

ISIS Topology-Transparent Zone (TTZ)

draft-chen-isis-ttz-02

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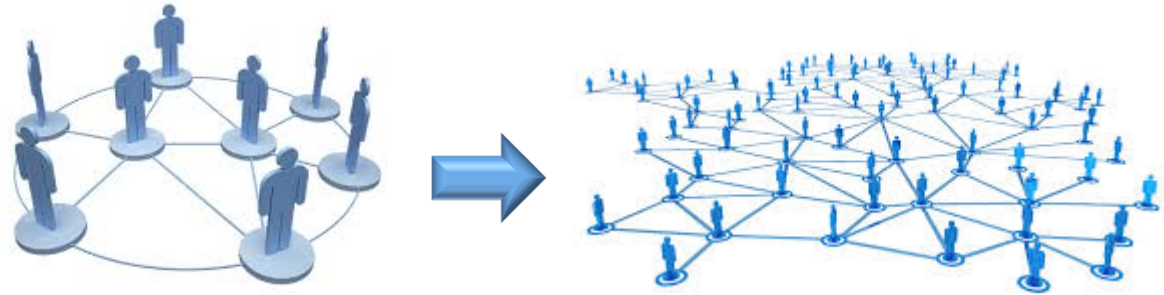
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Contents

- Introduction
- Extensions to ISIS for TTZ
- Update LSPs for TTZ
- Adjacencies with TTZ
- Next Step

Introduction

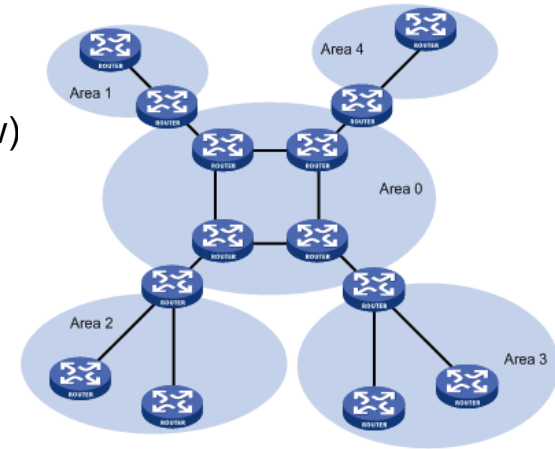
What will happen when a network grows bigger & bigger?



Issues for split it into more areas:

- ❑ **Service interruptions** (routers down w/ old area and up w/ new)
- ❑ **Very challenging** (big network architecture changes)
- ❑ **Time consuming** (months/even year's planning and executing)
- ❑ **Complex for E2E services** (need PCEs' help for E2E path)

TTZ resolves these issues



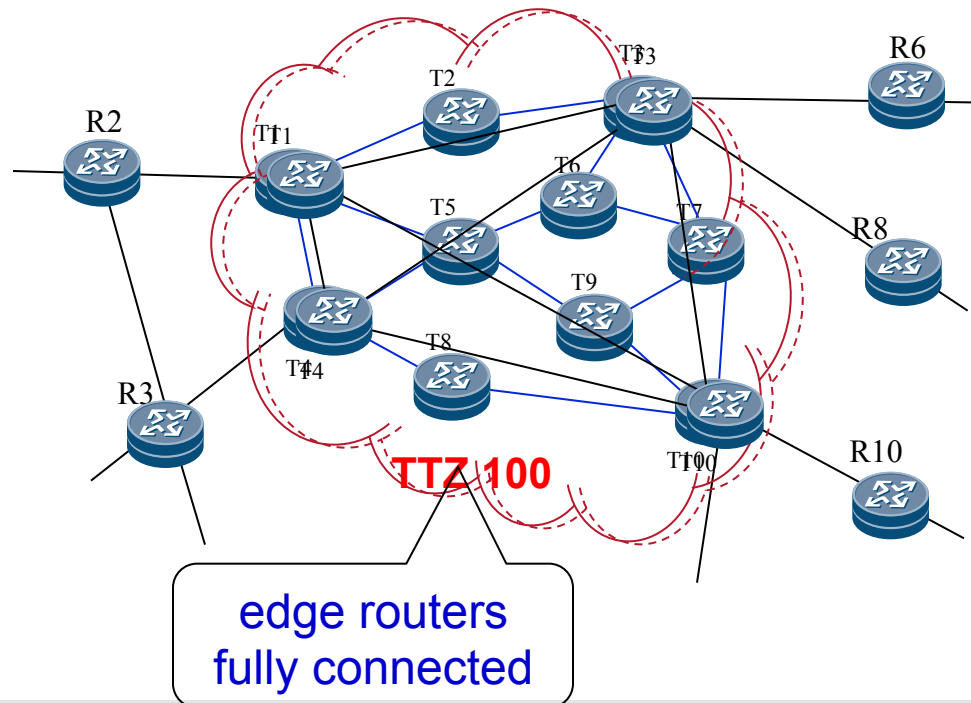
OSPF TTZ is implemented, showed, and WG document

Introduction to TTZ (animated)

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

- virtualized as
 - edge routers fully connected
- routers outside TTZ are NOT aware of

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



TTZ IS Neighbor sub TLV

	TTZ ISN sub-TLV	Length in Byte
	+-----+	
	Sub-Type = 1	1
	+-----+	
	Length	n*(IDLength + 5)
TTZ IS Neighbor 1	+-----+	
	Default Metric(1)	1
	+-----+	
	Delay Metric(1)	1
	+-----+	
	Expense Metric(1)	1
	+-----+	
Error Metric(1)	1	
	+-----+	
	Neighbor ID(1)	IDLength + 1
	+-----+	
	~ ~	
TTZ IS Neighbor n	+-----+	
	Default Metric(n)	1
	+-----+	
	Delay Metric(n)	1
	+-----+	
	Expense Metric(n)	1
	+-----+	
	Error Metric(n)	1
	+-----+	
	Neighbor ID(n)	IDLength + 1
	+-----+	

Update LSPs for TTZ

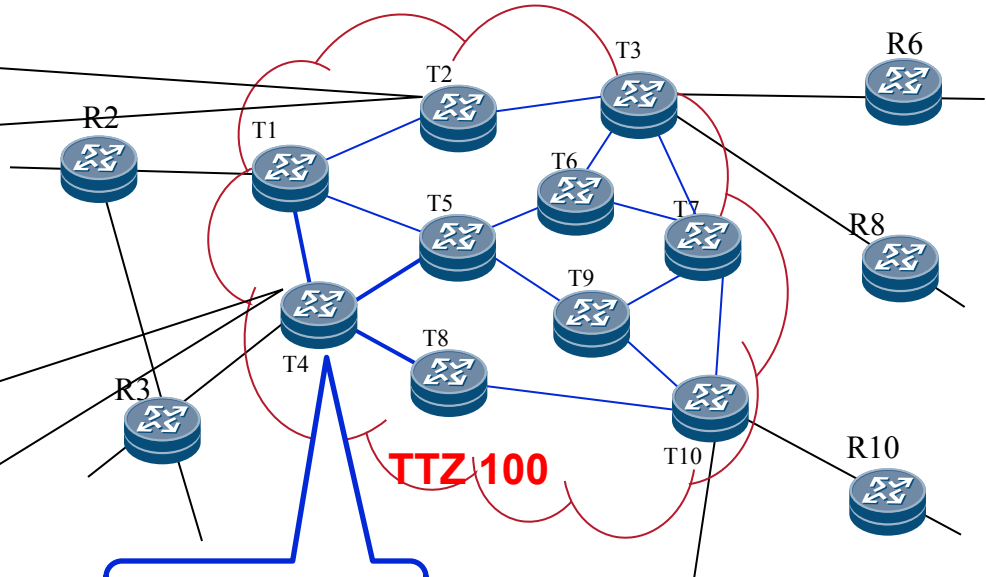
For each TTZ internal router,
Its LSP with TTZ TLV (E=0,
TTZ ID = 100, no sub TLV)
indicating all its circuits are TTZ
circuits

For each TTZ edge router,
Its LSP with TTZ TLV (E=1,
TTZ ID = 100, TTZ ISN sub TLV)
and **other edges as IS Neighbors**

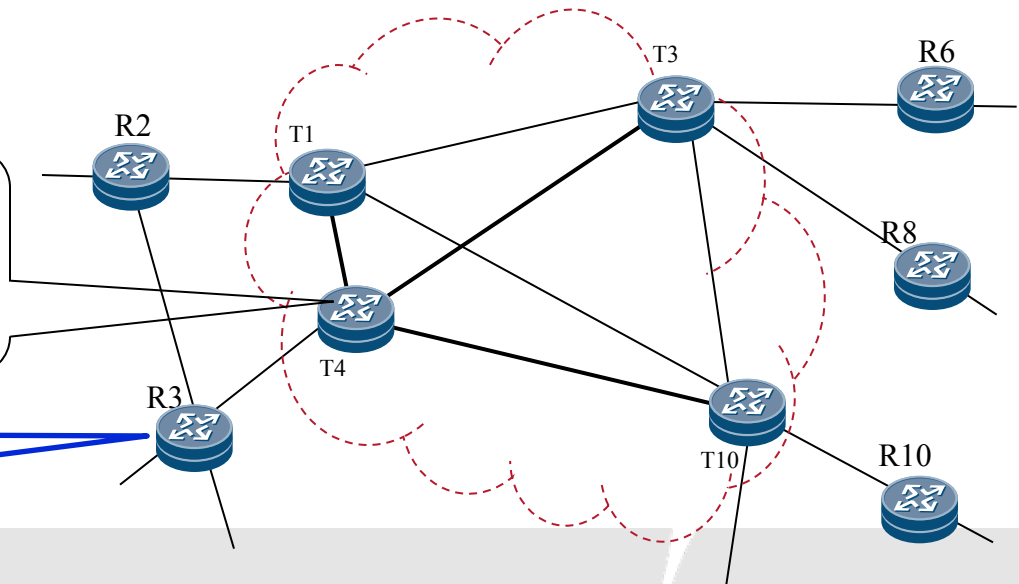
**TTZ ISN sub TLV has edge's TTZ
neighbors** (e.g., T4's TTZ
neighbors: T1, T5 and T8)

For TTZ edge router T4,
Its other edges as IS Neighbors are T1,
T3 and T10
Its TTZ neighbors T1, T5 and T8 deleted

Every node outside TTZ sees topology on right



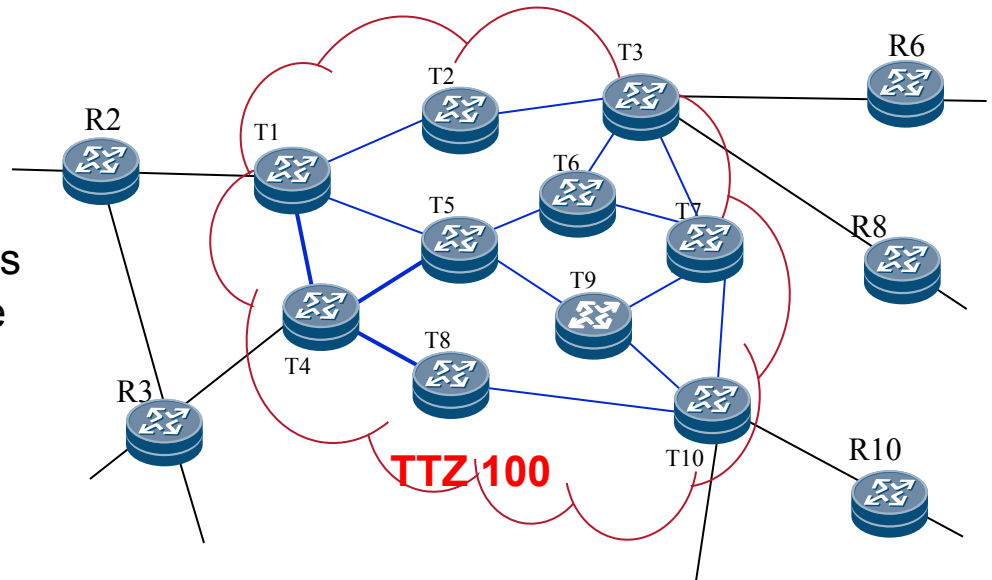
Every node in TTZ
sees topology above



Adjacencies with TTZ

Discover TTZ over Normal Adjacency

- There is a normal adjacency (e.g., full between T1 and T2)
- TTZ is configured (e.g., on T1, T2,)
- TTZ TLV with TTZ ID added in Hellos
- They are TTZ neighbors if they have same TTZ ID in Hellos



Establish TTZ Adjacency

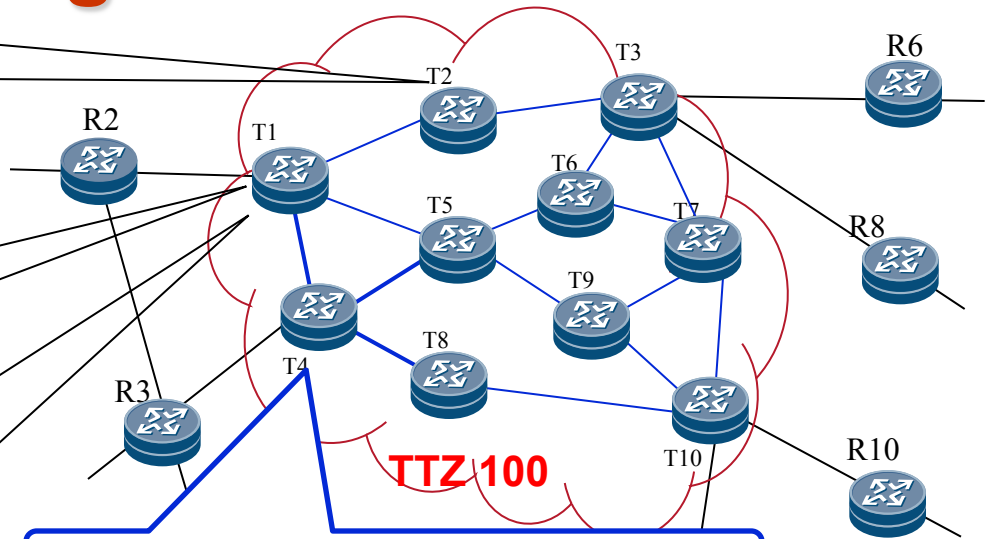
- Suppose that there is not any adjacency between two nodes
- TTZ is configured (e.g., on T1, T2, . . .) in addition to normal configurations
- TTZ TLV with TTZ ID is added into Hellos
- Two nodes forms a full adjacency if they have same TTZ ID; otherwise, no adjacency is formed.

Smooth Migration to TTZ

1. Configure TTZ on every TTZ router (1 cmd/each)

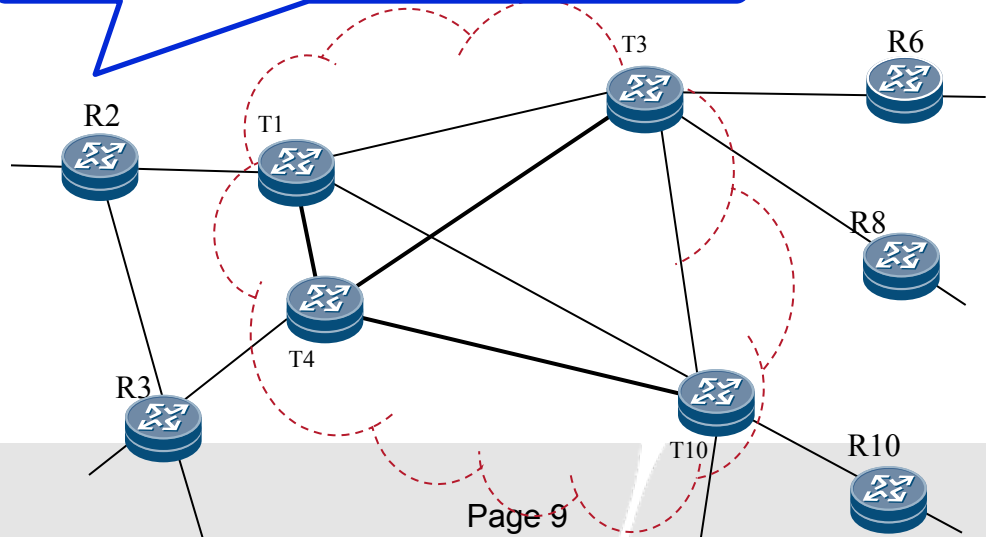
2. Only on one router, use 1 cmd to trigger TTZ information distribution

3. Only on one router, use 1 cmd to migrate cloud to TTZ



Every node in TTZ sees topology above after step 3

Every node outside TTZ sees topology below after 3



1. TTZ are discovered
2. TTZ routers add TTZ TLVs into their LSPs
3. TTZ edges update their LSPs for virtualizing TTZ and not distribute LSPs of TTZ internal routers to outside

Next Step

Welcome comments

WG adoption?