



## Building Scalable Cisco Internetworks (BSCI)

### IP Routing Features

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## Route Redistribution Overview

- Process of exchanging reachability information between routing domains
  - e.g. OSPF to EIGRP redistribution
- Considerations
  - Metric conversion
  - Loss of loop prevention
  - Table instability
    - e.g. BGP to IGP redistribution

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## How Redistribution Works

- Route redistribution occurs from the routing *table*, not the routing *database*
  - i.e. only currently installed routes are candidate to be redistributed
- Most protocols also include connected interfaces running the routing process as candidate
  - e.g. implicit `redistribute connected`
  - IS-IS & IPv6 exceptions
- Redistribution must be explicit
  - e.g. EIGRP to OSPF then OSPF to RIP does not imply EIGRP to RIP

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## Redistribution into RIPv2

- Does not distinguish between internal vs. external routes
- No default metric for redistribution, must be manually specified
  - Global `default-metric`
  - Individual redistribute statements

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## Redistribution into EIGRP

- Does distinguish between internal vs. external routes
  - Internal (D) EIGRP AD 90
  - External (D EX) EIGRP AD 170
- EIGRP Router-ID tagged in external route
  - Automatic loop prevention
- No default metric for redistribution unless going EIGRP to EIGRP
  - Global `default-metric`
  - Individual redistribute statements

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## Redistribution into OSPF

- Does distinguish between internal vs. external routes
  - E1/E2/N1/N2
  - Same AD for all, but can be separately modified
- OSPF Router-ID tagged in external LSA
  - Automatic loop prevention
- Default metric of 20
- Default metric type of E2/N2

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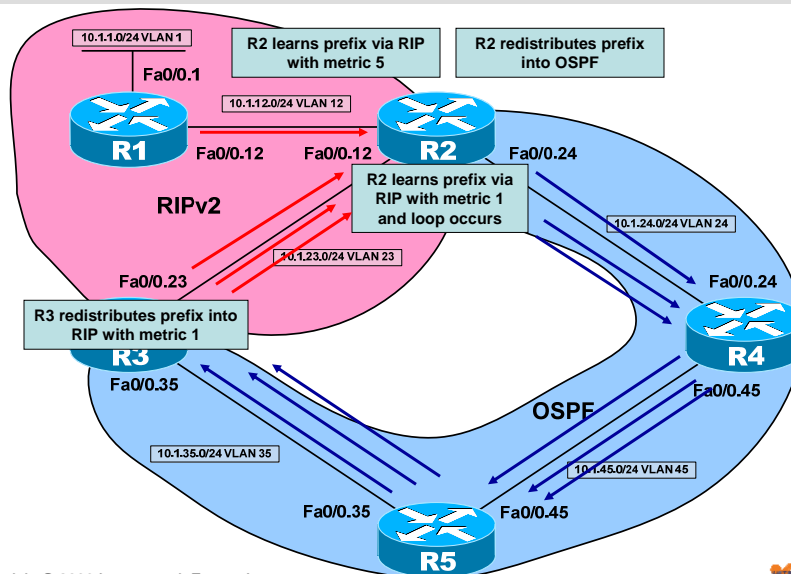
## Redistribution into IS-IS

- Does distinguish between internal vs. external routes
  - Same AD for all, cannot be separately modified
- Default metric of 10
- Default level L2-Only
- Redistributing *from* IS-IS does not include connected routes

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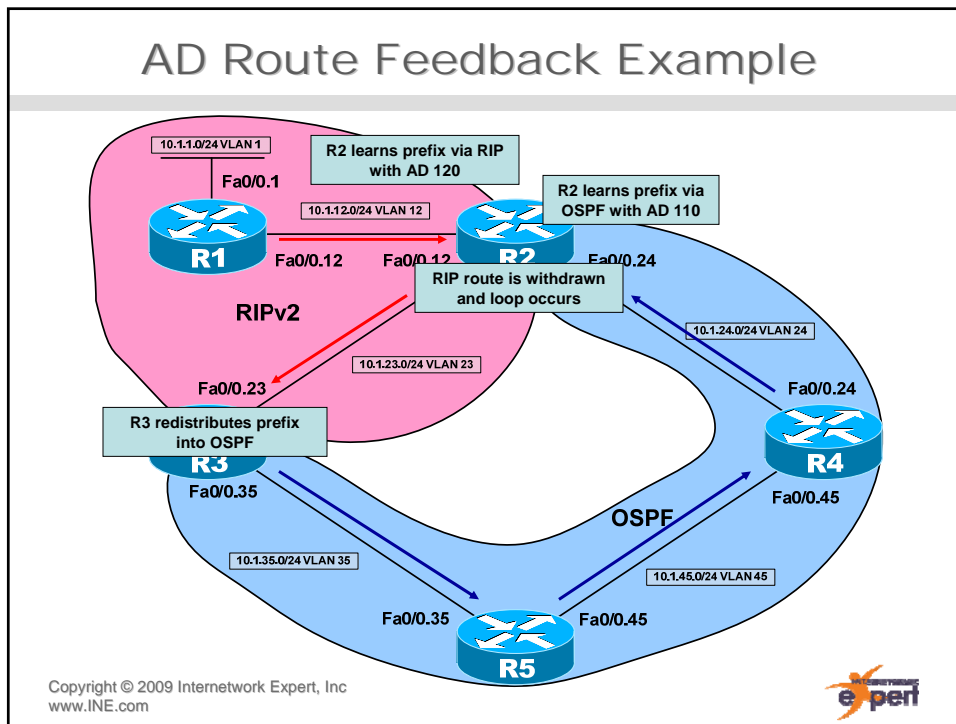


## Metric Route Feedback Example



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### Route Maps

- Condition based criteria for filtering & modifying redistribution
- Like ACLs, ends in implicit deny
- Typically should match prefix-list, but can match more
  - ACL
  - Route type
  - Route source
  - Metric
- Can be used for route tagging & loop prevention

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## Distribute-Lists

- ACLs & prefix-lists for filtering route advertisement inbound/outbound on a per neighbor/interface basis
- Only for RIPv2/EIGRP/BGP
  - Breaks OSPF/IS-IS LSDB logic

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## Passive Interface

- Used to disable sending of routing updates on an interface that has the process enabled
- For RIPv2, receive but not send
- For OSPF/EIGRP, breaks adjacency forming
- For IS-IS, advertise the link but don't send hellos
- Can be per link or all links

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## DHCP

- Dynamic Host Configuration Protocol
- Automatic assignment of
  - IP address
  - Default Gateway
  - DNS
  - ....
- IOS supports
  - DHCP Server
  - DHCP Proxy
  - DHCP Client
    - Ethernet & IPCP

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## Routing Features Q&A

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