

Configuring IS-IS

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- **Naming Convention**
- **Basic Configuration**
- **SP Configuration**
- **MD5 Authentication**

Naming Convention

- IS-IS uses **CLNS NSAP** as “router-id”
- We need a consistent way of mapping loopback IP to CLNS System-IDs
- We use **AFI 49** for “local” NSAP - NET.

Naming Convention

- How do most ISPs define System IDs? E.g.

The **LOOPBACK** IP Address: **192.168.3.25**

The **AREA** the Router Under Is: **49.0001**

Conversion Process:

192.168.3.25

192.168.003.025

1921.6800.3025

49.0001.1921.6800.3025

Naming Convention

IOS Configuration

```
router#configure terminal
```

Enter configuration commands, one per line. End with CNTL/Z.

```
router(config)#int loopback 0
```

```
router(config-if)#ip address 192.168.3.25 255.255.255.255
```

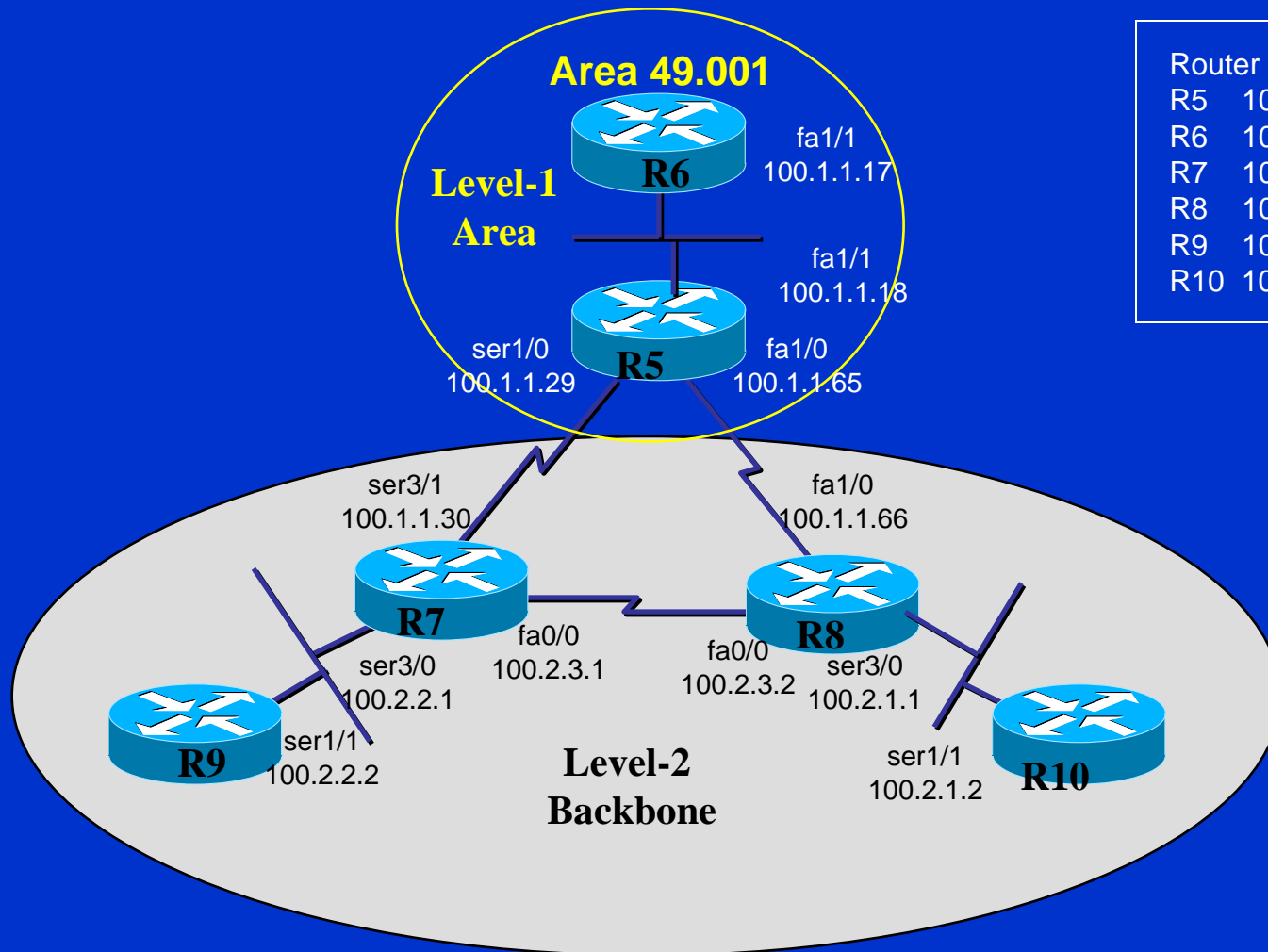
```
router(config-if)#exit
```

```
router(config)#router isis
```

```
router(config-router)#net 49.0001.1921.6800.3025.00
```

```
router(config-router)#^Z
```

Basic Configuration



Router Loopbacks:

R5 100.1.0.5/32
R6 100.1.0.6/32
R7 100.1.0.7/32
R8 100.1.0.8/32
R9 100.1.0.9/32
R10 100.1.0.10/32

Basic Configuration: R5

```
hostname R5
!
Interface Loopback0
Ip address 100.1.0.5 255.255.255.255
!
interface FastEthernet1/0
  description -- Connection to R8 --
  ip address 100.1.1.65 255.255.255.252
  ip router isis level1
  isis network point-to-point
!
interface Serial1/0
  ip address 100.1.1.29 255.255.255.252
  ip router isis level1
  clock rate 2000000
!
```

```
interface FastEthernet1/1
  ip address 100.1.1.18 255.255.255.252
  ip router isis level1
!
router isis level1
  net 59.0551.1000.0100.0005.00
  metric-style wide
  set-overload-bit on-startup wait-for-
    bgp
  passive-interface Loopback0
```

SP Configuration

- Recommended SP configuration
 - Metric-style wide
 - Level-2-only (for level-2)
 - Level-1-only (for level-1)
 - Overload signaling (fate sharing with CEF)
 - “*set-overload-bit*” on start-up and BGP
 - “*isis network point-to-point*” on broadcast media for point-to-point-links

MD5 Authentication

- MD5 Authentication can be applied to the 5 packet types:
 - LSP
 - LAN-Hello
 - P2P-Hello
 - CSNP
 - PSNP
- On Different IS-IS Levels Independently
- Passwords can be rolled over without disruption to adjacency

MD5 Authentication

- Can configure to accept PDU with or without authentication, but send out PDUs with authentication (transition)
- Ability to select authentication for L1/L2, LSP only, interface PDUs, Hellos, SNPs, etc.
- “*service password-encryption*” should be used to prevent keys being shown in clear-text

MD5 Authentication

Configuration Tasks

1. Create keychain and associated keys
2. Configure authentication type (MD5)
3. Associate keychain with authentication

```
key chain keychain  
  key instance  
    key-string keystack
```

```
!
```

```
router isis isp  
  authentication mode [text|md5] [level-1|level-2]  
  authentication key-chain keychain
```

```
!
```

MD5 Authentication

For non-disruptive migration to MD5

1. **Create keychain and associated keys**
2. **Configure “authentication send-only”**
3. **Configure authentication type (MD5)**
4. **Associate keychain with authentication**
5. **Remove “authentication send-only” after all routers have been configured with steps 1-4**

MD5 Authentication (Example)

```
hostname R1
!
key chain mychain
  key 1
    key-string d0na!dDu(k
!
router isis isp
  net 49.0001.1921.6800.1001.00
  is-type level-1
  authentication mode md5
  authentication key-chain mychain
  passive-interface Loopback0
!
```

MD5 Authentication (More e.g.)

```
key chain mychain
  key 1
    key-string d0na!dDu(k
    accept-lifetime 00:00:00 Feb 20 2006 00:10:00 Feb 26 2006
    send-lifetime 00:00:00 Feb 20 2006 00:00:00 Feb 26 2006
  key 2
    key-string m!ck3yM0us3
    accept-lifetime 00:00:00 Feb 20 2006 infinite
    send-lifetime 00:00:00 Feb 20 2006 infinite
!
router isis isp
  net 49.0001.1921.6800.1001.00
  is-type level-1
  authentication mode md5
  authentication key-chain mychain
  passive-interface Loopback0
```