

# Wireless 802.1x authentication integration with NPS

**Implementation Cookbook** 



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# Preface

# Intended Audience

This document is intended for:

- Network engineers
- Technical support and servicing engineers
- Network administrators

# **Technical Support**

- The official website of Ruijie Reyee: <u>https://www.ruijienetworks.com/products/reyee</u>
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### Conventions

# 1. GUI Symbols

Interface symbol	Description	Example
Boldface	<ol> <li>Button names</li> <li>Window names, tab name, field name and menu items</li> <li>Link</li> </ol>	<ol> <li>Click OK.</li> <li>Select Config Wizard.</li> <li>Click the Download File link.</li> </ol>
>	Multi-level menus items	Select System > Time.

# 2. Signs

This document also uses signs to indicate some important points during the operation. The meanings of these signs are as follows:

# Warning

An alert that calls attention to important rules and information that if not understood or followed can result in data loss or equipment damage.

# 🛕 Note

An alert that calls attention to essential information that if not understood or followed can result in function failure or performance degradation.

### Instruction

An alert that contains additional or supplementary information that if not understood or followed will not lead to serious consequences.

Specification

An alert that contains a description of product or version support.

# 3. Instruction

This manual is used to guide users to understand the product, install the product, and complete the configuration.

- The example of the port type may be different from the actual situation. Please proceed with configuration according to the port type supported by the product.
- The example of display information may contain the content of other product series (such as model and description). Please refer to the actual display information.
- The routers and router product icons involved in this manual represent common routers and layer-3 switches running routing protocols.

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# **1** NPS Server Deployment

This chapter will introduce how to deploy a NPS server on Windows Server 2008 R2 Enterprise to integrate AD domain authentication and Wireless dot1x authentication. AD domain server, AD license server, DNS server, WEB server (IIS) and NPS server.

# 1.1 Operating System of NPS Server

Server Type	Operating System	Note
Windows NPS Server	Windows Server 2008 R2 Enterprise	Provide certificate application, issuance, revocation and other services

# 1.2 Install AD Domain Server

# 1.2.1 Change the DNS address of the server

Open WIN+R and input 'ncpa.cpl' to enter 'Network Connection' page. Choose the NIC and enter the configuration page by click 'Properties' to change the preferred DNS server as the local IP address: 127.0.0.1

Computer			
Recycle Bir			
🖻 Run		×	
	Type the name of a program, folder, document, or Internet resource, and Windows will open it for you.		
Open:	ncpa.cpl		
	OK     Cancel     Browse		
Start	🛃 🜌 🚞 📼		* 🕑 🐌 🚯 5:45 PM 9/11/2023 📼



# 1.2.2 Add roles for 'Active Directory Domain Server'

Click "[Start>>[Administrative Tools] >>[Server Manager]" and click [Roles] in the left menus and then click 'Add Roles'

Computer Command Prompt Command Prompt Notepad Command Prompt Internet Explorer	Administrator Documents Computer Network Control Panel Devices and Printers Administrative Tools	Remote Desktop Services         Component Services         Computer Management         Data Sources (ODBC)         Event Viewer         SCSI Initiator         Local Security Policy         Performance Monitor         Security Configuration Wizard         Services         Services         Share and Storage Management         Storage Explorer         System Configuration         Vindows Firewall with Advanced Security         Windows Server Backup	
All Programs	Help and Support		
Search programs and files	Log off		
🍂 Start 🛃 🖉 📑			* P 10:55 AM

# Click "Add Roles"





(1) Select 'Active Directory Domain Services' and click 'Next'

Add Roles Wizard		X
Select Server Ro	les	
Before You Begin Server Roles Active Directory Domain Services Confirmation Progress Results	Select one or more roles to install on this server.         Roles:         Active Directory Certificate Services         Active Directory Pomain Services         Active Directory Pightweight Directory Services         Active Directory Rights Management Services         DHCP Server         DHCP Server         Pisa Server         File Services         Hyper-V         Network Policy and Access Services         Web Server (IIS)         Windows Deployment Services         Windows Server Update Services         Windows Server roles	>       Install       Cancel

**Select Server Roles** 



Active Directory Domain Services Introduction

(2) Click 'Install' to install domain services

Add Roles Wizard		×
Confirm Installa	tion Selections	
NS Before You Begin Server Roles Active Directory Domain Services	To install the following roles, role services, or features, click Install.	
Confirmation	(i) This server might need to be restarted after the installation completes.	
Progress	Active Directory Domain Services	
Results	After you install the AD DS role, use the Active Directory Domain Services Installation Wizard (dcpromo.exe) to make the server a fully functional domain controller.     MIET Framework 3.5.1 Features	
	Print, e-mail, or save this information  < Previous Next > Install Cancel	

**Confirm Installation Selections** 

Add Roles Wizard		
Installation Pro	gres	s
Before You Begin		The following roles, role services, or features are being installed:
Server Roles		Active Directory Domain Services
Active Directory Domain Services		.NET Framework 3.5.1 Features
Confirmation		
Results		
	43	
		😤 🗖
		<ul> <li>Installing</li> </ul>
		< Previous Next > Install Cancel

(3) Click 'Close' after Domain Services is installed

Add Roles Wizard			×
Installation Resu	lts		
Before You Begin Server Roles Active Directory Domain Services Confirmation Progress	The following roles, role services, or features we 1 warning, 1 informational messages below Windows automatic updating is not enable automatically updated, turn on Windows to	ere installed successfully: v ed. To ensure that your newly-installed role or feature is Jpdate in Control Panel.	
Results	Active Directory Domain Services The following role services were installed:     Active Directory Domain Controller     Use the Active Directory Domain Service:     fully functional domain controller.     Close this wizard and launch the Active Directory     .NET Framework 3.5.1 Features	Installation succeeded Installation Wizard (dcpromo.exe) to make the server a tory Domain Services Installation Wizard (dcpromo.exe). Installation succeeded	
	The following features were installed: .NET Framework 3.5.1		
	Print, e-mail, or save the installation report	evious Next.> Close Cancel	

Installation Results

# 1.2.3 Install Active Directory Domain Controller

(1) [Active Directory Domain Services Installation Wizard] to click User Advanced Mode Installation'



Select "Use advanced mode installation"

(2) Click 'Next' after the 'Operating System Compatibility' pops up



Select Operating System Compatibility

(3) Choose an domain configuration as "Create a new domain in a new forest" .

Active Directory Domain Services Installation Wizard	×
Choose a Deployment Configuration You can create a domain controller for an existing forest or for a new forest.	
C Existing forest	
C Add a domain controller to an existing domain	
$\ensuremath{\bigwedge}^{\ensuremath{\bigcirc}}$ Create a new domain in an existing forest. This server will become the first domain controller in the new domain.	
Create a new domain tree root instead of a new child domain	
Create a new domain in a new forest	
More about possible deployment configurations	
< Back Next >	Cancel

Create a new domain in a new forest

(4) If the following error message is displayed when you click Next, enter 'net user username password /passwordreq:yes' in the command line.



Local Administrator account does not meet requirements

(5) Name the domain: because this is the first domain in the forest, so this domain is also the root domain.

ctive Directory Domain Services Installation Wizard	
Iame the Forest Root Domain The first domain in the forest is the forest root domain. Its name is also the nar the forest.	ne of
Type the fully qualified domain name (FQDN) of the new forest root domain.	
FQDN of the forest root domain:	
ruijie007.com	
Example: corp.contoso.com	
(Beats News)	Connel

#### Enter Root domain name

The domain is named as ruijie007.com here, but you can name based on your requirement.

main NetBIOS Name This is the name that users ( new domain.	of earlier versions of Windows will use to identify the
The wizard generates a defa have selected advanced mo name.	ault NetBIOS name. This sizard page appears only if you ode or the wizard has detected a conflict with the default
Either accept the name that then click Next.	has been generated by the wizard or type a new name and
Domain NetBIOS name:	RUINIE007

**Domain NetBIOS Name** 

The default NetBIOS name is from the domain name before .com. So the default NetBIOS name in this test is RUIJIE007

(6) Set "Set Forest Functional Level". The forest functional level you choose here will affect the domain controller added

Forest fur	ctional level;	
Window	s Server 2003	-
Details:		
available features: -	in Windows 2000 forest functional level, and the following additional Linked-value replication, which improves the replication of changes to group memberships. More efficient generation of complex replication topologies by the KCC. Forest trust, which allows organizations to easily share	
Δ	You will be able to add only domain controllers that are running Windows Server 2003 or later to this forest.	
More abo	ut domain and forest functional levels	
Nore abo	ut <u>domain and forest functional levels</u>	

Set Forest Functional Level

Set Domain Functional Level. In order for a domain to be more powerful, the domain functional level should try to set the lowest operating system used in the domain.



Set Domain Functional Level

(7) Check the DNS Configuration after clicking 'Next'

Active Directory Domain Services Installation Wizard
Set Domain Functional Level Select the domain functional level.
Domain functional level:
Windows Server 2003
Details:
The features all features at following adds - Cor adv - Cor adv - Last - Upd - Yc - W - More about domain and forest functional levels
< Back Next > Cancel

Check DNS configuration

(8) Since we have not installed the DNS service yet, you will need to check "DNS Server".

litional Domain Controller Options	
Select additional options for this domain co	ontroller.
DNS server	
🔽 Global catalog	
E Read-only domain controller (RODC)	
Additional information:	
We recommend that you install the DNS controller.	Server service on the first domain
We recommend that you install the DNS controller. More about <u>additional domain controller of</u>	Server service on the first domain

Install DNS Server

(9) Ignore the displayed warning information and click 'Yes, the computer will use an IP address automatically assigned by a DHCP server (not recommended)' and click 'Next'.

E.	Server Manager		
F	Active Directo	ry Domain Services Installation Wizard	
	Additional Dor	main Controller Options	
E			
Ľ	Select additi	Static IP assignment	luding user logon
E E	🔽 DNS se 🔽 Global	This computer has dynamically assigned IP address(es)	
E	Additional i The first dicannot be	This computer has at least one physical network adapter that does not have static IP address(es) assigned to its IP Properties. If both IPv4 and IPv6 are enabled for a network adapter, both IPv4 and IPv6 static IP addresses should be assigned to both IPv4 and IPv6 Properties of the physical network adapter. Such static IP address(es) assignment should be done to all the physical network adapters for reliable Domain Name System (DNS) operation.	n Services
	controller.	Yes, the computer ill use an IP address automatically assigned by a DHCP server (not recommended)	
H		No, I will assign static IP addresses to all physical network adapters.	
	More about	More about configuring TCP/IP and DNS Client settings.	
		< Back Next > Cancel	



Install DNS Server

(10) Configure the location for Database, Log Files, and SYSVOL. Generally, it's recommended to set two different locations for database and log files.

Active Directory Domain Services Installation Wizard	×
Location for Database, Log Files, and SYSVOL Specify the folders that will contain the Active Directory domain control database, log files, and SYSVOL.	ler
For better performance and recoverability, store the database and log f volumes.	iles on separate
Database folder:	
C:\Windows\NTDS	Browse
Log files folder:	
C:\Windows\NTDS	Browse
SYSVOL folder:	
C:\Windows\SYSVOL	Browse
More about placing Active Directory Domain Services files	
< Back Next	> Cancel

Set the location for Database, Log Files and SYSVOL

(11) Set Directory Services Restore Mode Administrator Password。 It will be needed if you need to recover the Active Directory from backup.

The Directory Services R Administrator account.	estore Mode Administrator account is different from the domain
Assign a password for the controller is started in Dire choose a strong password	Administrator account that will be used when this domain actory Services Restore Mode. We recommend that you d.
Password:	•••••
Confirm password:	•••••
More about Directory Sen	vices Restore Mode password
	N
	Å
	¢∕

Set Directory Services Restore Mode Administrator Password

(12) When the above steps are set up, the configurations will be performed in summary form for review.

Summary			1111
			1
Review your selections:			
Configure this server as the first Active Direct	tory domain controll	er in a new forest.	-
The new domain name is "ruijie007.com". T	his is also the name	of the new forest.	
The NetBIOS name of the domain is "RUIJI	E007".		
Forest Functional Level: Windows Server 2	003		
Domain Functional Level: Windows Server	2003		
Site: Default-First-Site-Name			
Additional Options			
			<b>_</b>
To change an option, click Back. To begin	the operation, click	Next.	
These settings can be exported to an answer other unattended operations. More about <u>using an answer file</u>	er file for use with	Export settings	]
		Nexts	Canad

**Domain Services Summary** 

(13) If the configuration is correct, go to the next step to start the installation.



**Start Installation** 

(14) When the installation is complete, you are prompted to restart the computer. The AD domain controller is set up after the restart.



# 1.3 Install CA Server

(1) Log in to the domain Server as the Administrator and click [Start]>>[Administrative Tools] >>[Server Manager] to open the server manager.



(2) Click 'Role' in the left menu and click 'Add Roles' in the right Roles Summary Help.

Server Manager			
File Action View Help			
🗢 🔿 🖄 📅 🛛			
Server Manager (WIN-GPTDUSF68	Roles		
Configuration     Storage	View the health of the roles installed on your server a	nd add or remove roles and features.	
	Roles Summary	Roles Summary Help	Î
	Roles: 2 of 17 installed	Add Roles	
	Active Directory Domain Services     DNS Server		
		AD DS Help	
	Stores directory data and manages communication between use processes, authentication, and directory searches.	ers and domains, including user logon	
		Go to Active Directory Domain Services	
	Messages: 1 System Services: 9 Running, 1 Stopped		
	Events: 4 warnings, 31 informational in the last 24 hours		-
	Last Refresh: Today at 3:38 PM Configure refresh		

(3) Select 'Active Directory Certificate Services' in the 'Select Server Roles' page, and then click 'next' twice.

Select Server Roles		
Before You Begin       Select one or mark         Server Roles       Roles:         AD CS       Role Services         Setup Type       Active Direct         CA Type       Active Direct         Private Key       Cryptography         CA Name       Dis Service         Validity Period       File Service         Confirmation       Priogress         Progress       Windows Deiles         Windows Server       Windows Server         Orget abut server       Windows Server         Nues       Windows Server	ere roles to install on this server.	Description: Active Directory Certificate Services (AD CS) is used to create certification authorities and related role services that allow you to issue and manage certificates used in a variety of applications.



Add Roles Wizard	×
Introduction	to Active Directory Certificate Services
Before You Begin Server Roles AD CS Role Services Setup Type CA Type Private Key Cryptography CA Name Validity Period Certificate Database Confirmation	Active Directory Certificate Services (AD CS)         Active Directory Certificate Services (AD CS) provides the certificate infrastructure to enable scenarios such as secure wireless networks, virtual private networks, Internet Protocol Security (IPSec), Network Access Protection (NAP), encrypting file system (EFS) and smart card logon.         Things to Note <ul> <li>The name and domain settings of this computer cannot be changed after a certificate authority (CA) has been installed. If you want to change the computer name, join a domain, or promote this server to a domain controller, complete these changes before installing the CA. For more information, see certification authority naming.         Additional Information         Active Directory Certificate Services Overview.         Managing a Certification Authority         Certification Authority Naming</li></ul>
Progress Results	< Previous Next > Install Cancel

"Active Directory Certificate Services" Introduction

(4) Click 'Certification Authority', 'Certification Authority Web Enrollment and 'Online Responder' and then click 'Next'.

Select Role	Services	\$
Before You Begin Server Roles AD CS Role Services Setup Type CA Type Private Key Cryptography CA Name Validity Period Certificate Database Web Server (IIS) Role Services Confirmation Progress Results	Select the role services to install for Active Directory Cert Role services: Certification Authority Web Enrollment Online Responder Certificate Enrollment Web Service Certificate Enrollment Policy Web Service	rtificate Services: Description: Online Responder makes certificate revocation checking data accessible to clients in complex network environments.

Select Role Services

(5) Click 'Enterprise' in the Specify Setup Type' page, and then click 'Next'

Before You Begin Certi Server Roles AD CS C E Role Services C S Setup Type C S Private Key S Cryptography S	ification Authorities can use data in Active Directory to simplify the issuance and management of ficates. Specify whether you want to set up an Enterprise or Standalone CA. Interprise Select this option if this CA is a member of a domain and can use Directory Service to issue and manage certificates.
CA Type C si Private Key s Cryptography s	itandalone
CA Name Validity Period Certificate Database Web Server (IIS) Role Services Confirmation Progress Results	Select this option if this CA does not use Directory Service data to issue or manage certificates. A standalone CA can be a member of a domain.

Specify Setup Type

(6) Click 'Root CA' in the 'Specify CA Type' and then click 'Next'.



Specify CA Type

(7) You can set available settings in the 'Set Up Private Key' page. The default settings 'Create a new private key' is set here, and then click 'Next'.

setore You Begin Server Roles AD CS Role Services	To generate and issue certificates to clients, a CA must have a private key. Specify whether you want to create a new private key or use an existing one.  Create a new private key Use this option if you don't have a private key or wish to create a new private key to enhance security. You will be asked to select a cryptographic service provider and specify a key length for the private key.
Setup Type CA Type Private Key	To issue new certificates, you must also select a hash algorithm. C Use existing private key Use this option to ensure continuity with previously issued certificates when reinstalling a CA
Cryptography CA Name Validity Period Certificate Database Web Server (IIS) Role Services Confirmation Progress Results	<ul> <li>Select a certificate and use its associated private key Select this option if you have an existing certificate on this computer or if you want to import a certificate and use its associated private key.</li> <li>Select an existing private key on this computer Select this option if you have retained private keys from a previous installation or want to use a priva key from an alternate source.</li> </ul>
	More about public and private keys

(8) 在Configure cryptography for CA in the 'Cryptography' page and click 'Next' without changing any settings.

Add Roles Wizard	<u>×</u>
Configure Crypto	graphy for CA
Before You Begin Server Roles AD CS Role Services Setup Type CA Type Private Key Cryptography CA Name Validity Period Certificate Database Web Server (IIS) Role Services Confirmation Progress Results	To create a new private key, you must first select a <u>cryptographic service provider, hash algorithm</u> , and key length that are appropriate for the intended use of the certificates that you issue. Selecting a higher value for key length will result in stronger security, but increase the time needed to complete signing operations.

Configure Cryptography for CA

(9) You can keep the default content: 'Domain name+ Server Name' in the box of 'Common name for this CA' and then click 'Next'

Add Roles Wizard		×
Configure CA	Name	
Before You Begin Server Roles AD CS Role Services Setup Type CA Type Private Key Cruptography	Type in a common name to identify this CA. This name is added to all certificates issued by the CA. Distinguished name suffix values are automatically generated but can be modified. Common name for this CA: Tuijie007-WIN-GPTDUSF68P4-CA Distinguished name suffix: DC=ruijie007,DC=com	_
CA Name	Preview of distinguished name:	
Validity Period Certificate Database Web Server (IIS) Role Services Confirmation Progress Results	CN=ruijie007-WIN-GPTDUSF68P4-CA,DC=ruijie007,DC=com	
	< Previous Next > Install Cancel	1

**Configure CA Name** 

(10) In the 'Set Validity Period' page, accept the default validity period, and the click 'Next'.

Pofora Vau Ragin	A partificate will be instant to this CA to pay so communications with other CAs and with short communities
Server Roles	certificates win be assued to this LA to secure communications with other based on a number of factors, including the intended certificates. The validity period of a CA certificate can be based on a number of factors, including the intended purpose of the CA and security measures that we have taken to secure the CA.
AD CS	purpose of the GM and secondly incostnes that you have taken to secure the GM.
Role Services	Select validity period for the certificate generated for this CA:
Setup Type	5 Years
CA Type	CA expiration Date: 9/18/2028 3:40 PM
Private Key	INDRE that CA WIII ISSUE CERTIFICATES VAIID ONLY UNDER SEXPIRATION DATE.
Cryptography	
CA Name	
Validity Period	
Certificate Database	
Web Server (IIS)	
Role Services	
Confirmation	
Progress	
Results	
	More about setting the certificate validity period

Set Validity Period

(11) In the "Configure Certificate Database" page, accept the default location or save the certificates database and certificates log in different location and then click 'Next'.

Add Roles Wizard		×
Configure Co	ertificate Database	
Before You Begin Server Roles AD CS	The certificate database records all certificate requests, issued certificates, and revoked or expired certificates. The database log can be used to monitor management activity for a CA. Certificate database location:	
Role Services Setup Type CA Type	C:\Windows\system32\CertLog Brow Use existing certificate database from previous installation at this location Certificate database log location:	se
Private Key Cryptography CA Name Validity Period	C:\Windows\system32\CertLog Brow	se
Certificate Database		
Web Server (IIS) Role Services Confirmation Progress Results		
	< Previous Next > Install Car	icel

# **Configure Certificate Database**

(12) Inter "Web Server (IIS) " page, click 'Next'



Web Server Installation

(13) In the 'Select Role Services' page, use the default configuration and then click 'Next'



Add a Role Services for Web Server

(14) After verify the information in the 'Confirm Installation Selections' page and click 'install'

Add Roles Wizard			x
Confirm Installa	tion Selections		
Before You Begin Server Roles AD CS	To install the following roles, role service	ces, or features, dick Install. ages below	-
Role Services Setup Type CA Type Private Key	This server might need to be res     Active Directory Certificate S     Certification Authority     The name and domain settings	started after the installation completes.	
Cryptography CA Name Validity Period	has been installed. CA Type : CSP : Hash Algorithm : Key Length :	Enterprise Root RSA#Microsoft Software Key Storage Provider SHA1 2048	
Certificate Database Web Server (IIS) Role Services Confirmation	Allow CSP Interaction : Certificate Validity Period : Distinguished name : Certificate Database Location : Certificate Database Log Location :	Disabled 9/18/2028 3:40 PM CN=ruijie007-WIN-GPTDUSF68P4-CA,DC=ruijie007,DC=com C:\Windows\system32\CertLog C:\Windows\system32\CertLog	
Progress Results	Certification Authority Web En Online Responder	rollment	1
	Print, e-mail, or save this information	< Previous Next > Install Cancel	1

**Confirm Installation Selections** 

Add Roles Wizard	
Installation Progre	255
Before You Begin	The following roles, role services, or features are being installed:
Server Roles	Active Directory Certificate Services
AD CS	Web Server (IIS)
Role Services	Pameta Sanyar Administration Tools
Setup Type	
CA Type	
Private Key	
Cryptography	
CA Name	
Validity Period	
Certificate Database	
Web Server (IIS)	
Role Services	
Confirmation	
Progress	
Results	
	Initializing installation
	< Previous Next > Install Cancel

(15) Check the configuration to verify where the installation is successful or not.



### **Confirm Installation Results**

Server Manager (WIN-GPTDUSF68) Comparison Roles Comparison Roles Comparison Roles Configuration Con	Active Directory Domain Services Stores directory data and manages communication between users and domains, including user logon processes, authentication, and directory searches.
	Active Directory Domain Services Installation Wizard       Image: Services Installation Wizard         You must restart your computer before the changes made by the Active Directory Domain Services Installation wizard take effect.       Image: Services Installation Wizard take effect.         Restart Now       Do not Restart Now       Image: Services Installation Wizard take effect.         Image: Services Installation Wizard take effect.       Image: Services Installation Wizard take effect.         Image: Services Installation Wizard take effect.       Image: Services Installation Wizard take effect.         Image: Services Installation Wizard take effect.       Image: Services Installation Wizard take effect.         Image: Services Installation Wizard take effect.       Image: Services Installation Installatinstallatinstextendeseteeee Installation Installation Installation

#### **Restart the Computer**

# 1.4 Install Server Certificates

# 1.4.1 Set the browser

(1) Click Tools in browser->Internet Options-> Security ->Add the http://localpcip/certsrv as the trusted site .



 Custom level for security and enable the "Initialize and script activex controls not marked as safe for scripting" in the options of ActiveX

ternet Options	
General Security Privacy Content Connections Programs	Advanced ) Y X Y Bing Security Settings - Trusted Sites Zone
Select a zone to view or change security settings.	r Settings
Internet Local intranet Trusted sites Restricted	Enable     Prompt     Initialize and script ActiveX controls not marked as safe for st
sites Trusted sites This zone contains websites that you Sites	Disable     Enable     Prompt
Trust not to damage your computer or your files. You have websites in this zone.	Only allow approved domains to use ActiveX without prompt     O Disable     Enable     Run ActiveX controls and plugains
Allowed levels for this zone - Prompts before downloading potentially unsafe	C Administrator approved     Disable     Enable
Content     Content     - Unsigned ActiveX controls will not be downloaded	Script ActiveX controls marked safe for scripting*     Disable
Enable Protected Mode (requires restarting Internet Explo Custom level Default le	re *Takes effect after you restart Internet Explorer
Reset all zones to default le	Reset to: Medium (default)
	OK Cancel
	-

(2) Disable the option of 'Disable script debugging (Other)'

ettings		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
Accessibilit Always Enable Move s Reset Reset Reset Reset Browsing Autom Close Disable Disable Disable Disable Disable Disable Disable Disable Autom Autom Autom Close u Disable Disable Autom Reset Autom Close u Disable Autom Reset Autom Reset Autom Close u Reset Autom Reset Autom Reset	by s expand ALT text for caret Browsing for r system caret with foc text size to medium v zoom level for new w latically recover from unused folders in Hist e script debugging (fr e script debugging (fr e script debugging (fr y a notification about y Accelerator button	r images new windows and tab us/selection changes for new windows and while zooming * indows and tabs page layout errors w fory and Favorites * iternet Explorer) ther) every script error on selection	s tabs ith Compa
"Takes effect a	atter you restart inte	Restore advance	ed settings
	plorer settings		
eset Internet Exp Resets Internet condition.	Explorer's settings to	o their default	Reset

# 1.4.2 Apply and install the server certificates

(1) Visit http://serverip/certsrv and log in with admin account, then apply the certificate by following steps.

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ertificate Template:	Access Confirmation	
Administrator	This Web site is attempting to perform a digital certificate operation on your behalf:	
€ Create new ke CSP: Loading ▼	You should only allow known Web sites to perform digital certificate operations on your behalf. Do you want to allow this operation?	
Key Usage: @ Exchange Key Size: 0 Min: (c	Yes No	
Automatic key con Mark keys as expo Mark keys as expo	r <del>amer name – o ser specineu key container name</del> Intable	
Enable strong priva	te key protection	
tuditional options.		

It recommended to use PC name of the server to apply for web server and other options keeps default settings.进行web

Then click Submit for 'application'.

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	certificate operations on your behalf.	
	Do you want to allow this operation?	
	No.	
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Click 'Yes' to apply the certification. After the application is complete, click 'Install this certificate' to install.
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Your new certificate has been successfully installed.		
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Check the certificate:

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	Issued to: WIN-GPTDUSF68P4	
	Issued by: ruijie007-WIN-GPTDUSF68P4-CA	
Import Export Remove	Valid from 9/ 18/ 2023 to 9/ 17/ 2025	
Certificate intended purposes	$\ref{eq:product}$ You have a private key that corresponds to this certificate.	
Learn more about <u>certificates</u>	Learn more about <u>certificates</u>	
OK Cancel	OK	

After the certificate is installed, please follow the above guides to check whether the certificate is installed successfully.

# 1.5 NPS Server Installation

Computer		Remote Desktop Services       Image: Constraint of the services         Active Directory Administrative Center         Active Directory Domains and Trusts         Active Directory Module for Windows PowerShell         Active Directory Sites and Services	
Command Prompt		Active Directory Users and Computers ADSI Edit Certification Authority Component Services	
Notepad Notepad	Administrator Documents	Computer Management Data Sources (ODBC) DNS Event Viewer	
	Computer Network	Group Policy Management Internet Information Services (IIS) Manager SCSI Initiator	
	Control Panel Devices and Printers	Local Security Policy Conline Responder Management Performance Monitor	
	Administrative Tools	Security Configuration Wizard	
	Help and Support	Services Share and Storage Management Storage Evologer	
All Programs		System Configuration	
Search programs and files	Log off +	Windows Firewall with Advanced Security	
Arstart 🛃 🕢 🧊 🥖		Windows Memory Diagnostic     Windows PowerShell Modules	4:51 PM 9/18/2023

(1) Click '[Start]>>[Administrative Tools] >>[Server Manager]' to open server manager

Click 'Roles' in the left menu and click 'Add Roles' in the right 'Roles Summary'.



Choose Network Policy and Access Service to install.

Add Roles Wizard		×
Select Server Ro	les	
Before You Begin Server Roles Network Policy and Access Services Role Services Confirmation Progress Results	Select one or more roles to install on this server.         Roles: <ul> <li>Active Directory Certificate Services (Installed)</li> <li>Active Directory Pederation Services</li> <li>Active Directory Regration Services</li> <li>Active Directory Rights Management Services</li> <li>Application Server</li> <li>DHCP Server</li> <li>ONS Server (Installed)</li> <li>Fax Server</li> <li>Bile Services</li> <li>Huner-V</li> <li>Network Policy and Access Services</li> <li>Wendze Desktop Services</li> <li>Windows Deployment Services</li> <li>Windows Server Update Services</li> <li>Windows Server roles</li> </ul> Image: Windows Server Services	Description: <u>Network Policy and Access Services</u> provides Network Policy Server (NPS), Routing and Remote Access, Health Registration Authority (HRA), and Host Credential Authority and Host Credential Authority of your network.
	< Previous N	lext > Install Cancel

Select Network Policy and Access Service



Click Next

Add Roles Wizard		X
Select Role Servi	ces	
Before You Begin Server Roles Network Policy and Access Services Role Services Confirmation Progress Results	Select the role services to install for Network Policy and Access Servic Role services: Network Policy Server Network Policy Server Roung and remote Access Services Roung Roung Health Registration Authority Host Credential Authorization Protocol More about role services	ces: Description: Network Policy Server (NPS) allows you to create and enforce organization-wide network access policies for client health, connection request authentication, and connection request authorization. With NPS, you can also deploy Network Access Protection (NAP), a client health policy creation, enforcement, and remediation technology.
	< Previous Next	> Install Cancel

Select Network Policy Server





The network policy and access services are now installed. Restart the PC if it is necessary.

After the above steps, we have completed the installation: AD domain service, DNS service, AD Domain certificate, WEB Server (IIS), network policy, and access service.

# 1.6 Configure NPS Server

### 1.6.1 Add User and Group in the AD Domain Server.

(1) Add users and group in the AD domain server. Choose user and click new-> group.

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E B Active Dire	Delegate Control	Domain Cont	Security Group	All domain controllers		
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Create a group in the user of AD domain

(2) Add users after group is created. Select User and then click 'New->User.

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Add a new user in the user of AD domain

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The password must contain letters, special characters, and digits

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(3) Double click ruijie account to set user properties including the 'dial-in' properties and 'member of' properties

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**User Properties Setting** 

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File Action View Help			
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Server Manager (WIN-355BEO1E2)	Users 21 objects [Filter Activated]	Actions	
Profes     Profes     Profes     Profes     Profes     Profes     Profes	Na ruijie Properties	Select Groups	? ×
E 🚆 Active Directory Domain Se	Remote Desktop Services Profile P	ers Select this object type:	
Active Directory Users :	Dial-in Environment	Se Groups or Built-in security principals	Object Types
🗄 🧮 Builtin		From this location:	[
	Member of: Select Groups	npstest.com	Locations
	Domain Users Select this object type	Common Queries	
	Groups or Built-in sec	ur Name: Starts with	Columns
Active Directory Sites a      DNS Server	From this location:		Find Now
File Services	npstest.com		
	Enter the object name	Disabled accounts	Stop
🗄 💣 Features	2 Domain Admins	Non-expling password	e
Diagnostics      Gonfiguration	8	Days since last logon:	<b>*</b>
🕀 🚰 Storage	X Add	-	
	Advanced	0	K L Canad L
	Primary group: Domain Users	Search results:	
	Cot Primary Group   There is no need	t Account Oper postest com/Buil	<u> </u>
	you have Macin applications.	Administrators npstest.com/Buil	
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Server Manager	Select Groups	<u>? x</u>	
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Server Manager File Action View Help	Select Groups Select this object type: Groups or Built-in security principals	Cbject Types	
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File Action View Help	Select Groups         Select this object type:         Groups or Built in security principals         From this location:         ruije007.com         Common Queries         Name:       Starts with ▼         Description:       Starts with ▼	?∫× Object Types Locations Columns Find Now	
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File Action View Help	Select Groups Select this object type: Groups or Built-in security principals From this location: Tuijie007.com Common Queries Name: Starts with Description: Starts with Description: Starts with Disabled accounts Non expiring password Days since last logon: Search results: Name (RDN) Description DNS Administrat DDns Administrat DNS Administrat DNS Administrat	? ×         Object Types         Locations         Columns         Find Now         Stop         Stop         OK         OK         Cancel         In Folder         nujje007.com/U	
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File Action View Help	Select Groups         Select this object type:         Groups or Built-in security principals         From this location:         ruije007.com         Common Queries         Name:       Starts with ▼         Description:       Starts with ▼         Disabled accounts         Non expiring password         Days since last logon:         Search results:         Name (RDN)         Description         Disabled accounts         Donain Admins         DNS Administrat         Domain Contr         Al domain contr         Domain Guests         Al domain users         Al domain users         Reinsted admin	? ×           Object Types           Locations           Columns           Find Now           Stop           Stop           OK           Cancel           In Folder           rujie007.com/U           rujie007.com/U           rujie007.com/U           rujie007.com/U           rujie007.com/U           rujie007.com/U           rujie007.com/U           rujie007.com/U           rujie007.com/U	
File Action View Help	Select Groups         Select this object type:         Groups or Built-in security principals         From this location:         ruije007.com         Common Queries         Name:       Starts with ▼         Description:       Starts with ▼         Disabled accounts         Non expiring password         Days since last logon:         ▼         Search results:         Name (RDN)         Description         Disabled scounts         Donad Mainis         DNS Administrat         Domain Admins         Domain Contr         All domain contr         Domain Guests         All domain users         Enterprise Ad         Designated admi.	? ×           Object Types           Locations           Columns           Find Now           Stop           Stop           OK           Cancel           In Folder           ntije007.com/U           ruije007.com/U	

🛼 Server Manager	Select Groups	<u>? ×</u>	<u>- 0 ×</u>
File Action View Help	Select this object type:		
🗢 🔿   🖄 📅   🦧 📋   :	Groups or Built-in security principals	Object Types	
🛓 Server Manager (WIN-GPTDU:	From this location:		
Roles	ruiie007.com	Locations	
🕀 🕎 Active Directory Certif			
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🖃 🧧 Active Directory U	1		
ruijie007.com	Name: Starts with 🔻	Columns	<b>^</b>
🗉 🚞 Builtin			•
🗉 🚞 Computer	Description: Starts with 💌	Find Now	
🛨 🛅 Domain C		Chan	
🕀 🔛 ForeignSe	Disabled accounts	stop	
Managed	Non expiring password		
Users	×		
Active Directory	Days since last logon:		
DNS Server			
Network Policy and A			
East res			
Peatores	Conservation	OK Cancel	
	Search results.		
E Storage	Name (RDN) Description In Folder	<b>_</b> _	
E E Storoge	Kead-only Do Members of this ruijie007.com/U		
	Remote Desk ruijie007.com/B		
	Replicator ruijie007.com/B		
	Kan Schema Admins Designated admi ruijie007.com/U		
	Server Operat ruijie007.com/B		
	Eminal Serv ruijie007.com/B		
	Busers ruijie007.com/B		
	Windows Aut ruijie007.com/B		
•	wirelessac ruijie007.com/U		
		<u> </u>	

🔜 Server Manager	wills Descetter	
File Action View Help		
← → 2 📰 🤞 🗎 🗙	Remote Desktop Services Profile         Personal Virtual Desktop         COM+           Dial-in         Environment         Sessions         Remote control           General         Address         Account         Profile         Telephones         Organization	ctions
Koles     Active Directory Certifica	Member of:	lsers 🔺
Active Directory Domain S	Name Active Directory Domain Services Folder	More Actions
Active Directory User     Active Directory User     Active Directory User     Active Directory User     Bigging rulipedo7.com     Bigging Rulipedo7.com	Domain Admins ruije007.com/Users Domain Users ruije007.com/Users	uijie 🔺
Computers     Computers     Domain Contr     PoreignSecur     PoreignSecur     Desers     Discord Directory Sites     ONS Server      Network Policy and Access	wirelessac ruijie007.com/Users	More Actions
Web Server (IIS)     Features     Diagnostics	Add Remove	
Configuration     Storage	Primary group: Domain Users	
	Set Primary Group There is no need to change Primary group unless you have Macintosh clients or POSIX-compliant applications.	
	OK Cancel Apply Help	

In the process of setting the 'Member of' properties, select add->advanced->find now, select domain admin, domain users and wirelessac groups and then click 'Apply'. Now, the User name and group are added successfully.



### 1.6.2 Enable NPS Service

Click 'register server in active directory'. The NPS Server enable notification will be promoted when register.

### 1.6.3 Add radius client

Add the radius client that is the AC device we need to integrate.

Server Manager	New RADIUS Client	× ×
File Action View Help	Settings Advanced	
Server Manager (WIN-GPTDUSF68P4)  Roles  Active Directory Certificate Services  Active Directory Users and Computer  Active Directory Users and Computer  Builtin  Builtin  Computers  Domain Controllers  Computers  Domain Controllers  Domain Services  Domain Ser	Select on existing template:  Name and Address Friendly name:  Address (IP or DNS): Verify Verify	s to
Managed Service Accounts     Users     Active Directory Sites and Services     Sorver     Network Policy and Access Services	Shared Secret Select an existing Shared Secrets template: None	
KPS (Local)     RADIUS Clients and Servers     RADIUS Clients     Remote RADIUS Server Grou     Policies     Network Access Protection	To manually type a shared secret, click Manual. To automatically generate a shared secret, click Generate. You must configure the RADIUS client with the same shared secret entered here. Shared secrets are case-sensitive.	
Accounting	Manual     Generate Shared secret:	
Diagnostics     Configuration	Confirm shared secret:	
Action: In progress	OK Cappel	

Server Manager	New RAD1US Client	× ×
File Action View Help	Settings Advanced	
🗢 🏟 🖄 📅 🔽 📅	Enable this DADIUS start	1
Server Manager (WIN-GPTDU		ons
E PRoles	Select an existing template:	IUS Clients
Carling Active Directory Certi	Ţ.	New
Enterprise PKI	□ Name and Address	
Certificate Templa	Friendly name:	Export List
ruijie007-WIN-GP	ac1	View +
Active Directory Doma	Address (IP or DNC):	Refresh
E 🚔 ruijie007.com	172 26 1 77 Verify	Help
🗄 🧾 Builtin	176.20.177	
E Computer	Shared Secret	
E EoreignSe	Select an existing Shared Secrets template:	
🕀 🧾 i oreignse	None	
📔 Users		
E R Active Directory S	To manually type a shared secret, click Manual. To automatically generate a shared	
DNS Server	secret, click Generate. You must configure the RADIUS client with the sake shared	
A Network Policy and Action		
🖃 🛞 NPS (Local)		
🖃 🎬 RADIUS Clien	Manual     C Generate	
RADIUS C	Shared secret:	
E Policies		
🗄 😽 Network Acce	Confirm shared secret:	
Recounting	••••••	
Action: In progress	OK Carcel	

Click radius client to add the AC device. Please note that the key you configured in shared secret should be consistently with the configuration of radius-server host 172.26.1.77 key ruijie@123.

Note: When adding Radius Clients, if the radius server are in the same local area network, the address box

Note: When you add a Radius client, if the Radius Server and AC are on the same LAN, enter the AC Address in the address box. If the Radius Server is on the external network of the AC, the AC communicates with the Radius Server using an IP address after NAT. Therefore, enter the IP Address after NAT in the address box. The Address in this article is the WAN port address of EG.

In the advanced page, click RADIUS client is NAP-capable in the Additions Options.

🖡 Server Manager	New RADIUS Client	×	_ 🗆 🗙
File       Action       View       Help         Image: Server Manager (WIN-GPTDU       Image: Server Manager (WIN-GPTDU)         Image: Server Manager (WIN-GPTDU)       Image: Server Manager (WIN-GPTDU)         Image: Server Manager (WIN-GPTO)       Image: Server Manager (WIN-GPTO)         Image: Server Manager (WIN-GPTO)       Image: Server (WIN-GPTO)         Image: Server (WIN-GPTO)       Imag	Settings       Advanced         Vendor       Specify RADIUS Standard for most RADIUS clients, or select the RADIUS client vendor from the list.         Vendor name:       RADIUS Standard         Additional Options       ✓         Access-Bequest messages must contain the Message Authenticator attribute         ✓       RADIUS client is NAP-capable		Dons TUS Clients
Action: In progress	OK Casal	1	

📕 Server Manager		_0_×
File Action View Help		
🗢 🔿 🔰 🖬 🚺 🖬		
Server Manager (WIN-GPTDUSF     Roles     Roles     Active Directory Certific     Roles     Certificate Template     Certificate Template     Certificate Template     Certificate Template     Certificate Template     Directory Use     Certificate Template     Directory Use     Domain Con     Domain Con     Domain Con     Computers     Domain Con     Roles     Doss     Network Policy and Acce     Network Policy and Acce     RADIUS Clients     Remote RAI     Policies     Network Access	RADIUS Clients       Actions         Image: Principal state provide access to your network.       RADIUS Clients         Friendly Name       IP Address       Device Manufacturer       NAP-Capable       New         Export List       View       Image: Refresh       Image: Refresh       Image: Refresh         Image: Refresh       Image: Refres	· · · · · · · · · · · · · · · · · · ·

Click 'OK' after the settings are finished.

### 1.6.4 Set Wireless 802.1x Template

Set Wireless 802.1x template for AC

NPS(Local) > RADIUS server for 802.1x wireless or wired connections > Configure 802.1x





📕 Server Manager	Configure 802.1X	×	_ 🗆 ×
File Action View	Select 802.1X Connections Type		
🕀 📆 Active Dire	Type of 802.1X connections:		
Active Dire     Active     Active	(• Secure Wireless Connections When you deploy 802.1X wireless access points on your network, NPS can authenticate and authorize connection requests made by wireless clients connecting through the access points.		n-wide network connection request
t t t t t t t t t t	<ul> <li>Secure Wired (Ethemet) Connections         When you deploy 802.1X authenticating switches on your network, NPS can authenticate and authorize         connection requests made by Ethemet clients connecting through the switches.         Name:         This default text is used as part of the name for each of the policies created with this wizard. You can use the         default text or modify it.     </li> </ul>		n the scenario wizard
Network Pc     Network Pc     NPS ()	Secure Wireless Connections	-1	
RA RA Pol Pol Pol Pol Pol Pol Pol Pol			ate network policies : I authenticating switc
Diagnostics     Configuration			
	Previous Next Finish Cancel	1	

Select the AC device you need to integrate. The devices display here are the devices you have added before. If you doesn't add the devices before, you can click 'Add' to add the device.

🛃 Server Manager	Configure 802.1X	×	_ 🗆 ×
File     Action     View       Image: Server Manager (V       Image: Server Manager (V       Image: Server Manager (V	Specify 802.1X Switches Please specify 802.1X switches or Wireless Access Points (RADIUS Clients)		
Active Dire	RADIUS clients are network access servers, such as authenticating switches and wireless access point. RADIUS clients are not client computers. To specify a RADIUS client, click Add. RADIUS clients: acl Add	×	n-wide network onnection request
Active     Active     Active     Active     Active     Network P     Network P     Network P	Edt Remove	] n	the scenario wizard
Pol Pol Acc Ter Web Server			authensicating switc
Partures     Diagnostics     Configuration	Previous Next Finish Cancel		

Click 'Microsoft: Protected EAP (PEAP)' and 'Configure' to set.

🛓 Server Manager	Configure 802.1X	_0×
File Action View	Configure an Authentication Method	
E 🍯 Active Dire Control Control Cont	Select the EAP type for this policy. Type (based on method of access and network configuration):	pn-wide network
⊡ ∰ ⊂	Microsoft: Protected EAP (PEAP)	
± ⊒ € <sup>6</sup>		n the scenario wizard
Active     Active     Active     Active     Active     Network		<b>_</b>
⊟ 💕 №S (U ⊟ 🛄 RJ		ate network policies authenticating switc
Web Server     Web Server     Features     Diagnostics		
Configuration	Previous Next Finish Cancel	

Select the server certificate applied in the figure, do not select the root certificate of another –CA. Click 'OK' and then go back to the configuration to click 'Next'

Server Manager	Configure 802.1X	×	_ <b>_ _</b> ×
File Action View	Edit Protected EAN Properties		
🍊 🔿 🖉 📻 🗌			
	Select the certificate the server should use to prove its identity to the dient.		
Server Manager (v Roles	Policy will override this certificate.		
🗄 📆 Active Dire	Certificate issued		
🖃 😭 Active Dire			
🖃 🧧 Active	Friendly name:		connection request
E 🔐 rug	Issuer: ruitie007-WIN-GPTDUSE68P4-CA	Configure	
•			
E 🗐	Expiration date: 9/17/2024 3:39:40 PM		
E 🛄	Fnable Fast Reconnect		n the scenario wizard
± 🛄	Disconnect Clients without Cryptobinding		
E me Active	Fan Types		
+ A DNS Serve	Secured paraward (EAD-MSCHAD v2)		
E Network Pe	Tiove Up		
🔁 🚱 NPS (L	Move Down		ate petwork policies
🖻 🛄 RA			authenticating switc
	Add Edit Remove OK Cancel		
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		-	
🕀 📕 Te			
🕀 💐 Web Serve			
Features			
Diagnostics			
E M Configuration			+
•	Previous Next Finish	Cancel	•

In the configuration page of Specify User Groups, click Add > Advanced > Find Now and select group you have set before, then click check name. If the follow warming is displayed, 'Close" it and add the group more time.

Server Manager	Configure 802	1X	×	<u>_     ×</u>
File     Action     View       Image: Comparison of the second s		<b>Specify User Groups</b> Users that are members of the selected group or groups will be allowed or denied a based on the network policy Access Permission setting.	access	
Active Dire     Active Dire     Active Dire     Active Dire     Active Dire     Active     Act	To select User	Groups, click Add. If no groups are selected, this policy applies to all users.	i	n-wide network connection request
ONS Serve     Network P     ONS Serve				ate network policies ( authenticating switc
Configuration		Previous Next Finish Cance	¥	

#### Implementation Cookbook

Server Manager	Configure 802.1X		×	
File Action View	Select Group	<u>? ×</u>		
🗢 🔿   🚈 🔲	Select this object type:	r denied acce	222	
Server Manager (V	Group	Object Types	_	
Roles     F Active Dire	From this location:			
Active Dire	ruijie007.com	Locations		uide estuade
🖃 📴 Active	Enter the object name to select (examples):		pn-1	nection request
E 🙀 🖸		Check Names Add		
• 🗎		Remove	-	-
± 😐				
E 🧮	Advanced OK	Cancel	nth	ne scenario wizard
E B				-
🕀 🛔 DNS Serve	1			
Network Pc				
🖃 🛄 RA			ate I au	thenticating switc
E 📑 Pol				
🗉 🎥 Ne				
🕀 📑 🕀				
🕀 🥞 Web Serve				
Diagnostics				
E Configuration				
•	Previous Next	Finish Cancel		<u> </u>
				,
Server Manager	Select Group	?  x		
Server Manager	Select Group	? ×	×	>
Server Manager File Action View	Select Group	? X	×	_0>
File     Action     View       Image: Server Manager (V)	Select Group	? ×       Object Types	× 255	>
File Action View	Select Group Select this object type:  From this location:  ruije007.com	Object Types	255	>
File Action View	Select Group Select this object type: Group From this location: ruije007.com	Object Types	255	>
File Action View	Select Group Select this object type: Group From this location: ruije007.com Common Queries	Object Types	255	wide network
File Action View File Action View Server Manager (V Server Manager (V Server Manager (V Active Dire Ac	Select Group Select this object type: Croup From this location: ruije007.com Common Queries Name: Starts with	? ×       Object Types       Locations       Columns	255 255	wide network
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File Action View	Select Group Select this object type: Group From this location: ruije007.com Common Queries Name: Starts with  Description: Starts with	Object Types      Object Types      Locations      Columns      Find Now      Sinn	ESS DO	wide network nnection request
File Action View	Select Group Select this object type:	Object Types      Dobject Types      Locations      Columns      Find Now      Stop	ESS Don	wide network nnection request
File Action View	Select Group         Select this object type:         Group         From this location:         ruije007.com         Common Queries         Name:       Starts with ▼         Description:       Starts with ▼         □ bisabled laccounts         □ Non expiring password	? ×         Object Types         Locations         Columns         Find Now         Stop	ess nn- or	wide network nnection request
File Action View	Select Group         Select this object type:         Group         From this location:         rujie007.com         Common Queries         Name:       Starts with ▼         Description:       Starts with ▼         □ Disabled accounts         □ Non expiring password         Days since last logon:       ▼	? ×         Object Types         Locations         Columns         Find Now         Stop         \$\nother find Now	255	wide network nnection request
File Action View	Select Group         Select this object type:         Group         From this location:         rujie007.com         Common Queries         Name:       Starts with ▼         Description:       Starts with ▼         □ Disabled accounts         □ Non expiring password         Days since last logon:	Object Types       Locations       Columns       Find Now       Stop       \$\screwtartersize\$	255	wide network nnection request
File Action View	Select Group         Select this object type:         Group         From this location:         ruije007.com         Common Queries         Name:       Starts with Image:         Description:       Starts with Image:         Disabled accounts       Image:         Non expiring password       Days since lest logon:         Days since lest logon:       Image:	Columns      Columns      Find Now     Stop      Stop	ESS Driver	wide network nnection request
File Action View	Select Group         Select this object type:         Group         From this location:         ruije007.com         Common Queries         Name:       Stats with ▼         Description:       Stats with ▼         □       Disabled accounts         □       Non expring password         Days since last logon:       ▼         Search results:	? ×         Object Types         Locations         Columns         Find Now         Stop         \$\screwtypes\$         OK       Cancel	255	wide network nnection request he scenario wizard e network policies t uthenticating switc
File Action View	Select Group         Select this object type:         Group         From this location:         ruije007.com         Common Queries         Name:       Starts with Image: Starts	? ×         Object Types         Locations         Columns         Find Now         Stop         \$\$\screwtheta\$         OK       Cancel	ess and ate	wide network nnection request the scenario wizard e network policies t uthenticating switc
File Action View	Select Group         Select this object type:         Group         From this location:         ruije007.com         Common Queries         Name:       Starts with ▼         Description:       Starts with ▼         □ Disabled accounts         □ Non expiring password         Days since last logon:         ▼         Search results:         Name (RDN)       Description	? ×         Object Types         Locations         Find Now         Stop         \$\screwtypes\$         OK       Cancel	ESS nt	wide network nnection request the scenario wizard e network policies t uthenticating switc
File Action View	Select Group         Select this object type:         Group         From this location:         ruije007.com         Common Queries         Name:       Starts with Image: Starts	? ×         Object Types         Locations         Columns         Find Now         Stop         Stop         ØK         Cancel	ess nn- cor	wide network nnection request he scenario wizarc e network policies t uthenticating switc
File Action View	Select Group         Select this object type:         Group         From this location:         ruije007.com         Common Queries         Name:       Starts with ▼         Description:       Starts with ▼         □ Disabled accounts         □ Non expiring password         Days since last logon:         ▼         Search results:         Name (RDN)       Description         In Folder	? ×         Object Types         Locations         Columns         Find Now         Stop         ØK	ESS International Internationa	wide network nnection request he scenario wizard e network policies t uthenticating switc
File Action View  File Action View  Server Manager (V  Server Manager (V  Active Dire  Active  Active Dire  Active  Ac	Select Group         Select this object type:         Group         From this location:         rujje007.com         Common Queries         Name:       Starts with ▼         Description:       Starts with ▼         □ Disabled accounts         □ Non expring password         Days since last logon:         ▼         Search results:         Name (RDN)       Description	? ×         Object Types         Locations         Columns         Find Now         Stop         ØK	ESS Don	wide network nnection request he scenario wizard e network policies t uthenticating switc
File Action View	Select Group         Select this object type:         Group         From this location:         ruije007.com         Common Queries         Name:       Stats with ▼         Description:       Stats with ▼         □       Disabled accounts         □       Non expring password         Days since last logon:       ▼         Search results:       Name (RDN)         Description       In Folder	? ×         Object Types         Locations         Columns         Find Now         Stop         ØK	255 Don Don Don Don don don don don don don don don don d	wide network nnection request he scenario wizard e network policies t uthenticating switc
File Action View	Select Group         Select this object type:         Group         From this location:         ruije007.com         Common Queries         Name:       Stats with Image: Stats	? ×         Object Types         Locations         Columns         Find Now         Stop         %         OK         Cancel	255	wide network nnection request the scenario wizard e network policies t uthenticating switc

#### Implementation Cookbook

Server Manager	Select Group	<u>? ×</u>	X	_ 🗆 ×
File Action View	Select this object type:			
🗇 🔿   🚈 📘	Group	Object Types	ess	
Server Manager (V	From this location:			
P Roles	ruijie007.com	Locations		
Active Dire	Common Queries			
🖃 🧧 Active		Caluma		on-wide network
	Name: Starts with 💌	Columns		
۰ 📫	Description: Starts with 💌	Find Now		<u> </u>
E 🗎	Disabled access with	Stop	H.	
	Non expiring password			n the scenario wizard
· · · · ·		<b>A</b>		
Active     Active     Active	Days since last logon:	71		<b></b>
Network Pc				
E 🜍 NPS (L				ate network policies
	Search results:	OK Cancel		authenticating switc
	Name (RDN) Description In Folder	<b>^</b>		
🕀 🧾 Pol	Domain Guests All domain guests ruijie007.com/U			
Ao	Domain Users All domain users ruijie007.com/U			
🕀 💐 Ter	Enterprise Ad Designated admi ruijie007.com/U			
🕀 😫 Web Serve	Enterprise Re Members of this ruijie007.com/U			
• Features	Group Policy Members in this ruijie007.com/U			
<ul> <li>Diagnostics</li> </ul>	RAS and IAS Servers in this gr rulie007.com/U			
Configuration	read-only Do Members of this rulieUU/.com/U			
•	uitelesses		П	
	Nujie007.com/0	-	۲	

If the warming is displayed, click 'Close' and 'check name' again.

🛼 Server Manager	Configure 802.1X	×
File Action View	Select Group	
🗢 🔿   🚈 📊	Select this object type: r denied access	
Server Manager (V	Group Object Types	
E P Roles	From this location:	
Active Dire	ruijie007.com Locations	
🖃 🔛 Active	Enter the object name to select ( <u>examples</u> ):	on-wide network connection request
± <u>□</u>	wirelessac Check Names Remove	<u> </u>
•	Advanced OK Cancel	n the scenario wizard
H H Active DNS Serve DNS Serve NPS (L P RA H H PO H PO AC H M Te	Select Group  Windows cannot process the object with the name "wirelessac" because of the following error:  The specified domain either does not exist or could not be contacted.  Close	ate network policies f authenticating switc
Web Server     Generation     Generation     Generation	Previous Next Finish Cancel	

1

🛃 Server Manager	Configure 802.1X	×
File     Action     View       Image: Comparison of the second s	Specify User Groups Users that are members of the selected group or groups will be allowed or denied access based on the network policy Access Permission setting.	
Active Dire     Active Dire     Active Dire     Active     Ac	To select User Groups, click Add. If no groups are selected, this policy applies to all users.           Groups         Add           RUIJIE007\wirelessac         Remove	on-wide network connection request n the scenario wizard
RA		ate network policies i authenticating switc
Ne     Ac     Features     Gradient Configuration     Configuration	Previous Next Finish Cancel	

Enter the page of Traffic Control Configuration to check the radius attributes.

🛃 Server Manager	Configure 802.1X	
File     Action     View       Image: Constraint of the second s	Use virtual LANs (VLANs) and access control lists (ACLs) to control network traffic.	k
Active Dire	If your RADIUS clients (authenticating switches or wireless access points) support the assignment of traffic controls using RADIUS tunnel attributes, you can configure these attributes here. If you configure these attributes, NPS instructs RADIUS clients to apply these settings for connection requests that are authenticated and authorized. If you do not use traffic controls or you want to configure them later, click Next.	on-wide network connection request
E Active	Traffic control configuration To configure traffic control attributes, click Configure.	n the scenario wizard
INPS (L     I		ate network policies i i authenticating switc
Web Serve     Features     Diagnostics     Configuration	Previous Next Finish Cancel	

Server Manager	Configure 802.1X	×	<u>_0×</u>
File Action View	Configure Traffic Controls	d	
🗢 🄿 🖄 📅 🗌		1	
Server Manager (V	RADIUS Standard Attributes Vendor-Specific Attributes		
E Active Dire	If yo To send additional attributes to RADIUS clients, select a RADIUS standard attribute, and		
Active Dire	cont then click Edit. If you do not configure an attribute, it is not sent to RADIUS clients. See your RADIUS client documentation for required attributes.	ites,	on-wide network
jun 🕅 🖂	auth Attributes:		connection request
± 📕 •	If yo Name Value		-
E 🗐	Filter-Id <not configured=""></not>		_
•	Tunnel-Medium-Type <not configured=""></not>		n the scenario wizarc
E B Active	Tc Tunnel-Pvt-Group-ID <not configured=""> Tunnel-Assianment-ID <not configured=""></not></not>		
E 🛔 DNS Serve		h	
E NPS (L		۲	ate network policies
🖂 🛄 RA			authenticating switc
	Description:		
🕀 🧾 Pol			
Ao	Edit		
🕀 😜 Web Serve			
Features     Diagnostics	OK Cancel		
Configuration			-
•	Previous Next Finish Cancel		
			-
Server Manager	Configure 802.1X	X	
File Action View	Configure RADIUS Attributes	1	
	-	1	
Server Manager (V	RADIUS Standard Attributes Vendor-Specific Attributes		
🕀 🎬 Active Dire	If yo then dick Erit if you do not configure an attribute, select a Vendor Specific attribute, and then dick Erit if you do not configure an attribute, it is not sent to RADIUS clients. See		
🖻 🔛 Active	NPS your RADIUS client documentation for required attributes.	ites,	pn-wide network
🗆 🛱 ruij	auth	143	
•	lf yo Attributes:		<u> </u>
E 🗎	Name Vendor Value		
•	Tr Vendor-Specific RADIUS Standard	Ь	h the scenario wizard
E R Active	Тс		-
<ul> <li>DNS Serve</li> <li>Network Po</li> </ul>			
E 🚱 NPS (L			ate network policies
			authenticating switc
E Pol	Add Edit Remove		
🕀 🌆 Ne			
🗎 Ao 🕀 📑 Ter			
🕀 💐 Web Serve			
Diagnostics	OK Cancel		
Configuration			
	Previous Next Hmish Cancel		

🚬 Server Manager	Configure 802.1X	
File Action View	Use virtual LANs (VLANs) and access control lists (ACLs) to control network traffic.	
Roles     R	If your RADIUS clients (authenticating switches or wireless access points) support the assignment of traffic controls using RADIUS lients to apply these settings for connection requests that are authenticated and authorized. If you do not use traffic controls or you want to configure them later, click Next. Traffic control configuration To configure traffic control attributes, click Configure. Configure	In the scenario wizard
1	Previous Next Finish Cancel	

Click 'Finish' to finish the configuration. Now the 802.1x configuration template for AC1 is finished.

Server Manager	Configure 802.1X	
File     Action     View       Image: server Manager (V     Image: server Manager (V       Image: server Manager (V       Image: server Manager (V	Completing New IEEE 802.1X Secure Wired and Wireless Connections and RADIUS clients	
Active Dire     Active Dire     Active     Active	You have successfully created the following policies and configured the following RADIUS clients. <ul> <li>To view the configuration details in your default browser, click Configuration Details.</li> <li>To change the configuration, click Previous.</li> <li>To save the configuration and close this wizard, click Finish.</li> </ul>	pr-wide network connection request
E Provide Active DNS Serve Network Provide Active RA	Connection Request Policy: Secure Wireless Connections Network Policies: Secure Wireless Connections	n the scenario wizard
Pol     P	Configuration Details           Previous         Next         Finish         Cancel	

## 1.6.5 Set NPS Network Policy

Click 'Network Policies' > the 802.1x configuration template you have just set > Grant access to grant the access if the connection request matches this policy.

Action View Help		
a 2 🖬 🛛 🖬		
Server Manager (WIN-GPTDUSF68P4)	Network Policies	
Roles		
Active Directory Certificate Services	Network policies allow you to designate who is authorized to conn circumstances under which they can or cannot connect	nect to the network and
Active Directory Lisers and Computer		
E B ruije007.com	-N	1
F Builtin	Policy Name Statu	us Processing Order
Computers	Secure Wireless Connections Enab	oled 1
🗐 🧃 Domain Controllers	Connections to Microsoft Routing and Remote Access server Enab	bled 999999
ForeignSecurityPrincipals	Connections to other access servers Enab	bled 1000000
Managed Service Accounts		
Users		
Active Directory Sites and Services	Secure Wireless Connections	
Network Policy and Access Services	Conditions - If the following conditions are met:	
🖃 😔 NPS (Local)		
RADIUS Clients and Servers	Condition Value	
RADIUS Clients	NAS Port Type Wireless - Other OR Wireless - IEEE 802.11	
Remote RADIUS Server Grou	Windows Groups RUIJIE007\wirelessac	
E Policies		
Notwork Detries		
Network Policies		
Network Access Protection		
Accounting	Settings - Then the following settings are applied:	
Templates Management	Setting	
🕀 😂 Web Server (IIS)	Authentication Method EAP OR MSCHAP	1 OR MSCHAP v1 (
	Planet lice and the live in the linet in the live in the live in the live in t	FIORE MONTH VILL
· · · ·		
ure Wireless Connections Properties		
ure Wireless Connections Properties verview Conditions Constraints Settings		
verview Conditions Constraints Settings Policy name: Secure Wireless Connections	ections	
ure Wireless Connections Properties verview Conditions Constraints Settings Policy name: Secure Wireless Connections	ections	
Ure Wireless Connections Properties Verview Conditions Constraints Settings Policy name: Secure Wireless Conne Policy State	ections	
Ure Wireless Connections Properties Verview Conditions Constraints Settings Policy name: Secure Wireless Conne Policy State If enabled, NPS evaluates this policy while perform	actions	
Ure Wireless Connections Properties Verview Conditions Constraints Settings Policy name: Secure Wireless Conne Policy State If enabled, NPS evaluates this policy while perform	actions ming authorization. If disabled, NPS does not evaluate this policy.	
Ure Wireless Connections Properties Verview Conditions Constraints Settings Policy name: Secure Wireless Conne Policy State If enabled, NPS evaluates this policy while perform IV Policy enabled	Ections ning authorization. If disabled, NPS does not evaluate this policy.	
Ure Wireless Connections Properties Verview Conditions Constraints Settings Policy name: Secure Wireless Conne Policy State If enabled, NPS evaluates this policy while perform I Policy enabled	Ections Tring authorization. If disabled, NPS does not evaluate this policy.	
Ure Wireless Connections Properties Verview Conditions Constraints Settings Policy name: Secure Wireless Conne Policy State If enabled, NPS evaluates this policy while perform IV Policy enabled Access Permission	Ections Tring authorization. If disabled, NPS does not evaluate this policy.	
Ure Wireless Connections Properties Verview Conditions Constraints Settings Policy name: Secure Wireless Conne Policy State If enabled, NPS evaluates this policy while perform IV Policy enabled Access Permission If conditions and constraints of the network policy	Ections ming authorization. If disabled, NPS does not evaluate this policy. icy match the connection request, the policy can either grant access or deny	k and
Ure Wireless Connections Properties Verview Conditions Constraints Settings Policy name: Secure Wireless Corne Policy State If enabled, NPS evaluates this policy while perform If Policy enabled Access Permission If conditions and constraints of the network poli access. What is access permission?	ections ming authorization. If disabled, NPS does not evaluate this policy. icy match the connection request, the policy can either grant access or deny	
	ections ning authorization. If disabled, NPS does not evaluate this policy. icy match the connection request, the policy can either grant access or deny	
Ure Wireless Connections Properties Verview Conditions Constraints Settings Policy name: Secure Wireless Corne Policy State If enabled. NPS evaluates this policy while perform If Policy enabled Access Permission If conditions and constraints of the network poli access. What is access permission? C Grant access Grant access if the connection of	Ections  ining authorization. If disabled, NPS does not evaluate this policy.  icy match the connection request, the policy can either grant access or deny  request matches this policy.	
Ure Wireless Connections Properties Verview Conditions Constraints Settings Policy name: Secure Wireless Conne Policy State If enabled, NPS evaluates this policy while perform IF Policy enabled Access Permission If conditions and constraints of the network poli access. What is access permission? IF Connection receives the connection recei	Ections  Ting authorization. If disabled, NPS does not evaluate this policy.  Ticy match the connection request, the policy can either grant access or deny  request matches this policy.	
Ure Wireless Connections Properties Verview Conditions Constraints Settings Policy name: Secure Wireless Corne Policy State If enabled, NPS evaluates this policy while perform I Policy enabled Access Permission If conditions and constraints of the network poli access. What is access permission? C Grant access. Grant access if the connection of C Deny access. Deny access if the connection of	Ections  Thing authorization. If disabled, NPS does not evaluate this policy.  The policy match the connection request, the policy can either grant access or deny  request matches this policy.  equest matches this policy.	
Ure Wireless Connections Properties Verview Conditions Constraints Settings Policy name: Secure Wireless Corne Policy State If enabled, NPS evaluates this policy while perform IV Policy enabled Access Permission If conditions and constraints of the network poli access. What is access permission? IV Grant access. Grant access if the connection r IV Deny access. Deny access if the connection r IV Ignore user account dial-in properties.	Ections  ining authorization. If disabled, NPS does not evaluate this policy.  icy match the connection request, the policy can either grant access or deny request matches this policy.  equest matches this policy.	
Ure Wireless Connections Properties Verview Conditions Constraints Settings Policy name: Secure Wireless Conne Policy State If enabled, NPS evaluates this policy while perform Policy enabled Access Permission If conditions and constraints of the network poli access. What is access permission? Gerant access. Grant access if the connection re Constraints access for the connection re Constraints access for the connection re Constraints access if the connection results access if the c	Ections  ining authorization. If disabled, NPS does not evaluate this policy.  icy match the connection request, the policy can either grant access or deny request matches this policy.  equest matches this policy.  a and constraints of this network policy and the policy grants access perform	
	ections  ining authorization. If disabled, NPS does not evaluate this policy.  icy match the connection request, the policy can either grant access or deny request matches this policy.  equest matches this policy.  rs and constraints of this network policy and the policy grants access, perform valuate the dial-in properties of user accounts .	
	Ections	
	Ections	
	Ections  Thing authorization. If disabled, NPS does not evaluate this policy.  The policy match the connection request, the policy can either grant access or deny  request matches this policy.  Request matches this p	Ever type
	Ections  ining authorization. If disabled, NPS does not evaluate this policy.  icy match the connection request, the policy can either grant access or deny request matches this policy.  equest matches this policy.  is and constraints of this network policy and the policy grants access, perform valuate the dial-in properties of user accounts .  ids the connection request to NPS. You can select either the network access se network access server is an 802.1X authenticating switch or wireless access policy.	x and order
	Ections  Ining authorization. If disabled, NPS does not evaluate this policy.  Ining authorization. If disabled, NPS does not evaluate this policy.  Ining authorization. If disabled, NPS does not evaluate this policy.  Ining authorization request, the policy can either grant access or deny  request matches this policy.  In and constraints of this network policy and the policy grants access, perform  valuate the dial-in properties of user accounts .  In the connection request to NPS. You can select either the network access se  network access server is an 802.1X authenticating switch or wireless access policy.	x and order
		x and order
	Ections  Ining authorization. If disabled, NPS does not evaluate this policy.  icy match the connection request, the policy can either grant access or deny request matches this policy.  equest matches this policy.  as and constraints of this network policy and the policy grants access, perform valuate the dial-in properties of user accounts .  ads the connection request to NPS. You can select either the network access se network access server is an 802.1X authenticating switch or wireless access policy.	Server type of the server type o
ure Wireless Connections Properties verview Conditions Constraints Settings Policy name: Secure Wireless Connections Prolocy State If enabled, NPS evaluates this policy while perform If enabled, NPS evaluates this policy while perform If Policy enabled Access Permission If conditions and constraints of the network polia access. What is access permission? If conditions and constraints of the network polia access. What is access permission? If conditions and constraints of the connection receive the connection request matches the condition authorization with network policy only; do not evaluate the type of network access server that sen or Vendor specific, but nether is required. If your select the type of network access server: Unspecified	Ections	siver type
	Ections	siver type
ure Wireless Connections Properties verview Conditions Constraints Settings Policy name: Secure Wireless Corne Policy State If enabled, NPS evaluates this policy while perform I Policy enabled Access Permission If conditions and constraints of the network poliaccess. What is access permission? I Conditions and constraints of the network poliaccess. What is access fit the connection regulation request matches the condition authorization with network policy only; do not evaluate the type of network access server that sen or Vendor specific, but nether is required. If your select Unspecified. I Type of network access server: Unspecified C Vendor specific:	Ections  Ining authorization. If disabled, NPS does not evaluate this policy.  icy match the connection request, the policy can either grant access or deny request matches this policy.  equest matches this policy.  Instand constraints of this network policy and the policy grants access, perform valuate the dial-in properties of user accounts.  Indis the connection request to NPS. You can select either the network access server is an 802-1X authenticating switch or wireless access policy.	siver type sint.

view Conditions Con-	etrainte Settinge		
New Constitutions   Cons	aranina   aerrinda		
figure the conditions for t	this network policy.		
onditions match the conn	nection request, NPS uses this policy to authorize the connection request. If condit	tions do not match t	the
nection request, NPS sk	tips this policy and evaluates other policies, if additional policies are configured.		
	5		
Condition	Value		
I NAS Port Type	Wireless - Other OR Wireless - IEEE 802.11		
Windows Groups	RUIJIE007\wirelessac		
dition description.			
dition description:			
dition description: Windows Groups condit	tion specifies that the connecting user or computer must belong to one of the sele	cted groups.	
dition description: Windows Groups condit	tion specifies that the connecting user or computer must belong to one of the sele	cted groups.	
dition description: Windows Groups condit	tion specifies that the connecting user or computer must belong to one of the sele	cted groups.	
dition description: Windows Groups condit	tion specifies that the connecting user or computer must belong to one of the sele	cted groups.	
dition description: Windows Groups condit	tion specifies that the connecting user or computer must belong to one of the sele	cted groups.	Permane
dition description: Windows Groups condi	tion specifies that the connecting user or computer must belong to one of the sele Add	cted groups.	Remove

### Secure Wireless Connections 2 Properties

Overview Conditions Constraints Settings

Configure the conditions for this network policy.

If conditions match the connection request, NPS uses this policy to authorize the connection request. If conditions do not match the connection request, NPS skips this policy and evaluates other policies, if additional policies are configured.

Condition	Value
NAS Port Type	Wireless - IEEE 802.11
> Windows Groups	NPSTEST\wirelessac

figure the constraints for this network constraints are not matched by the	c policy. connection request, network access is denied.
straints	
Authentication Methods	Allow access only to those clients that authenticate with the specified methods.
Idle Timeout	EAP types are negotiated between NPS and the client in the order in which they are
Session Timeout	EAP Types:
Called Station ID Day and time restrictions	Microsoft: Protected EAP (PEAP)
NAS Port Type	MoveDown
	Add Edit Remove
	Less secure authentication methods:
	Microsoft Encrypted Authentication version 2 (MS-CHAP-v2)
	✓ User can change password after it has expired
	Microsoft Encrypted Authentication (MS-CHAP)
	<ul> <li>Ser can change password arter it has expired</li> <li>Encounted authentication (CHAP)</li> </ul>
	Unencrypted authentication (PAP, SPAP)
	Allow clients to connect without negotiating an authentication method
	Perform machine health check only

Check the settings about Microsoft: Protected EAP (PEAP) and the selected certificates are right or not.

erview Conditions Con	straints Settings		-
nfigure the constraints for all constraints are not mate instraints:	this network policy ched by the conner	r. ction request, network access is denied.	
Constraints Authentication Meth	ods	Allow access only to those clients that authenticate with the specified methods.	k and ti
Idle Timeout         Session Timeout         Called Station ID         Day and time restric         NAS Port Type	tions	EAP types are negotiated between NPS and the client in the order in which they are listed.  FAP Types  Microsoft: Protected EAP (PEAP)  Move Up  Move Up  Move Down  Add  Edit Remove  Less secure authentication methods:  Microsoft Encrypted Authentication version 2 (MS-CHAP-v2)  Microsoft Encrypted Authentication (MS-CHAP)  User can change password after it has expired  Microsoft Encrypted Authentication (MS-CHAP)  User can change password after it has expired  Microsoft Encrypted authentication (CHAP)  Move Up  Add  Provide authentication (CHAP)  Allow clients to connect without negotiating an authentication method  Perform machine health check only	Order

Configure the constraints fo f all constraints are not mat	Select the certificate the senior should use to prove its identity to the dient	
Constraints: Constraints Authentication Meth Model Timeout Session Timeout	A certificate that is configured for Protected EAP in Connection Request Policy will override this certificate. Certificate issued IWIN-GPTDUSF68P4.ruijie007.com Friendly name: Issuer: ruijie007-WIN-GPTDUSF68P4-CA	thods. ch they are Ch they are Crate Cr
Called Station ID Day and time restrice NAS Port Type	Expiration date: 9/17/2024 3:39:40 PM   Enable Fast Reconnect  Disconnect Clients without Cryptobinding Eap Types  Secured password (EAP-MSCHAP v2)  Move D	Move:Up Move:Down
	Add Edit Remove OK Cance	ion method

Check the Setting of Radius Attributes. The configuration is shown as below:

Secure Wireless Connections Properties			×	_ D ×
Overview Conditions Constraints Settings	=			
Configure the settings for this network policy. If conditions and constraints match the connections	ection request and the po	blicy grants access, settings are applied.		
PADILIS Attributes				k and the
ADIOSAttribules	To send additional attr then click Edit. If your	ributes to RADIUS clients, select a RADIUS standard attribute, and		
Standard	your RADIUS client do	ocumentation for required attributes.		Order Acce
Vendor Specific				Grant
Network Access Protection				Deny
NAP Enforcement	Attributes:			Deny
Extended State	Name	Value		Þ
Routing and Remote Access	Framed-Protocol	PPP		
Multilink and Bandwidth Allocation Protocol (BAP)	Service-Type	Framed		<u> </u>
TP Filters				
Encryption				
💑 IP Settings				
	Add	Edt Remove		
				v1( )

cure Wireless Connections Properties				×	-OX
Overview Conditions Constraints Setting	s				
Configure the settings for this network policy. If conditions and constraints match the connection	ection request and the policy grants a	access, settings are app	lied.		
Settings:					k and the
RADIUS Attributes Standard Vendor Specific	To send additional attributes to R# then click Edit. If you do not config your RADIUS client documentation	ADIUS clients, select a gure an attribute, it is no n for required attributes.	Vendor Specific attribute, and t sent to RADIUS clients. See		Order Acce Grant
Networ Access Protection					Deny
Extended State	Attributes:	Vendor	Value	- H	Deny
Routing and Remote Access	Name	Vendor	Value	1 1	<u> </u>
Multilink and Bandwidth Allocation Protocol (BAP)					<u> </u>
TP Filters					
Encryption					
🦂 IP Settings	Add Edi	Remove			v1 ( ) =

## 1.6.6 Set NPS Connection Request Policies

The settings steps of NPS Connection Request Policies is similar to the steps of network policies. Some settings including EAP settings need to be checked.

🛃 Server Manager						
File Action View Help						
🗇 🤿 📶 🔟 🖬						
Server Manager (WIN-GPTDUSF68P4)  Roles  Active Directory Certificate Services  Active Directory Users and Computer  Role and	Connection Request I Connection req processed local must configure Policy Name	Policies Just policies allow you to y or forwarded to remot PEAP authentication in	o designate e RADIUS connection Status	e whether connectio servers. For NAP V request policy. Processing Order	n requests are PN or 802.1X, you Source	
Computers     Computers     Domain Controllers     ForeignSecurityPrincipals     Managed Service Accounts     Users	Use Windov, author	nections tication for all users	Enabled Enabled	1 1000000	Unspecified Unspecified	
Herein Active Directory Sites and Services     DNS Server     Network Policy and Access Services     Network Policy and Access Services	Secure Wireless Co	nnections wing conditions are met	:			<u> </u>
ADIUS Clients and Servers     ADIUS Clients     Remote RADIUS Server Grou     Policies     Connection Request Policies     Network Policies     Health Policies	Condition Valk NAS Port Type Wire	ue eless - Other OR Wireles	ss - IEEE 8	02.11		
Metwork Access Protection     Accounting	Settings - Then the fol	owing settings are appli	ied:			
Web Server (IIS)	Setting	Value				
					1	

	×
Overview Conditions Settings	
Policy name: Secure Wireless Connections	
Folicy state If enabled, NPS evaluates this policy while processing connection requests. If disabled, NPS does not evalue this policy.	
Policy enabled	
Network connection method	
Select the type of network access server that sends the connection request to NPS. You can select either the network access server type or Vendor specific, but neither is required. If your network access server is an 802.1X authenticating switch or wireless access point, select Unspecified.	
Type of network access server:	
Unspecified	
C Vendor specific:	
10	
Scure Wireless Connections Properties	×
Scure Wireless Connections Properties	×
Scure Wireless Connections Properties           Overview         Conditions         Settings           Configure the conditions for this network policy.         If conditions match the connection request, NPS uses this policy to authorize the connection request. If conditions do not match the connection request, NPS uses this policy and evaluates other policies, if additional policies are configured.	×
Secure Wireless Connections Properties           Overview         Conditions           Secure Wireless Conditions         Settings           Configure the conditions for this network policy.         If conditions match the connection request, NPS uses this policy to authorize the connection request. If conditions do not match the connection request, NPS skips this policy and evaluates other policies, if additional policies are configured.	×
Secure Wireless Connections Properties         Overview       Conditions         Settings         Configure the conditions for this network policy.         If conditions match the connection request, NPS uses this policy to authorize the connection request. If conditions do not match the connection request, NPS skips this policy and evaluates other policies, if additional policies are configured.         Condition       Value         NAS Port Type       Wireless - Other OR Wireless - IEEE 802.11	×
Secure Wireless Connections Properties           Overview         Conditions         Settings           Configure the conditions for this network policy.         If conditions match the connection request, NPS uses this policy to authorize the connection request. If conditions do not match the connection request, NPS skips this policy and evaluates other policies, if additional policies are configured.           Condition         Value           Condition         Value           NAS Port Type         Wireless - Other OR Wireless - IEEE 802.11	X
Store Wireless Connections Properties           Overview         Conditions         Settings           Configure the conditions for this network policy.         If conditions match the connection request, NPS uses this policy to authorize the connection request. If conditions do not match the connection request, NPS skips this policy and evaluates other policies, if additional policies are configured.           Condition         Value           Condition         Value           NAS Port Type         Wireless - Other OR Wireless - IEEE 802.11	×
Scure Wireless Connections Properties           Overview         Conditions         Settings           Configure the conditions for this network policy.         If conditions match the connection request, NPS uses this policy to authorize the connection request. If conditions do not match the connection request, NPS skips this policy and evaluates other policies, if additional policies are configured.           Condition         Value           NAS Port Type         Wireless - Other OR Wireless - IEEE 802.11	×
Secure Wireless Connections Properties           Overview         Conditions         Settings           Configure the conditions for this network policy.         If conditions match the connection request, NPS uses this policy to authorize the connection request. If conditions do not match the connection request, NPS skips this policy and evaluates other policies, if additional policies are configured.           Condition         Value           NAS Port Type         Wireless - Other OR Wireless - IEEE 802.11	×
Sucure Wireless Connections Properties         Overview       Conditions         Settings       Configure the conditions for this network policy.         If conditions match the connection request, NPS uses this policy to authorize the connection request. If conditions do not match the connection request, NPS skips this policy and evaluates other policies, if additional policies are configured.         Condition       Value         NAS Port Type       Wireless - Other OR Wreless - IEEE 802.11         Condition description:       The NAS Port Type condition specifies the type of media used by the access client, such as analog phone lines, ISDN, tunnels or virtual private networks, IEEE 802.11 wreless, and Ethernet switches.	×
Sicure Wireless Connections Properties Overview Conditions Settings Configure the conditions for this network policy. If conditions match the connection request, NPS uses this policy to authorize the connection request. If conditions do not match the connection request, NPS skips this policy and evaluates other policies, if additional policies are configured. Condition Value NAS Port Type Wireless - Other OR Wreless - IEEE 802.11 Condition description: The NAS Port Type continue appecties the type of media used by the access client, such as analog phone lines, ISDN, tunnels or vitual private networks, IEEE 802.11 wreless, and Ethernet switches.	×
Scure Wireless Connections Properties         Overview       Conditions         Settings       Conditions for this network policy.         If conditions match the connection request, NPS uses this policy to authorize the connection request. If conditions do not match the connection request, NPS skips this policy and evaluates other policies, if additional policies are configured.         Condition       Value         NAS Port Type       Wireless - Other OR Wireless - IEEE 802.11         Condition description:       Condition description:         The NAS Port Type condition specifies the type of media used by the access client, such as analog phone lines, ISDN, turnels or vitual private networks, IEEE 802.11 weless, and Ethemet switches.         Add       Edt	×

cure wireless Connections Propert	
Overview Conditions Settings	
Configure the settings for this network po	blicy.
If conditions and constraints match the c	connection request and the policy grants access, settings are applied.
Settings:	
Required Authentication Methods	Cverride network policy authentication settings
Authentication Methods	These authentication settings are used rather than the constraints and authentication
Forwarding Connection Request	configure PEAP authentication here.
→ Authentication	EAP types are negotiated between NPS and the client in the order in which they
National Accounting	are isted.
Specify a Realm Name	EAP Types:
Attribute	MOVE UP
RADIUS Attributes	Move Down
Standard	Add Edit Remove
Vendor Specific	ess secure authentication methods:
	Microsoft Encrypted Authentication version 2 (MS-CHAP-v2)
	User can change password after it has expired
	Microsoft Encrypted Authentication (MS-CHAP)
	User can change password after it has expired
	Encrypted authentication (CHAP)
	Unencrypted authentication (PAP, SPAP)
	Allow clients to connect without negotiating an authentication method.

figure the settings for this network po onditions and constraints match the c tings:	licy. onnection request and the policy grants access, settings are applied.
Required Authentication Methods	Veride network policy authentication setting
Authentication Methods	These authentication settings are used rather than the constraints and authentication
Forwarding Connection Request	configure PEAP authentication here.
Authentication	EAP types are negotiated between NPS and the client in the order in which they
Accounting	are listed.
Specify a Realm Name	EAP Types:
Attribute	Move Up
RADIUS Attributes	Move Down
Standard	
Vendor Specific	Add E.dt Hemove
	Less secure authentication methods:
	Microsoft Encrypted Authentication version 2 (MS-CHAP-v2)
	User can change password after it has expired
	Microsoft Encrypted Authentication (MS-CHAP)
	Encounted authentication (CHAP)
	Lineoperated authentication (CHAP)
	Allow clients to connect without neoptiating an authentication method

figure the settings for this netw	ork policy.	
conditions and constraints match	the connection request and the policy grants access, setting	s are applied.
ttings: Required Authentication	Override network policy authentication set	tings
Authentication Methods	These authentication settings are used rather settings in network policy. For VPN and 802.12	than the constraints and authentication X connections with NAP, you must
orwarding Connection Request	Add EAP	×
Authentication	Authentication methods:	he order in which they
Accounting	Microsoft: Smart Card or other certificate	
Specify a Realm Name	Microsoft: Protected EAP (PEAP) Microsoft: Secured password (EAP-MSCHAP v2)	MoveUp
Attribute		Marro Dama
RADIUS Attributes	-	INDAE DIGALI
Standard	4	<b>&gt;</b>
- vendor Specific		
		(P-v2)
	Microsoft Encrypted Authentication (MS-C	HAP)
	User can change password after it has	expired
	Encrypted authentication (CHAP)     Linencented authentication (PAP, SPAP)	
	Allow clients to connect without negotiation	a an authentication method

#### Secure Wireless Connections Properties × Overview Conditions Settings Configure the settings for this network policy. If conditions and constraints match the connection request and the policy grants access, settings are applied Settings: **Required Authentication** Override network policy authentication settings Methods These authentication settings are used rather than the constraints and authentication settings in network policy. For VPN and 802.1X connections with NAP, you must configure PEAP authentication here. Authentication Methods Forwarding Connection Request -> Authentication EAP types are negotiated between NPS and the client in the order in which they are listed. Accounting EAP Types: Specify a Realm Name Microsoft: Protected EAP (PEAP) Move Up Attribute Move Down **RADIUS** Attributes 4 • Standard Add .... Remove Vendor Specific Less secure authentication methods: Microsoft Encrypted Authentication version 2 (MS-CHAP-v2) 🔲 User can change password after it has expired Microsoft Encrypted Authentication (MS-CHAP) User can change password after it has expired Encrypted authentication (CHAP) Unencrypted authentication (PAP, SPAP) Allow clients to connect without negotiating an authentication method.

Click 'Edit' to check the settings of EAP, including the selected certificates are right or not.

onfigure the settings for this network policy. conditions and constraints match the conne ettings: Required Authentication <u>Methods</u>	ection request and the policy grants access, settings are applied.
Required Authentication Methods	
	Overnde network policy authentication settings
Authentication Methods	These authentication settings are used rather than the constraints and authentication
Forwarding Connection Request	configure PEAP authentication here.
-> Authentication	EAP types are negotiated between NPS and the client in the order in which they
Naccounting	are listed.
Specify a Realm Name	EAP Types:
Attribute	Microsoft: Protected EAP (PEAP)
RADIUS Attributes	Move Down
Standard Vendor Specific	Add Edit Remove
	Less secure authentication methods:
	User can change password after it has expired
	Microsoft Encrypted Authentication (MS-CHAP)
	User can change password after it has expired
	Encrypted authentication (CHAP)
	Unencrypted authentication (PAP, SPAP)



onditions and constraints match the o	oicy. connection request and the policy grants access, settings are applied.
Conditions and constraints match the of titings: Required Authentication Methods Authentication Methods Forwarding Connection Request Authentication Authentication Connection Request Authentication Authentication Authentication Authentication Authentication Authentication Connection Request Authentication Connection Request Authentication Connection Request Authentication Connection	Specify whether connection requests are processed locally, are forwarded to remote RADIUS servers for authentication, or are accepted without authentication.  Authenticate requests on this server  Forward requests to the following remote RADIUS server group for authentication:  Inst configured>  New  Accept users without validating credentials

Configure the settings for this network policy. If conditions and constraints match the conne Settings:	ection request and the policy grants a	ccess, settings are applied.
Required Authentication Methods Authentication Methods Forwarding Connection Request	To send additional attributes to RA then click Edit. If you do not confit your RADIUS client documentation	DIUS clients, select a RADIUS standard attribute, and pure an attribute, it is not sent to RADIUS clients. See of for required attributes.
→ Authentication	Attributes:	
National Accounting	Name	Value
Specify a Realm Name C Attribute RADIUS Attributes Standard C Vendor Specific	Add Edit	Remove

Secure Wireless Connec	tions Properties		×	<u>_8×</u>
Overview Conditions	Settings			
Overview       Conditions         Configure the settings for f conditio       Add Standa         Settings:       To add an at Add an at Add.         Method       To add an at Add.         Method       To add an at Add.         Method       Settings:         To add an at Add.       To add an at Add.         Method       Add.         Socret press       Add.         Specific       Name         Login-TC       Servicen-T         Stationary       Session-T	Settings	hen click Add. se this dialog and select Vendor Specific, and then click <b>Attribute Information</b> Attribute name: Service-Type Attribute number: 6 Attribute format: Enumerator		iou must
Ve Terminati Terminati Description Specifies th	n-Action seinoment-ID envice that the user has requested.	Attribute Value: Commonly used for Dial-Up or VPN Connect Commonly used for 802.1x Framed Cothere Cothere Cothere	Cance	

Secure Wireless Connections Properties × Overview Conditions Settings Configure the settings for this network policy. If conditions and constraints match the connection request and the policy grants access, settings are applied. Settings: Required Authentication Methods To send additional attributes to RADIUS clients, select a RADIUS standard attribute, and then click Edit. If you do not configure an attribute, it is not sent to RADIUS clients. See your RADIUS client documentation for required attributes. Authentication Methods Forwarding Connection Request -> Authentication Attributes: Accounting Name Value Specify a Realm Name Service-Type Framed Attribute **RADIUS** Attributes Standard Vendor Specific Add ... Edt... Remove

68
Required Authentication Methods Authentication Methods Forwarding Connection Request	To send additional attr then click Edit. If you o your RADIUS client do	ibutes to RADIUS clients, se do not configure an attribute, ocumentation for required attr	lect a Vendor Specific attrib it is not sent to RADIUS cli	oute, and
Authentication Methods Forwarding Connection Request	your RADIUS client do	ocumentation for required attr	it is not sent to RADIUS ci	-nre
Forwarding Connection Request	BR COMPANY CONTRACTOR		butes.	GIRS. JCC
				R
-> Authentication	Attributes:			Ů
Accounting	Name	Vendor	Value	
Specify a Realm Name				
Attribute				
RADIUS Attributes				
Standard				
Vendor Specific				
	Add	Edt Remove		

Now, all configurations are finished.

# **2** The integration Configuration Example of Ruijie AC and NPS (Network Policy Server)

## 2.1 Wireless 802.1x Authentication Introduction

802.1x is a port-based network access control protocol in Client/Server mode. Through its Extensible Authentication Protocol (EAP) authentication framework, all clients can be authenticated and their network access permissions can be controlled at the LAN access interface level.

When the 802.1X application is used for wireless network access authentication, a secure channel is established between the authentication client and the authentication server through the encryption mechanism of the PEAP certificate technology to ensure that the data inside the EAP is encrypted using the certificate, which greatly improves the security and reliability of the 802.1X authentication in the wireless application. It is applicable to scenarios where a new network is created, users are concentrated, and information security requirements are strict.

## **Product and Software Version**

Device Type Device Model		Version
WLAN AC	RG-WS6008	AC_RGOS 11.9(6)W1B1, Release(09192520)
Certificate Server	NPS(network policy server)	Establish on WIN SERVER2008R2

#### Table 2-1

# 2.2 Network Requirement

For the information security, Users are required to access the network to pass the 802.1x authentication via account and password.

- Install 802.1x client version on the users' terminals(Generally, the operation (The operation system will have the 802.1x client version by default. If no, you can download other 802.1x client version client version)
- AC supports 802.1x protocol.
- Certificate Server support standard RADIUS.

# 2.3 Topology



#### Topology Note:

- Ruijie EG as a gateway, is play a role as a DHCP server to assign the IP address for AP and STA and also can do the NAT translation.
- AP and AC connects to Ruijie SW and SW supplies power for AP.
- The WLAN authentication for wireless users is 802.1x

Item	Note
Manageable VLAN of AC	VLAN 1
Manageable IP of AC	192.168.20.7
IP address of AC for Establishing CAPWAP Tunnel.	192.168.20.7
Manageable VLAN of AP	VLAN 1
Business VLAN of STA	VLAN 100
STA Address Pool	192.168.100.0/24(The address pool is on the EG)
SSID	nps1xtest
	RADIUS authentication server group: npstest
RADIUS Authentication Parameter	RADIUS authentication server: 172.26.1153
	Authentication and accounting shared key: ruijie@123
	AD domain name: ruijie007.com
AAA Method List	Authentication method list: nps
	Account method list: nps
	ruijie/Abc.123456(User needs to add认证时填写用户需
Authentication Account	the domain name when authentication, that is: ruijie@ruijie007.com)

### Table 2-2 The Configuration of AC

# 2.4 Configuration Points

- Create a sub-interface and address pool of WLAN 100 to assign address for STA. Option 138 must be set in the address pool configuration to specify the capwap tunnel address.
- On the switch and AC, VLAN 100 should be created and allow them pass through.
- Configure the capwap tunnel address, 802.1x Authentication Parameter (Radius authentication server and AAA Method List) to enable the 802.1x authentication.

## 2.5 Configuration Steps

## 2.5.1 EG Configuration

Create a sub-interface and address pool of WLAN 100 to assign address for STA. Option 138 must be set in the address pool configuration to specify the capwap tunnel address.

Create a s	ub-interface:
------------	---------------

Ruíj	EG		Scenario: G	ieneral 🕜 【	Config Wizard	C Detect New Network	A Online Service Hi, admir
Home	Interface	Basic Settings Multi-PPPo	Aggregate Port Acces	is Mode	nterface Conversio	on Link Detection	
Common	SUPER-VLAN Route/Load	Note: Click the corresponding interface AnyIP: A successful gateway spoofing gateway can access the network directly	to edit configuration. For copper and fiber pr (ARP spoofing) attack allows an attacker to all	ort details, please vi er routing on a net	ew Help . The DHCP in work, effectively allowi	nterface does not support line e ng for a man-in-the-middle atta	<mark>sscape or link detection.</mark> ack. Device with any IP address or
Flow	DNS Settings	🛋: On 🛤: Off					
Eehavior	VPN	0MGMT 1	2 3	4	5	6 7	8F(SFP SFP+)
(🏹 Cache	NAT/Port Mapping	Configured Configured	Configured Configured Co	onfigured U	nconfigured Co	onfigured Configured	Unconfigured
Ū	DHCP	9F(SFP)					
Security O User	Line Escape	Unconfigured					
8 Network		2 (Gi0/2) Setting		Interf	ace Conversion	Secondary IP Sub	Interface DHCP Settings
() WLAN		IP Address: 192	.168.20.1 *				
ሔ		Submask: 255	*				
	Sub Interface	Gi0/2	. 100	(Range: 1	-1023)		
	VLAN IE	0: 100	* (Range: 1-408	87)			
	IP Addres	5: 192.168.100.1	*				
	Submas	:: 255.255.255.0	*				
	Anyli	e: 🗆 Enable					
	Reverse Patł	n: □Enable					
Sub I	atorfaco List	Add					
c	h Interface	VIANID	Interface Info	Ban	dwidth	ICD	Action
Gig	abitEthernet	60	IP Address192.168.60.1	Ball	-	-	Edit Delete
Show	/ No.: 10 🗸	Total Count: 1			I First I Pro	evious <mark>1</mark> Next	: Last 🕨 📘 G



Add

#### Sub Interface List

	Sub Interface	VLAN ID	Interface Info	Bandwidth	ISP	Action
	GigabitEthernet 0/2.100	100	IP Address192.168.100.1 Submask: 255.255.255.0	-	-	Edit Delete
	GigabitEthernet 0/2.60	60	IP Address192.168.60.1 Submask: 255.255.255.0	-	-	Edit Delete
S	Show No.: 10 🗸 To	otal Count: 2		l€ First ∢ Pr	evious <mark>1</mark> Next	Last 🕨 🚺 GO

#### Create an address pool

Ru	<b>jie</b> eg				Scenario: General 😗	Config Wizard	C Detect New Netv	vork 🖄 Onli	ne Service	Hi, admin 🗸
 Home	Interface	Settings	Static IP Address	user List						
÷	SUPER-VLAN	+Add DHCP	X Delete Selected I					×		
Common	Route/Load		Name					^ 	A	ction
$\succeq$	DNS Settings	0	20	Pool Name:	vlan100	•			Edit	Delete
Flow	Divis settings		vlan11						Edit	Delete
Behavior	VPN		30	Subnet:	192.168.100.0	* Format: 192.168.	1.0		Edit	Delete
~	NAT/Port Mapping		pool_Gi0/3	Mask:	255.255.255.0	* Format: 255.255.2	255.0		Edit	Delete
( 🖍 Cache			testtt	Default Gateway:	192.168.100.1	* Format: 192.168.1	1.1	114	Edit	Delete
$\widehat{\mathbf{U}}$	DHCP		vlan123	Lease Time:	○ Permanent	0 d 8	h min *		Edit	Delete
Security	Line Escape		vlan60						Edit	Delete
			200	Preferred DNS Server:	8.8.8.8	* Format: 114.114.1	14.114		Edit	Delete
User			pool_Gi0/0	Secondary DNS Server:					Edit	Delete
() Naturrk			pool_Gi0/4	Option 43:		0		Ŧ	Edit	Delete
Network		Show No.: 10	✓ Total Count: 13				Save Can	cel 2 Next	► Last ►	1 GO
WLAN										
-										
ക്										
شة Ru	<b>jie</b> eg				Scenario: General 👩	Config Wizard	C Detect New Netv	vork 🖄 Onli	ne Service	Hi, admin ∨
	JIE EG	Settings	Static IP Address	s User List	Scenario: General 😵	C Config Wizard	C Detect New Netv	vork 🖄 Onli	ne Service	Hi, admin 🗸
	Interface	Settings +Add DHCP	Static IP Address	s User List	Scenario: General 🥝	ଜି Config Wizard	លិ Detect New Netv	vork 🖄 Onli	ne Service	Hi, admin 🗸
	Interface SUPER-VLAN	Settings +Add DHCP	Static IP Address X Delete Selected I	User List	Scenario: General 🔮	Config Wizard	C Detect New Netv	vork 오onli	ne Service	Hi, admin ✓
	Interface SUPER-VLAN Route/Load	Settings + Add DHCP	Static IP Address X Deloto Selected I Name 20	User List	Scenario: General 🔮	Config Wizard	Detect New Netv	vork R Onli	ne Service A	Hi, admin ❤
	Interface SUPER-VLAN Route/Load DNS Settings	Settings +Add DHCP	Static IP Address X Delete Selected I Name 20 Vian11	Add DHCP Subnet: Mask:	Scenario: General 🔮	Config Wizard	Detect New Netv	vork R Onli	ne Service Ar Edit Edit	Hi, admin V stion Delete Delete
	Interface SUPER-VLAN Route/Load DNS Settings VPN	Settings +Add DHCP	Static IP Address X Delete Selected I Name 20 Vlan11 30	Add DHCP Subnet: Mask: Default Gateway:	Scenario: General 🔮	C Config Wizard  • Format: 192.168: • Format: 255.255.2	© Detect New Netv 1.0 255.0	vork R Onli	ne Service Ar Edit Edit Edit	Hi, admin V ttion Delete Delete Delete
Home Common Elow Behavior	Interface SUPER-VLAN Route/Load DNS Settings VPN NAT/Port	Settings + Add DHCP	Static IP Address X Delete Selected I Name 20 vlan11 30 pool_Gi0/3	s User List Add DHCP Subnet: Default Gateway: Lease Time:	Scenario: General 🔮	C Config Wizard	Detect New Netv  1.0  2255.0  1.1  h min*	vork R Onli	Al Edit Edit Edit Edit	Hi, admin ~
Home Common Elow Behavior	Interface SUPER-VLAN Route/Load DNS Settings VPN NAT/Port Mapping	Settings +Add DHCP  Add DHCP  C C C C C C C C C C C C C C C C C C	Static IP Address X Delete Selected I Name 20 Vian11 30 pool_Gi0/3 testtt	Add DHCP      Subnet:     Mask:     Default Gateway:     Lease Time:	Scenario: General 🔮	C Config Wizard  * Format: 192.168.*  * Format: 255.255  * Format: 192.168.*  0 d 8	Detect New Netw	X A Onli	Ari Edit Edit Edit Edit Edit	Hi, admin ~
Home Common Elevation Cache	Interface SUPER-VLAN Route/Load DNS Settings VPN NAT/Port Mapping DHCP	Settings  Add DHCP  Add DHCP  C C C C C C C C C C C C C C C C C C	Static IP Address X Delete Selected I Name 20 Vlan11 30 pool_Gi0/3 testtt Vlan123	Add DHCP Add DHCP Subnet: Mask: Default Gateway: Lease Time: Preferred DNS Server:	Scenario: General <table-cell> 192.168.100.0 255.255.255.0 192.168.100.1 O Permanent @ Lease Time [ 8.8.8.8</table-cell>	C Config Wizard  * Format: 192.168.*  * Format: 255.255.;  Format: 192.168.*  0 d 8  * Format: 114.114.*	C Detect New Netw 1.0 255.0 1.1 h min * 114.114	x A onli	Ar Edit Edit Edit Edit Edit	tion Delete Delete Delete Delete Delete Delete
Home Common Ecow Ecow Cache Cache	Interface SUPER-VLAN Route/Load DNS Settings VPN NAT/Port Mapping DHCP Line Escape	Settings	Static IP Address X Delete Selected I Name 20 Vlan11 30 pool_Gi0/3 testtt vlan123 Vlan60	Subnet:     Add DHCP     Subnet:     Mask:     Default Gateway:     Lease Time:     Preferred DNS Server:     Secondary DNS Server:	Scenario: General <table-cell> 192.168.100.0 256.255.255.0 192.168.100.1 O Permanent @ Lease Time 8.8.8.8</table-cell>	C Config Wizard  * Format: 192.168.*  * Format: 255.255.1  * Format: 192.168.*  0 d 8  * Format: 114.114.1	C Detect New Netw 1.0 255.0 1.1 h min * 114.114	x x x x x x x x x x x x x x x x x x x	A Edit Edit Edit Edit Edit Edit Edit	Hi, admin >>
Home Common Elow Elow Ecache Security	Interface SUPER-VLAN Route/Load DNS Settings VPN NAT/Port Mapping DHCP Line Escape	Settings  Add DHCP  Add DHCP  C C C C C C C C C C C C C C C C C C	Static IP Address X Delete Selected I Name 20 Vian11 30 pool_Gi0/3 testtt Vian123 Vian60 200	Add DHCP Subnet: Mask: Default Gateway: Lease Time: Preferred DNS Server: Secondary DNS Server: Option 43:	Scenario: General <table-cell>  192.168.100.0  255.255.255.0  192.168.100.1  Permanent @ Lease Time  8.8.8.8</table-cell>	C Config Wizard	Detect New Netw	xork 2 Onli	A Edit Edit Edit Edit Edit Edit Edit Edit	Hi, admin >>
Home Home Common Flow Behavior Cache Security User	Interface SUPER-VLAN Route/Load DNS Settings VPN NAT/Port Mapping DHCP Line Escape	Settings  Add DHCP  Add DHCP  C C C C C C C C C C C C C C C C C C	Static IP Address X Deloto Selocted I Name 20 Vian11 30 pool_Gi0/3 testtt Vian123 Vian60 200 pool_Gi0/0	Add DHCP Add DHCP Subnet: Mask: Default Gateway: Lease Time: Preferred DNS Server: Secondary DNS Server: Option 43: Option 138:	Scenario: General <table-cell>  192.168.100.0  255.255.255.0  192.168.100.1  Permanent @ Lease Time  8.8.8.8  192.168.20.7</table-cell>	C Config Wizard  * Format: 192.168. Format: 255.256.1 Format: 192.168. G d 8 Format: 114.114.1 G G A	Detect New Netw	xork 2 Onli	A Edit Edit Edit Edit Edit Edit Edit	Hi, admin >>
Home Common Echavior Cache Security User	Interface SUPER-VLAN Route/Load DNS Settings VPN NAT/Port Mapping DHCP Line Escape	Settings  Add DHCP  Add DHCP  C C C C C C C C C C C C C C C C C C	Static IP Address X Deloto Selocted I Name 20 Vlan11 30 pcol_Gi0/3 testtt Vlan123 Vlan60 200 pcol_Gi0/0 pcol_Gi0/4	Add DHCP Add DHCP Subnet: Mask: Default Gateway: Lease Time: Preferred DNS Server: Secondary DNS Server: Option 138:	Scenario: General	C Config Wizard      Format: 192.168.3      Format: 255.255.3      Format: 192.168.3      G      d      Format: 114.114.11      G      G      G      G	Detect New Netw	xork 2 Onli	A Edit Edit Edit Edit Edit Edit Edit Edit	Hi, admin >>
Home Home Ecommon Ecommon Ecommon Ecommon Security Security Security Network	Interface SUPER-VLAN Route/Load DNS Settings VPN NAT/Port Mapping DHCP Line Escape	Settings  +Add DHCP	Static IP Address X Delete Selected I Name 20 Vlan11 30 pool_Gi0/3 testtt Vlan123 Vlan60 200 pool_Gi0/0 pool_Gi0/4 Vlan24	Add DHCP Subnet: Mask: Default Gateway: Lease Time: Preferred DNS Server: Secondary DNS Server: Option 138:	Scenario: General	C Config Wizard      * Format: 192.168:      * Format: 255.255.3      * Format: 192.168:      0	Detect New Netw	x A Onli	A Edit Edit Edit Edit Edit Edit Edit Edit	Hi, admin >>
Home Home Common Economon Behavior Cache Security User Network	Interface SUPER-VLAN Route/Load DNS Settings VPN NAT/Port Mapping DHCP Line Escape	Settings  - Add DHCP  - Add DHCP - A	Static IP Address X Delete Selected I Name 20 Vlan11 30 pool_Gi0/3 testtt Vlan123 Vlan60 200 pool_Gi0/4 pool_Gi0/4	Add DHCP Subnet: Mask: Default Gateway: Lease Time: Preferred DNS Server: Secondary DNS Server: Option 138:	Scenario: General	C Config Wizard      * Format: 192.168:     * Format: 255.256.3      * Format: 192.168.7      o d 8      * Format: 114.114.11      o d 9      o	Detect New Netw      Detect New Netw      1.0      255.0      1.1      h min *      114.114      Save Cancer      C	xork R Onli	A Edit Edit Edit Edit Edit Edit Edit Edit	Hi, admin >>
Home Home Ecommon Ecommon Behavior Cache Security User Network	Interface SUPER-VLAN Route/Load DNS Settings VPN NAT/Port Mapping DHCP Line Escape	Settings  - Add DHCP  -  -  -  -  -  -  -  -  -  -  -  -  -	Static IP Address X Delete Selected I Name 20 Vian11 30 pool_Gi0/3 testtt Vian123 Vian60 200 pool_Gi0/0 pool_Gi0/4 v Total Count: 13	Subnet:     Subnet:     Subnet:     Mask:     Default Gateway:     Lease Time:     Preferred DNS Server:     Secondary DNS Server:     Option 138:	Scenario: General	C Config Wizard      * Format: 192.168:     * Format: 255.255.2      * Format: 192.168.*      o d 8      * Format: 114.114.11      @      @      @	Detect New Netw      Detect New Netw      1.0      255.0      1.1      h min *      114.114      Save Cancer      C	xork R Onli	A Edit Edit Edit Edit Edit Edit Edit Edit	Hi, admin >>

Ruíj	<b>jie</b> eg				Scenario: General 🚱	ធ Config Wizard ធិ ।	Detect New Network 🛛 😤 Onl	ine Service Hi, admin ৲
<b>∆</b> Home	Interface	Settings	Static IP Addres	s User List				
÷	SUPER-VLAN	+Add DHCP	X Delete Selected DH	ICP ØExcluded Address R	ange DHCP: ON			
Common	Route/Load		Name	IP Address Range	Default Gateway	Lease Time	DNS	Action
Ŀ∠ Floor	DNS Settinge		pool_Ag1	192.168.50.1-192.168.50.254	192.168.50.1	8 hour(s)	8.8.8	Edit Delete
Flow	Divis settings		G0/5	192.168.45.1-192.168.45.254	192.168.45.1	8 hour(s)	8.8.8	Edit Delete
<b>⊈</b> Behavior	VPN	0	pool_Gi0/1	92.168.111.1-192.168.111.25 4	192.168.30.1	8 hour(s)	8.8.8.8	Edit Delete
a	NAT/Port Mapping	0	vlan100	192.168.100.1-192.168.100.2 54	192.168.100.1	8 hour(s)	8.8.8	Edit Delete
Cache	DUICE	Show No.: 10	Total Count: 14				K First K Pre 1 2 Nex	tt ▶ Last ▶∥ 2 GO
() Security	Line Escape							
O User								
(Ø Network								
( WLAN								
avascript;								

## 2.5.2 Create VLAN 100 and allow VLAN 100 to pass through on switch and AC

Create VLAN 100 on switch and connect AP and AC with switch. EG port should be set as Trunk and allow VLAN100 to pass through

צט	JIE SWITCH	WEB model: 32910-7	24G14SFF-UP-H Detail				C- MACC	X Service	- More	C+ Logo
<u>ک</u>	Home	VLAN Settings	Trunk Port							
vorites	VLAN	+ Batch Add VLAN	+ Add VLAN X De	elete Selected VLAN						
<b>Ø</b> atwork	Port		VLAN ID	🗘 VLAN r	ame	Port		Action	1	
	Poe Settings		1	VLANO	001 Gi0/1-	-2,Gi0/4,Gi0/6-14,Gi0/16-20,Gi0	/22-28	Edit		
	Restart		10	VLANO	010	Gi0/1,Gi0/19,Gi0/23-24		Edit De	elete	
20		0	11	VLANO	011	Gi0/1,Gi0/19,Gi0/23-24		Edit De	elete	
vanced			20	VLANO	020	Gi0/1,Gi0/19,Gi0/23-24		Edit De	elete	
(ĵ} ∉stem		0	30	VLANO	030	Gi0/1,Gi0/19,Gi0/23-24		Edit De	elete	
			40	VLANO	040	Gi0/1,Gi0/19,Gi0/23-24		Edit De	elete	
		0	50	VLANO	050	Gi0/1,Gi0/19,Gi0/23-24		Edit De	elete	
			60	VLANO	060 G	i0/1,Gi0/3,Gi0/5,Gi0/19,Gi0/23-	24	Edit De	elete	
			100	STA_V	AN	Gi0/15,Gi0/21,Gi0/23-24		Edit De	elete	
		Show No.: 10 V	999 Total Count:10	VLANC	999	Gi0/1,Gi0/19,Gi0/23-24	≪First ≪ Pre <b>1</b> N	Edit De	H 1	GO
		Show No.: 10 V	999 Total Count:10	VLANG	999	Gi0/1,Gi0/19,Gi0/23-24	≪First ≪ Pre <b>1</b> N	Edit De	Nete	GO
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[	Port Gi0/15	Show No.: 10 V Up/Down Up	999 Total Count:10 Port Type TRUNK	Access VLAN	Native VLAN	Permit VLAN 1-4094	4 First 4 Pre 1 N Descriptio	edit De	Nete I Acti Edit	GO ion Detail
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[	Port Gi0/15 Gi0/15 Gi0/16 Gi0/16 Gi0/17 Gi0/18 Gi0/17 Gi0/18 Gi0/19 Gi0/20 Gi0/	Show No.: 10      Vp/Down     Up     Up	999 Total Count:10 Port Type TRUNK ACCESS ACCESS ACCESS TRUNK ACCESS	Access VLAN 1 1 1 1 1 1 1 1 1 1 1 1 1	Native VLAN 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Permit VLAN	4 First 4 Pro 1 N Descriptio	Noxt > Last b	Acti Edit Edit Edit Edit Edit Edit	GO GO Detail Detail Detail Detail Detail Detail
	Port         I           Gi0/15         I           Gi0/16         I           Gi0/17         I           Gi0/18         I           Gi0/19         I           Gi0/20         I	□ Show No.:: 10 ✓ Up/Down Up Up Up Up Up Up Up Up Up Up	999 Total Count:10 Port Type TRUNK ACCESS ACCESS ACCESS TRUNK ACCESS TRUNK	Access VLAN 1 1 1 1 1 1 1 1 1 1 1 1 1	Native VLAN	Permit VLAN Permit VLAN 1-4094 1-99,101-4094	4 First 4 Pro 1 N Descriptio	n and a second	Acti Edit Edit Edit Edit Edit Edit Edit	I GO Ion Detail Detail Detail Detail Detail Detail
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On the AC:

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≊ŏ AC	,	□ 1	192.168.20.7	255.255.255	5.0	DHCP		Edit
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Network	-	17						Edit Delet
Interface		□ 100	192.168.100.4	255.255.255	5.0	DHCP		Edit Delet
VLAN		2024						Edit Delet
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⊟o AC	,	Port GigabitEthernet 0/1		Mode ACCESS	Default VLAN	Allowed VL	AN	Action Edit
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<ul> <li>B AC</li> <li>AP</li> <li>Network</li> <li>Interface</li> <li>VLAN</li> <li>Route</li> <li>DLGO</li> </ul>	•	Port GigabitEthernet 0/1 GigabitEthernet 0/2 GigabitEthernet 0/3 GigabitEthernet 0/4 GigabitEthernet 0/5 GigabitEthernet 0/6 GigabitEthernet 0/7		Mode Access Access Access TRUNK Access TRUNK	Default VLAN	Allowed VL. 1 1 1 ALL ALL ALL 1 ALL 1	AN	Action Edit Edit Edit Edit Edit Edit Edit
<ul> <li>B AC</li> <li>AP</li> <li>Network</li> <li>Interface</li> <li>VLAN</li> <li>Route</li> <li>DHCP</li> <li>VRDB</li> </ul>	•	Port GigabitEthernet 0/1 GigabitEthernet 0/2 GigabitEthernet 0/3 GigabitEthernet 0/4 GigabitEthernet 0/6 GigabitEthernet 0/7 GigabitEthernet 0/8		Mode Access Access Access TRUNK Access TRUNK Access Access	Default VLAN	Allowed VL 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	AN	Action Edit Edit Edit Edit Edit Edit Edit Edit
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2.5.3 Configure the capwap tunnel address, 802.1x Authentication Parameter (Radius authentication server and AAA Method List) to enable the 802.1x authentication.

<ul> <li>Configure</li> </ul>	the capwap tunnel address on AC
Ruijie AC	프 정 Monitoring @ Config % Diagnosis X Maintenance Enter a search term Q 축 Config Wizard / 호 🗘 🖲 Sy
🙀 Favorites 🛛 🗿	Console Output: Background C
⊡ AC ,	AC2#sh ip int br
φ AP ,	Interface         IP-Address(Pri)         IP-Address(Sec)         Status         Protocol           Loopback 0         10.1.1.1/32         no address         up         up
🗞 System 🕞	Loopback 1 1.1.1.1/32 no address up up
Web Management Teinet Web Console open API SNMP CWMP/MACC	VLAN 1 192.168.20.7/24 192.168.10.1/24 up up VLAN 100 192.168.100.4/24 no address up up AC2#conft Enter configuration commands, one per line. End with CNTL/Z. AC2(config)#ac-controller AC2(config-ac)#capwap ctrl-ip 192.168.20.7 AC2(config-ac)#capwap ctrl-ip 192.168.20.7 AC2(config-ac)#capwap ctrl-ip 192.168.20.7 AC2(wr Command Input:
CWMP/MACC	AC2#wr Command Input:

802.1x Authentication Parameter (Radius authentication server and AAA Method List) 

Ruíjie AC	Œ	🛛 Monitoring	@ Config	🎖 Diagnosis	🗙 Maintenance		Enter a search term Q	芸 Config Wizard	🏾 🖉 🐨 Sys
😭 Favorites 🛛 🗿		Note: It is recommende	d to configure English S	SIDs.	٥				
🗟 WLAN 🗸		Rute Limit. Refers to the	current rute mint for cu		•				
Add WiFi	Ŀ	Add WiFi/WLAN X	Delete Selected						
PPSK		WLAN ID	SSID	Associated AP Gro	up As	ssociated STAs	Forwarding Mode	Action	
≅å AC →		0 1	for-staff	Default 戻	0		Local Forwarding	Edit Rat	te Limit Details
å AP 🔸		2	for-guest	Default 戻	0		Local Forwarding	Edit Rat	te Limit Details
		Show No.: 10 - Tot	tal Count:2					K First 🛛 🔍 🤇 K First	Next > Last
Security									
& Authentication									
Solution ,									
•									•
Ruíjie AC		🛛 Monitoring 🛛 🧃	🔋 Config 🛛 😵 Dia	agnosis 🛛 💥 Maint		Enter a sear	rch term Q	rd 🚿 🗘 🖲 Syste	
🕞 Favorites 🛛 🗿	Note	e: It is recommended to cor	nfigure English SSIDs.						
S WLAN •	Rate	Limit: Refers to the current	rate limit for each user un	der the WLAN. 🕜				×	
Add WiFi	+ Ade	d WiFi/WLA						<u>^</u>	
PPSK		WLAN IE	WLAN ID: 3		* Range: 1-2048				
₽\$ AC →	0	2	SSID: nps1xt	test					
å AP ,	Sho	w No.: 10	ryption Type: WPA/	WPA2-802.1X 🗸	0				1 60
Network		Authentic	cation Server: All Se	rvers 👻 [	Radius Server Settings	s] No authentication serv	ver is specified.		
⊘ Security ,		Accou	unting Server: All Se	rvers 👻					
~ Authentication $~$ ,			>> Adv	anced Settings					
Optimization ,									
♀ Solution →						_			
Advanced					Ne	xt			

Ruijie AC	•	표 @ Monitoring @ Config Wzard @ 🖓 @ System A admin -
😭 Favorites	0	
S WLAN	•	Radius Server Settings ×
Add WiFi		Server Group: All Server  Ald Server  Control  C
PPSK		C Server IP Authe Add Server X Action
E <sup>b</sup> AC	•	form ID (17) MARCO
l AP	•	Server IP: 1/2.26.1.153
Network	•	Authentication Port: 1812
☑ Security	•	Accounting Port: 1813 *
Authentication		Shared Password:
Optimization	•	
Solution		Cancel
<ul> <li>Advanced</li> </ul>	'	
Ruijie AC		표 @ Monitoring
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S WLAN	-	Kadius Server Settings X
Add WiFi		Server Group: All Servers V Delete Selected
PPSK		Server IP         Authentication Port         Accounting Port         Action
ES AC	1	172261.153         1812         1813         Edit         Delete
👶 AP	1	Show No: 10 - Total Count: 1 K First < Pre (1) Next > Last > 1 GO
Network	•	
Security		
Authentication     Optimization		
© Solution		
Advanced		
javascript:void(0)		
Ruijie AC		표 @ Monitoring @ Config & Diagnosis X Maintenance Enter a search term Q 조 Config Wizard @ 🖉 O System 우 admin •
😭 Favorites	0	Note: It is recommended to configure English SSIDs
S WLAN		Rate Limit: Refers to the current rate limit for each user under the WLAN.
Add WiFi		+ Add WiFi/WEA Network Access Configuration X
PPSK		WILAN II Associated AP Group ③ STA VLAN ID ③ STA DHCP Service ③ Network Type Support Radio ③ Action
E% AC	•	□ 1 Default    100 On Switch/Gateway    24685G
l AP	•	Show No. 10
Network	•	
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Authentication	,	
Optimization	•	
✓ Solution		Finish Back
<ul> <li>Auvanced</li> </ul>		

Ruijie AC		Ē	🖉 Monitoring	© Config	ଓ Diagnosis 🛛 💥 Mainte	ance	Enter a search term Q	≅ Config Wizard 🚿 🗘 💿 System	R admin ★		
😭 Favorites	0	Not	e: It is recommended	to configure English S	SIDs.						
S WLAN		Rate Limit: Refers to the current rate limit for each user under the WLAN. (?)									
Add WiFi		+ Ad	d WiFi/WLAN X	Delete Selected							
PPSK			WLAN ID	SSID	Associated AP Group	Associated STAs	Forwarding Mode	Action			
🗟 AC			1	for-staff	Default 😡	0	Local Forwarding	Edit Rate Limit Details			
å AD			2	for-guest	Default 😡	0	Local Forwarding	Edit Rate Limit Details			
a Ar			3	nps1xtest	Default 頋	0	Local Forwarding	Edit Rate Limit Details			
Network	•	Sho	w No.: 10 🗸 Tot	al Count:3			1	K First 〈 Pre 1 Next 〉 Last 게 1	60		
Security	•										
Authentication	× .										
Optimization											
Solution											
Advanced											

#### To do the CLI configuration

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😭 Favorites 🛛 🕚	Console Output: Background C							
🖻 AC 🔸	AC2#conf t							
φÅ AP γ	Enter configuration commands, one per line. End with CNTL/Z. AC2(config)#aaa new-model							
🗞 System 🔹	AC2(config)#aaa group server radius npstest							
Web Management Telnet Web Console	AC2(config-gs-radius)#exit AC2(config-gs-radius)#exit AC2(config)#aaa authentication dot1x nps group npstest AC2(config)#aaa accounting network nps start-stop group npstest							
open API	AC2(config)#aaa domain ruijie007.com							
SNMP	AC2(config-aaa-domain)#authentication dot1x nps							
CWMP/MACC	AC2(config-aa-domain)#accounting network nps							
	Command Input: Send Clear Screen							

Favorites     Console Output:     Console Output:     AC     AC2(config)#aaa ad     AC2(config)#aaa dd	counting network n	ps group ripstest			Background Cc
AP     AP     AC2(config)#aaa da     AC2(config)#aaa da     AC2(config-aaa-da     AC2(config-aaa-da     AC2(config-aaa-da     AC2(config-aaa-da     AC2(config)#wlans     AC2(config-wlanse     open API     AC2(config-wlanse     SNMP     AC2(config-wlanse     AC2(config-wlanse     AC2(config)#	main ruijle007.com main)#authenticatio main)#accounting n main)#exit c 3 )#security rsn enabl )#security rsn eiphe )#security rsn akm i }#exit	n dot1x nps atwork nps e rs aes enable 002.1x enable	pstest		
Command Input: Command Input: AC2 (config) #aaa new-n	odel	radius	Send Clear Screen		

AC2(config-gs-radius)#server 172.26.1.153

```
AC2(config-gs-radius)#exit
AC2(config)#aaa authentication dot1x nps group npstest
AC2(config) #aaa accounting network nps start-stop group npstest
AC2(config) #aaa domain enable
AC2(config)#aaa domain ruijie007.com // the domain name setted in nps上设置的域名
AC2 (config-aaa-domain) #authentication dot1x nps
AC2(config-aaa-domain) #accounting network nps
AC2(config-aaa-domain)#exit
AC2(config) #wlansec 3
                            //corresponding wlansec number of nps1xtest SSID,
that is WLAN ID
AC2(config-wlansec) #security rsn enable
AC2(config-wlansec) #security rsn ciphers aes enable
AC2(config-wlansec) #security rsn akm 802.1x enable
AC2(config-wlansec)#exit
AC2(config)#end
AC2#wr
Building configuration...
[OK]
AC2#
```

## 2.6 Result Verification

STA connect to the SSID and pass the authentication successfully.

Favorites       Console Output:       Backgrou         S       AC       AC2(config: wlansec)#security rsn ciphers ase anable       AC2(config: wlansec)#security rsn able         AC2(config: wlansec)#security rsn ciphers ase anable       AC2(config: wlansec)#security rsn able       AC2(config: wlansec)#security rsn able         & AP       AC2(config: wlansec)#security rsn able       AC2(config: wlansec)#security rsn able       AC2(config: wlansec)#security rsn able         & System       •       AC2(config: wlansec)#security rsn able       AC2(config: wlansec)#security rsn able         & AC2(config: wlansec)#security rsn able       AC2(config: wlansec)#security rsn able       AC2(config: wlansec)#security rsn able         & AC2(config: wlansec)#security rsn able       AC2(config: wlansec)#security rsn able       AC2(config: wlansec)#security rsn able         & AC2(config: wlansec)#security rsn able       AC2(config: wlansec)#security rsn able       AC2(config: wlansec)#security rsn able         & AC2(config: wlansec)#security rsn able       AC2(config: wlansec)#security rsn able       AC2(config: wlansec)#security rsn able         & Meb       Management       IOKI       AC2(config: wlansec)#security rsn able         & Meb       Ac2#security rsn able       AC2(config: wlansec)#security rsn able       AC2(config: wlansec)#security rsn able         & Sixter       IOKI       AC2(config: wlansec)#security rsn able       AC2(rotity rsn able </th <th>Ruíjie AC</th> <th>Œ</th> <th>🛛 🖾 Monitoring</th> <th>Config</th> <th>🎖 Diagnosis</th> <th>X Maintenance</th> <th>Enter a se</th> <th>earch term Q</th> <th>莘 Config Wizard</th> <th>s 🗘 💿</th> <th>sys</th>	Ruíjie AC	Œ	🛛 🖾 Monitoring	Config	🎖 Diagnosis	X Maintenance	Enter a se	earch term Q	莘 Config Wizard	s 🗘 💿	sys
S AC       AC2(config whanse)#security is nicibles as enable         AC2(config whanse)#security is nicibles as enable <td>😭 Favorites</td> <td>0</td> <td>Console Output:</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Background</td> <td>Cc</td>	😭 Favorites	0	Console Output:							Background	Cc
& AP       AC2(config:wlansec)#security rsn akm 802.1x enable         & System       AC2(config:wlansec)#security rsn akm 802.1x enable         & System       AC2(config:wlansec)#security rsn akm 802.1x enable         & Web Management       AC2(config:wlansec)#security rsn akm 802.1x enable         Telnet       Building configuration         Veb Console       IOKI         open API       AC2#show dot1x summary         ID       Username       MAC         AC2#       Acca#show work in a 100 Authenticated Idle         CWMP/MACC       Command Input:	🖻 AC	•	AC2(config-wlansec)#s	ecurity rsn cipher	rs aes enable						
System     AC2(config)#end       Web Management     Building configuration       Telnet     IOKI       Web Console     IOKI       open API     AC2#       SNMP     34 ruijie@ruijie007.com       CWMP/MACC     Command Input.	් AP	•	AC2(config-wlansec)#s AC2(config-wlansec)#e	ecurity rsn akm 8 exit	02.1x enable						
Web Management     AL2#Wr       Telnet     Building configuration       Telnet     [OK]       AC2#show dot1x summary       ID     Username       MAC     Interface VLAN Auth-State       Backend-state Port-Status User-Type Time	🗞 System	*	AC2(config)#end								
	Web Management Telnet Web Console open API SNMP CWMP/MACC	t	AC2#Wr Building configuration [OK] AC2#show dot1x sumr ID Username 	 mary MAC 7.com e685	Interface VLAN J	Auth-State Backend-state P 100 Authenticated Idle Send Clear Screen	ort-Status User-Type Time	 h12m11s			