## Discussing Simple OSPF Communication Blocks



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## Module Overview





### Module Overview



Reviewing what a link state advertisement is



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Reviewing what a link state advertisement is

Digging into the router LSA (type 1)

Digging into the network LSA (type 2)

Digging into the external LSA (type 5)



# Let's focus on OSPF information exchange



#### **OSPF** Communications

Two different exchanges:

**Using DBD packets** 



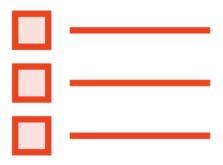
#### **OSPF** Communications

Two different exchanges:

Using link state packets (request, update, acknowledgment)



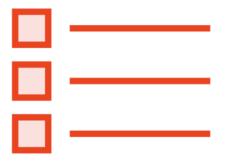
## DBD Matching

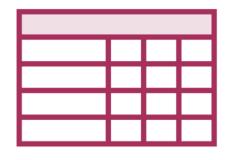


Link state type



#### DBD Matching



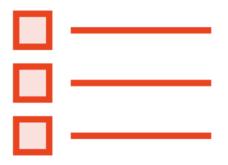


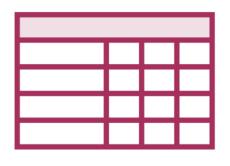
Link state type

Link state ID



#### DBD Matching







Link state type

Link state ID

Advertising device RID









If LSAs are missing





If LSAs are missing

Requested using a link state request packet



LSAs send back using link state update packet





#### Link State Acknowledgement

Exchange completed using link state acknowledgment packet



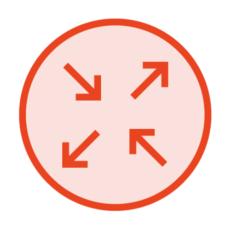
#### Link State Acknowledgement

If not seen, will be retransmitted



#### What Are the Different LSA Types?

#### Coverage including:

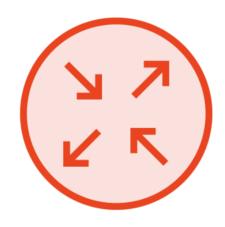


Router (type 1)

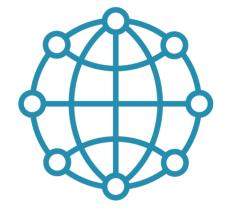


#### What Are the Different LSA Types?

#### Coverage including:





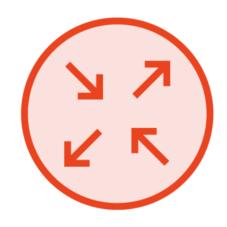


Network (type 2)



#### What Are the Different LSA Types?

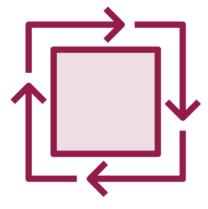
#### Coverage including:







Network (type 2)



External (type 5)









Generated by all OSPF devices





Generated by all OSPF devices

**Amount of information varies** 





Generated by all OSPF devices

Amount of information varies

Sent to every area device

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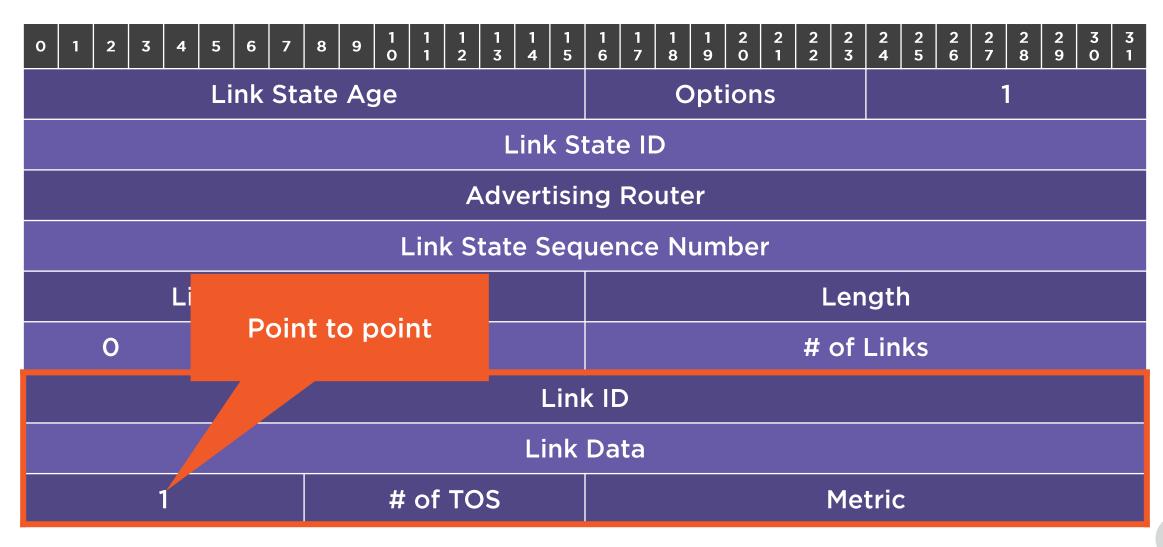
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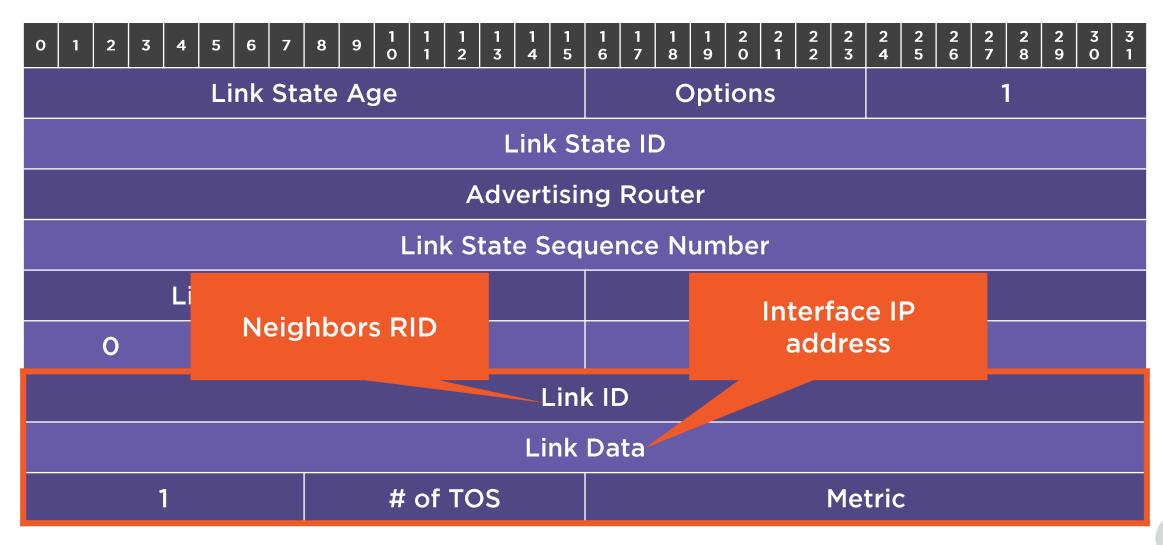
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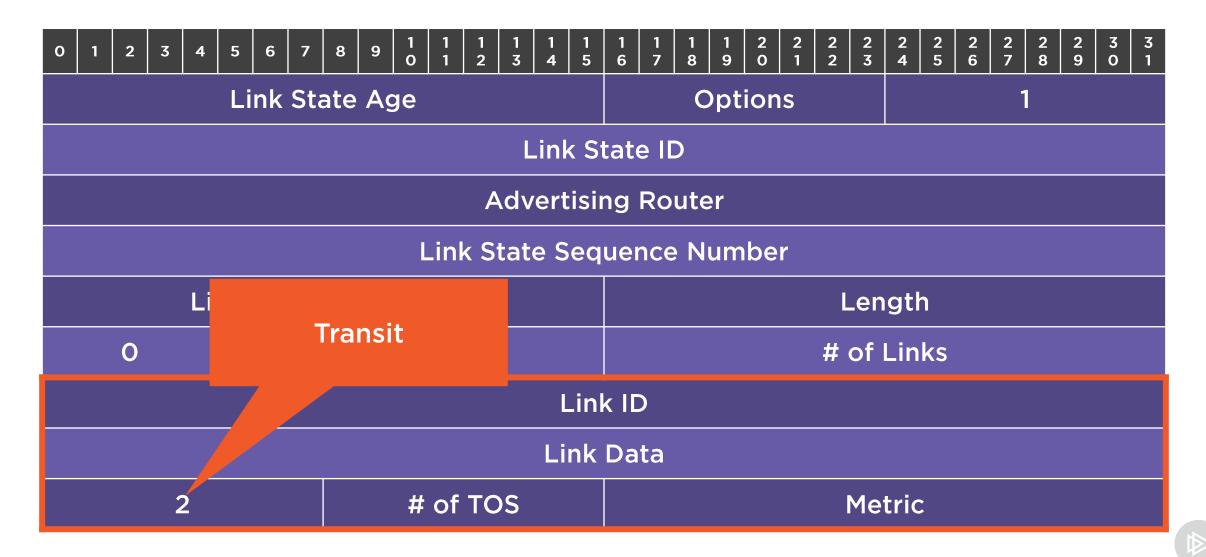
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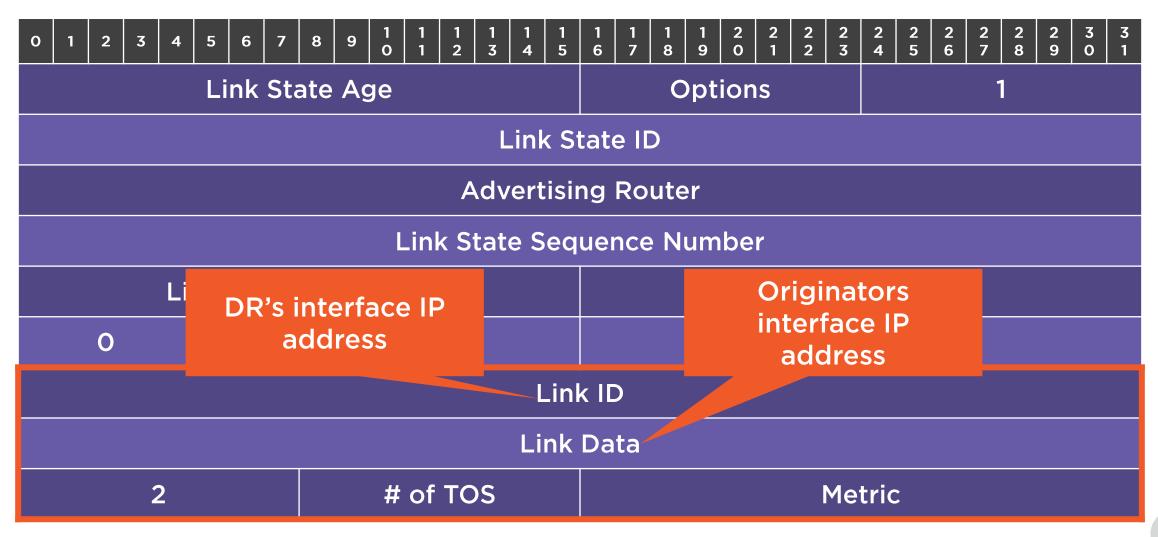
#### Router LSA – Link Type 1 - PtP



#### Router LSA – Link Type 2 - Transit

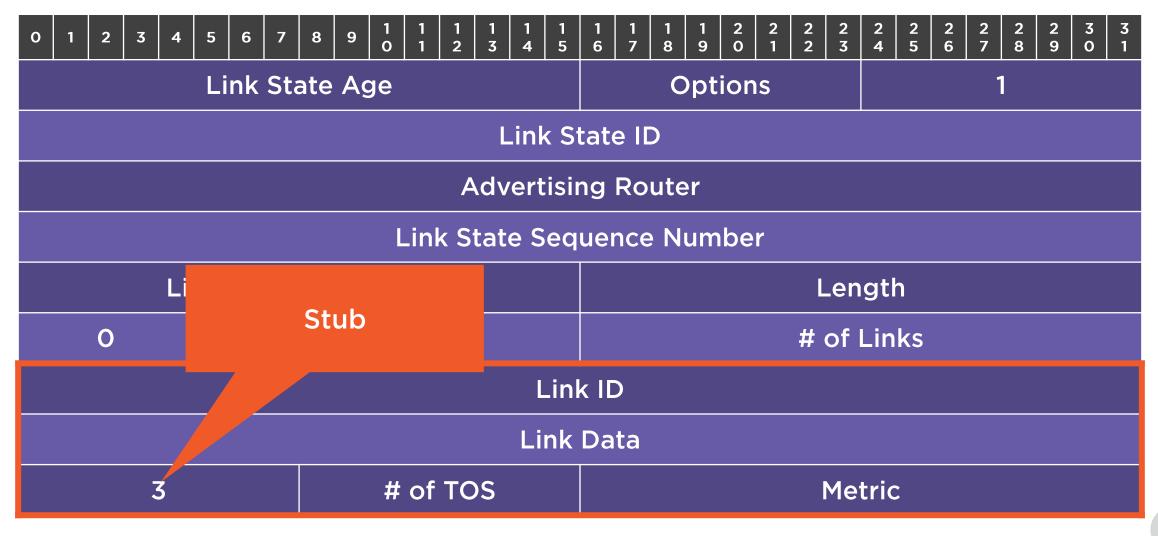


#### Router LSA – Link Type 2 - Transit



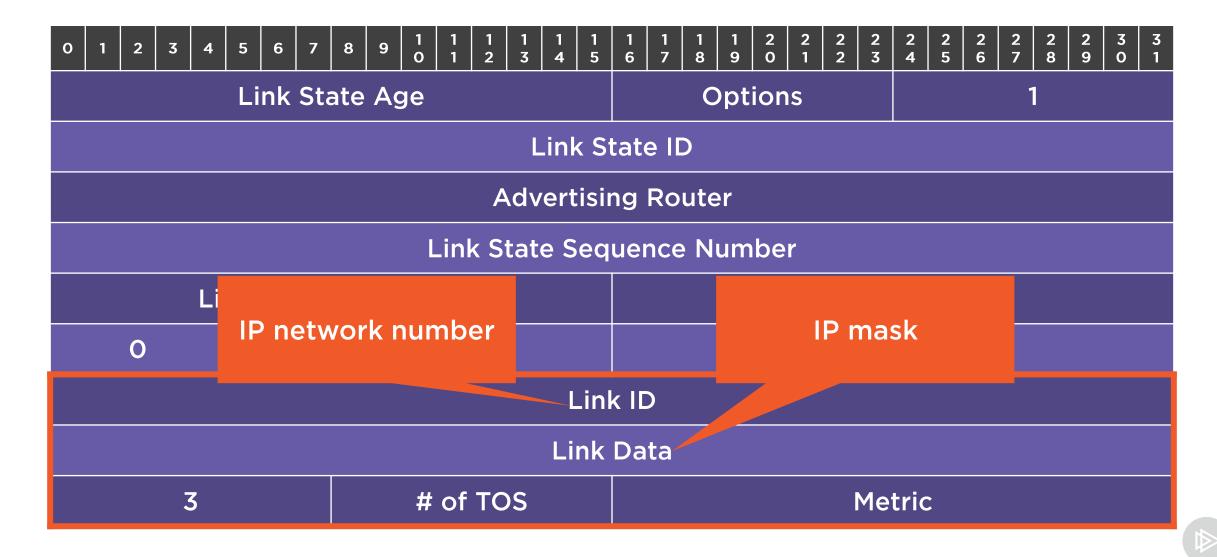


#### Router LSA – Link Type 3 - Stub

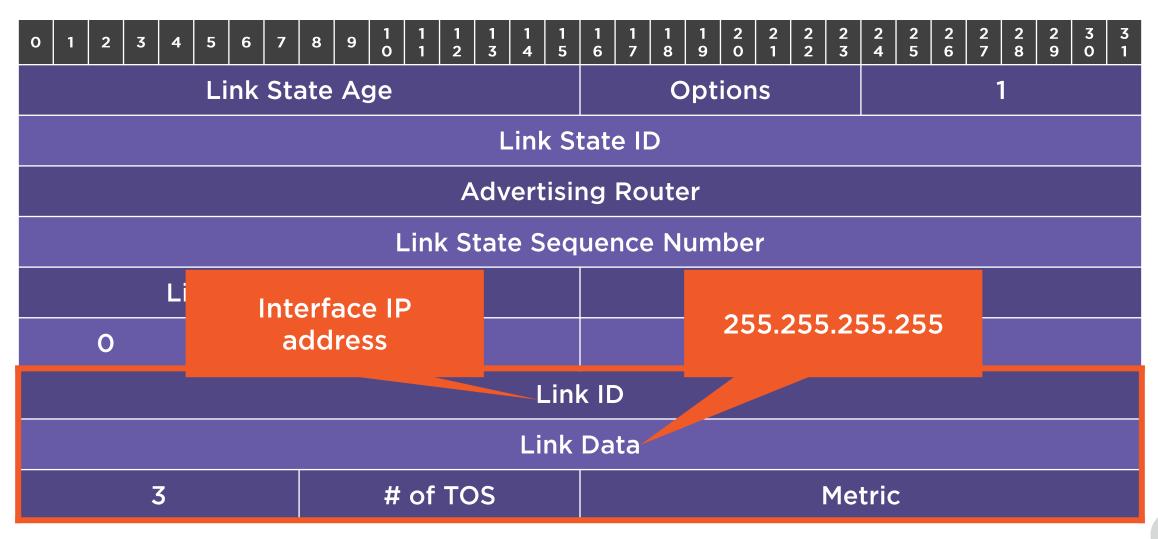




#### Router LSA – Link Type 3 - Stub

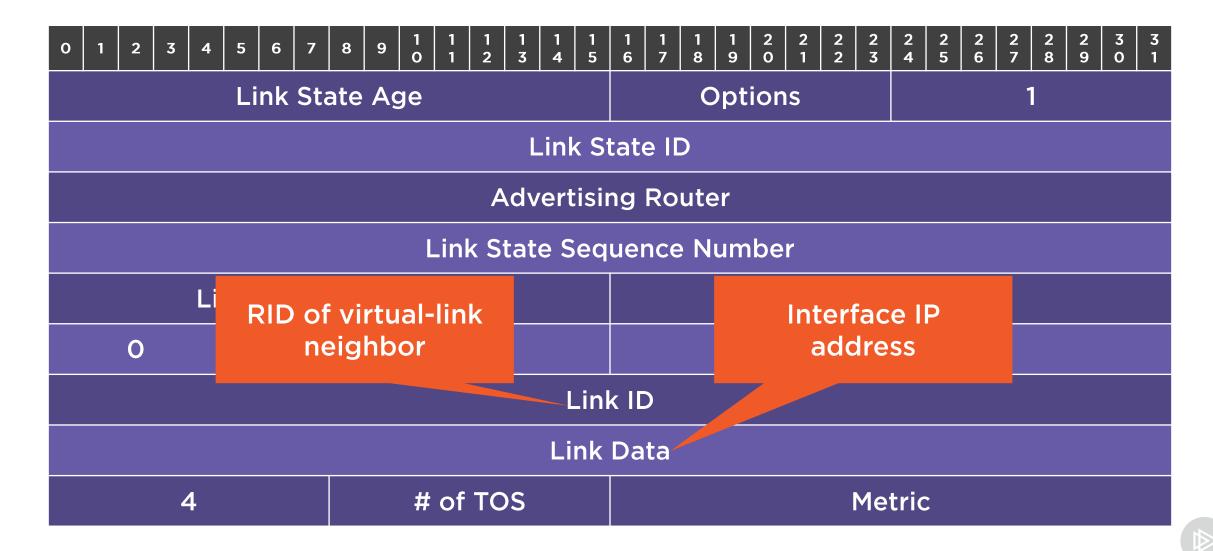


#### Router LSA – Link Type 3 – Stub – PtMP





### Router LSA – Link Type 4 – Virtual Link



# Let's move into the lab



Only used on links with DR



DR generates this LSA



Sent to every area device



2+

At least two devices required





At least two devices required

One device would result in only router LSA



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Advertises networks outside of OSPF

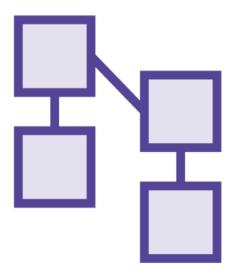




Advertises networks outside of OSPF

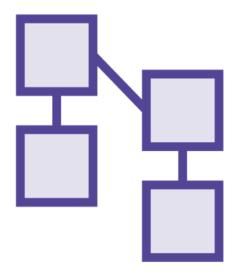
Taken from other sources







Originated by connecting device

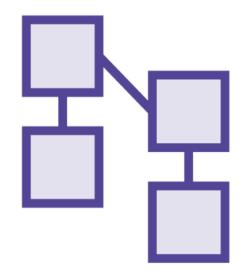




Originated by connecting device

Autonomous system boundary router

(ASBR)



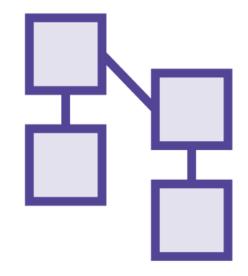


Originated by connecting device

Autonomous system boundary router

(ASBR)

Send to every OSPF device





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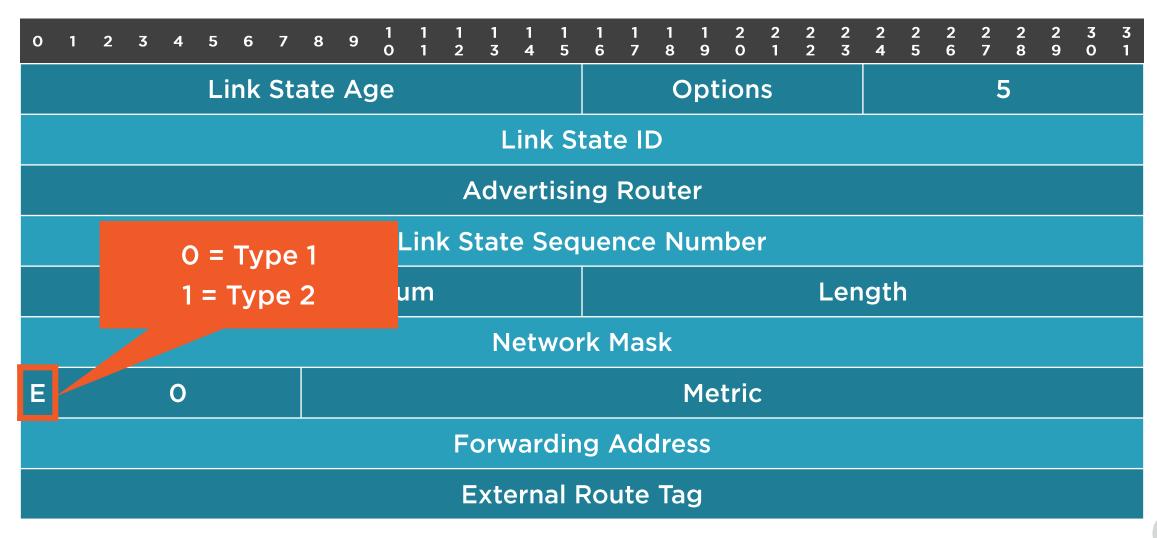
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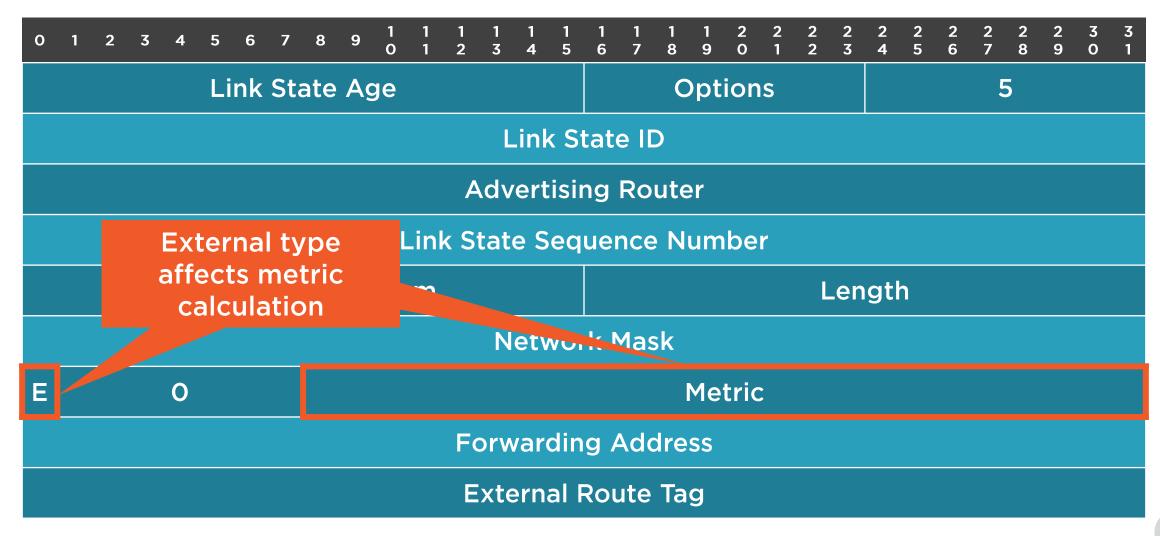
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# Summary





### Summary



Reviewing what a link state advertisement is



### Summary



Reviewing what a link state advertisement is

Digging into the router LSA (type 1)

Digging into the network LSA (type 2)

Digging into the external LSA (type 5)



# Lab Topology

