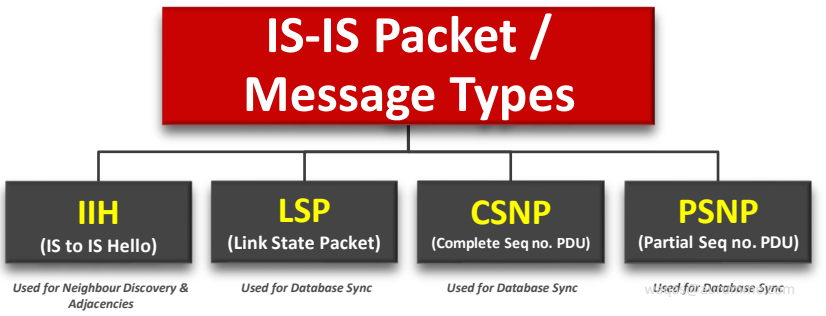
IS-IS Routing Protocol – Cheatsheet – Part-1

Version 2

Key Attributes

Protocol Type/Class:	IP / Link State / Classless
Standard:	Original IS-IS - ISO10589 (1987), Integrated/Dual IS-IS RFC1195 (1990)
Algorithm:	SPF (Dijkstra)
Type:	IGP (Interior Gateway Protocol)
Admin Distance:	115
Metric:	10 (Default)
Authentication:	YES (Plaintext, MD5)
Transport:	Layer2
Area borders:	On Links (not on Routers as in OSPF)
Updates:	Unicast / Multicast (Layer2)
Support:	Supports VLSM, FLSM & Manual Summary
Convergence Speed:	Fast (Hello/Dead=10s/30s), while OSPF is 10/40, 30/120
Multicast Addresses:	01-80-C2-00-00-14/15, 09-00-2B-00-00-04/05

IS-IS Packet / Message Types



IS-IS Terms

IS-IS Term	Description
IS (Intermediate System)	ISO terminology for Router
ES (End System)	ISO terminology for Host
DIS (Designated IS)	The Router elected to generate the LSP/LSA. Same as DR in OSPF
LSP (Link State PDU)	Advertisements. Same as LSA in OSPF
Level-1 Router	Same as IR (Internal Router) in OSPF
Level-2 Router	Same as BB or ASBR in OSPF
Level-1/2 Router	Same as ABR in OSPF
CLNP	Connectionless Network Protocol (An OSI Protocol)
Routing Domain	Same as AS (Autonomous System)
Sub Domain	Same as Area in OSPF
IS-IS System ID	Same as OSPF Router ID
CSNP (Complete Seq No. PDU)	Same as DBD in OSPF
PSNP (Partial Sequence No. PDU)	Same as LSAck/LSR in OSPF
TLV (Type/Length/Value)	Variable-length modular datasets used in IS-IS
PDU	Packet www.networkwalks.com
SNPA (Sub-network Point of Attachment)	Layer2 Address. It identifies a point at which a device connects to a network in CLNS language
NET (Network Entity Title)	Address assigned to an instance of the IS-IS protocol
ESH / ISH / IIH	Hello Packets used by IS-IS to establish adjacencies with other IS and ES
SNP (Sequence Number Packet)	Used to request and advertise LSPs. SNP's can be complete (CSNP) or partial (PSNP)

IS-IS Timers

Interface Type	IS-IS Timer
POINT-to-POINT	Hello Interval: 10 sec Dead Interval: 30 sec
BROADCAST	Hello Interval: 10 sec Dead Interval: 30 sec

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IS-IS Router Levels

Level-1 Router	Same as IR (Internal Router) in OSPF	Intra-Area Routing. Contains a Level-1 LSDB only	Responsible for only routing to ESs inside an area
Level-2 Router	Same as BB or ASBR in OSPF	Inter-Area Routing. Contains a Level-2 LSDB only	Responsible for routing between areas
Level-1/2 Router	Same as ABR in OSPF	Intra-Area & Inter-Area Routing. Contains two separate LSDB's for Level-1 & Level-2	Responsible for both L1 intra-area routing and L2 inter-area routing

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IS-IS Metrics

COST	Mandatory	Sum of the costs on all outgoing interfaces along a particular path from the source to the destination. All Links costs are 10 by default. **Cost Range:** 1-63 (narrow metric style) - 6bit metric value 0–16277215 (transition/wide metric style)
DELAY	Optional	Transit delay of a subnetwork
EXPENSE	Optional	Monetary cost of using the subnetwork
ERROR	Optional	Error probability of the subnetwork

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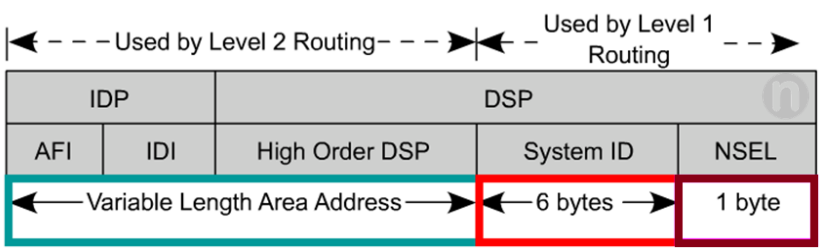
**Cisco Routers support only the Cost (default) metric*

IS-IS Router ID (NET / NSAP)



AFI (8 bits): Any number (usually 49 indicating Private IS-IS)
Area (16 bits): Area
System ID (48 bits): MAC Address of any interface of this Router
NSEL (last 8 bits): Zero (NSEL = 00 means the device itself. The NSAP with a NSEL = 00 is known as a NET)

e.g. AFI.Area . System ID(MAC) . NSEL (always 00 on ISs)
49.0001.2222.2222.2222.00