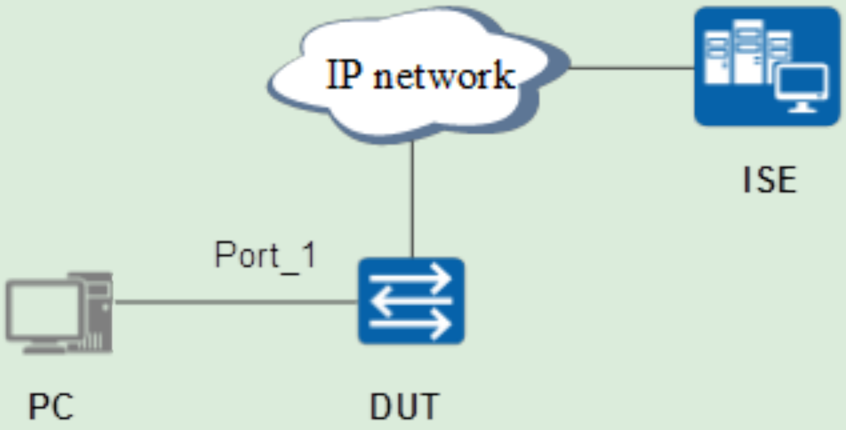
```
No.   Time       Source         Destination    Length Protocol Info
  125 11.475577  192.89.11.10   192.89.11.188     344 RADIUS   Access-Request(1)  (id=124, l=298)
  126 11.481650  192.89.11.188  192.89.11.10      212 RADIUS   Access-Challenge(11)  (id=124, l=166)
  129 11.486462  192.89.11.10   192.89.11.188     426 RADIUS   Access-Request(1)  (id=125, l=380)
  130 11.494810  192.89.11.188  192.89.11.10       90 RADIUS   Access-Reject(3)  (id=125, l=44)

⊞ Frame 130: 90 bytes on wire (720 bits), 90 bytes captured (720 bits) on interface 0
⊞ Ethernet II, Src: Vmware_7f:c3:a6 (00:0c:29:7f:c3:a6), Dst: HuaweiTe_c9:9a:eb (54:39:df:c9:9a:eb)
⊞ Internet Protocol Version 4, Src: 192.89.11.188, Dst: 192.89.11.10
⊞ User Datagram Protocol, Src Port: 1812 (1812), Dst Port: 1812 (1812)
⊟ RADIUS Protocol
    Code: Access-Reject (3)
    Packet identifier: 0x7d (125)
    Length: 44
    Authenticator: e99477c392259591a2299a7ea71e38bc
    [This is a response to a request in frame 129]
    [Time from request: 0.008348000 seconds]
  ⊞ Attribute Value Pairs
```



```
[Tolly_auth]dis access-user
 ------------------------------------------------------------------------------
 UserID Username                     IP address        MAC            Status
 ------------------------------------------------------------------------------
 19002   3C-97-0E-D9-BD-91           192.89.11.243     3c97-0ed9-bd91 Success
 19007   tolly123                    10.1.1.250        0010-9400-0011 Fail-authorized
 ------------------------------------------------------------------------------
```



```
[Tolly_auth]dis access-user
 ------------------------------------------------------------------------------
 UserID Username                     IP address        MAC            Status
 ------------------------------------------------------------------------------
 19002   3C-97-0E-D9-BD-91           192.89.11.243     3c97-0ed9-bd91 Success
 19007   tolly123                    10.1.1.250        0010-9400-0011 Fail-authorized
 ------------------------------------------------------------------------------
 Total: 2, printed: 2
[Tolly_auth]dis acc
[Tolly_auth]dis access-user user-id 19007

Basic:
  User ID                            : 19007
  User name                          : tolly123
  Domain-name                        : -
  User MAC                           : 0010-9400-0011
  User IP address                    : 10.1.1.250
  User vpn-instance                  : -
  User IPv6 address                  : -
  User access Interface              : XGigabitEthernet1/0/0
  User vlan event                    : Fail-authorized
  QinQVlan/UserVlan                  : 0/10
  User access time                   : 2016/10/14 14:35:57
  Option82 information               : -
  User access type                   : None
  Terminal Device Type               : Data Terminal
  Dynamic VLAN ID                    : 10

AAA:
  User authentication type           : No authentication
  Current authentication method      : None
  Current authorization method       : Local
  Current accounting method          : None
```

Test 3.9	Time-based Authentication Policy
Objective	Verify the time-based authentication when a Huawei S switch works as the access control switch and the Cisco ISE server works as the authentication (RADIUS) server.
Procedure	1. Configure the switch's IP address so that the switch can communicate with the ISE server. 2. Configure the RADIUS server profile and aaa profile on the switch. 3. Configure the aaa scheme. 4. Configure the 802.1X authentication profile on the device. 5. Configure the DHCP server on the device, and enable dot1x authentication on the correspondent port. 6. Enter the correct user name and password on the device for authentication. Check the user address and authentication information, and expected result 1 is displayed. 7. Configure time ranges on the ISE server. Authorization policies vary with different time periods. 
Pass Criteria	Result 1: The user passes the authentication successfully and obtains the correspondent IP address. The device shows that the authentication succeeds. Result 2: Users obtain different authorization policies based on time periods.

Test Results

Configuration

1. Configure the switch's IP address so that the switch can communicate with the ISE server.
2. Configure the RADIUS server profile and aaa profile on the switch.

```
#
radius-server template tolly
radius-server shared-key cipher huawei123
radius-server authentication 192.89.11.188 1812 weight 80
radius-server accounting 192.89.11.188 1813 weight 80
undo radius-server user-name domain-included
calling-station-id mac-format hyphen-split mode2
#
```

3. Configure the aaa scheme.

```
#
aaa
authentication-scheme tolly
authentication-mode radius
authorization-scheme tolly
accounting-scheme tolly
accounting-mode radius
domain tolly
authentication-scheme tolly
accounting-scheme tolly
radius-server tolly
#
```

4. Configure the 802.1X authentication profile on the device.

```
#
dot1x-access-profile name tolly
authentication-method eap
authentication-profile name tolly
dot1x-access-profile tolly
access-domain tolly dot1x force
#
```

Test Results

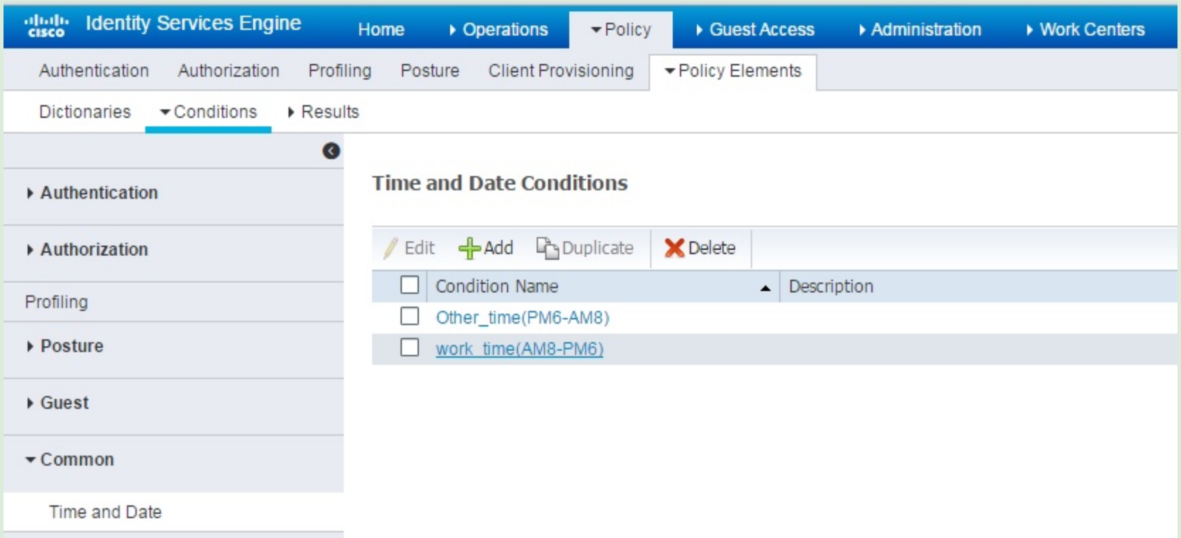
5. Configure the DHCP server on the device, and enable dot1x authentication on the correspondent port.

```
#
interface Vlanif4090
ip address 192.89.6.202 255.255.255.0
dhcp select interface
interface GigabitEthernet1/1/0
port link-type hybrid
port hybrid pvid vlan 4090
port hybrid untagged vlan 4090
authentication-profile tolly
#
```

6. Enter the correct user name and password on the device for authentication. Check the user address and authentication information, and expected result 1 is displayed.
7. Configure time ranges on the ISE server. Authorization policies vary with different time periods.

Test Results:

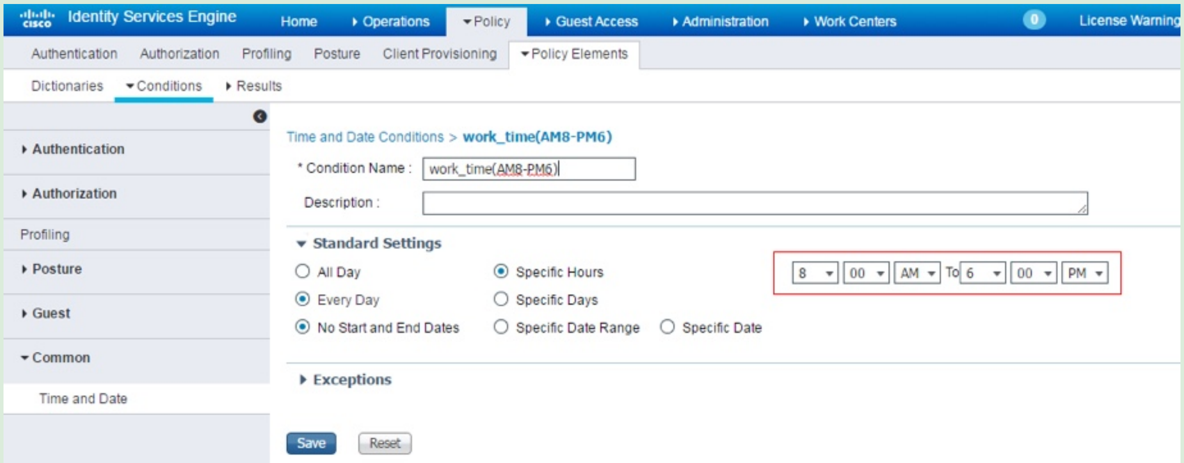
1. Configure different time ranges and two dot1x authorization policies on the ISE server. Users obtain different authorization policies based on their login time periods.



Time and Date Conditions

	Condition Name	Description
□	Other_time(PM6-AM8)	
□	work_time(AM8-PM6)	

Test Results



Time and Date Conditions > work_time(AM8-PM6)

* Condition Name : work_time(AM8-PM6)

Description :

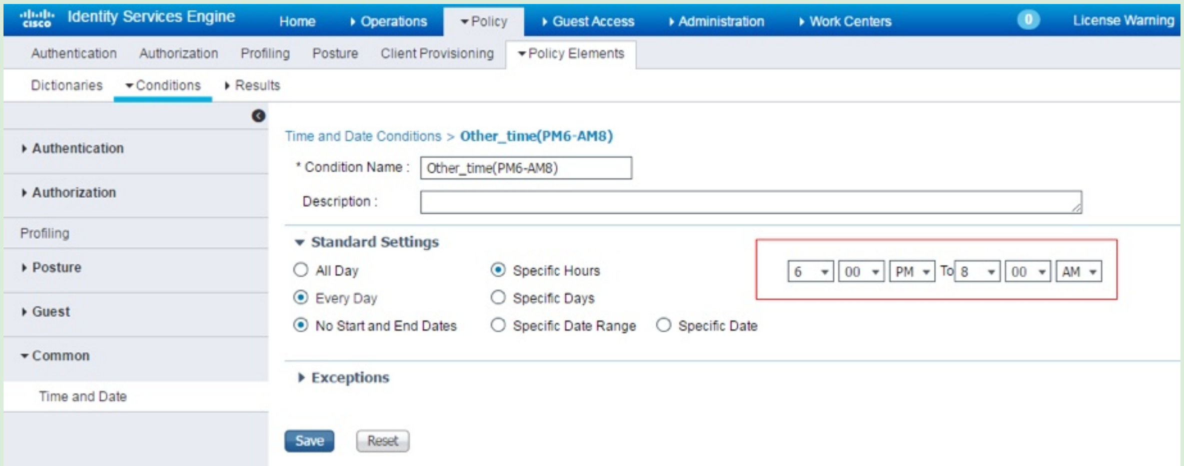
Standard Settings

○ All Day ● Specific Hours 8 : 00 AM To 6 : 00 PM

● Every Day ○ Specific Days

● No Start and End Dates ○ Specific Date Range ○ Specific Date

Exceptions



Time and Date Conditions > Other_time(PM6-AM8)

* Condition Name : Other_time(PM6-AM8)

Description :

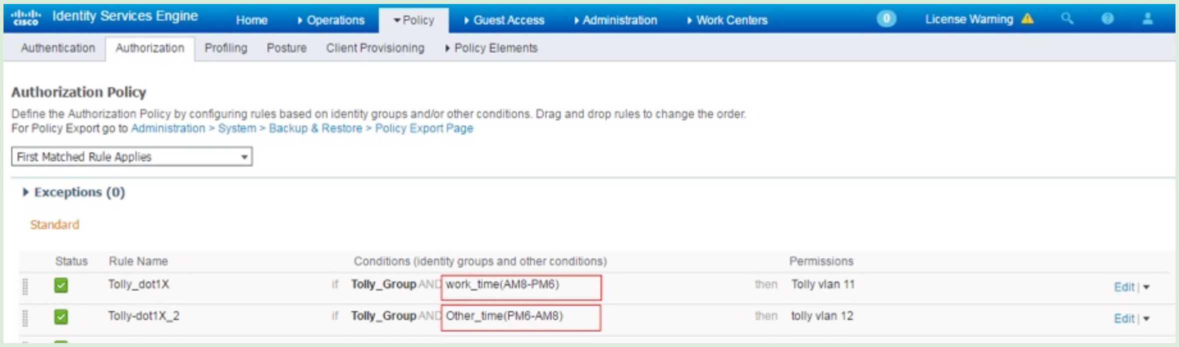
Standard Settings

○ All Day ● Specific Hours 6 : 00 PM To 8 : 00 AM

● Every Day ○ Specific Days

● No Start and End Dates ○ Specific Date Range ○ Specific Date

Exceptions



Authorization Policy

Define the Authorization Policy by configuring rules based on identity groups and/or other conditions. Drag and drop rules to change the order.
For Policy Export go to Administration > System > Backup & Restore > Policy Export Page

First Matched Rule Applies

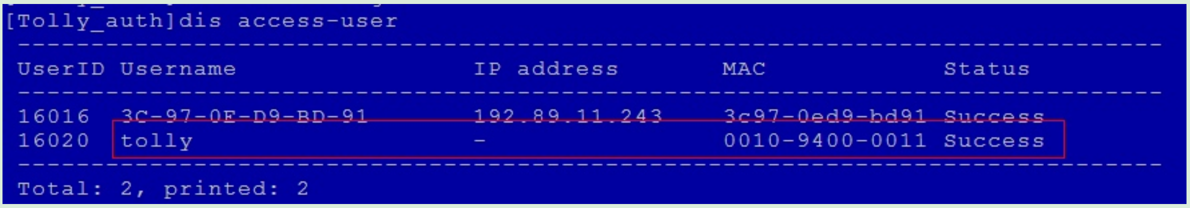
Exceptions (0)

Standard

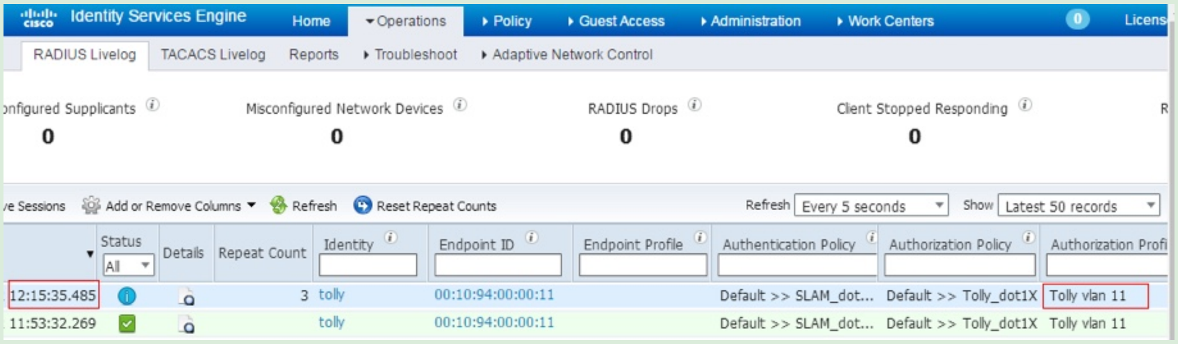
Status	Rule Name	Conditions (identity groups and other conditions)	Permissions
☑	Tolly_dot1X	if Tolly_Group AND work_time(AM8-PM6)	then Tolly vlan 11
☑	Tolly-dot1X_2	if Tolly_Group AND Other_time(PM6-AM8)	then tolly vlan 12

Test Results

2. A user goes online after passing the dot1x authentication, and obtains the correspondent authorization policy based on the login time period.



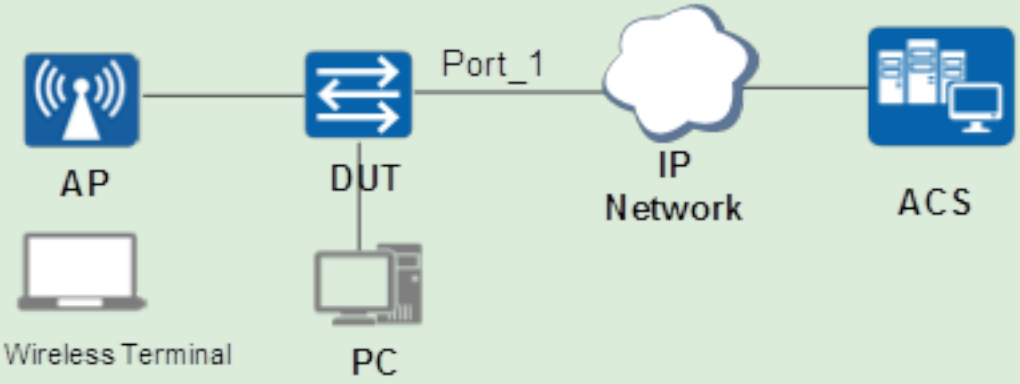
```
[Tolly_auth]dis access-user
 ------------------------------------------------------------------------------
 UserID Username                    IP address       MAC              Status
 ------------------------------------------------------------------------------
 16016  3C-97-0E-D9-BD-91           192.89.11.243    3c97-0ed9-bd91   Success
 16020  tolly                       -                0010-9400-0011   Success
 ------------------------------------------------------------------------------
 Total: 2, printed: 2
```

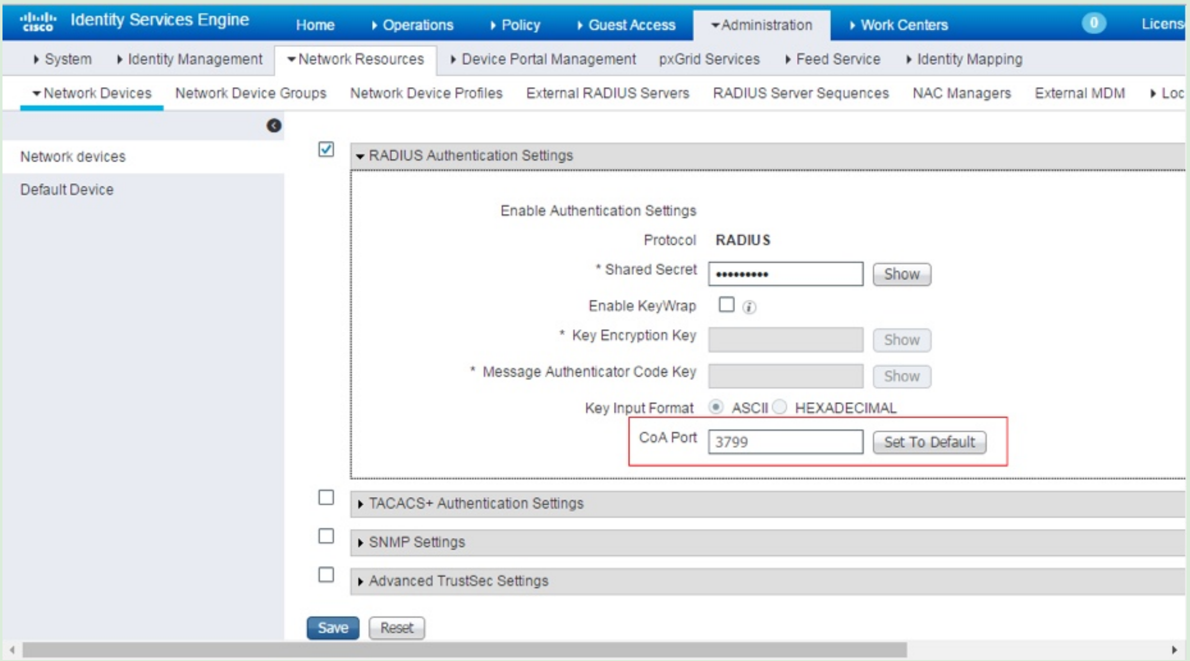


onfigured Supplicants	Misconfigured Network Devices	RADIUS Drops	Client Stopped Responding
0	0	0	0

Refresh Every 5 seconds Show Latest 50 records

	Status All	Details	Repeat Count	Identity	Endpoint ID	Endpoint Profile	Authentication Policy	Authorization Policy	Authorization Profi
12:15:35.485	●		3	tolly	00:10:94:00:00:11		Default >> SLAM_dot...	Default >> Tolly_dot1X	Tolly vlan 11
11:53:32.269	✓			tolly	00:10:94:00:00:11		Default >> SLAM_dot...	Default >> Tolly_dot1X	Tolly vlan 11

Test 4.1	Change of Authorization (CoA): Session Re-authentication
Objective	Verify session re-authentication when a Huawei S switch works as the access control switch and the Cisco ISE server works as the authentication (RADIUS) server.
Procedure	1. Configure the switch's IP address so that the switch can communicate with the ISE server. 2. Configure the management VLAN10, and assign IP addresses to APs. Configure network access for APs. 3. Configure the RADIUS server on the switch. 4. Configure the aaa profile. 5. Configure the MAC authentication profile. 6. Configure the CoA authorization server. 7. Configure the redirection ACL on the switch. 8. Users access the network in wired mode for MAC authentication. Expected result 1 is displayed. 9. Open a web page and access any website. Enter the user name and password for authentication. Expected result 2 is displayed.  Port_1 AP DUT IP Network ACS Wireless Terminal PC
Pass Criteria	Result 1: When the user accesses the network for MAC authentication, the server delivers URL and redirection ACL. Open a browser and enter any IP address in the address bar, the page is redirected to the guest management page. Result 2: After entering the user name and password, the user passes the Portal authentication successfully.

Test Results	1. Configure the RADIUS authorization server, and enable the device to respond to and process ISE CoA packets. On the ISE server, change the CoA port number of the access device to 3799 (change the destination port number in the 1.6.3 case). # radius-server authorization 192.89.11.188 shared-key cipher huawei123 # 

☑ RADIUS 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 3799 Set To Default

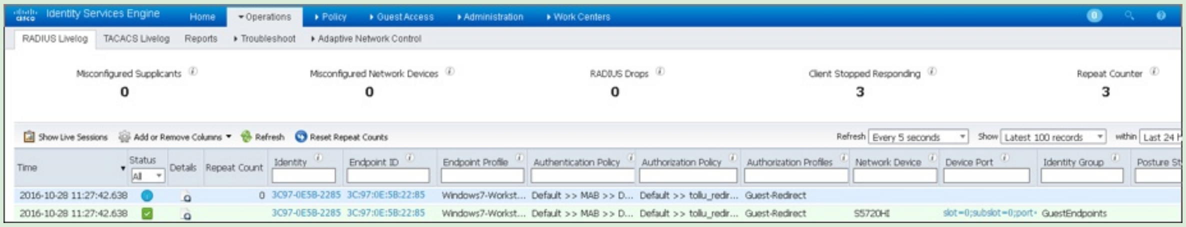
□ TACACS+ Authentication Settings

□ SNMP Settings

□ Advanced TrustSec Settings

Test Results

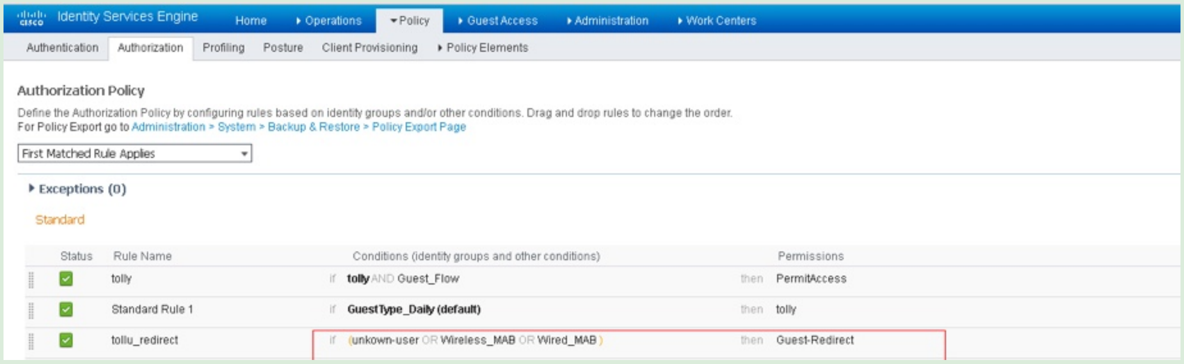
2. When a new user accesses the network, he must pass the MAC authentication first. After the authentication succeeds, the page is redirected to the guest management page. A user can log in to the system using a registered account or a new user can register an account first.



Misconfigured Supplicants 0
Misconfigured Network Devices 0
RADIUS Drops 0
Client Stopped Responding 3
Repeat Counter 3

Refresh: Every 5 seconds; Show: Latest 100 records; within: Last 24 H

Time	Status	Details	Repeat Count	Identity	Endpoint ID	Endpoint Profile	Authentication Policy	Authorization Policy	Authorization Profiles	Network Device	Device Port	Identity Group	Posture St
2016-10-28 11:27:42.638	●		0	3C97-0E5B-2285	3C:97:0E:5B:22:85	Windows7-Workst...	Default >> MAB >> D...	Default >> tollu_redir...	Guest-Redirect				
2016-10-28 11:27:42.638	✓			3C97-0E5B-2285	3C:97:0E:5B:22:85	Windows7-Workst...	Default >> MAB >> D...	Default >> tollu_redir...	Guest-Redirect	S5720HI	slot=0;subslot=0;port·	GuestEndpoints	



Authorization Policy

Define the Authorization Policy by configuring rules based on identity groups and/or other conditions. Drag and drop rules to change the order.
For Policy Export go to Administration > System > Backup & Restore > Policy Export Page

First Matched Rule Applies

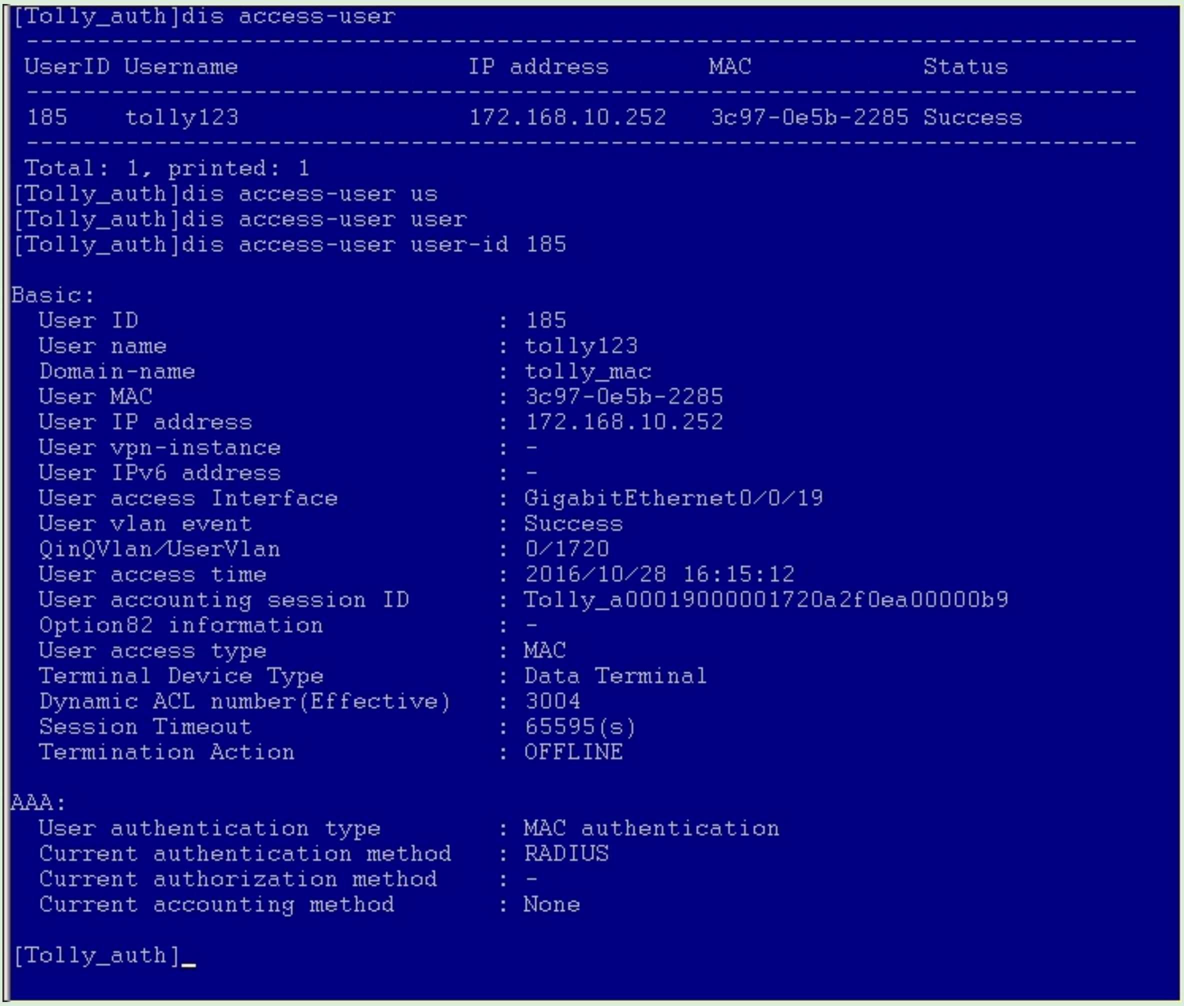
Exceptions (0)

Standard

Status	Rule Name		Conditions (identity groups and other conditions)		Permissions
✓	tolly	if	tolly AND Guest_Flow	then	PermitAccess
✓	Standard Rule 1	if	GuestType_Daily (default)	then	tolly
✓	tollu_redirect	if	(unkown-user OR Wireless_MAB OR Wired_MAB)	then	Guest-Redirect

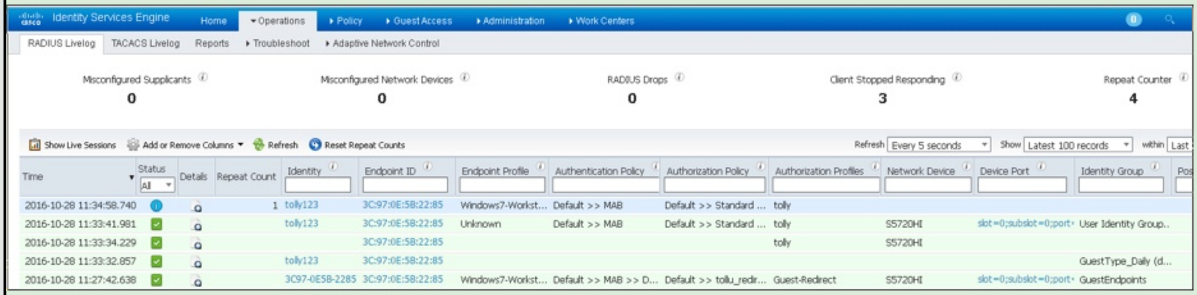
3. After a user registers an account, the system disconnect the user through CoA. The user should log in again using the new account.
4. After new users log in to the system, the server authorizes new policies to users so that they can obtain new permissions.

Test Results



```
[Tolly_auth]dis access-user
 ------------------------------------------------------------------------------
 UserID Username                   IP address       MAC              Status
 ------------------------------------------------------------------------------
 185    tolly123                   172.168.10.252   3c97-0e5b-2285 Success
 ------------------------------------------------------------------------------
 Total: 1, printed: 1
[Tolly_auth]dis access-user us
[Tolly_auth]dis access-user user
[Tolly_auth]dis access-user user-id 185

Basic:
  User ID                            : 185
  User name                          : tolly123
  Domain-name                        : tolly_mac
  User MAC                           : 3c97-0e5b-2285
  User IP address                    : 172.168.10.252
  User vpn-instance                  : -
  User IPv6 address                  : -
  User access Interface              : GigabitEthernet0/0/19
  User vlan event                    : Success
  QinQVlan/UserVlan                  : 0/1720
  User access time                   : 2016/10/28 16:15:12
  User accounting session ID         : Tolly_a00019000001720a2f0ea00000b9
  Option82 information               : -
  User access type                   : MAC
  Terminal Device Type               : Data Terminal
  Dynamic ACL number(Effective)      : 3004
  Session Timeout                    : 65595(s)
  Termination Action                 : OFFLINE

AAA:
  User authentication type           : MAC authentication
  Current authentication method      : RADIUS
  Current authorization method       : -
  Current accounting method          : None

[Tolly_auth]_
```

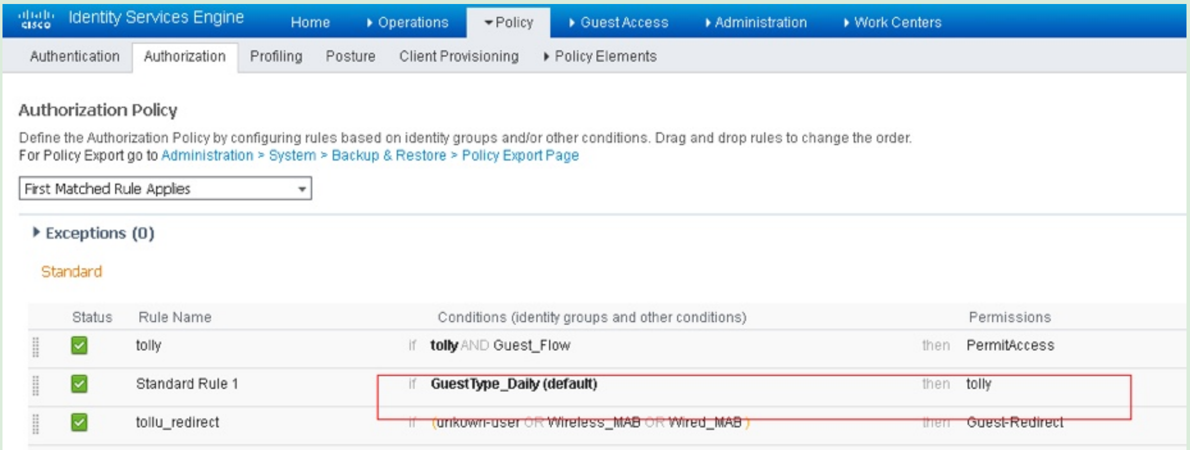
Test Results



Misconfigured Supplicants	Misconfigured Network Devices	RADIUS Drops	Client Stopped Responding	Repeat Counter
0	0	0	3	4

Refresh: Every 5 seconds | Show: Latest 100 records | within: Last

Time	Status	Details	Repeat Count	Identity	Endpoint ID	Endpoint Profile	Authentication Policy	Authorization Policy	Authorization Profiles	Network Device	Device Port	Identity Group
2016-10-28 11:34:58.740	●		1	tolly123	3C:97:0E:58:22:85	Windows7-Workst...	Default >> MAB	Default >> Standard ...	tolly			
2016-10-28 11:33:41.981	✓			tolly123	3C:97:0E:58:22:85	Unknown	Default >> MAB	Default >> Standard ...	tolly	S5720HI	slot=0;subslot=0;port=	User Identity Group..
2016-10-28 11:33:34.229	✓				3C:97:0E:58:22:85				tolly	S5720HI		
2016-10-28 11:33:32.857	✓			tolly123	3C:97:0E:58:22:85							GuestType_Daily (d...
2016-10-28 11:27:42.638	✓			3C97-0E5B-2285	3C:97:0E:58:22:85	Windows7-Workst...	Default >> MAB >> D...	Default >> tollu_redir...	Guest-Redirect	S5720HI	slot=0;subslot=0;port=	GuestEndpoints



Authorization Policy

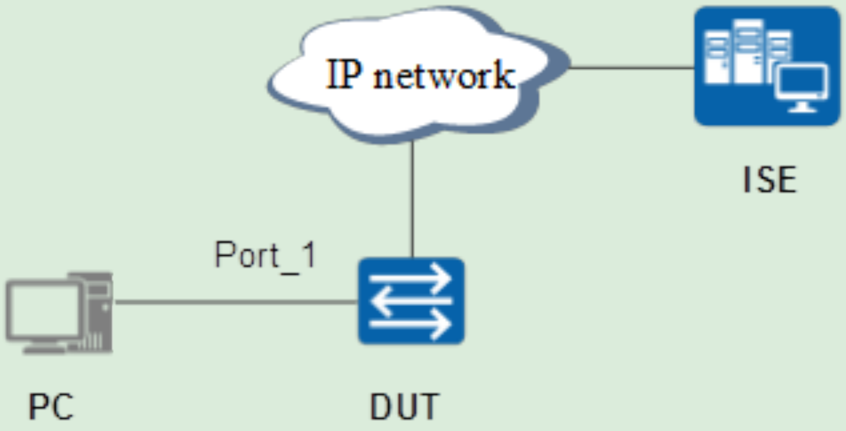
Define the Authorization Policy by configuring rules based on identity groups and/or other conditions. Drag and drop rules to change the order.
For Policy Export go to Administration > System > Backup & Restore > Policy Export Page

First Matched Rule Applies

Exceptions (0)

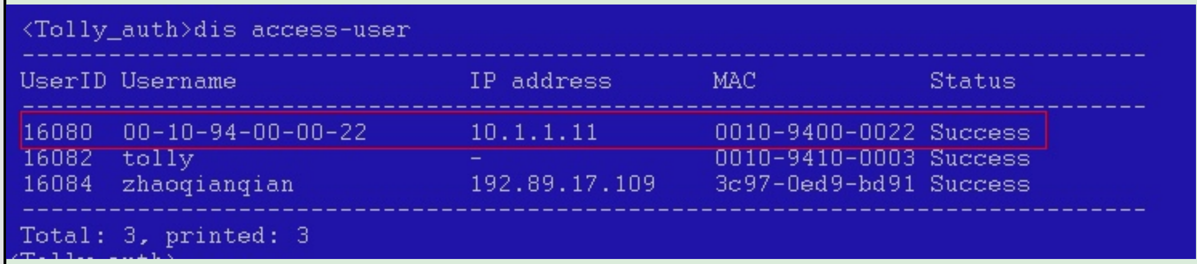
Standard

Status	Rule Name	Conditions (identity groups and other conditions)	Permissions
✓	tolly	if tolly AND Guest_Flow	then PermitAccess
✓	Standard Rule 1	if GuestType_Daily (default)	then tolly
✓	tollu_redirect	if (unkown-user OR Wireless_MAB OR Wired_MAB)	then Guest-Redirect

Test 4.2	CoA: Session Termination
Objective	Verify session termination when a Huawei S switch works as the access control switch and the Cisco ISE server works as the authentication (RADIUS) server.
Procedure	1. Configure the switch's IP address so that the switch can communicate with the ISE server. 2. Configure the RADIUS server profile and aaa profile on the switch. 3. Configure the MAC authentication profile on the device. 4. Configure the DHCP server on the device, and enable MAC authentication on the correspondent port. 5. Connect the user terminal to the DUT and enable the MAC-authenticated port. Expected result 1 is displayed. 6. Configure the RADIUS authorization server on the device and use the ISE server to disconnect online users. Expected result 2 is displayed. 
Pass Criteria	Result 1: The user passes the authentication successfully and obtains the correspondent IP address. The device shows that the authentication succeeds. Result 2: Online users are disconnected from the network by the ISE server, and online user entries are deleted from the device.

Test Results

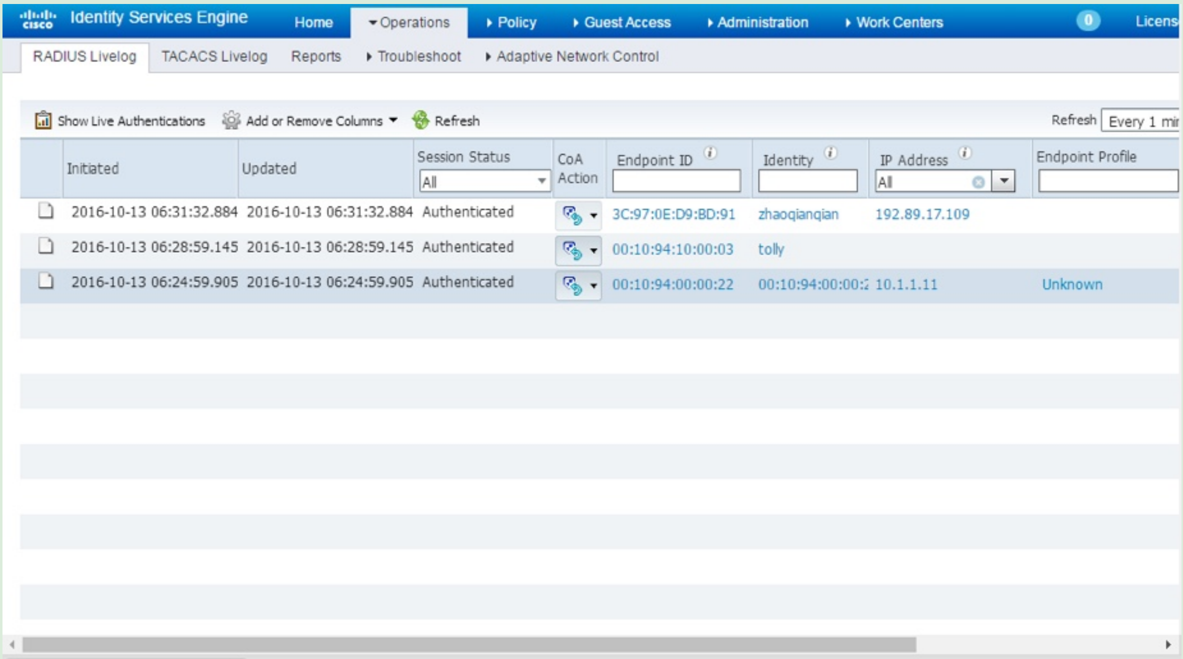
1. The user goes online after passing the MAC authentication successfully, and obtains the correspondent IP address.



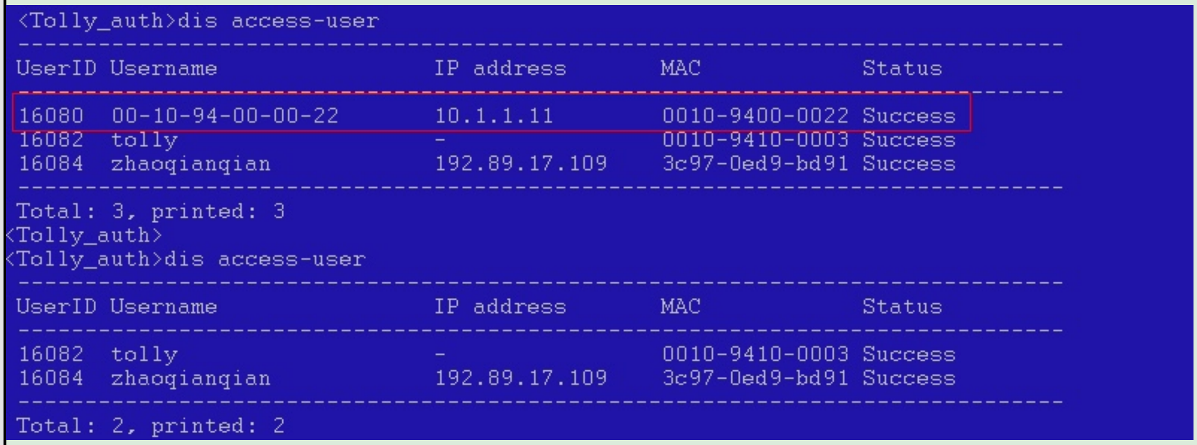
```
<Tolly_auth>dis access-user
------------------------------------------------------------------------------
UserID Username                     IP address       MAC            Status
------------------------------------------------------------------------------
16080  00-10-94-00-00-22            10.1.1.11        0010-9400-0022 Success
16082  tolly                        -                0010-9410-0003 Success
16084  zhaoqianqian                 192.89.17.109    3c97-0ed9-bd91 Success
------------------------------------------------------------------------------
Total: 3, printed: 3
<Tolly_auth>
```

Test Results

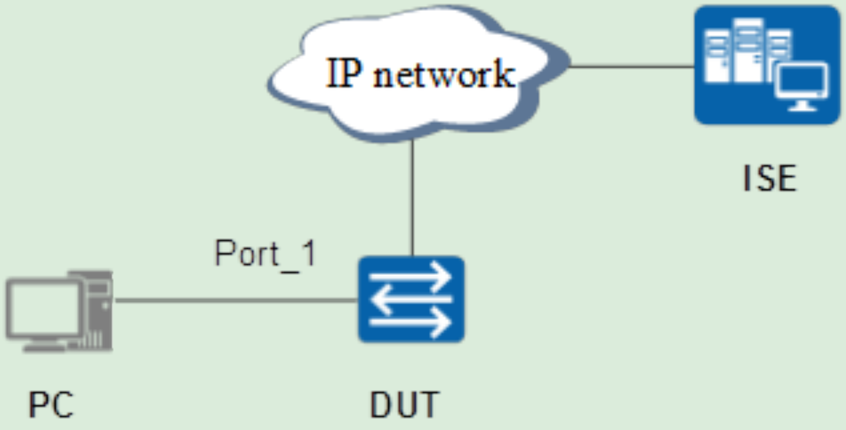
2. Online users are disconnected from the network by the ISE server, and online user entries are deleted from the device.



Initiated	Updated	Session Status All	CoA Action	Endpoint ID	Identity	IP Address All	Endpoint Profile
2016-10-13 06:31:32.884	2016-10-13 06:31:32.884	Authenticated		3C:97:0E:D9:BD:91	zhaoqianqian	192.89.17.109	
2016-10-13 06:28:59.145	2016-10-13 06:28:59.145	Authenticated		00:10:94:10:00:03	tolly		
2016-10-13 06:24:59.905	2016-10-13 06:24:59.905	Authenticated		00:10:94:00:00:22	00:10:94:00:00:2	10.1.1.11	Unknown



```
<Tolly_auth>dis access-user
------------------------------------------------------------------------------
UserID Username                     IP address       MAC            Status
------------------------------------------------------------------------------
16080  00-10-94-00-00-22            10.1.1.11        0010-9400-0022 Success
16082  tolly                        -                0010-9410-0003 Success
16084  zhaoqianqian                 192.89.17.109    3c97-0ed9-bd91 Success
------------------------------------------------------------------------------
Total: 3, printed: 3
<Tolly_auth>
<Tolly_auth>dis access-user
------------------------------------------------------------------------------
UserID Username                     IP address       MAC            Status
------------------------------------------------------------------------------
16082  tolly                        -                0010-9410-0003 Success
16084  zhaoqianqian                 192.89.17.109    3c97-0ed9-bd91 Success
------------------------------------------------------------------------------
Total: 2, printed: 2
```

Test 4.3	CoA Port Customization in ISE
Objective	Verify CoA port customization when a Huawei S switch works as the access control switch and the Cisco ISE server works as the authentication (RADIUS) server.
Procedure	1. Configure the switch's IP address so that the switch can communicate with the ISE server. 2. Configure the RADIUS server profile and aaa profile on the switch. 3. Configure the MAC authentication profile on the device. 4. Configure the DHCP server on the device, and enable MAC authentication on the correspondent port. 5. Connect the user terminal to the DUT and enable the MAC-authenticated port. 6. Change the CoA port number of the access device to 3799 on the ISE server. 7. Configure the RADIUS authorization server on the device and use the ISE server to disconnect online users. Expected result 1 is displayed. 
Pass Criteria	Result 1: The CoA port number is changed to 3799, and online users are disconnected.

Test Results

Configuration:

1. Configure the switch's IP address so that the switch can communicate with the ISE server.
2. Configure the RADIUS server profile and aaa profile on the switch.

```
#
radius-server template mac_auth
radius-server shared-key cipher Huawei@123
radius-server authentication 192.89.11.188 1812 weight 80
radius-server accounting 192.89.11.188 1813 weight 80
undo radius-server user-name domain-included
calling-station-id mac-format hyphen-split mode2
radius-attribute set Service-Type 10
#
```

3. Configure the MAC authentication profile on the device.

```
#
mac-access-profile name mac_access_profile
authentication-profile name mac_auth
mac-access-profile mac_access_profile
access-domain mac_auth force
#
```

4. Configure the DHCP server on the device, and enable MAC authentication on the correspondent port.

```
#
interface Vlanif12
ip address 12.1.1.1 255.255.255.0
dhcp select interface
interface GigabitEthernet0/0/2
port link-type access
port default vlan 130
authentication-profile mac_auth
#
```

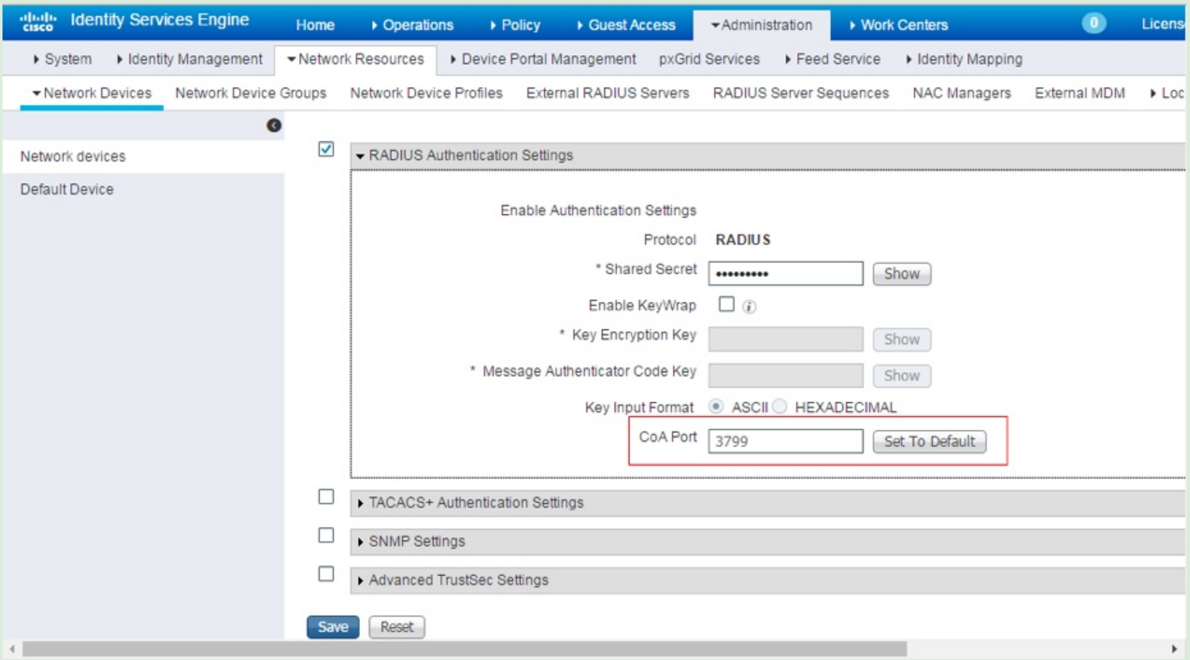
Test Results

5. Connect the user terminal to the DUT and enable the MAC-authenticated port.
6. Change the CoA port number of the access device to 3799 on the ISE server.
7. Configure the RADIUS authorization server on the device and use the ISE server to disconnect online users. Expected result 1 is displayed.

```
#
radius-server authorization 192.89.11.188 shared-key cipher huawei123
#
```

Results:

1. Change the CoA port number of the access device to 3799 on the ISE server.



☑ RADIUS Authentication Settings

Enable Authentication Settings

Protocol RADIUS

* Shared Secret •••••••••

Enable KeyWrap □

* Key Encryption Key

* Message Authenticator Code Key

Key Input Format ● ASCII ○ HEXADECIMAL

CoA Port 3799

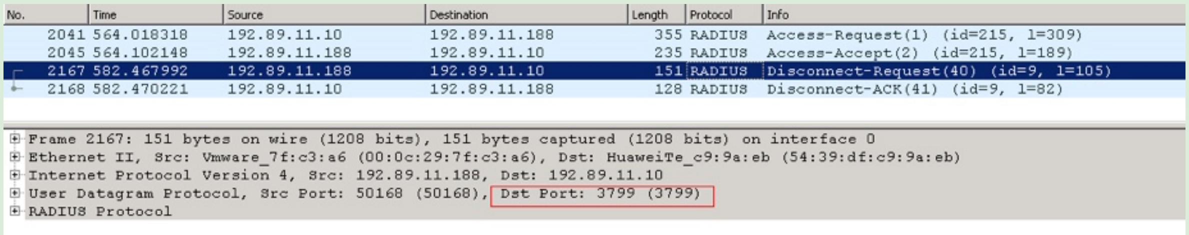
□ TACACS+ Authentication Settings

□ SNMP Settings

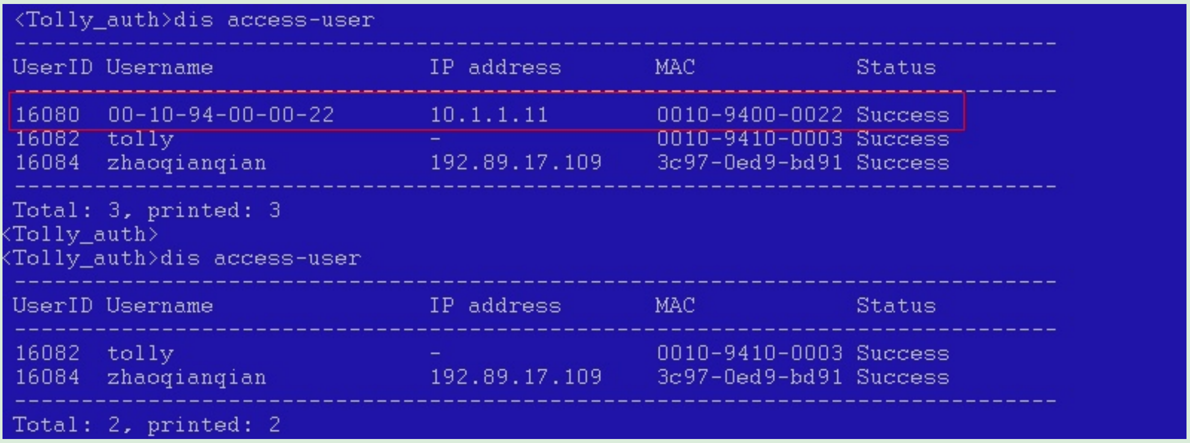
□ Advanced TrustSec Settings

Test Results

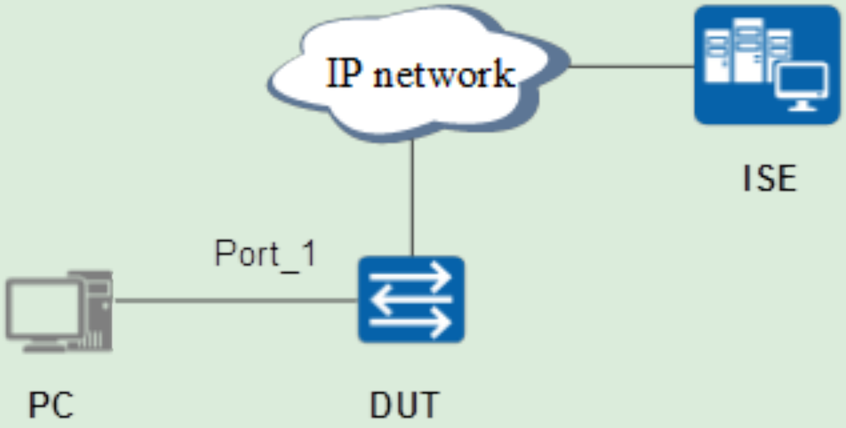
2. The online user is disconnected from the network by the ISE server. The CoA port number of the disconnection packet sent by the RADIUS server is changed to 3799.



```
No.    Time        Source         Destination    Length Protocol Info
  2041 564.018318  192.89.11.10   192.89.11.188     355 RADIUS   Access-Request(1)  (id=215, l=309)
  2045 564.102148  192.89.11.188  192.89.11.10      235 RADIUS   Access-Accept(2)  (id=215, l=189)
  2167 582.467992  192.89.11.188  192.89.11.10      151 RADIUS   Disconnect-Request(40)  (id=9, l=105)
  2168 582.470221  192.89.11.10   192.89.11.188     128 RADIUS   Disconnect-ACK(41)  (id=9, l=82)

⊞ Frame 2167: 151 bytes on wire (1208 bits), 151 bytes captured (1208 bits) on interface 0
⊞ Ethernet II, Src: Vmware_7f:c3:a6 (00:0c:29:7f:c3:a6), Dst: HuaweiTe_c9:9a:eb (54:39:df:c9:9a:eb)
⊞ Internet Protocol Version 4, Src: 192.89.11.188, Dst: 192.89.11.10
⊞ User Datagram Protocol, Src Port: 50168 (50168), Dst Port: 3799 (3799)
⊞ RADIUS Protocol
```



```
<Tolly_auth>dis access-user
------------------------------------------------------------------------------
UserID Username                      IP address        MAC            Status
------------------------------------------------------------------------------
16080  00-10-94-00-00-22             10.1.1.11         0010-9400-0022 Success
16082  tolly                         -                 0010-9410-0003 Success
16084  zhaoqianqian                  192.89.17.109     3c97-0ed9-bd91 Success
------------------------------------------------------------------------------
Total: 3, printed: 3
<Tolly_auth>
<Tolly_auth>dis access-user
------------------------------------------------------------------------------
UserID Username                      IP address        MAC            Status
------------------------------------------------------------------------------
16082  tolly                         -                 0010-9410-0003 Success
16084  zhaoqianqian                  192.89.17.109     3c97-0ed9-bd91 Success
------------------------------------------------------------------------------
Total: 2, printed: 2
```

Test 5.1	Endpoint Profiling with DHCP Packets
Objective	Verify endpoint profiling with DHCP packets when a Huawei S switch works as the access control switch and the Cisco ISE server works as the authentication (RADIUS) server.
Procedure	1. Configure the switch's IP address so that the switch can communicate with the ISE server. 2. Configure the RADIUS server profile and aaa profile on the switch. 3. Configure the aaa scheme. 4. Configure the MAC authentication profile on the device. 5. Configure the DHCP server on the device, and enable MAC authentication on the correspondent interface. 6. Connect the user terminal to the DUT and enable the MAC-authenticated port. Expected result 1 is displayed. 7. Configure terminal identification through DHCP on the ISE server. Expected result 2 is displayed. 
Pass Criteria	Result 1: The user passes the authentication successfully and obtains the correspondent IP address. The device shows that the authentication succeeds. Result 2: The ISE server can identify terminals through DHCP.

Test Results	Configuration: 1. Configure the switch's IP address so that the switch can communicate with the ISE server. 2. Configure the RADIUS server profile and aaa profile on the switch. # radius-server template tolly_mac radius-server shared-key cipher huawei123 radius-server authentication 192.89.11.188 1812 weight 80 radius-server accounting 192.89.11.188 1813 weight 80 undo radius-server user-name domain-included calling-station-id mac-format hyphen-split mode2 radius-attribute set Service-Type 10 # domain tolly_mac authentication-scheme tolly authorization-scheme tolly radius-server tolly_mac # 3. Configure the aaa scheme. # aaa authentication-scheme tolly authentication-mode radius authorization-scheme tolly accounting-scheme tolly accounting-mode radius domain tolly_mac authentication-scheme tolly accounting-scheme tolly radius-server tolly_mac #

Test Results

4. Configure the MAC authentication profile on the device.

   ```
   #
   mac-access-profile name tolly
   mac-authen username macaddress format with-hyphen normal uppercase
   authentication-profile name tolly_mac
   mac-access-profile tolly
   access-domain tolly_mac
   #
   ```

5. Configure the DHCP server on the device, and enable MAC authentication on the correspondent interface.

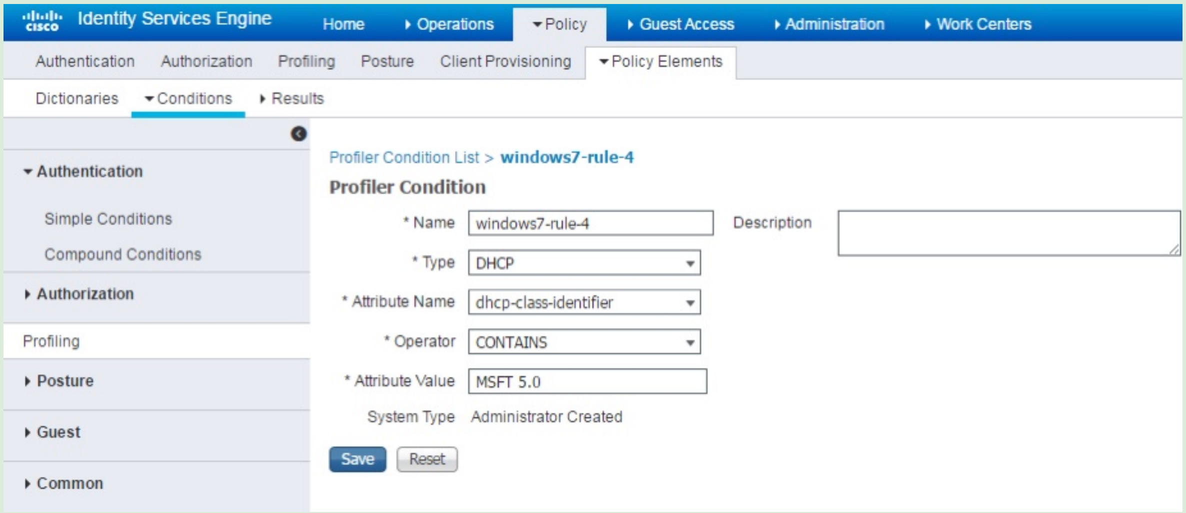
   ```
   #
   interface Vlanif4090
   ip address 192.89.11.10 255.255.255.0
   dhcp select interface
   #
   interface XGigabitEthernet1/0/0
   port link-type hybrid
   port hybrid pvid vlan 4090
   port hybrid untagged vlan 4090
   authentication-profile tolly_mac
   #
   ```

6. Connect the user terminal to the DUT and enable the MAC-authenticated port. Expected result 1 is displayed.
7. Configure terminal identification through DHCP on the ISE server. Expected result 2 is displayed.

Test Results

Results:

1. Configure the DHCP attribute to identify the option field in the DHCP packets that match certain conditions.



Profiler Condition List > windows7-rule-4

Profiler Condition

* Name: windows7-rule-4

Description:

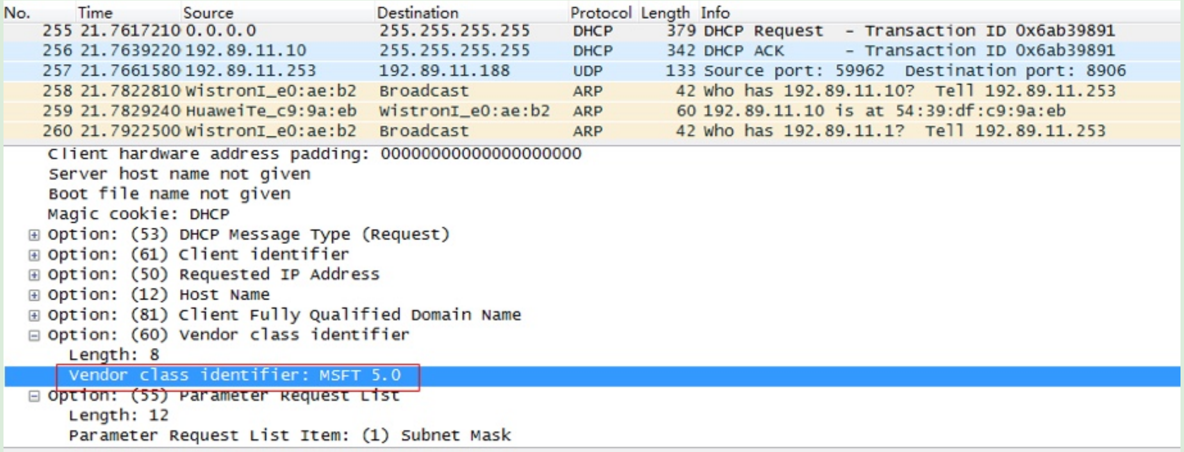
* Type: DHCP

* Attribute Name: dhcp-class-identifier

* Operator: CONTAINS

* Attribute Value: MSFT 5.0

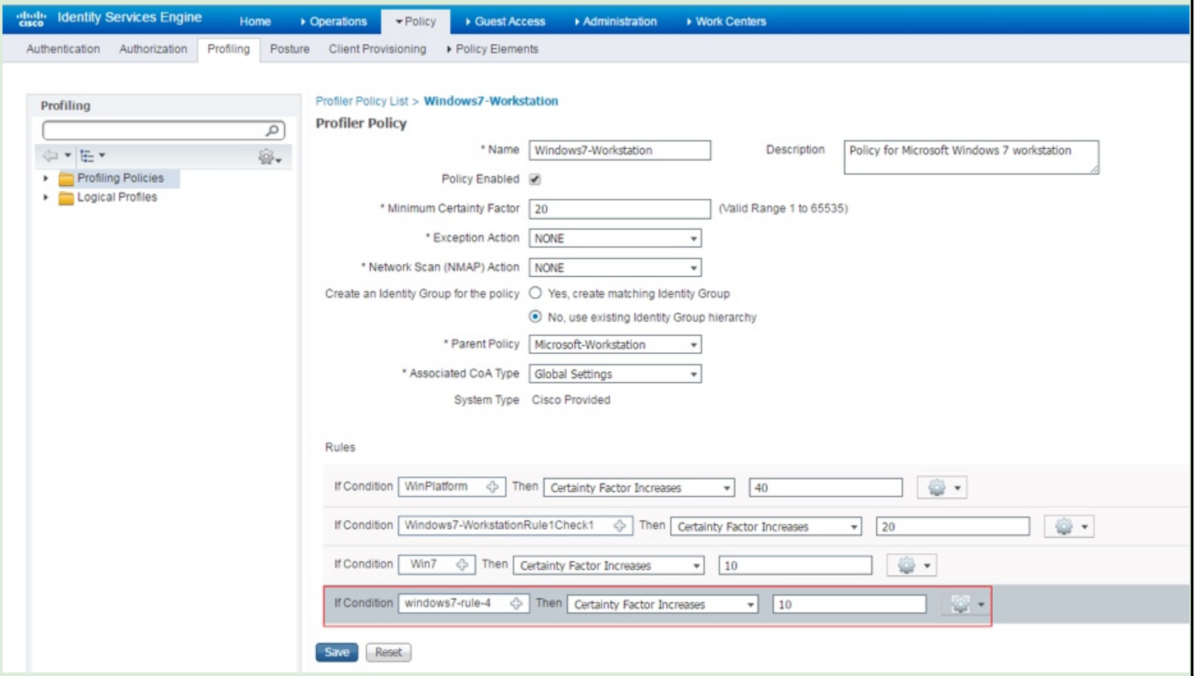
System Type: Administrator Created



```
No.  Time        Source              Destination         Protocol Length Info
 255 21.7617210 0.0.0.0             255.255.255.255     DHCP      379 DHCP Request  - Transaction ID 0x6ab39891
 256 21.7639220 192.89.11.10        255.255.255.255     DHCP      342 DHCP ACK      - Transaction ID 0x6ab39891
 257 21.7661580 192.89.11.253       192.89.11.188       UDP       133 Source port: 59962  Destination port: 8906
 258 21.7822810 WistronI_e0:ae:b2   Broadcast           ARP        42 Who has 192.89.11.10?  Tell 192.89.11.253
 259 21.7829240 HuaweiTe_c9:9a:eb   WistronI_e0:ae:b2   ARP        60 192.89.11.10 is at 54:39:df:c9:9a:eb
 260 21.7922500 WistronI_e0:ae:b2   Broadcast           ARP        42 Who has 192.89.11.1?  Tell 192.89.11.253
    Client hardware address padding: 00000000000000000000
    Server host name not given
    Boot file name not given
    Magic cookie: DHCP
  ⊞ Option: (53) DHCP Message Type (Request)
  ⊞ Option: (61) Client identifier
  ⊞ Option: (50) Requested IP Address
  ⊞ Option: (12) Host Name
  ⊞ Option: (81) Client Fully Qualified Domain Name
  ⊟ Option: (60) Vendor class identifier
      Length: 8
      Vendor class identifier: MSFT 5.0
  ⊟ Option: (55) Parameter Request List
      Length: 12
      Parameter Request List Item: (1) Subnet Mask
```

Test Results

2. Configure identification policies to invoke attribute identification conditions.



Profiler Policy

* Name: Windows7-Workstation

Description: Policy for Microsoft Windows 7 workstation

Policy Enabled ☑

* Minimum Certainty Factor: 20 (Valid Range 1 to 65535)

* Exception Action: NONE

* Network Scan (NMAP) Action: NONE

Create an Identity Group for the policy ○ Yes, create matching Identity Group ● No, use existing Identity Group hierarchy

* Parent Policy: Microsoft-Workstation

* Associated CoA Type: Global Settings

System Type: Cisco Provided

Rules

If Condition WinPlatform Then Certainty Factor Increases 40

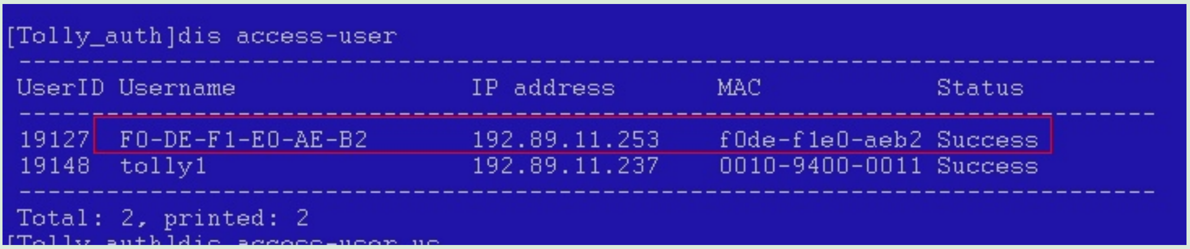
If Condition Windows7-WorkstationRule1Check1 Then Certainty Factor Increases 20

If Condition Win7 Then Certainty Factor Increases 10

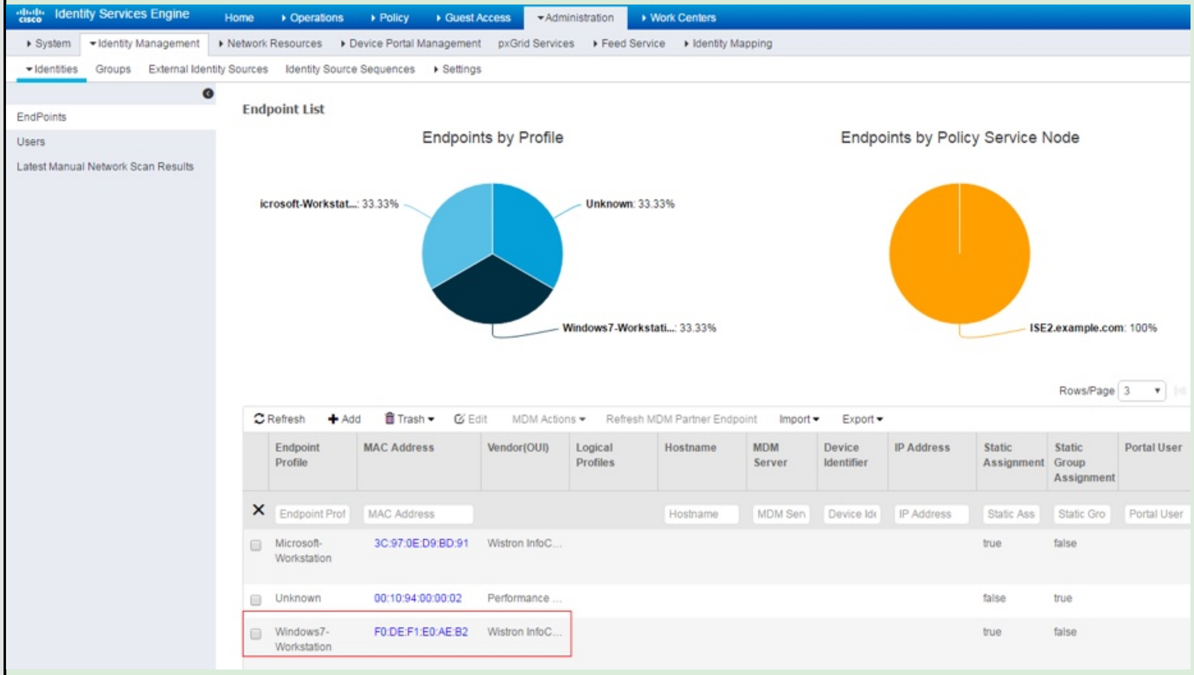
If Condition windows7-rule-4 Then Certainty Factor Increases 10

Test Results

3. Users go online and identify terminal devices based on identification policies on the ISE server.

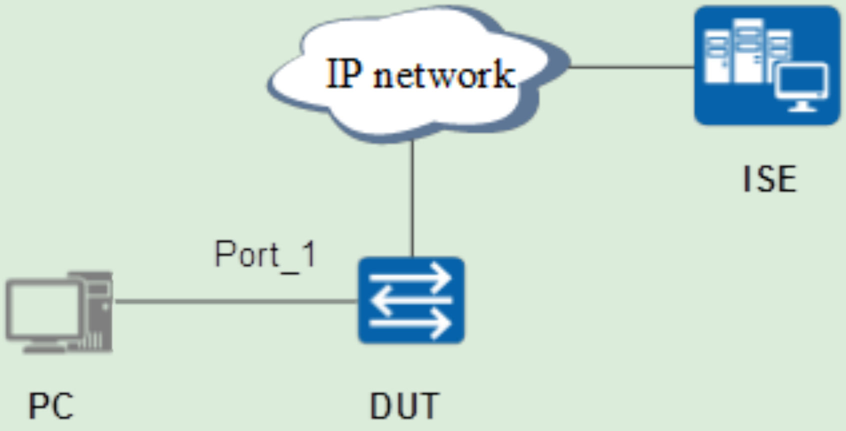


```
[Tolly_auth]dis access-user
 ------------------------------------------------------------------------------
 UserID Username                      IP address       MAC            Status
 ------------------------------------------------------------------------------
 19127  F0-DE-F1-E0-AE-B2             192.89.11.253    f0de-f1e0-aeb2 Success
 19148  tolly1                        192.89.11.237    0010-9400-0011 Success
 ------------------------------------------------------------------------------
 Total: 2, printed: 2
[Tolly_auth]dis access-user us
```



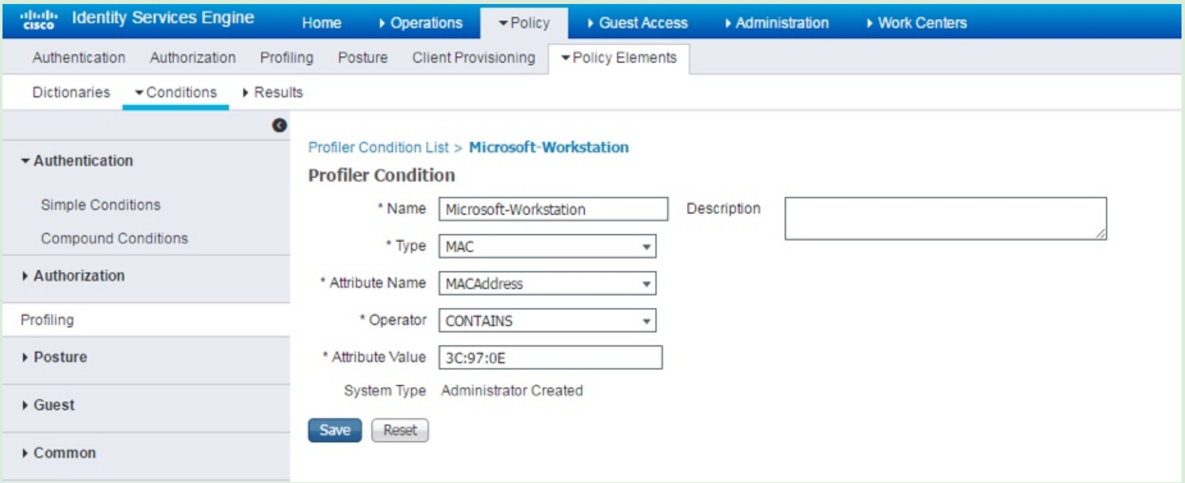
Endpoint List

	Endpoint Profile	MAC Address	Vendor(OUI)	Logical Profiles	Hostname	MDM Server	Device Identifier	IP Address	Static Assignment	Static Group Assignment	Portal User
✕	Endpoint Prof	MAC Address			Hostname	MDM Serv	Device Ide	IP Address	Static Ass	Static Gro	Portal User
□	Microsoft-Workstation	3C:97:0E:D9:BD:91	Wistron InfoC...						true	false	
□	Unknown	00:10:94:00:00:02	Performance ...						false	true	
□	Windows7-Workstation	F0:DE:F1:E0:AE:B2	Wistron InfoC...						true	false	

Test 5.2	Endpoint Profiling with MAC Addresses
Objective	Verify endpoint profiling with MAC addresses when a Huawei S switch works as the access control switch and the Cisco ISE server works as the authentication (RADIUS) server.
Procedure	1. Configure the switch's IP address so that the switch can communicate with the ISE server. 2. Configure the RADIUS server profile and aaa profile on the switch. 3. Configure the aaa profile on the switch. 4. Configure the MAC authentication profile on the device. 5. Configure the DHCP server on the device, and enable MAC authentication on the correspondent port. 6. Connect the user terminal to the DUT and enable the MAC-authenticated port. Expected result 1 is displayed. 7. Configure terminal identification through MAC address on the ISE server. Expected result 2 is displayed. 
Pass Criteria	Result 1: The user passes the authentication successfully and obtains the correspondent IP address. The device shows that the authentication succeeds. Result 2: The ISE server can identify terminals through MAC addresses.

Test Results

1. Configure the MAC address segment identification and specify the MAC address OUI provided by the ISE as the matching condition.



Profiler Condition List > Microsoft-Workstation

Profiler Condition

* Name Microsoft-Workstation

Description

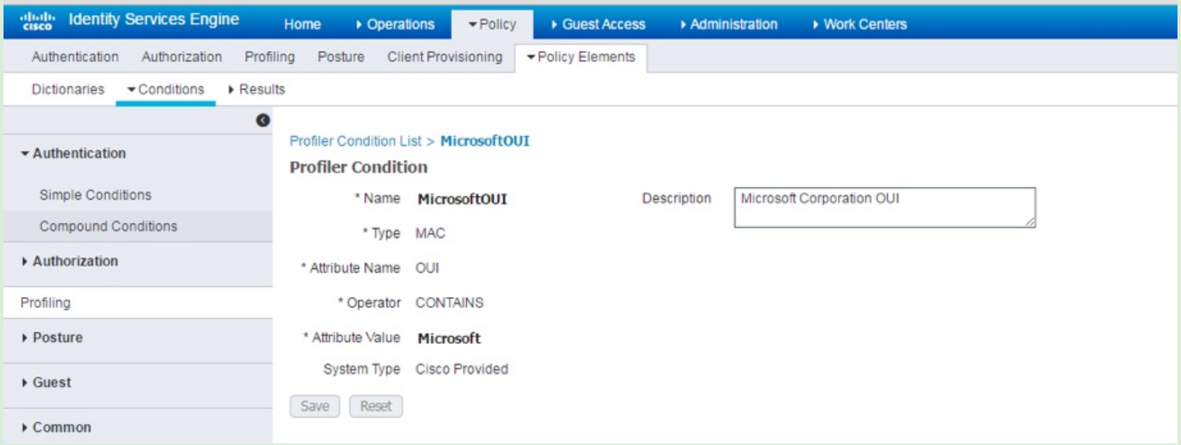
* Type MAC

* Attribute Name MACAddress

* Operator CONTAINS

* Attribute Value 3C:97:0E

System Type Administrator Created



Profiler Condition List > MicrosoftOUI

Profiler Condition

* Name MicrosoftOUI

Description Microsoft Corporation OUI

* Type MAC

* Attribute Name OUI

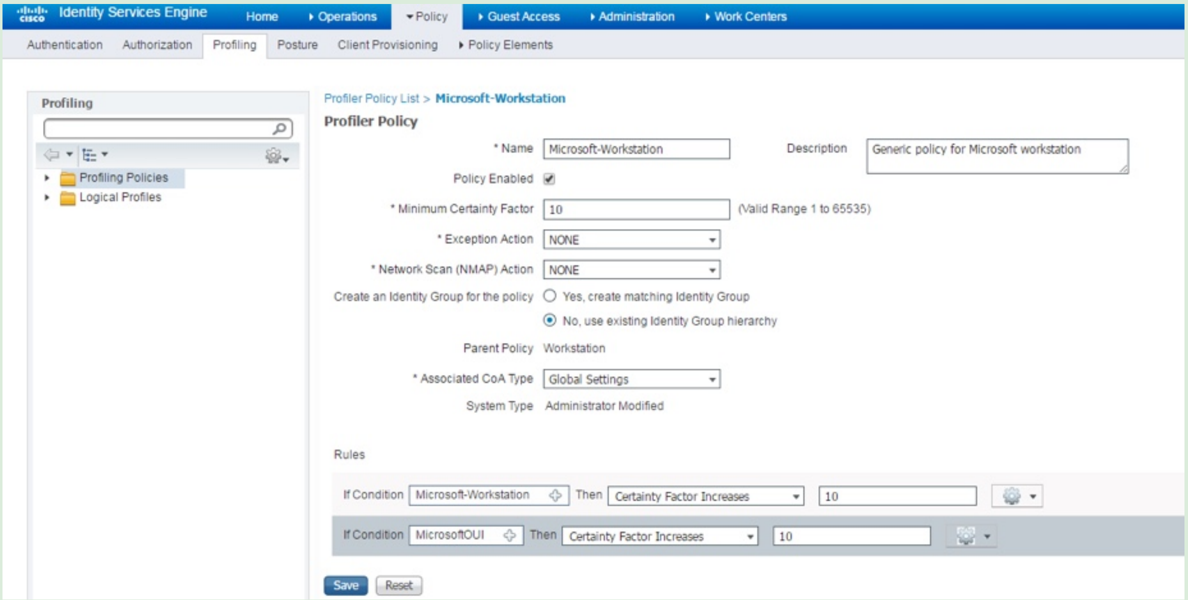
* Operator CONTAINS

* Attribute Value Microsoft

System Type Cisco Provided

Test Results

2. Configure identification policies to invoke attribute identification conditions.



Profiler Policy

* Name: Microsoft-Workstation

Description: Generic policy for Microsoft workstation

Policy Enabled: ☑

* Minimum Certainty Factor: 10 (Valid Range 1 to 65535)

* Exception Action: NONE

* Network Scan (NMAP) Action: NONE

Create an Identity Group for the policy: ○ Yes, create matching Identity Group ● No, use existing Identity Group hierarchy

Parent Policy: Workstation

* Associated CoA Type: Global Settings

System Type: Administrator Modified

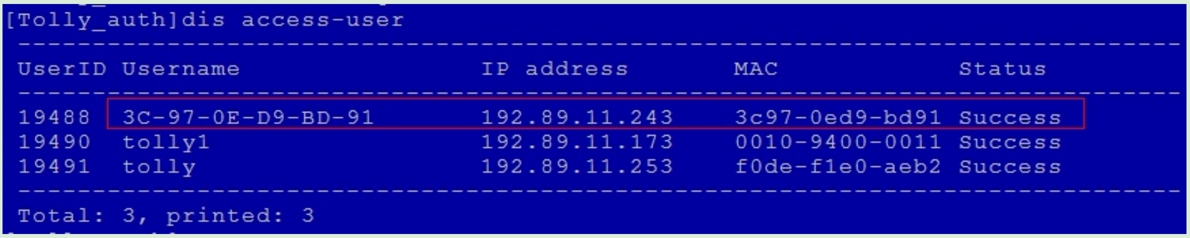
Rules

If Condition Microsoft-Workstation Then Certainty Factor Increases 10

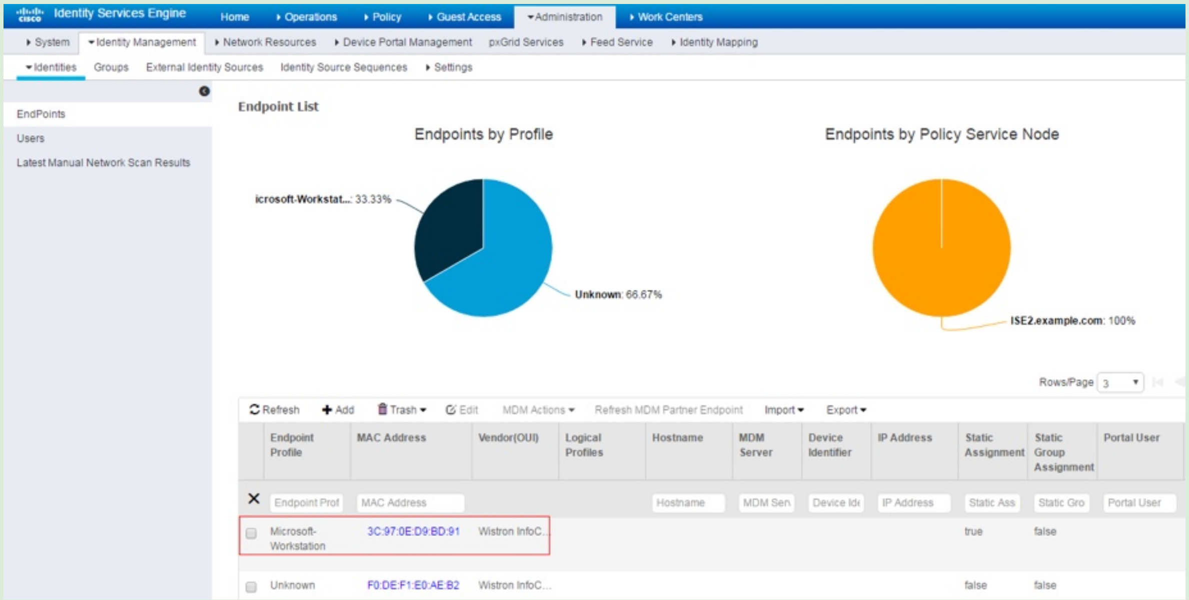
If Condition MicrosoftOUI Then Certainty Factor Increases 10

Test Results

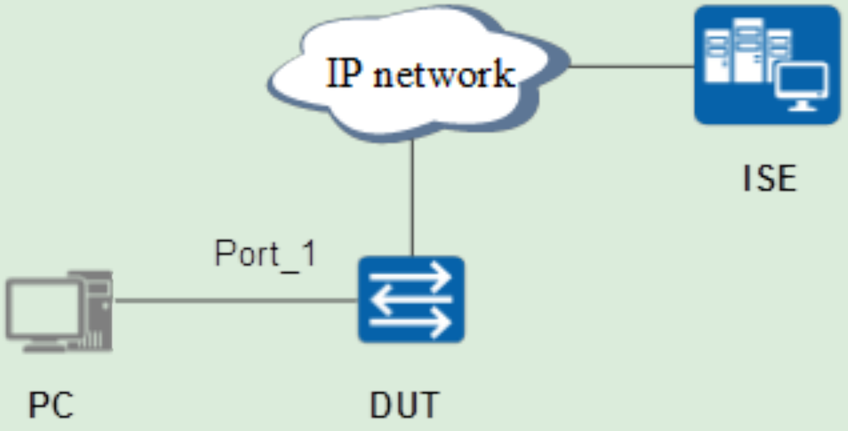
3. Users go online and identify terminal devices based on identification policies on the ISE server.



```
[Tolly_auth]dis access-user
 ------------------------------------------------------------------------------
 UserID Username                    IP address        MAC            Status
 ------------------------------------------------------------------------------
 19488  3C-97-0E-D9-BD-91           192.89.11.243     3c97-0ed9-bd91 Success
 19490  tolly1                      192.89.11.173     0010-9400-0011 Success
 19491  tolly                       192.89.11.253     f0de-f1e0-aeb2 Success
 ------------------------------------------------------------------------------
 Total: 3, printed: 3
```

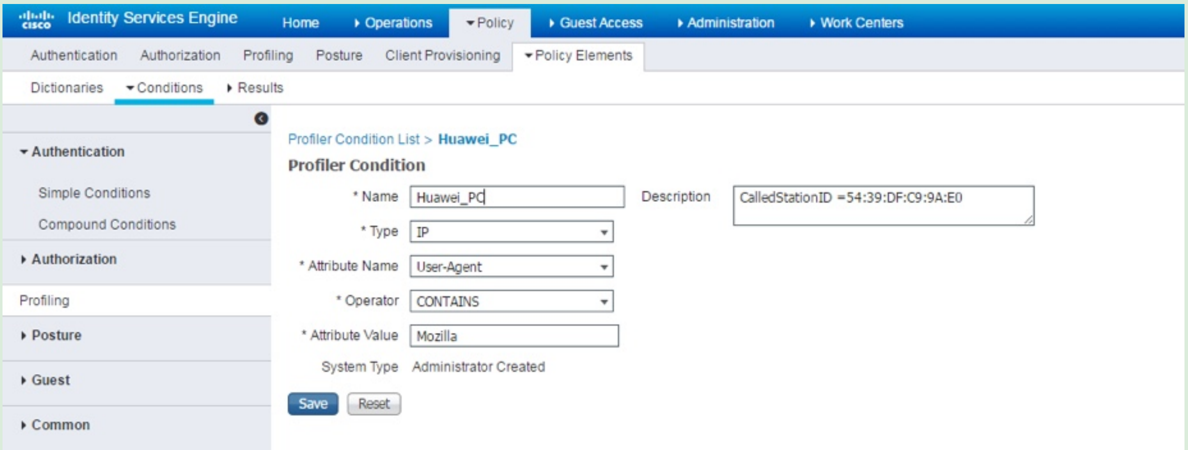


	Endpoint Profile	MAC Address	Vendor(OUI)	Logical Profiles	Hostname	MDM Server	Device Identifier	IP Address	Static Assignment	Static Group Assignment	Portal User
✕	Endpoint Prof	MAC Address			Hostname	MDM Serv	Device Ide	IP Address	Static Ass	Static Gro	Portal User
□	Microsoft-Workstation	3C:97:0E:D9:BD:91	Wistron InfoC...						true	false	
□	Unknown	F0:DE:F1:E0:AE:B2	Wistron InfoC...						false	false	

Test 5.3	Endpoint Profiling with HTTP Packets
Objective	Verify endpoint profiling with HTTP packets when a Huawei S switch works as the access control switch and the Cisco ISE server works as the authentication (RADIUS) server.
Procedure	1. Configure the switch's IP address so that the switch can communicate with the ISE server. 2. Configure the RADIUS server profile and aaa profile on the switch. 3. Configure the aaa scheme. 4. Configure the MAC authentication profile on the device. 5. Configure the DHCP server on the device, and enable MAC authentication on the correspondent interface. 6. Connect the user terminal to the DUT and enable the MAC-authenticated port. Expected result 1 is displayed. 7. When a user goes online after passing the MAC authentication, push the guest management page to him and allow him to exchange HTTP packets with the ISE server. 
Pass Criteria	Result 1: The user passes the authentication successfully and obtains the correspondent IP address. The device shows that the authentication succeeds. Result 2: The ISE server can identify terminals through HTTP.

Test Results

1. Set the HTTP identification: User-Agent is the HTTP identifier of a device.



Profiler Condition List > Huawei_PC

Profiler Condition

* Name: Huawei_PC

Description: CalledStationID =54:39:DF:C9:9A:E0

* Type: IP

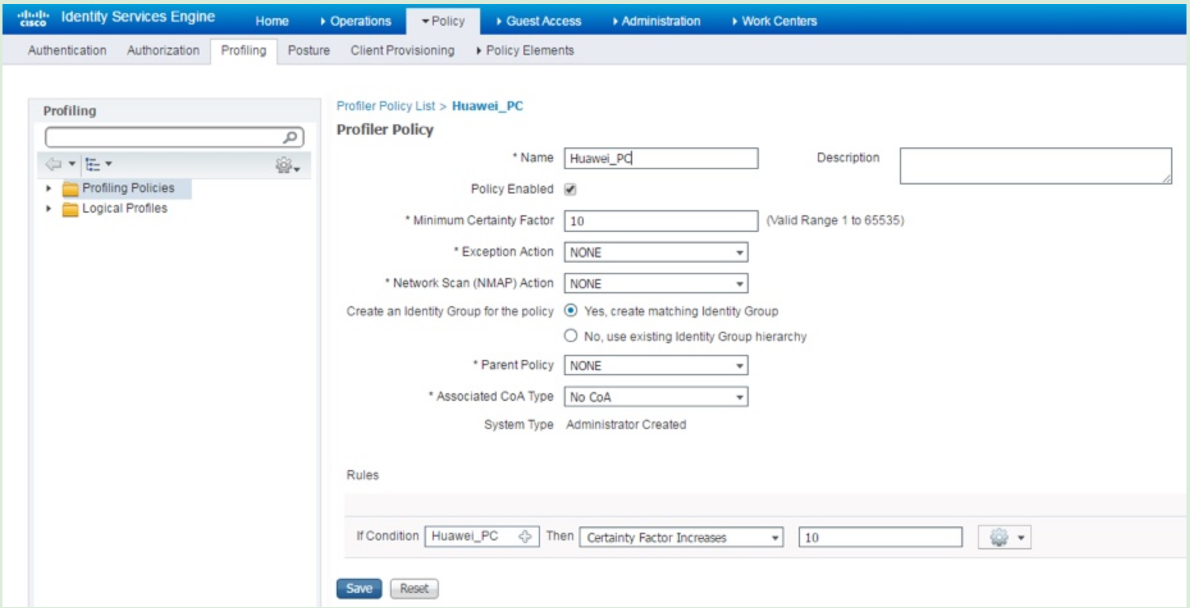
* Attribute Name: User-Agent

* Operator: CONTAINS

* Attribute Value: Mozilla

System Type: Administrator Created

2. Configure identification policies to invoke attribute identification conditions.



Profiler Policy List > Huawei_PC

Profiler Policy

* Name: Huawei_PC

Description:

Policy Enabled: ☑

* Minimum Certainty Factor: 10 (Valid Range 1 to 65535)

* Exception Action: NONE

* Network Scan (NMAP) Action: NONE

Create an Identity Group for the policy: ● Yes, create matching Identity Group ○ No, use existing Identity Group hierarchy

* Parent Policy: NONE

* Associated CoA Type: No CoA

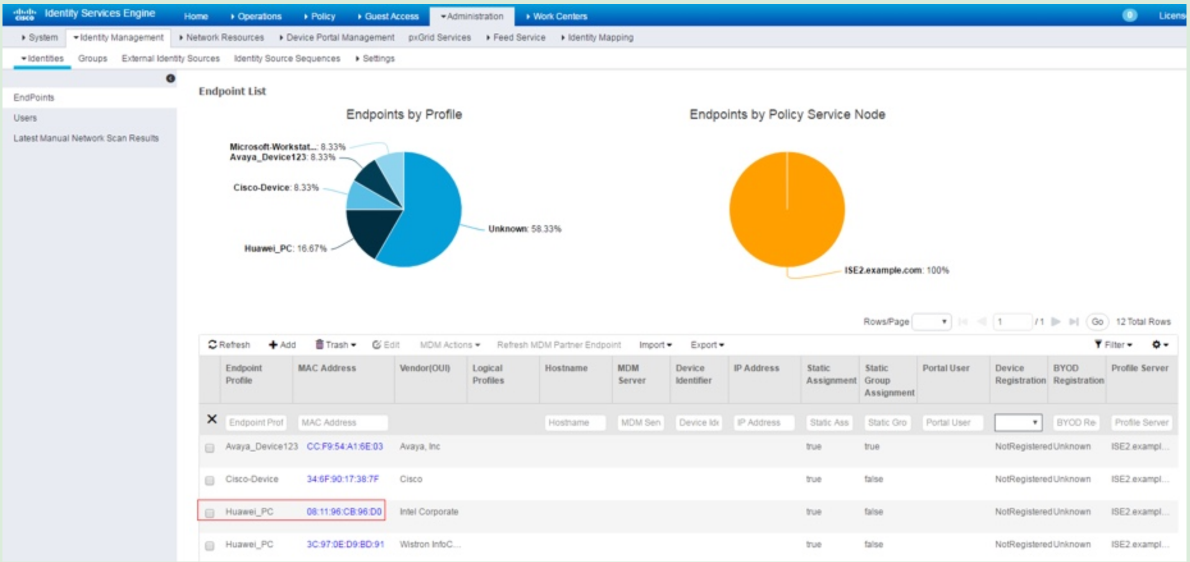
System Type: Administrator Created

Rules

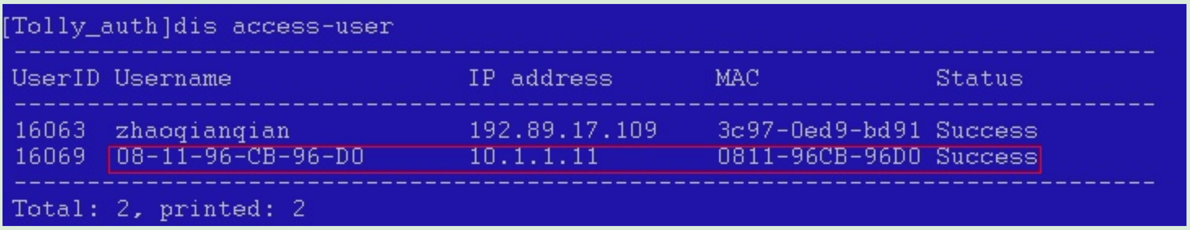
If Condition Huawei_PC Then Certainty Factor Increases 10

Test Results

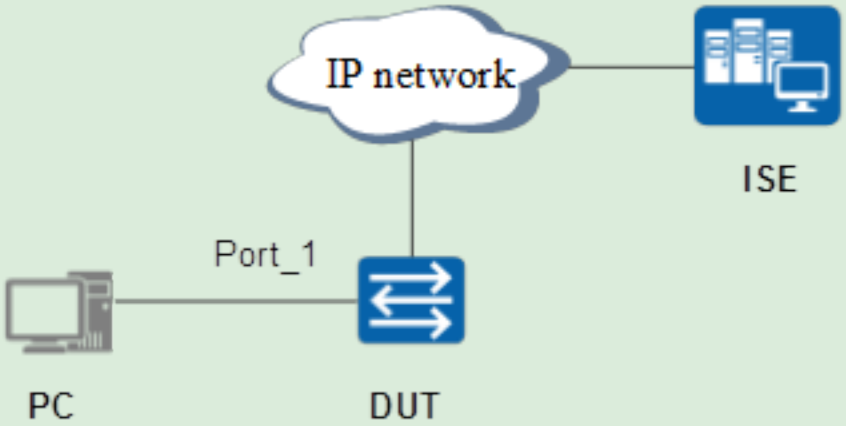
3. Users go online and identify terminal devices based on identification policies on the ISE server.



Endpoint Profile	MAC Address	Vendor(OUI)	Logical Profiles	Hostname	MDM Server	Device Identifier	IP Address	Static Assignment	Static Group Assignment	Portal User	Device Registration	BYOD Registration	Profile Server
Avaya_Device123	CC:F9:54:A1:6E:03	Avaya, Inc						true	true		NotRegistered	Unknown	ISE2.exampl...
Cisco-Device	34:6F:90:17:38:7F	Cisco						true	false		NotRegistered	Unknown	ISE2.exampl...
Huawei_PC	08:11:96:CB:96:D0	Intel Corporate						true	false		NotRegistered	Unknown	ISE2.exampl...
Huawei_PC	3C:97:0E:D9:BD:91	Wistron InfoC...						true	false		NotRegistered	Unknown	ISE2.exampl...

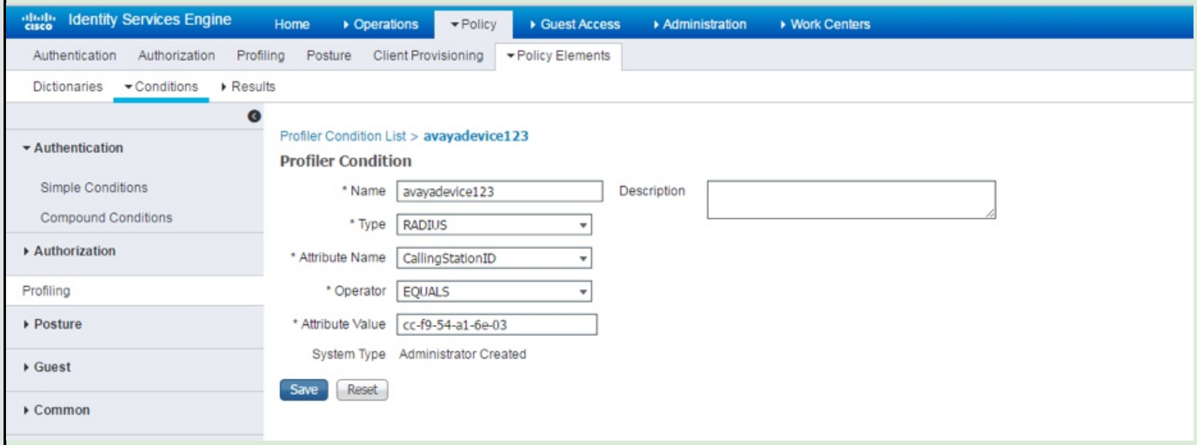


```
[Tolly_auth]dis access-user
 ------------------------------------------------------------------------------
 UserID Username                    IP address       MAC            Status
 ------------------------------------------------------------------------------
 16063  zhaoqianqian                192.89.17.109    3c97-0ed9-bd91 Success
 16069  08-11-96-CB-96-D0           10.1.1.11        0811-96CB-96D0 Success
 ------------------------------------------------------------------------------
 Total: 2, printed: 2
```

Test 5.4	Endpoint Profiling with RADIUS Packets
Objective	Verify endpoint profiling with RADIUS packets when a Huawei S switch works as the access control switch and the Cisco ISE server works as the authentication (RADIUS) server.
Procedure	1. Configure the switch's IP address so that the switch can communicate with the ISE server. 2. Configure the RADIUS server profile and aaa profile on the switch. 3. Configure the aaa scheme. 4. Configure the MAC authentication profile on the device. 5. Configure the DHCP server on the device, and enable MAC authentication on the correspondent interface. 6. Connect the user terminal to the DUT and enable the MAC-authenticated port. Expected result 1 is displayed. 7. Configure terminal identification through RADIUS on the ISE server. Expected result 2 is displayed. 
Pass Criteria	Result 1: The user passes the authentication successfully and obtains the correspondent IP address. The device shows that the authentication succeeds. Result 2: The ISE server can identify terminals through RADIUS.

Test Results

1. Set the RADIUS identification: callingStationID is the MAC address of the device.

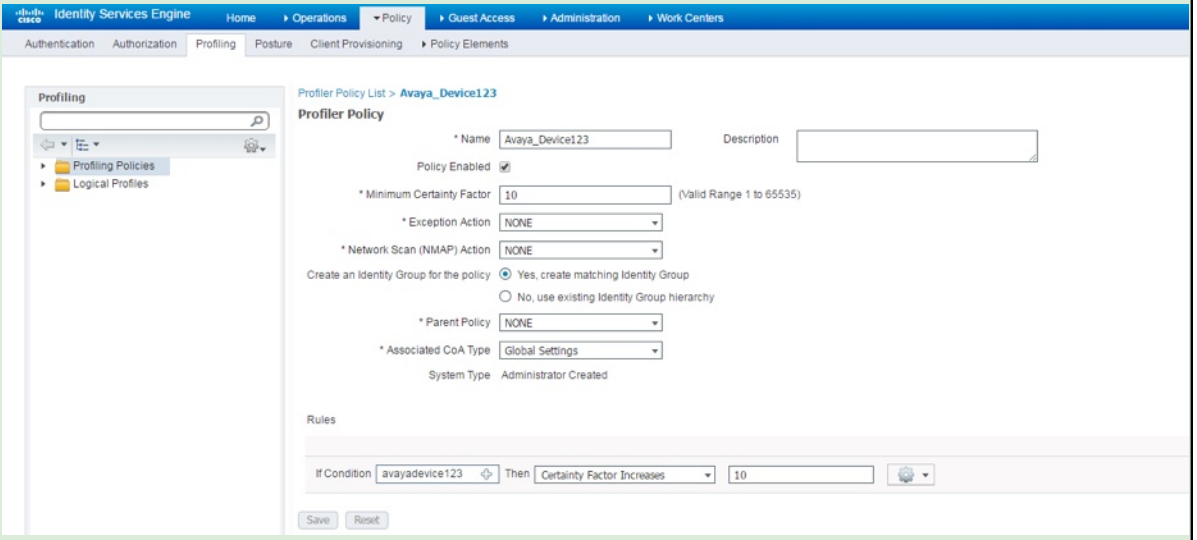


Profiler Condition List > avayadevice123

Profiler Condition

* Name: avayadevice123
Description:
* Type: RADIUS
* Attribute Name: CallingStationID
* Operator: EQUALS
* Attribute Value: cc-f9-54-a1-6e-03
System Type: Administrator Created

2. Configure identification policies to invoke attribute identification conditions.



Profiler Policy List > Avaya_Device123

Profiler Policy

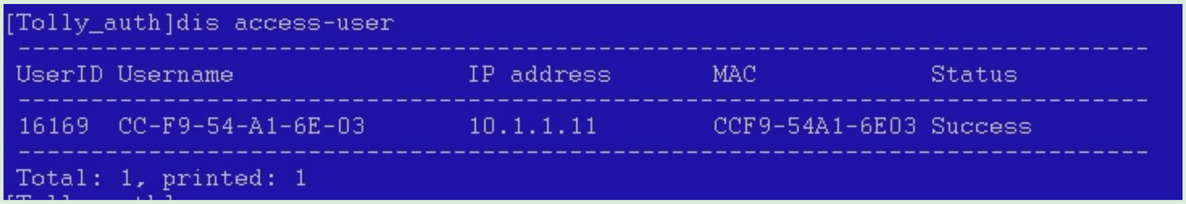
* Name: Avaya_Device123
Description:
Policy Enabled: ☑
* Minimum Certainty Factor: 10 (Valid Range 1 to 65535)
* Exception Action: NONE
* Network Scan (NMAP) Action: NONE
Create an Identity Group for the policy: ● Yes, create matching Identity Group ○ No, use existing Identity Group hierarchy
* Parent Policy: NONE
* Associated CoA Type: Global Settings
System Type: Administrator Created

Rules

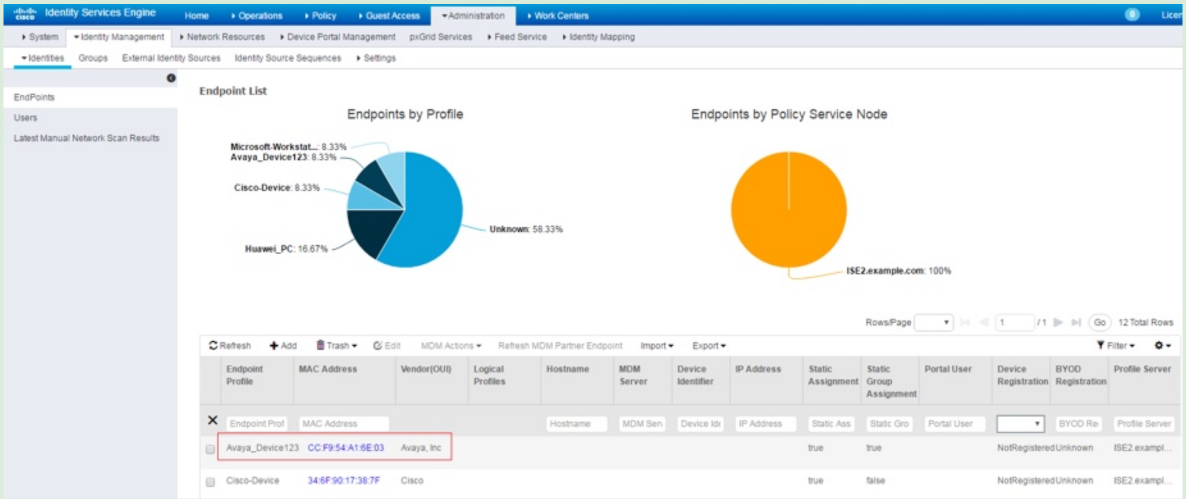
If Condition avayadevice123 Then Certainty Factor Increases 10

Test Results

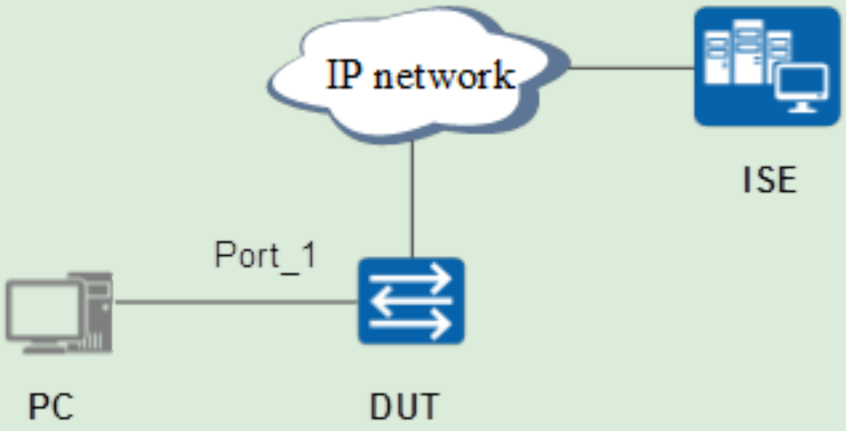
3. Users go online and identify terminal devices based on identification policies on the ISE server.



```
[Tolly_auth]dis access-user
 ------------------------------------------------------------------------------
 UserID Username                     IP address        MAC            Status
 ------------------------------------------------------------------------------
 16169  CC-F9-54-A1-6E-03            10.1.1.11         CCF9-54A1-6E03 Success
 ------------------------------------------------------------------------------
 Total: 1, printed: 1
```



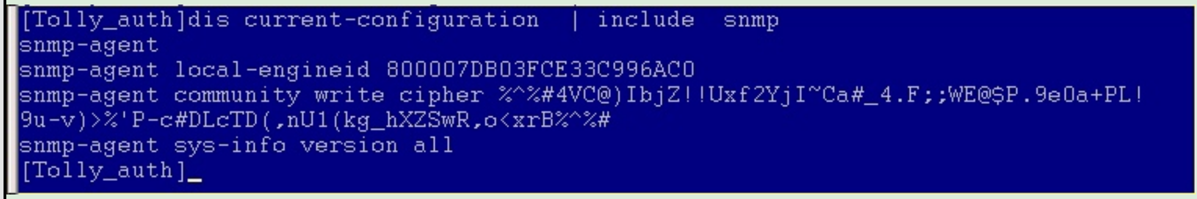
	Endpoint Profile	MAC Address	Vendor(OUI)	Logical Profiles	Hostname	MDM Server	Device Identifier	IP Address	Static Assignment	Static Group Assignment	Portal User	Device Registration	BYOD Registration	Profile Server
✕	Endpoint Prof	MAC Address			Hostname	MDM Serv	Device Ide	IP Address	Static Ass	Static Gro	Portal User		BYOD Re	Profile Server
□	Avaya_Device123	CC:F9:54:A1:6E:03	Avaya, Inc						true	true		NotRegistered	Unknown	ISE2.exampl...
□	Cisco-Device	34:6F:90:17:38:7F	Cisco						true	false		NotRegistered	Unknown	ISE2.exampl...

Test 5.5	Network Scan (NMAP)
Objective	Verify network scan (NMAP) when a Huawei S switch works as the access control switch and the Cisco ISE server works as the authentication (RADIUS) server.
Procedure	1. Configure the switch's IP address so that the switch can communicate with the ISE server. 2. Configure the RADIUS server profile and aaa profile on the switch. 3. Configure the aaa scheme. 4. Configure the MAC authentication profile on the device. 5. Configure the DHCP server on the device, and enable MAC authentication on the correspondent interface. 6. Connect the user terminal to the DUT and enable the MAC-authenticated port. Expected result 1 is displayed. 7. Set the SNMP write community password as huawei123, which matches configuration on the ISE. Configure Nmap scanning on the ISE server. Expected result 2 is displayed. 
Pass Criteria	Result 1: The user passes the authentication successfully and obtains the correspondent IP address. The device shows that the authentication succeeds. Result 2: The ISE server identifies the device's IP address and MAC address, and identifies the terminal type based on the OUI.

Test Results

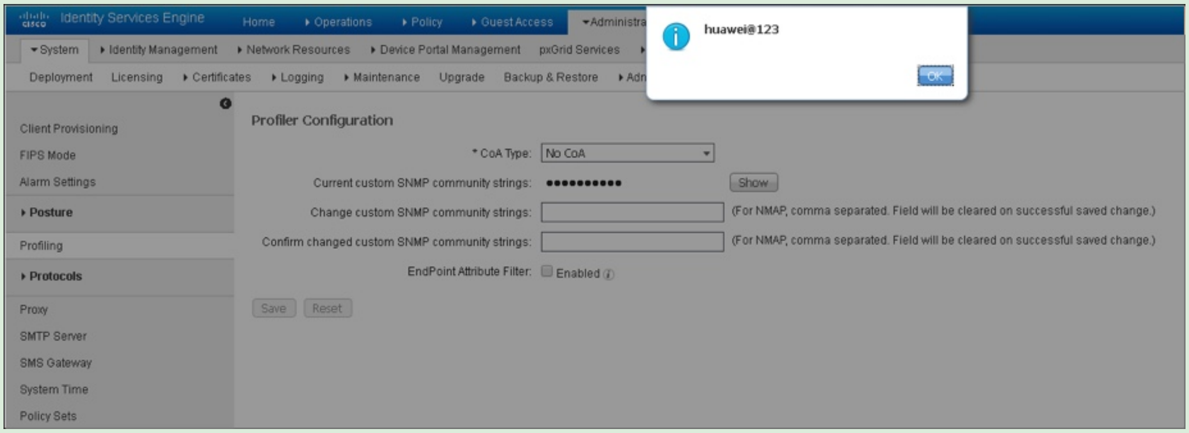
Configuration:

1. Configure the Huawei S switch.



```
[Tolly_auth]dis current-configuration  | include  snmp
snmp-agent
snmp-agent local-engineid 800007DB03FCE33C996AC0
snmp-agent community write cipher %^%#4VC@)IbjZ!!Uxf2YjI~Ca#_4.F;;WE@$P.9e0a+PL!
9u-v)>%'P-c#DLcTD(,nU1(kg_hXZSwR,o<xrB%^%#
snmp-agent sys-info version all
[Tolly_auth]_
```

Configure the Cisco ISE server



huawei@123

Profiler Configuration

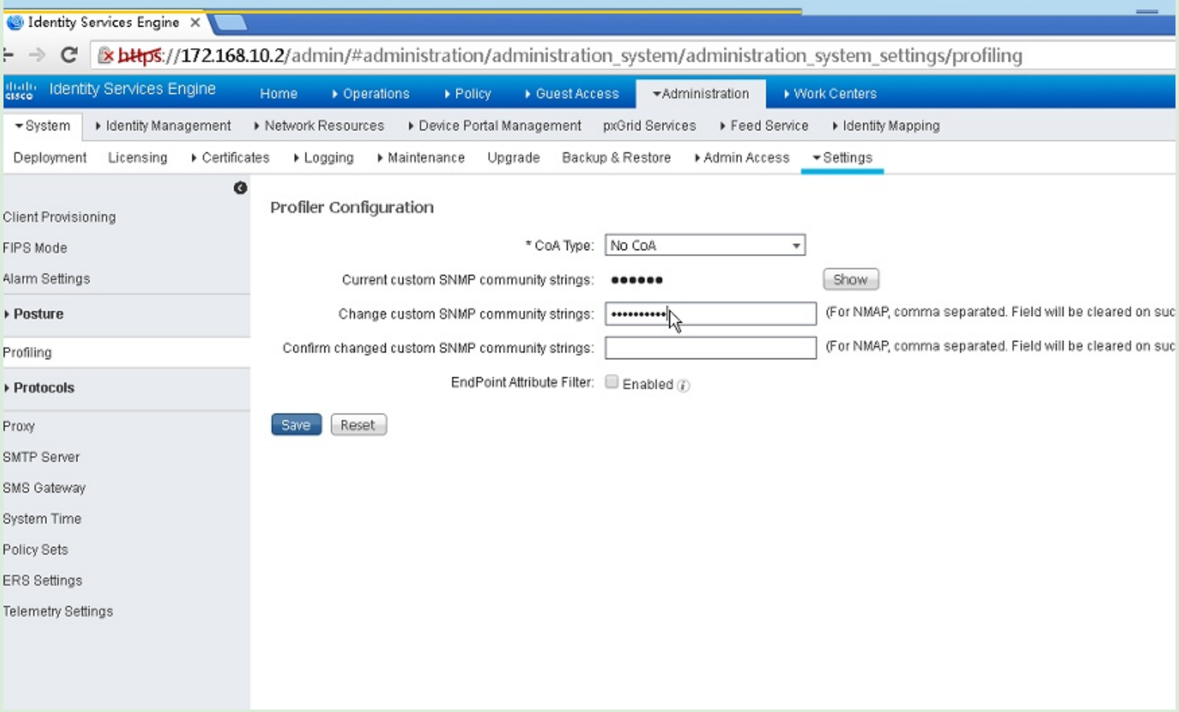
* CoA Type: No CoA

Current custom SNMP community strings: ●●●●●●●●●●●

Change custom SNMP community strings: (For NMAP, comma separated. Field will be cleared on successful saved change.)

Confirm changed custom SNMP community strings: (For NMAP, comma separated. Field will be cleared on successful saved change.)

EndPoint Attribute Filter: □ Enabled



https://172.168.10.2/admin/#administration/administration_system/administration_system_settings/profiling

Profiler Configuration

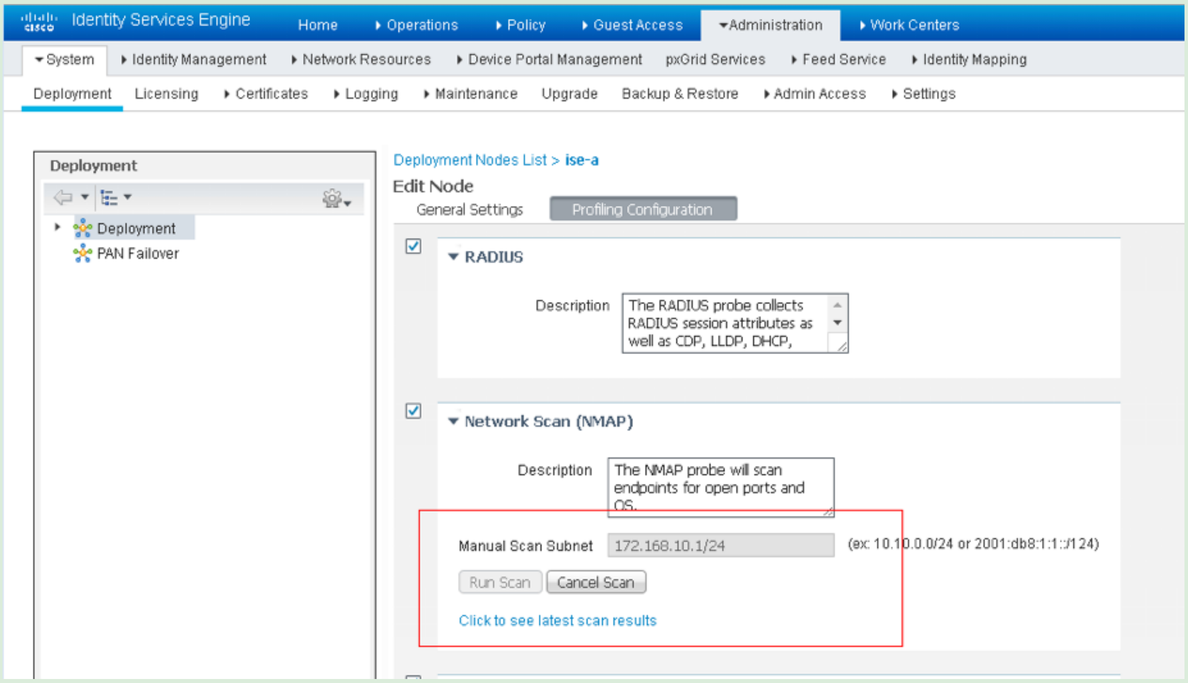
* CoA Type: No CoA

Current custom SNMP community strings: ●●●●●●

Change custom SNMP community strings: ●●●●●●●●●● (For NMAP, comma separated. Field will be cleared on suc

Confirm changed custom SNMP community strings: (For NMAP, comma separated. Field will be cleared on suc

EndPoint Attribute Filter: □ Enabled



Deployment Nodes List > ise-a

Edit Node

General Settings | Profiling Configuration

☑ RADIUS

Description: The RADIUS probe collects RADIUS session attributes as well as CDP, LLDP, DHCP,

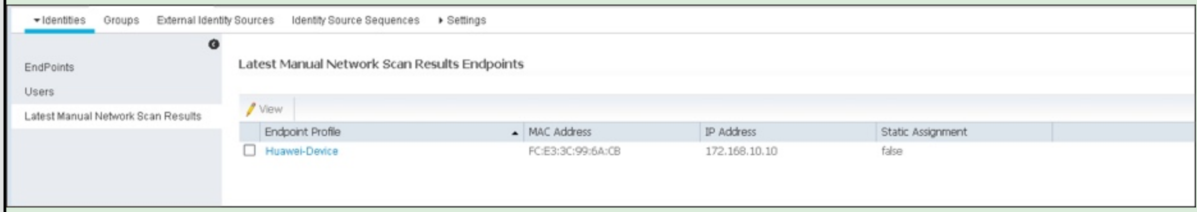
☑ Network Scan (NMAP)

Description: The NMAP probe will scan endpoints for open ports and OS.

Manual Scan Subnet: 172.168.10.1/24 (ex: 10.10.0.0/24 or 2001:db8:1:1::/124)

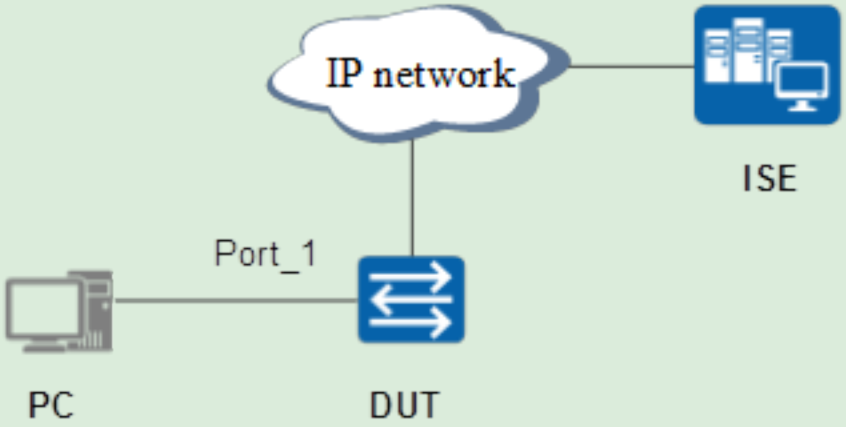
Test Results

2. Check the scanning result, and the device's IP address and MAC address are displayed. The terminal type is identified based on the OUI.


Identities
Groups
External Identity Sources
Identity Source Sequences
Settings
EndPoints
Users
Latest Manual Network Scan Results
View

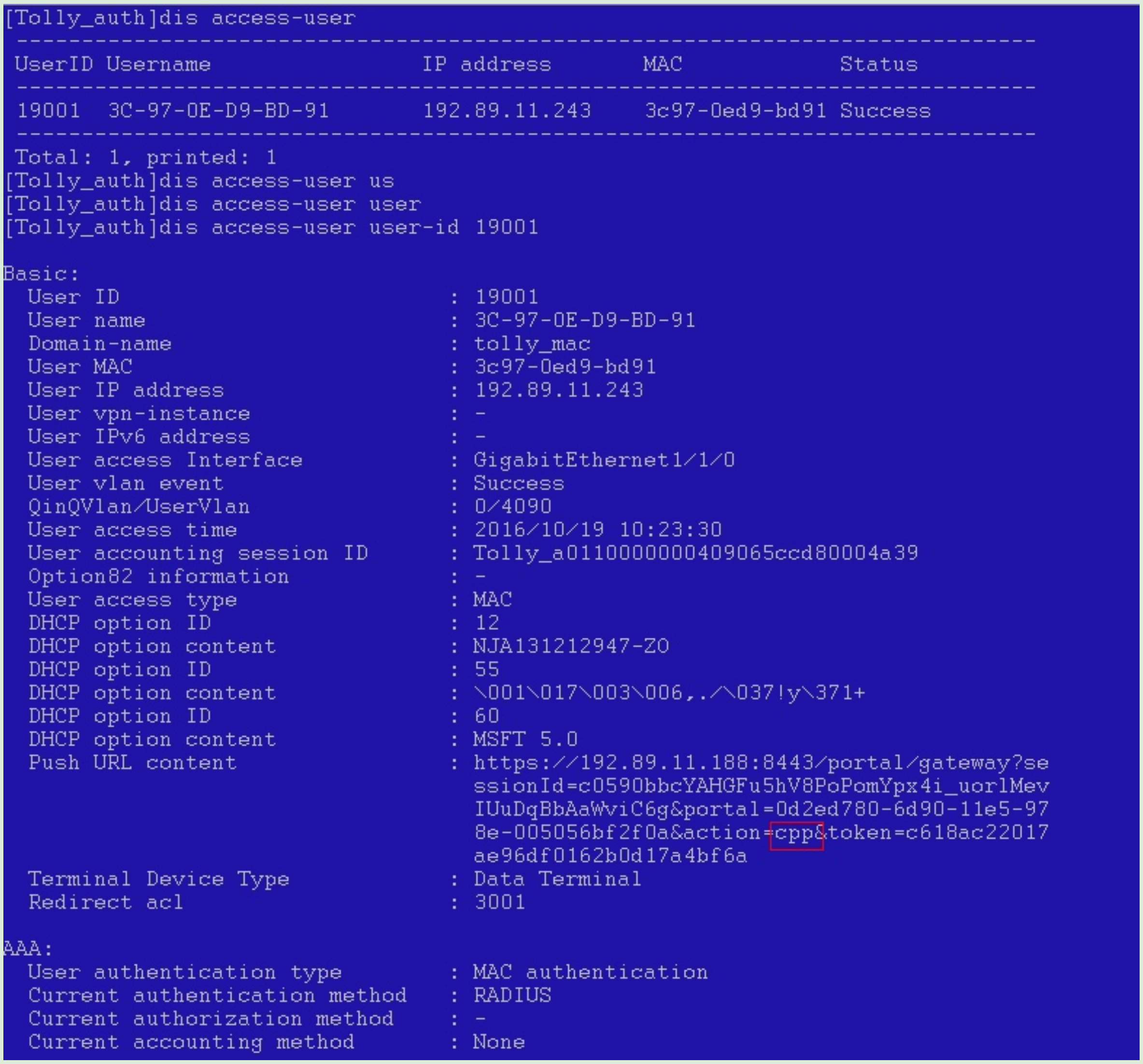
Latest Manual Network Scan Results Endpoints

	Endpoint Profile	MAC Address	IP Address	Static Assignment
☐	Huawei-Device	FC:E3:3C:99:6A:CB	172.168.10.10	false

Test 6.1	Posture Assessment with the Cisco ISE and the Cisco NAC Appliance Agent
Objective	Verify posture assessment with a Huawei S switch works as the access control switch, the Cisco ISE server works as the authentication (RADIUS) server, and the Cisco NAC appliance agent.
Procedure	1. User terminals without the NAC-agent access the DUT in wired mode. Expected result 1 is displayed. 2. After the NAC-agent is installed, the agent checks the user terminals and sends the result to the ISE server. Expected result 2 is displayed. 3. The ISE server sends the CoA re-authentication to terminal devices that have passed the check. Expected result 3 is displayed. 
Pass Criteria	Result 1: The ISE server detects the lack of the NAC-agent on the device through MAC authentication, and delivers the redirection URL to the NAC-agent download page. The user terminal then downloads and installs the NAC-agent through the redirection URL. Result 2: When a terminal fails the check, the ISE server redirects the terminal to an URL for software repairing. The terminal check will not be ended until the terminal passes the check. Result 2: The device responds to CoA re-authentication, and the user's interface is authorized so that the user is granted the network access permission.

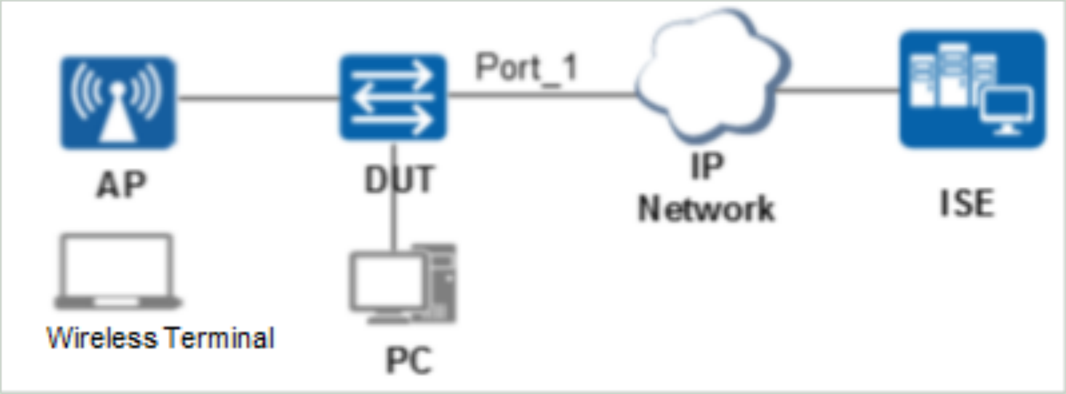
Test Results

1. After the user goes online, the server redirects the user to the URL of the cpp page.



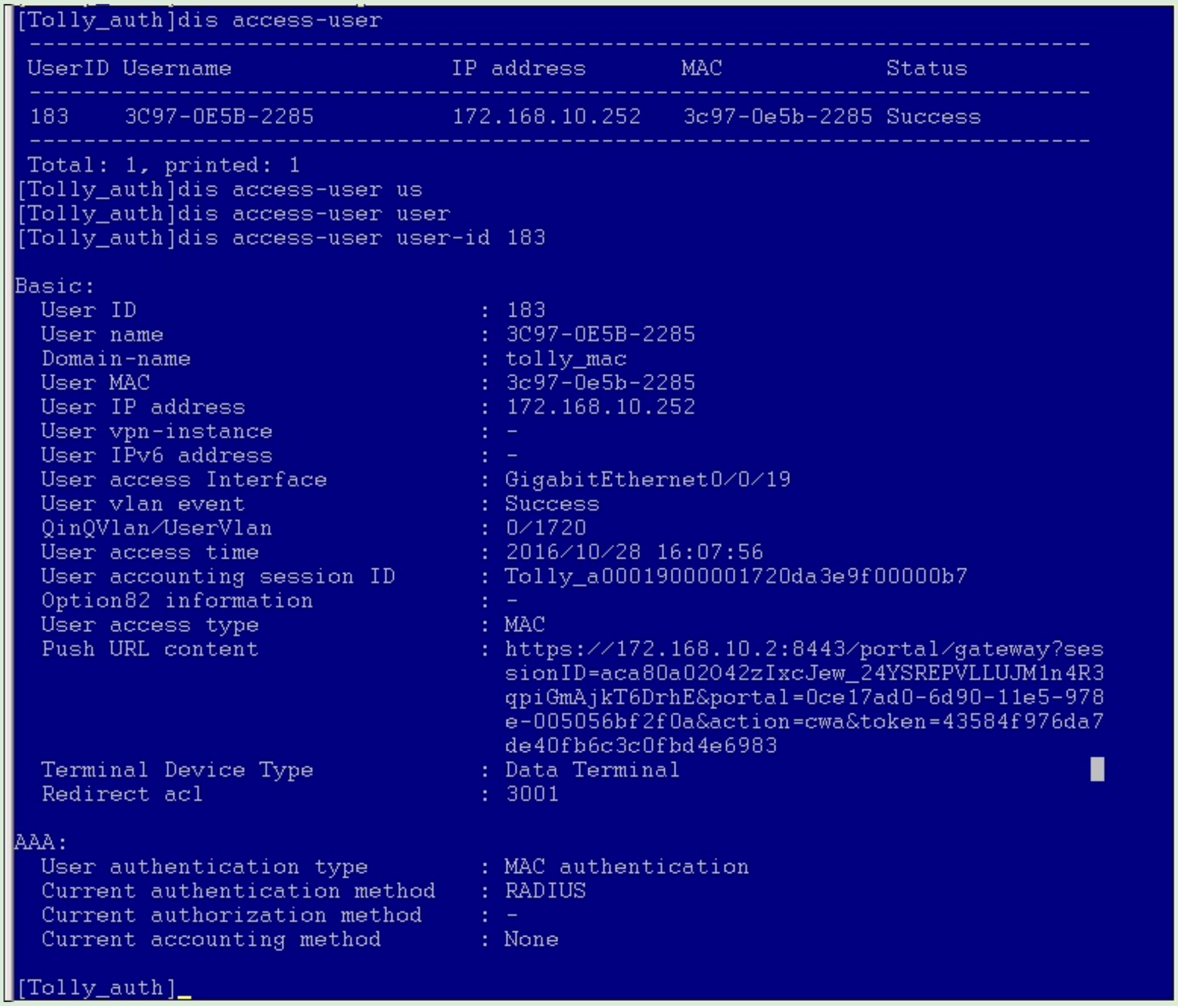
```
[Tolly_auth]dis access-user
 ------------------------------------------------------------------------------
 UserID Username                IP address       MAC            Status
 ------------------------------------------------------------------------------
 19001  3C-97-0E-D9-BD-91       192.89.11.243    3c97-0ed9-bd91 Success
 ------------------------------------------------------------------------------
 Total: 1, printed: 1
[Tolly_auth]dis access-user us
[Tolly_auth]dis access-user user
[Tolly_auth]dis access-user user-id 19001

Basic:
  User ID                           : 19001
  User name                         : 3C-97-0E-D9-BD-91
  Domain-name                       : tolly_mac
  User MAC                          : 3c97-0ed9-bd91
  User IP address                   : 192.89.11.243
  User vpn-instance                 : -
  User IPv6 address                 : -
  User access Interface             : GigabitEthernet1/1/0
  User vlan event                   : Success
  QinQVlan/UserVlan                 : 0/4090
  User access time                  : 2016/10/19 10:23:30
  User accounting session ID        : Tolly_a0110000000409065ccd80004a39
  Option82 information              : -
  User access type                  : MAC
  DHCP option ID                    : 12
  DHCP option content               : NJA131212947-ZO
  DHCP option ID                    : 55
  DHCP option content               : \001\017\003\006,./\037!y\371+
  DHCP option ID                    : 60
  DHCP option content               : MSFT 5.0
  Push URL content                  : https://192.89.11.188:8443/portal/gateway?se
                                      ssionId=c0590bbcYAHGFu5hV8PoPomYpx4i_uorlMev
                                      IUuDqBbAaWviC6g&portal=0d2ed780-6d90-11e5-97
                                      8e-005056bf2f0a&action=cpp&token=c618ac22017
                                      ae96df0162b0d17a4bf6a
  Terminal Device Type              : Data Terminal
  Redirect acl                      : 3001

AAA:
  User authentication type          : MAC authentication
  Current authentication method     : RADIUS
  Current authorization method      : -
  Current accounting method         : None
```

2. After opening the page, the user is redirected to the cpp page to check whether the NAC agent exists.
3. The NAC agent is installed successfully.
4. Start the NAC agent for terminal status check. Check whether the command is running. The check result shows that the command process has not been started, which indicates that the check fails.
5. Click Repair to invoke the command process and check the NAC agent again. The result shows that the check succeeds and network permissions are granted to the user.

Test 6.2	Guest Management (Guest self-registration and authentication)
Objective	Verify guest management when a Huawei S switch works as the access control switch and the Cisco ISE server works as the authentication (RADIUS) server.
Procedure	1. Configure the switch's IP address so that the switch can communicate with the ISE server. 2. Configure the management VLAN10, and assign IP addresses to APs. Configure network access for APs. 3. Configure the RADIUS server on the switch. 4. Configure the aaa profile. 5. Configure the MAC authentication profile. 6. Configure the CoA authorization server. 7. Configure the ACL redirection on the switch. 8. Users access the network in wired mode for MAC authentication. Expected result 1 is displayed. 9. Open a web page and access any website. Enter the user name and password for authentication. Expected result 2 is displayed.  Port_1 AP DUT IP Network ISE Wireless Terminal PC
Pass Criteria	Result 1: When the user accesses the network for MAC authentication, the server delivers URL and redirection ACL. Open a browser and enter any IP address in the address bar, the page is redirected to the Portal authentication page. Result 2: After entering the user name and password, the user passes the Portal authentication successfully.

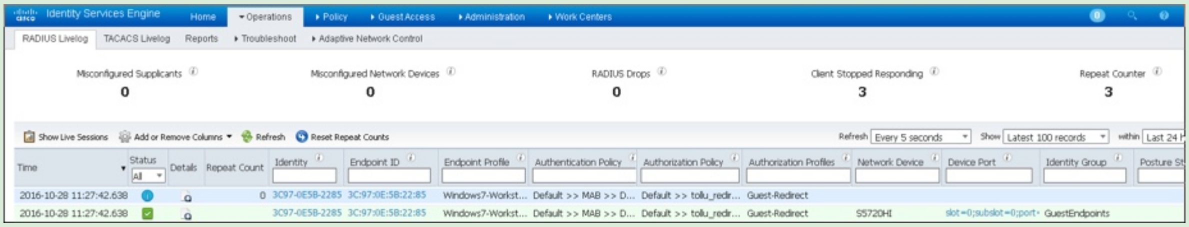
Test Results

1. When a new user accesses the network, he must pass the MAC authentication first. After the authentication succeeds, the page is redirected to the guest management page. A user can log in to the system using a registered account or a new user can register an account first.



```
[Tolly_auth]dis access-user
 ------------------------------------------------------------------------------
 UserID Username                IP address       MAC            Status
 ------------------------------------------------------------------------------
 183    3C97-0E5B-2285          172.168.10.252   3c97-0e5b-2285 Success
 ------------------------------------------------------------------------------
 Total: 1, printed: 1
[Tolly_auth]dis access-user us
[Tolly_auth]dis access-user user
[Tolly_auth]dis access-user user-id 183

Basic:
  User ID                          : 183
  User name                        : 3C97-0E5B-2285
  Domain-name                      : tolly_mac
  User MAC                         : 3c97-0e5b-2285
  User IP address                  : 172.168.10.252
  User vpn-instance                : -
  User IPv6 address                : -
  User access Interface            : GigabitEthernet0/0/19
  User vlan event                  : Success
  QinQVlan/UserVlan                : 0/1720
  User access time                 : 2016/10/28 16:07:56
  User accounting session ID       : Tolly_a00019000001720da3e9f00000b7
  Option82 information             : -
  User access type                 : MAC
  Push URL content                 : https://172.168.10.2:8443/portal/gateway?ses
                                     sionID=aca80a02042zIxcJew_24YSREPVLLUJM1n4R3
                                     qpiGmAjkT6DrhE&portal=0ce17ad0-6d90-11e5-978
                                     e-005056bf2f0a&action=cwa&token=43584f976da7
                                     de40fb6c3c0fbd4e6983
  Terminal Device Type             : Data Terminal
  Redirect acl                     : 3001

AAA:
  User authentication type         : MAC authentication
  Current authentication method    : RADIUS
  Current authorization method     : -
  Current accounting method        : None

[Tolly_auth]_
```

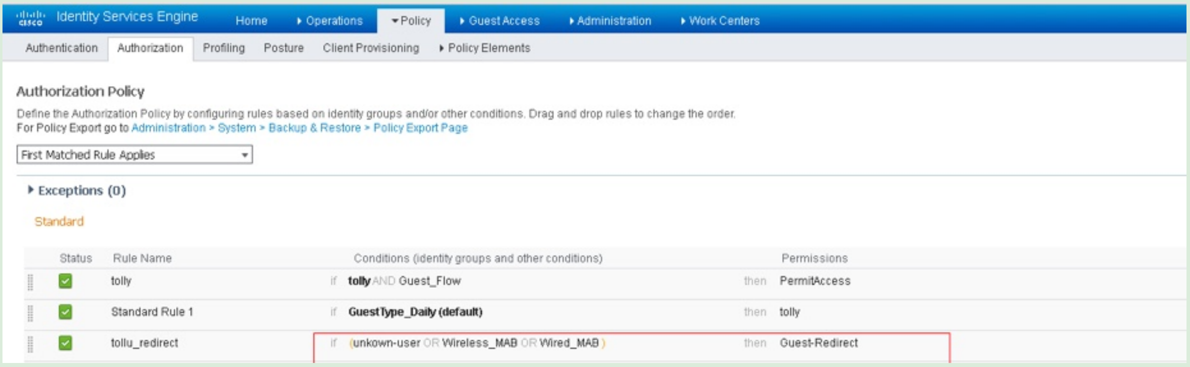
Test Results



Misconfigured Supplicants	Misconfigured Network Devices	RADIUS Drops	Client Stopped Responding	Repeat Counter
0	0	0	3	3

Refresh Every 5 seconds Show Latest 100 records within Last 24 H

Time	Status	Details	Repeat Count	Identity	Endpoint ID	Endpoint Profile	Authentication Policy	Authorization Policy	Authorization Profiles	Network Device	Device Port	Identity Group	Posture St
2016-10-28 11:27:42.638	●		0	3C97-0E5B-2285	3C:97:0E:5B:22:85	Windows7-Workst...	Default >> MAB >> D...	Default >> tollu_redir...	Guest-Redirect				
2016-10-28 11:27:42.638	✓			3C97-0E5B-2285	3C:97:0E:5B:22:85	Windows7-Workst...	Default >> MAB >> D...	Default >> tollu_redir...	Guest-Redirect	S5720HI	slot=0;subslot=0;port=	GuestEndpoints	



Authorization Policy

Define the Authorization Policy by configuring rules based on identity groups and/or other conditions. Drag and drop rules to change the order.
For Policy Export go to Administration > System > Backup & Restore > Policy Export Page

First Matched Rule Applies

Exceptions (0)

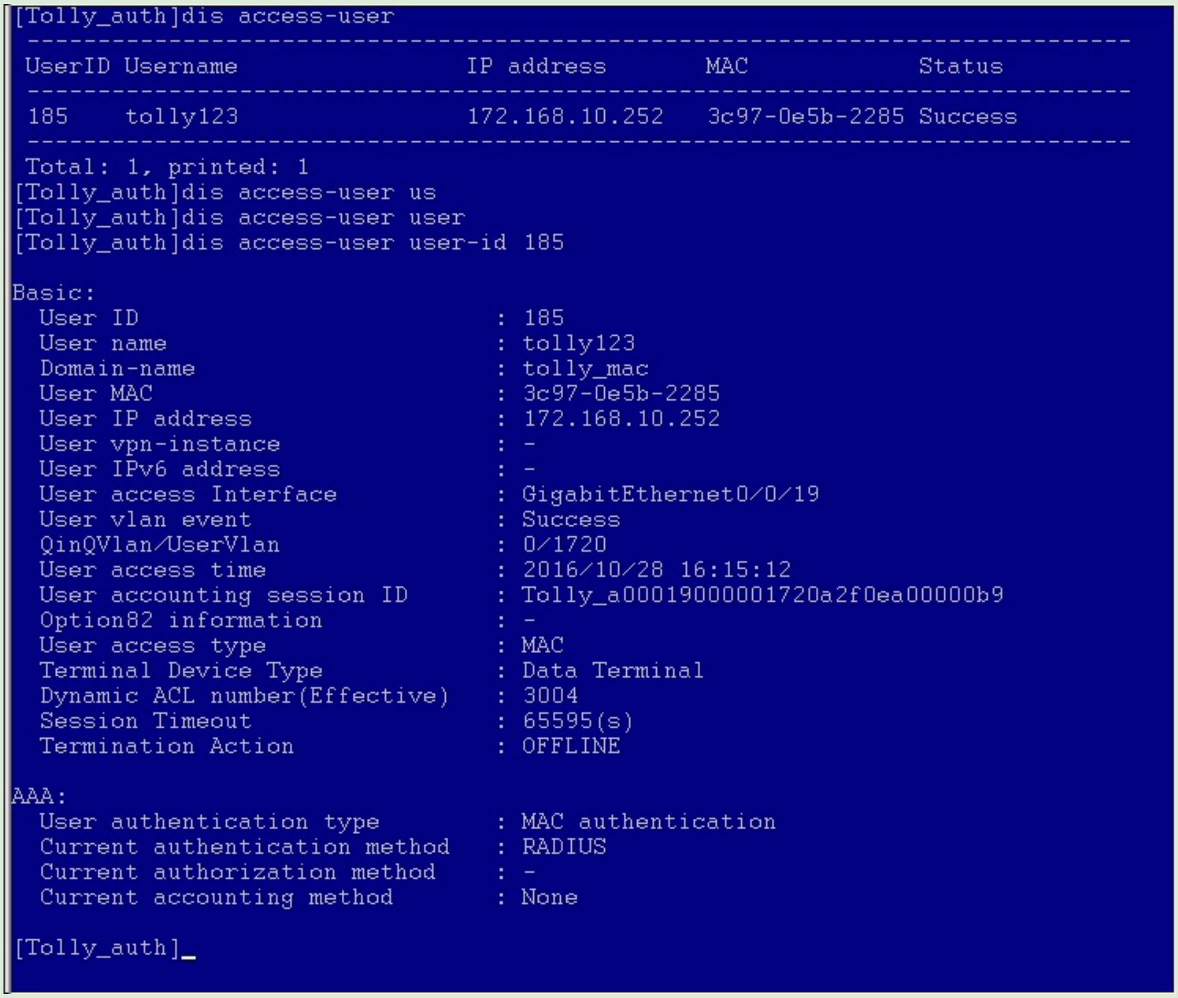
Standard

Status	Rule Name		Conditions (identity groups and other conditions)		Permissions
✓	tolly	if	tolly AND Guest_Flow	then	PermitAccess
✓	Standard Rule 1	if	GuestType_Daily (default)	then	tolly
✓	tollu_redirect	if	(unkown-user OR Wireless_MAB OR Wired_MAB)	then	Guest-Redirect

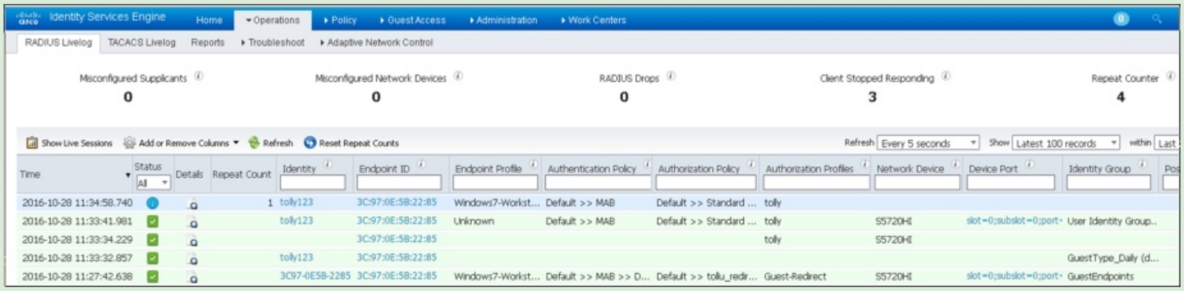
2. After a user registers an account, the system disconnect the user through CoA. The user should log in again using the new account.

3. After new users log in to the system, the server authorizes new policies to users so that they can obtain new permissions.

Test Results



```
[Tolly_auth]dis access-user
 ------------------------------------------------------------------------------
 UserID Username                    IP address       MAC            Status
 ------------------------------------------------------------------------------
 185    tolly123                    172.168.10.252   3c97-0e5b-2285 Success
 ------------------------------------------------------------------------------
 Total: 1, printed: 1
[Tolly_auth]dis access-user us
[Tolly_auth]dis access-user user
[Tolly_auth]dis access-user user-id 185

Basic:
  User ID                           : 185
  User name                         : tolly123
  Domain-name                       : tolly_mac
  User MAC                          : 3c97-0e5b-2285
  User IP address                   : 172.168.10.252
  User vpn-instance                 : -
  User IPv6 address                 : -
  User access Interface             : GigabitEthernet0/0/19
  User vlan event                   : Success
  QinQVlan/UserVlan                 : 0/1720
  User access time                  : 2016/10/28 16:15:12
  User accounting session ID        : Tolly_a00019000001720a2f0ea00000b9
  Option82 information              : -
  User access type                  : MAC
  Terminal Device Type              : Data Terminal
  Dynamic ACL number(Effective)     : 3004
  Session Timeout                   : 65595(s)
  Termination Action                : OFFLINE

AAA:
  User authentication type          : MAC authentication
  Current authentication method     : RADIUS
  Current authorization method      : -
  Current accounting method         : None

[Tolly_auth]_
```

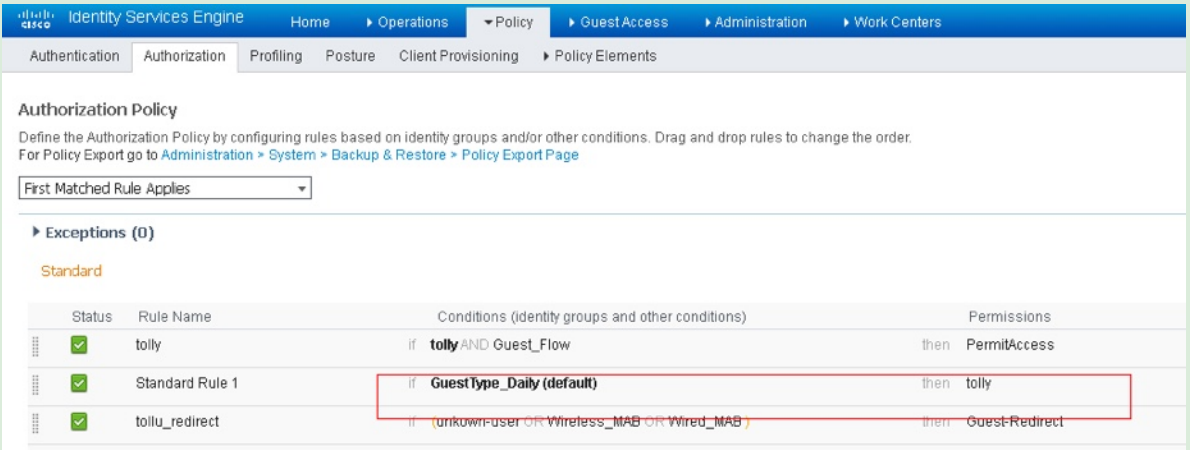


Misconfigured Supplicants	Misconfigured Network Devices	RADIUS Drops	Client Stopped Responding	Repeat Counter
0	0	0	3	4

Refresh: Every 5 seconds · Show: Latest 100 records · within: Last

Time	Status	Details	Repeat Count	Identity	Endpoint ID	Endpoint Profile	Authentication Policy	Authorization Policy	Authorization Profiles	Network Device	Device Port	Identity Group	Pos
2016-10-28 11:34:58.740	●		1	tolly123	3C:97:0E:5B:22:85	Windows7-Workst...	Default >> MAB	Default >> Standard ...	tolly				
2016-10-28 11:33:41.981	☑			tolly123	3C:97:0E:5B:22:85	Unknown	Default >> MAB	Default >> Standard ...	tolly	S5720HI	slot=0;subslot=0;port=	User Identity Group..	
2016-10-28 11:33:34.229	☑				3C:97:0E:5B:22:85				tolly	S5720HI			
2016-10-28 11:33:32.857	☑			tolly123	3C:97:0E:5B:22:85							GuestType_Daily (d...	
2016-10-28 11:27:42.638	☑			3C97-0E5B-2285	3C:97:0E:5B:22:85	Windows7-Workst...	Default >> MAB >> D...	Default >> tollu_redir...	Guest-Redirect	S5720HI	slot=0;subslot=0;port=	GuestEndpoints	

Test Results



Authorization Policy

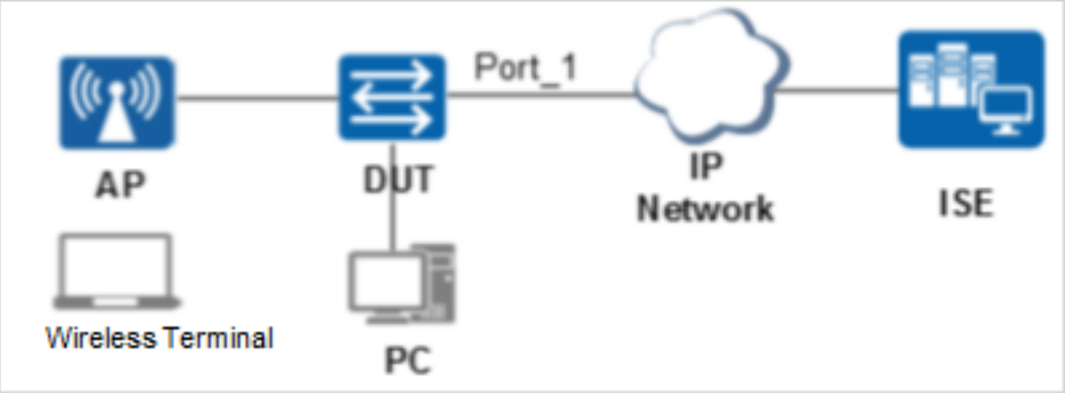
Define the Authorization Policy by configuring rules based on identity groups and/or other conditions. Drag and drop rules to change the order.
For Policy Export go to Administration > System > Backup & Restore > Policy Export Page

First Matched Rule Applies

Exceptions (0)

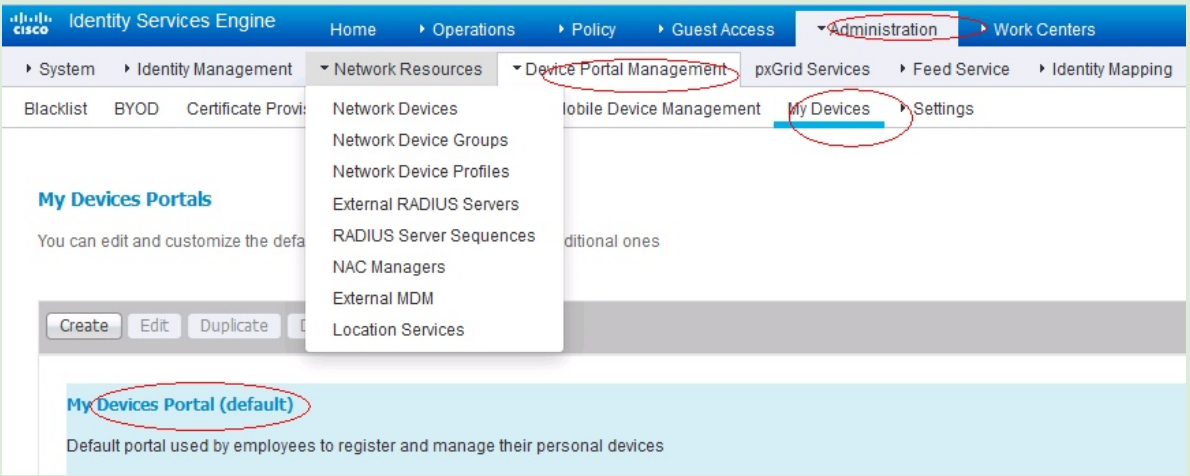
Standard

Status	Rule Name		Conditions (identity groups and other conditions)		Permissions
☑	tolly	if	**tolly** AND Guest_Flow	then	PermitAccess
☑	Standard Rule 1	if	**GuestType_Daily (default)**	then	tolly
☑	tollu_redirect	if	(unkown-user OR Wireless_MAB OR Wired_MAB)	then	Guest-Redirect

Test 6.3	BYOD (BYOD device self-registration and authentication)
Objective	Verify BYOD when a Huawei S switch works as the access control switch and the Cisco ISE server works as the authentication (RADIUS) server.
Procedure	1. Configure the switch's IP address so that the switch can communicate with the ISE server. 2. Configure the management VLAN10, and assign IP addresses to APs. Configure network access for APs. 3. Configure the RADIUS server on the switch. 4. Configure the aaa profile. 5. Configure the MAC authentication profile. 6. Configure the CoA authorization server. 7. Configure the ACL redirection on the switch. 8. Register users on the ISE server. Expected result 1 is displayed. 9. Users access the network in wireless mode. Expected result 2 is displayed.  Port_1 AP DUT IP Network ISE Wireless Terminal PC
Pass Criteria	Result 1: The user registers the access device on the ISE server successfully. Result 2: After entering the user name and password, the user passes the Portal authentication successfully.

Test Results

1. All internal employees must go to the specified website page (My Devices Portal) to register their own BYOD devices.

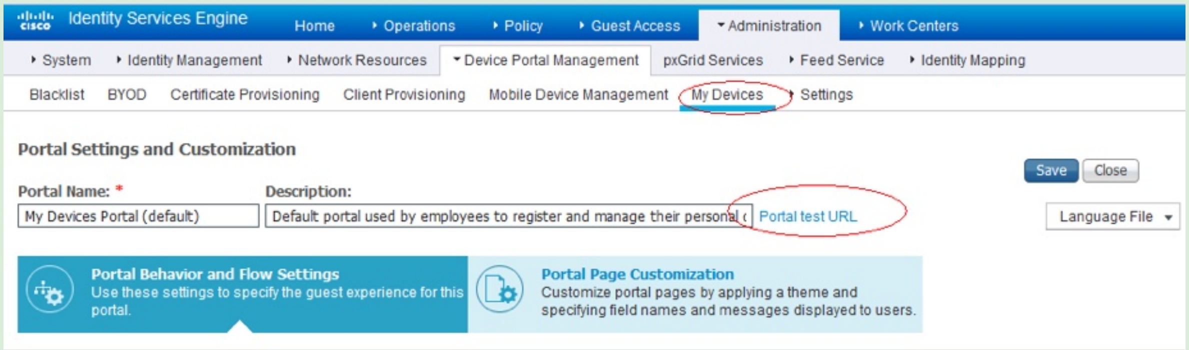


My Devices Portals

You can edit and customize the defa ditional ones

My Devices Portal (default)

Default portal used by employees to register and manage their personal devices



Portal Settings and Customization

Portal Name: * My Devices Portal (default)

Description: Default portal used by employees to register and manage their personal

Portal Behavior and Flow Settings
Use these settings to specify the guest experience for this portal.

Portal Page Customization
Customize portal pages by applying a theme and specifying field names and messages displayed to users.

2. Enter an employee account.
3. Click Adding a Device.
4. Add a device, and the device ID must be the mobile phone's MAC address.
5. The user has registered the BYOD device successfully, and has to register again on the BYOD device when he uses the device to log in.
6. The mobile phone connects to the wireless network. After the user enters any website in the address bar of a browser, the webpage will be redirected to the ISE server's BYOD page.
7. Click Start to enter the registered user name. The ISE obtains the mobile phone's MAC address.
8. Click Continue to download the TLS certificate and configuration files from the ISE server for login.
9. After the certificate is installed, the ISE server disconnects the user through CoA. The mobile phone goes online after re-authentication and obtains the network access permission based on configuration files and the TLS certificate.

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