OSPF Topology-Transparent Zone

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Contents

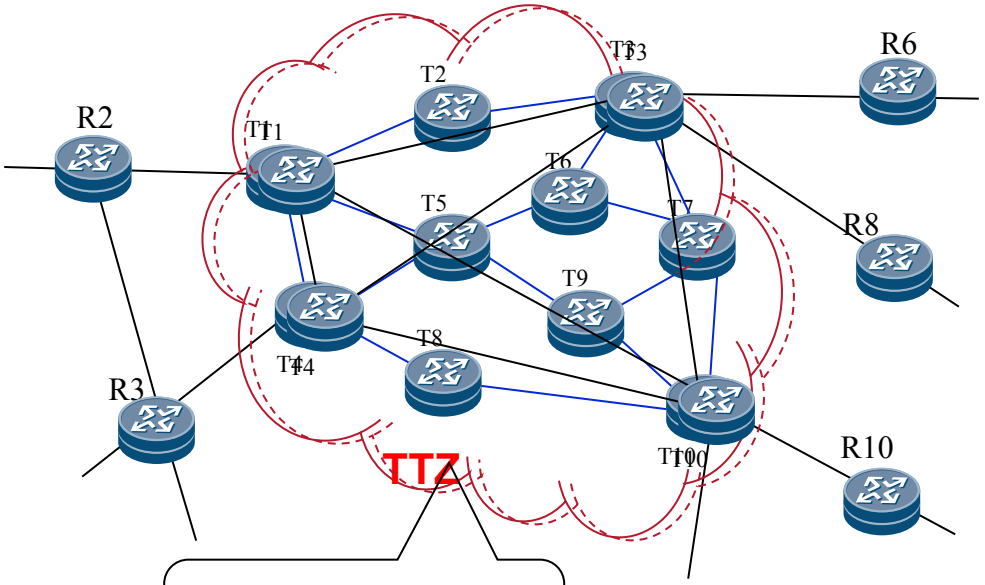
Definition of TTZ

A group of routers and links connecting routers with same TTZ ID

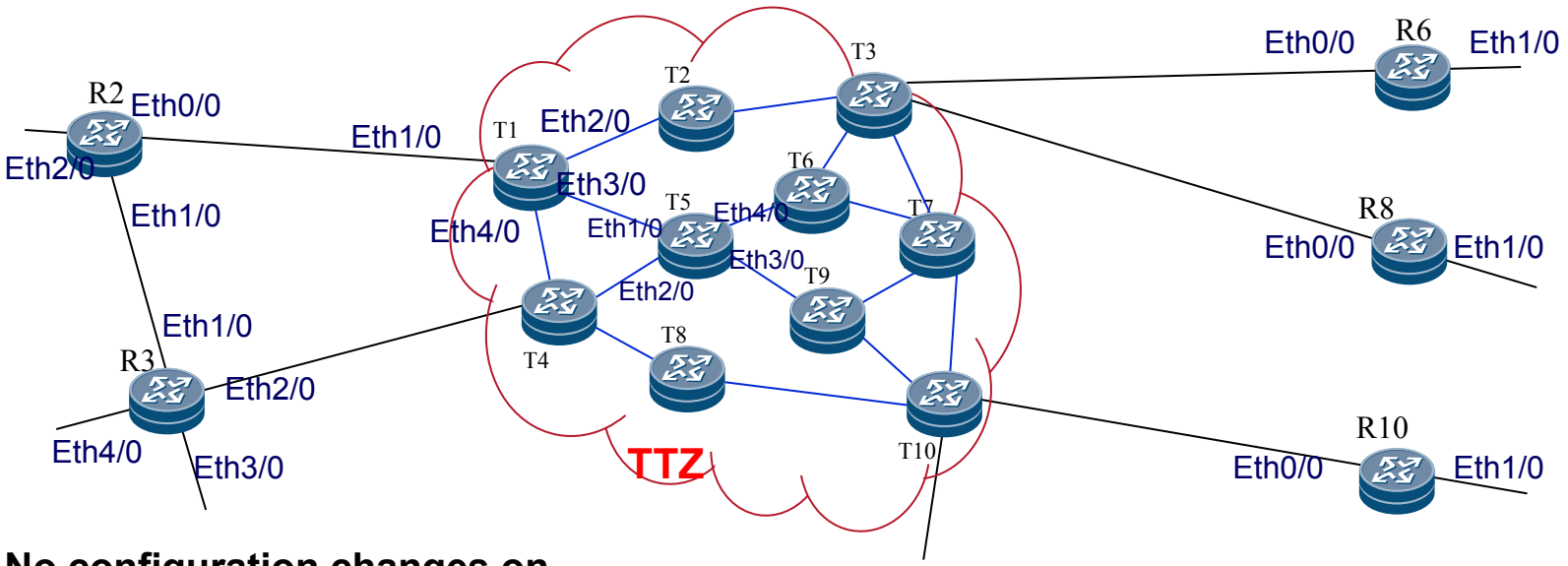
- **which is virtualized as**
  - **a group of TTZ edge routers fully connected or a single router**
- of which routers outside TTZ are NOT aware

Removed

Links, routers inside TTZ are NOT advertised to routers outside of TTZ



Operation Simplified: 1 cmd/router



No configuration changes on router outside TTZ

Configurations on router R2:

router ip ospf 1
Interface ethernet 0/0
  ip address 10.10.120.1/24
Interface ethernet 1/0
  ip address 10.10.220.1/24

Configure TTZ ID on one interface in TTZ for edge

Configurations on router T1:

router ospf 1
Interface ethernet 1/0
  ip address 10.10.120.1/24
Interface ethernet 2/0
  ip address 192.168.20.1/24
  ttz 192.168.100.100

Configure TTZ ID on internal TTZ router

Configurations on router T5:

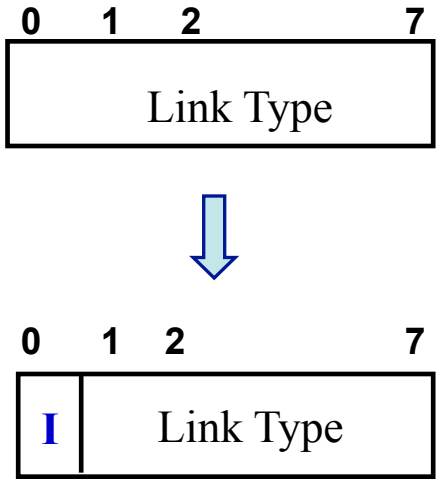
router ospf 1
 ttz 192.168.100.100
Interface ethernet 3/0
  ip address 192.168.30.1/24

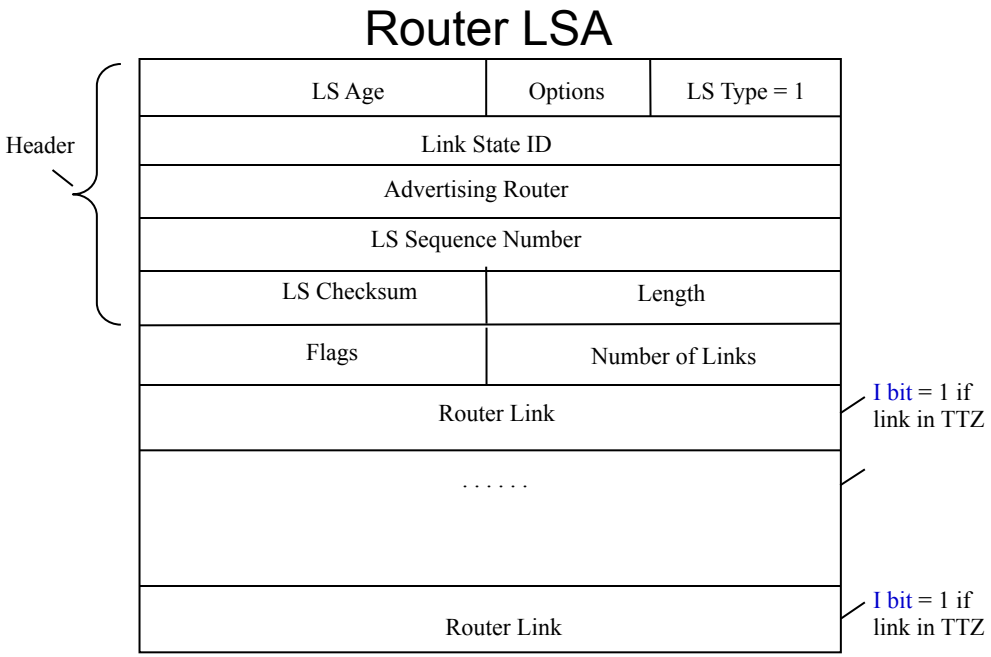
Will Simplify It More

Contents

LSA Change — I bit

1 bit to identify if a link is in TTZ



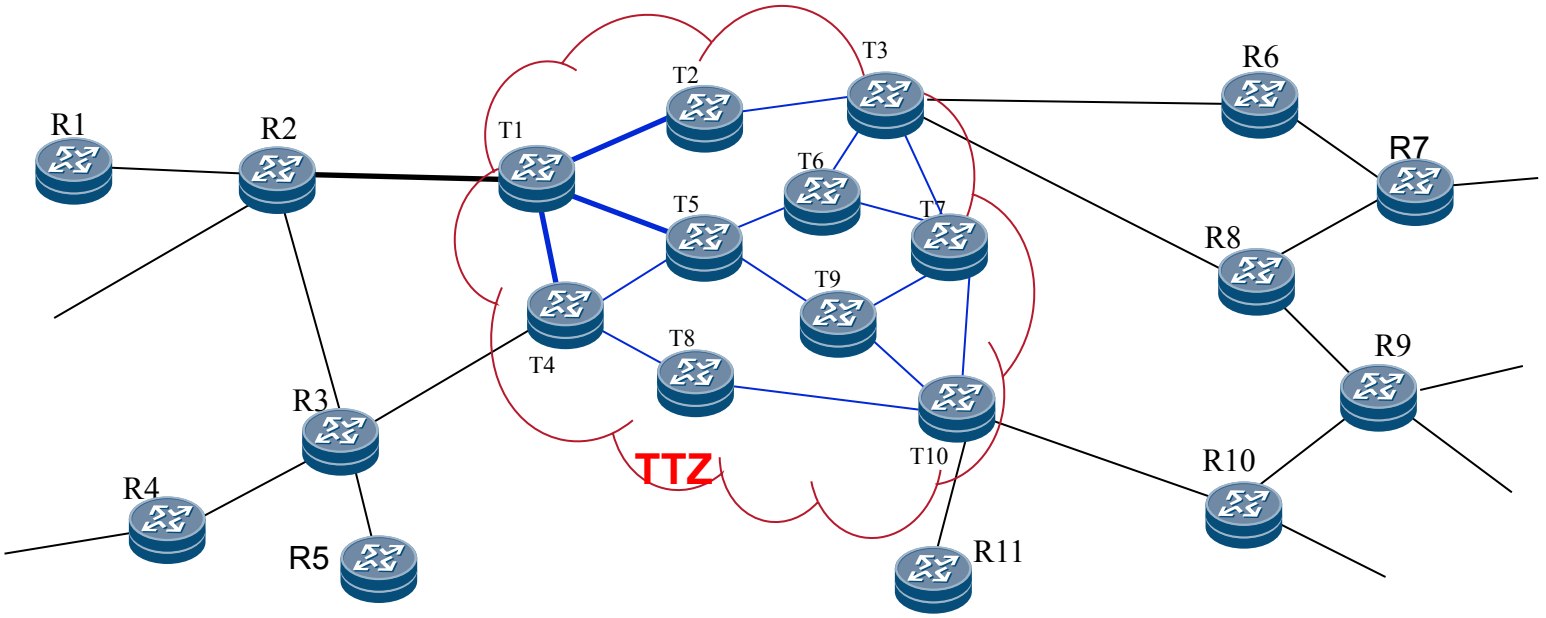


I = 1: Link is in TTZ

I = 0: Link is not in TTZ

Meaning of "Link Type" of 7 bits is the same as that of "Link Type" of 8 bits.

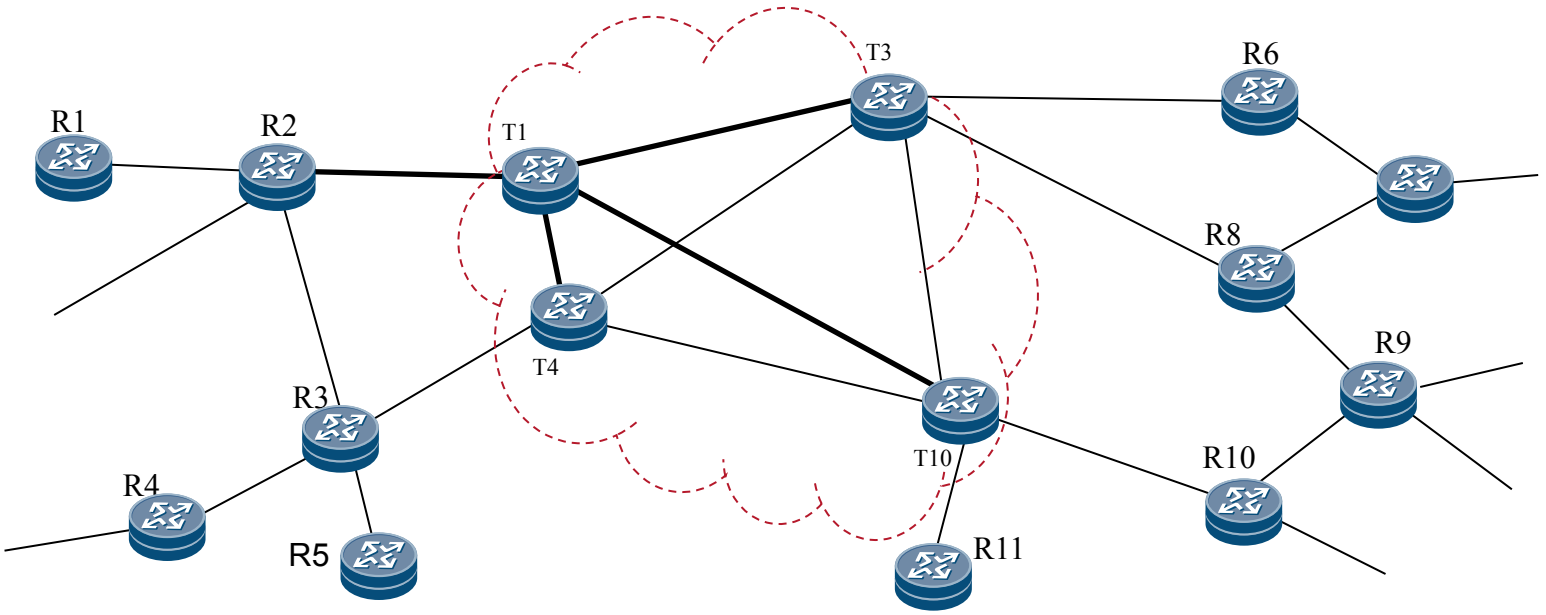
Router LSA Generated by T1/T5 to inside TTZ



Header		
LS Age	Options	LS Type = 1
Link State ID (**T1**)		
Advertising Router (**T1**)		
LS Sequence Number		
LS Checksum	Length	
Flags	Number of Links	
Router Link: T1 to R2		**I=0 for Normal Link**
Router Link: T1 to T2		**I=1 for TTZ link**
Router Link: T1 to T4		I=1 for TTZ link
Router Link: T1 to T5		I=1 for TTZ link

Header		
LS Age	Options	LS Type = 1
Link State ID (**T5**)		
Advertising Router (**T5**)		
LS Sequence Number		
LS Checksum	Length	
Flags	Number of Links	
Router Link: T5 to T1		I=1 for TTZ Link
Router Link: T5 to T4		I=1 for TTZ link
Router Link: T5 to T6		I=1 for TTZ link
Router Link: T5 to T9		I=1 for TTZ link

Router LSA by T1 for Virtualizing TTZ



Header	LS Age	Options	LS Type = 1
	Link State ID (**T1**)		
	Advertising Router (**T1**)		
	LS Sequence Number		
	LS Checksum	Length	
	Flags	Number of Links	
	Router Link: T1 to R2		Normal Link
	Router Link: T1 to T3		Normal Link (“virtual”)
	Router Link: T1 to T4		Normal Link (“virtual”)
	Router Link: T1 to T10		

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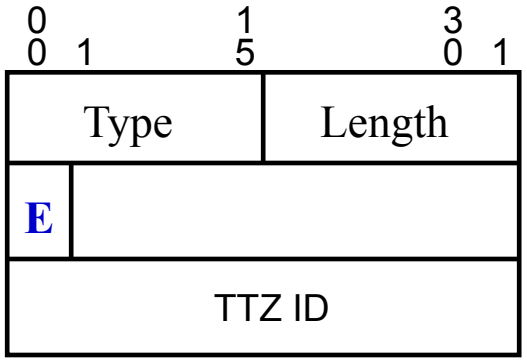
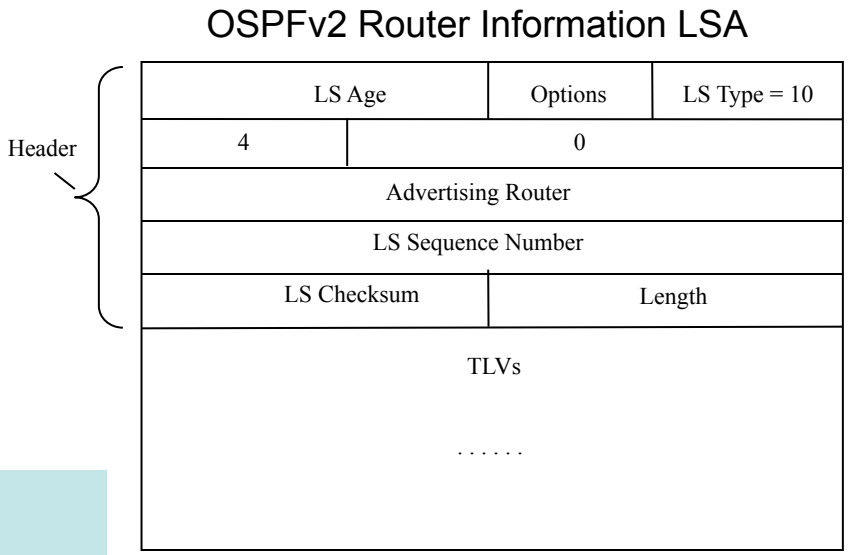
TTZ TLV in RI LSA

TLV for Info of TTZ router





E = 1: Edge router of TTZ

E = 0: Internal router of TTZ

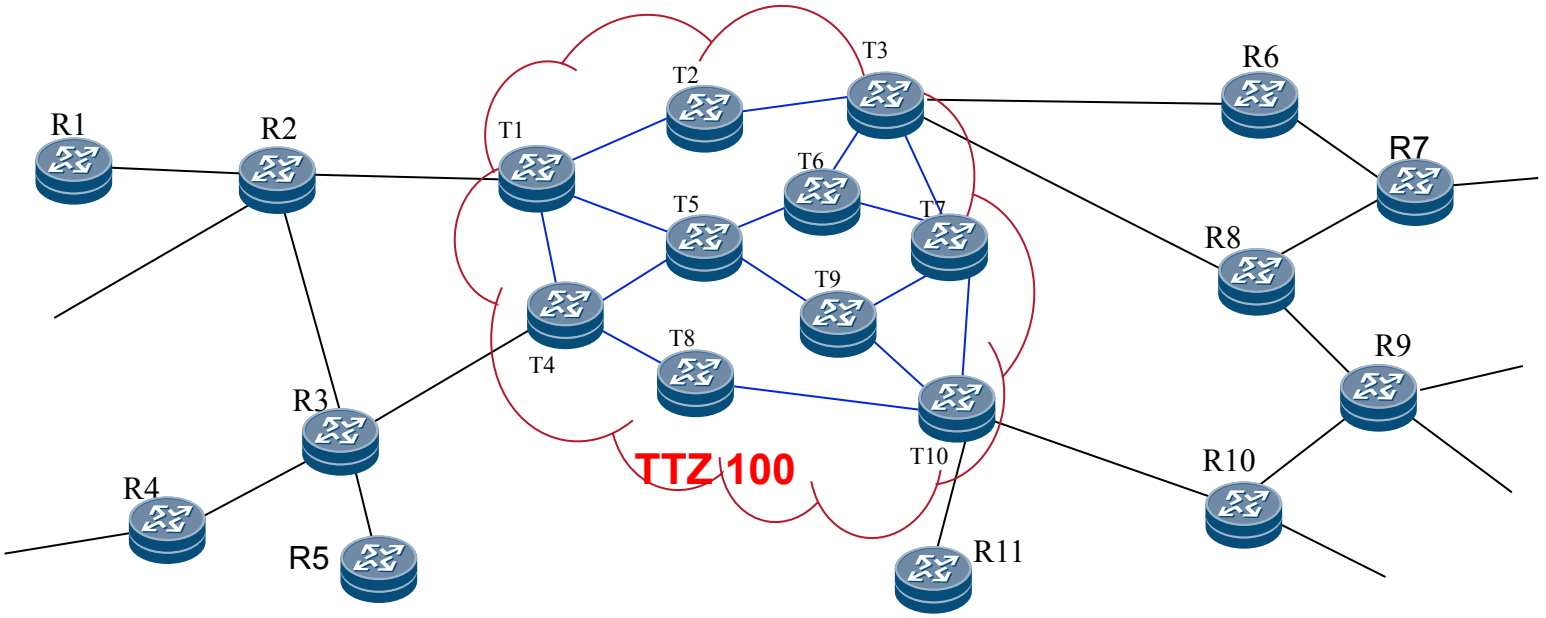
TTZ ID: ID of TTZ to which router belongs

TTZ: all routers with same TTZ ID and all TTZ links.

For TTZ edge router, its links connected to other TTZ routers are TTZ links.

For TTZ Internal router, all its links are TTZ links.

RI LSA Generated by T1/T5



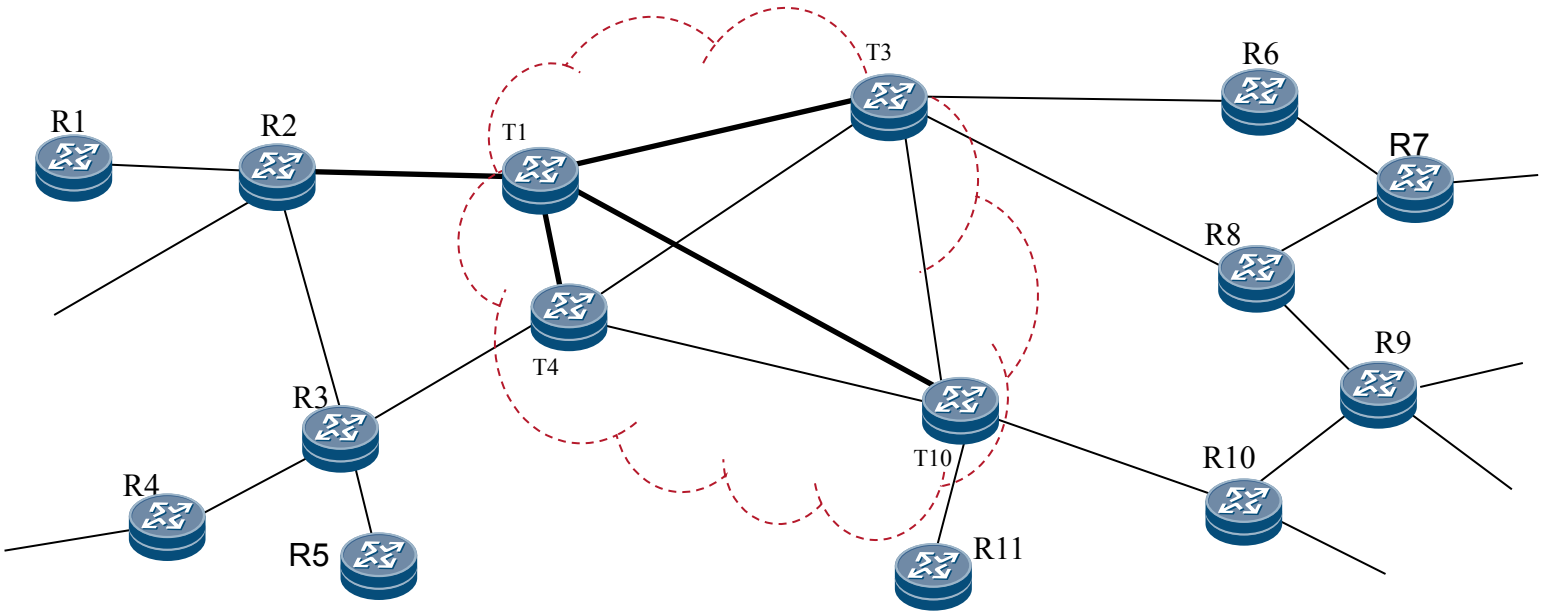
Header		
LS Age	Options	LS Type = 10
4	0	
Advertising Router (**T1**)		
LS Sequence Number		
LS Checksum	Length	
TTZ TLV		
E=1		
TTZ ID = 100		

E=1 for Edge of TTZ

Header		
LS Age	Options	LS Type = 10
4	0	
Advertising Router (**T5**)		
LS Sequence Number		
LS Checksum	Length	
TTZ TLV		
E=0		
TTZ ID = 100		

E=0 for Internal router of TTZ

Router LSA by T1 for Virtualizing TTZ (Same)



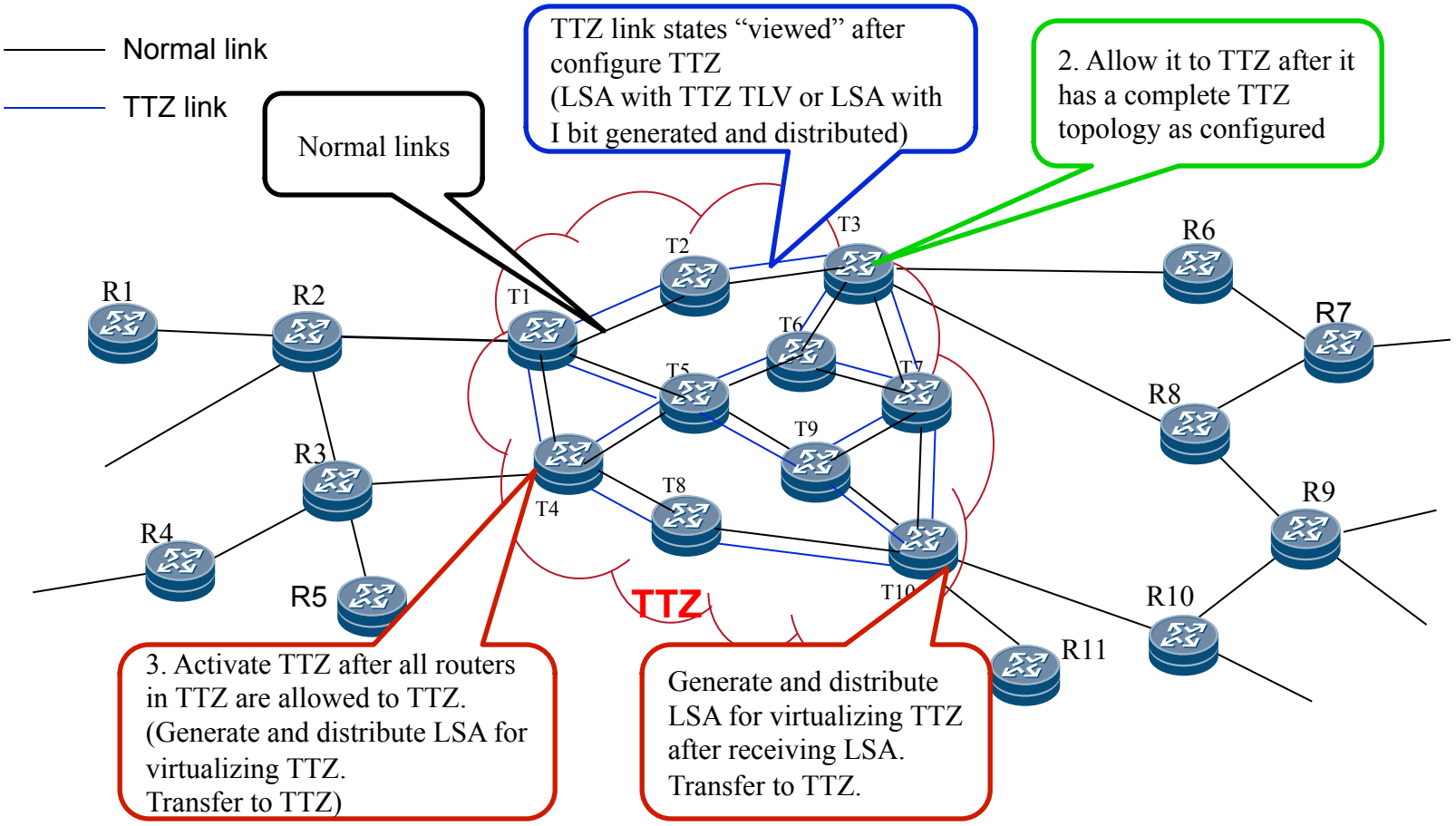
Header	LS Age	Options	LS Type = 1
	Link State ID (**T1**)		
	Advertising Router (**T1**)		
	LS Sequence Number		
	LS Checksum	Length	
	Flags	Number of Links	
	Router Link: T1 to R2		Normal Link
	Router Link: T1 to T3		Normal Link (“virtual”)
	Router Link: T1 to T4		Normal Link (“virtual”)
	Router Link: T1 to T10		

Contents

Smooth Migration to TTZ

Migration to TTZ with minimum interruption

1. Configure TTZ: routers in TTZ work as normal and prepare for TTZ
2. Allow router to TTZ after it is ready for TTZ
3. Activate TTZ: all routers in TTZ transfer to work as TTZ routers in ms



Next Step

Welcome comments