# Secure Services Configuration Guides

## 1. Configure Secure Passwords and SSH

Enable password encryption, strong secrets, RSA key generation, login blocking, and SSH on RTA and SW1.

### RTA Basic Security & SSH

|  |  |
| --- | --- |
| Prompt | Command |
| RTA(config)# | service password-encryption |
| RTA(config)# | security passwords min-length 10 |
| RTA(config)# | enable secret <your\_secret> |
| RTA(config)# | no ip domain-lookup |
| RTA(config)# | ip domain-name netsec.com |
| RTA(config)# | username admin secret <admin\_password> |
| RTA(config)# | crypto key generate rsa modulus 1024 |
| RTA(config)# | login block-for 180 attempts 4 within 120 |
| RTA(config)# | line vty 0 4 |
| RTA(config-line)# | transport input ssh |
| RTA(config-line)# | login local |
| RTA(config-line)# | exec-timeout 6 |
| RTA# | copy running-config startup-config |

### SW1 Basic Security & SSH

|  |  |
| --- | --- |
| Prompt | Command |
| SW1(config)# | service password-encryption |
| SW1(config)# | security passwords min-length 10 |
| SW1(config)# | enable secret <your\_secret> |
| SW1(config)# | no ip domain-lookup |
| SW1(config)# | ip domain-name netsec.com |
| SW1(config)# | username admin secret <admin\_password> |
| SW1(config)# | crypto key generate rsa modulus 1024 |
| SW1(config)# | interface vlan 1 |
| SW1(config-if)# | ip address 172.16.1.2 255.255.255.0 |
| SW1(config-if)# | no shutdown |
| SW1(config)# | ip default-gateway 172.16.1.1 |
| SW1(config)# | interface range Fa0/2-24, G0/2 |
| SW1(config-if-range)# | shutdown |
| SW1(config)# | line vty 0 4 |
| SW1(config-line)# | transport input ssh |
| SW1(config-line)# | login local |
| SW1(config-line)# | exec-timeout 6 |
| SW1# | copy running-config startup-config |

## 2. Configure OSPF Authentication

Enable MD5 authentication for OSPF area 0 on all routers.

### Test Connectivity

|  |  |
| --- | --- |
| Prompt | Command |
| Router# | ping 10.1.1.2 |
| Router# | ping 10.2.2.1 |
| Router# | ping 192.168.3.1 |

### Enable OSPF MD5 Authentication

|  |  |
| --- | --- |
| Prompt | Command |
| R1(config)# | router ospf 1 |
| R1(config-router)# | area 0 authentication message-digest |
| R2(config)# | router ospf 1 |
| R2(config-router)# | area 0 authentication message-digest |
| R3(config)# | router ospf 1 |
| R3(config-router)# | area 0 authentication message-digest |

### Configure OSPF Keys on Interfaces

|  |  |
| --- | --- |
| Prompt | Command |
| R1(config)# | interface g0/0/0 |
| R1(config-if)# | ip ospf message-digest-key 1 md5 MD5pa55 |
| R2(config)# | interface g0/0/0 |
| R2(config-if)# | ip ospf message-digest-key 1 md5 MD5pa55 |
| R3(config)# | interface g0/0/0 |
| R3(config-if)# | ip ospf message-digest-key 1 md5 MD5pa55 |

### Verify OSPF Authentication

|  |  |
| --- | --- |
| Prompt | Command |
| Router# | show ip ospf interface |
| Router# | show ip ospf neighbor |

## 3. Configure and Verify Secure NTP

Set up NTP client authentication and synchronization on R1 and R2.

### Verify Server & Connectivity

|  |  |
| --- | --- |
| Prompt | Command |
| R1# | show ntp status |
| R1# | ping 209.165.200.225 |
| R2# | ping 209.165.200.225 |

### Configure NTP Client

|  |  |
| --- | --- |
| Prompt | Command |
| R1(config)# | ntp server 209.165.200.225 |
| R2(config)# | ntp server 209.165.200.225 |

### Enable NTP Authentication

|  |  |
| --- | --- |
| Prompt | Command |
| R1(config)# | ntp authenticate |
| R1(config)# | ntp trusted-key 1 |
| R1(config)# | ntp authentication-key 1 md5 NTPpa55 |
| R2(config)# | ntp authenticate |
| R2(config)# | ntp trusted-key 1 |
| R2(config)# | ntp authentication-key 1 md5 NTPpa55 |

### Verify NTP Configuration

|  |  |
| --- | --- |
| Prompt | Command |
| R1# | show clock detail |
| R1# | show ntp status |
| R1# | show ntp associations |

## 4. Syslog, NTP & SSH Operations

Configure remote SSH access, syslog servers, switch timestamps, and NTP synchronization.

### Secure Remote SSH on R1

|  |  |
| --- | --- |
| Prompt | Command |
| R1(config)# | enable secret cisco12345 |
| R1(config)# | no ip domain-lookup |
| R1(config)# | ip domain-name example.com |
| R1(config)# | username SSHuser secret SSHuserpass |
| R1(config)# | crypto key generate rsa modulus 1024 |
| R1(config)# | login block-for 300 attempts 4 within 120 |
| R1(config)# | line vty 0 4 |
| R1(config-line)# | transport input ssh |
| R1(config-line)# | login local |
| R1(config-line)# | exec-timeout 5 |

### Configure Syslog

|  |  |
| --- | --- |
| Prompt | Command |
| R1(config)# | logging 10.0.1.254 |
| S1(config)# | logging 10.0.1.254 |
| S2(config)# | logging 10.0.1.254 |

### Enable Switch Timestamps

|  |  |
| --- | --- |
| Prompt | Command |
| S1(config)# | service timestamps log datetime msec |
| S2(config)# | service timestamps log datetime msec |

### Configure NTP on R1

|  |  |
| --- | --- |
| Prompt | Command |
| R1(config)# | ntp server 64.103.224.2 |

### Verify Operations

|  |  |
| --- | --- |
| Prompt | Command |
| R1# | show logging |
| S1# | show clock |
| R1# | show ntp status |