



IEEE 802.17

Suggested RPR

Simulation Scenarios

Khaled Amer

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Motivation

- **Desire to have more specific simulation scenarios to assist in choosing between features of various proposals**
- **Need to identify corner case scenarios and ensure that the proposed standard works under these conditions**
- **Ensure that we find a solution that has no fundamental weaknesses**



Classification of Scenarios

- **General scenarios**
- **Corner case scenarios**
- **All should be run for:**
 - **Various ring sizes (100 Km - 3000Km)**
 - **Various ring speeds (Oc-12, 48, 192)**

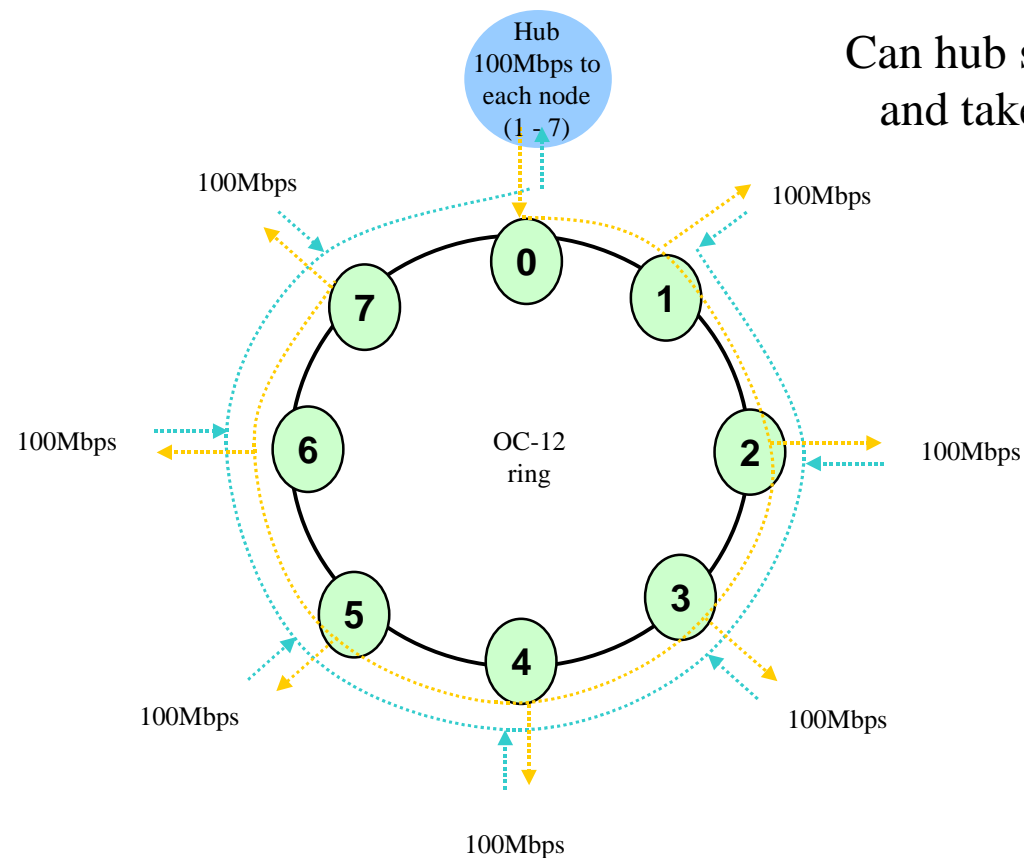
General Scenarios

- **Hubbing**
- **Peer to peer**
- **Scenarios to test fairness**
- **Scenarios to test spatial reuse**
- **Scenarios to test HOL blocking**



Scenario #1

Fairness / Spatial Reuse



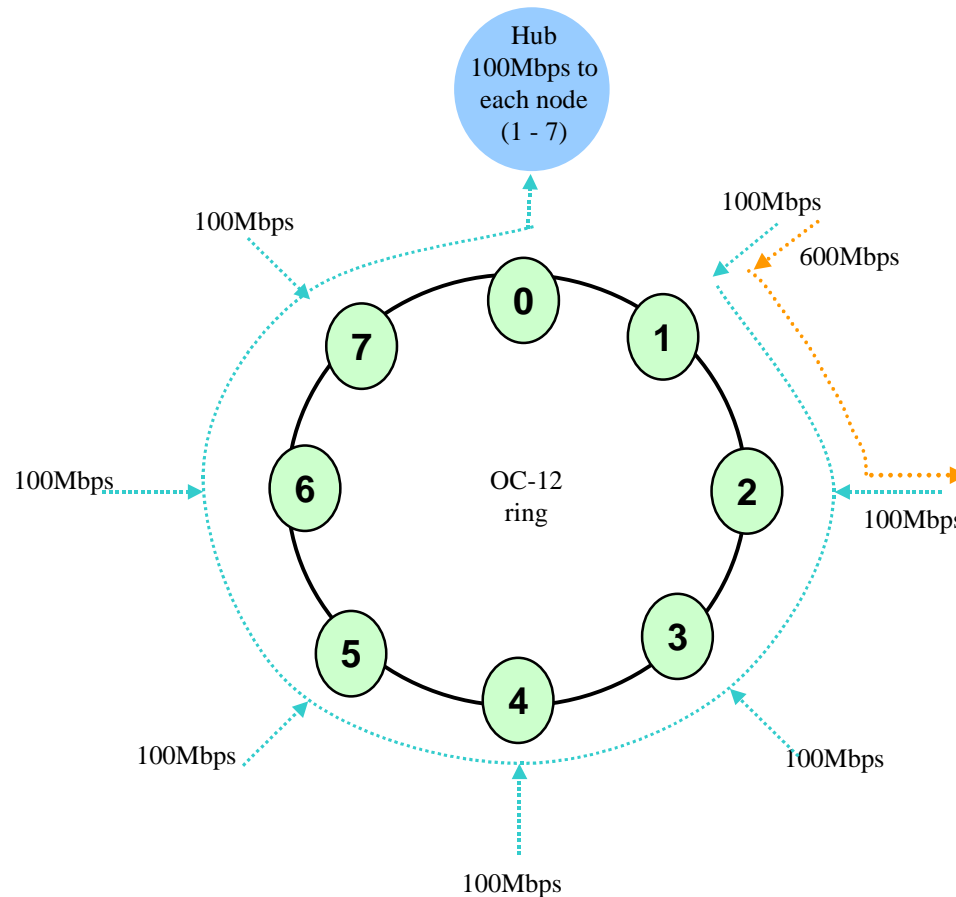
Question:
Can hub send data to other nodes
and take fair advantage of the
available BW?

Demonstrates
Case for OC-12



Scenario #2

Spatial Reuse / HOL Blocking



Question:
Can orange traffic use the available BW?

Demonstrates
Case for OC-12

Corner Case Scenarios

- **Behavior with bursty traffic**
 - **Efficient use of bandwidth**
- **Behavior of flow control mechanism**
 - **Throttling traffic**
 - **Restoring BW usage**

Corner Case Scenarios ...

Several scenarios to be analyzed:

- **Loaded ring**
- **Add:**
 - **Low priority bursty traffic**
 - **High priority constant traffic**
 - **(heavy and light)**
 - **High priority bursty traffic**



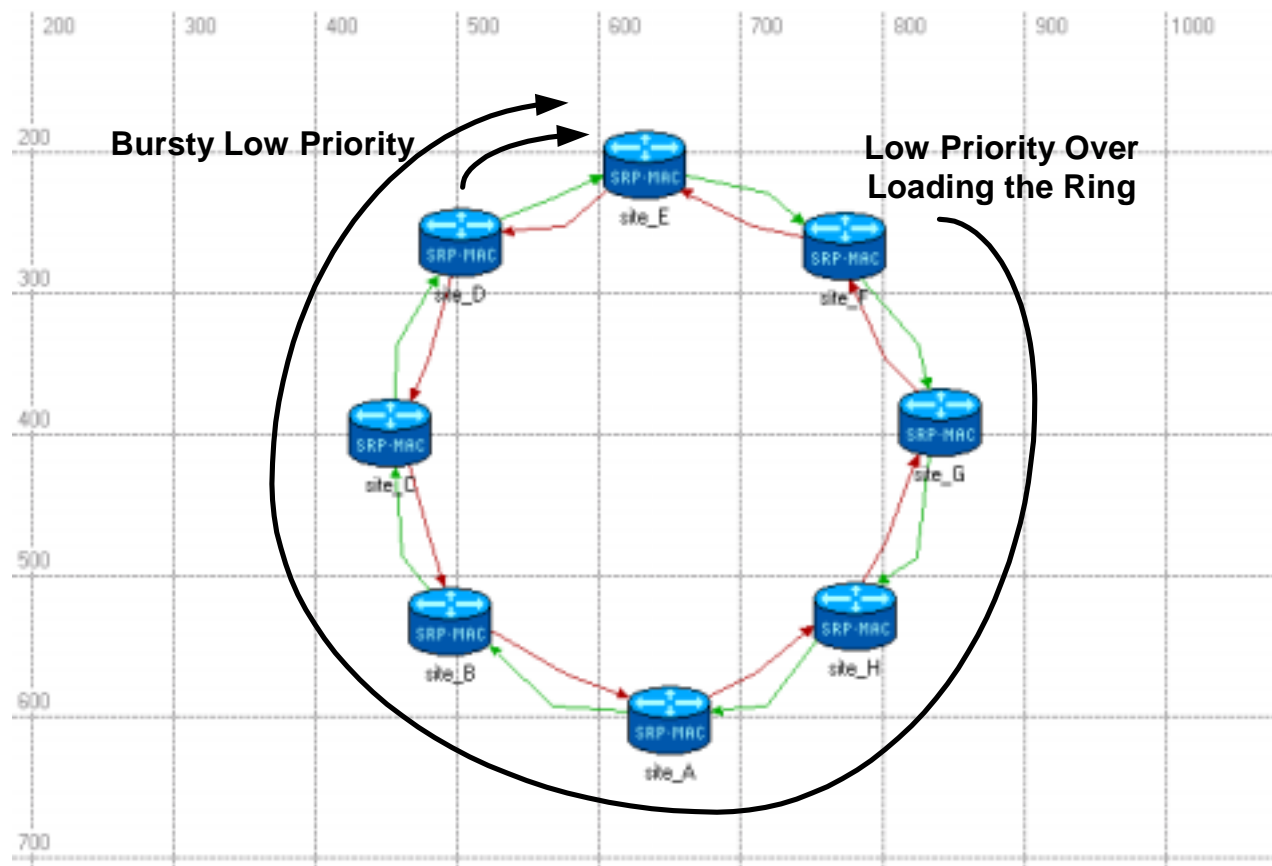
Scenario #1: Low priority Bursty Traffic



- **Assume loaded ring**
- **Bursty traffic is being injected**
- **Bursty traffic will be modeled as periodic pulses**



Scenario #1 Setup





Scenario #1

Parameters



Traffic Generation Parameters

	<u>Site F (Heavy Loaded)</u>	<u>Site D (Bursty)</u>	
Start Time	0.1	0.1	
ON State Time	10	0.001	
OFF State Time	0	0.02	
Packet Size	1500	1500	
Traffic generated	800 Mbps	600 Mbps	(OC12)
	3 Gbps	600 Mbps	(OC48)



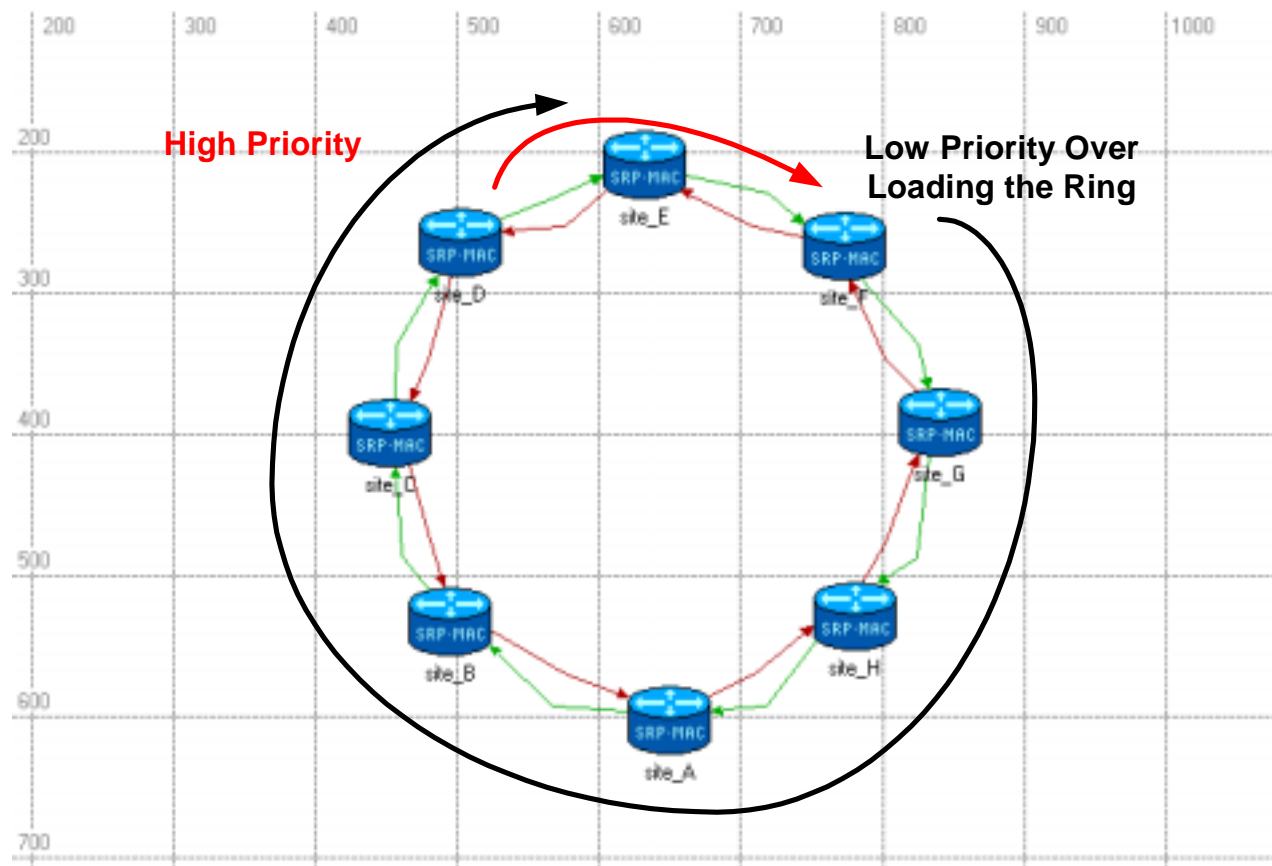
Scenario #2: High Priority Delay



- **Assume loaded ring**
- **Add high priority traffic (constant)**



Scenario #2 Setup





Scenario #2

Parameters



Traffic Generation Parameters

	<u>Site F (Low priority)</u>	<u>Site D (High Priority)</u>
Start Time	0.1	0.1
ON State Time	10	10
OFF State Time	0	0
Packet Size	1500	1500
Traffic generated	800 Mbps	600 Mbps (OC12)
	3 Gbps	2.4 Gbps (OC48)



Scenario #3:

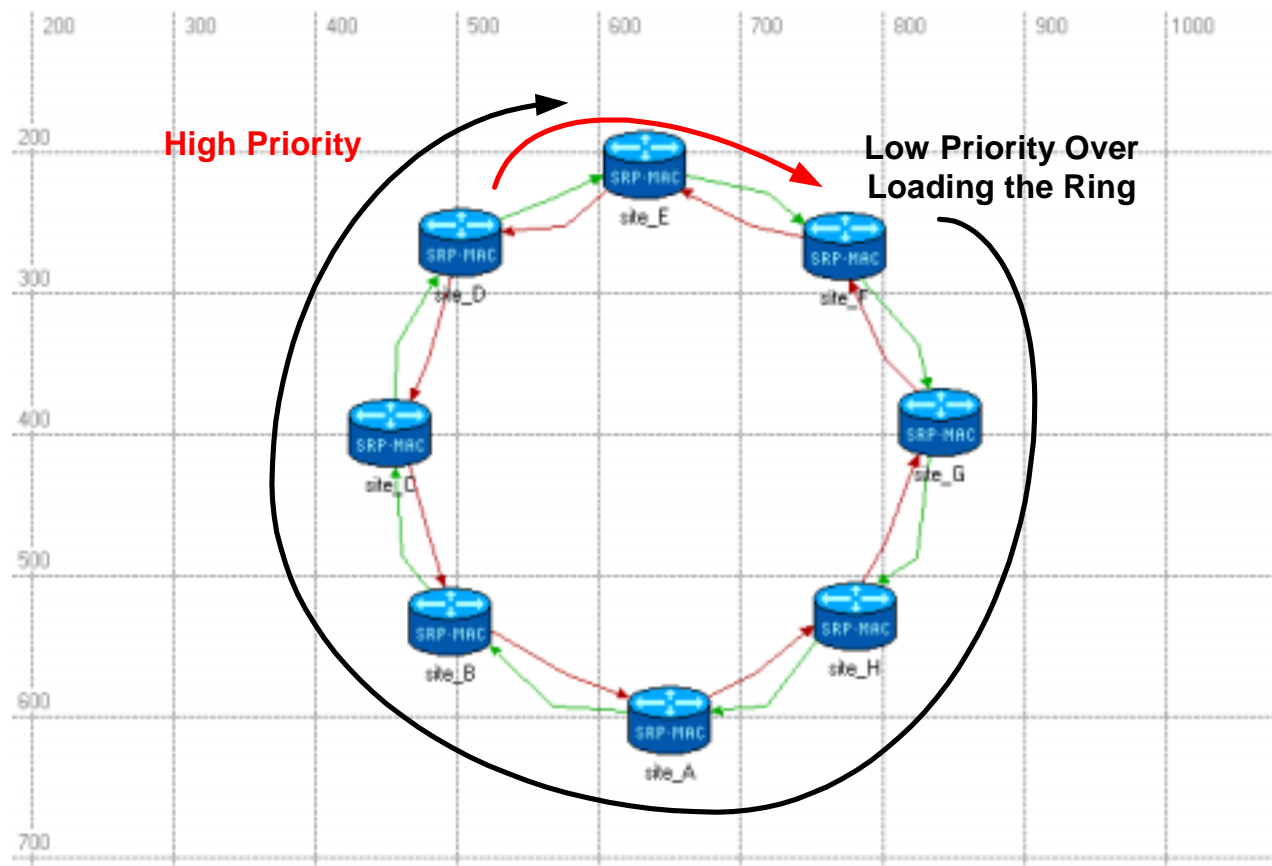
High priority low intensity



- **Assume loaded ring**
- **Add high priority traffic**
 - **Low intensity**
 - **Constant dist**



Scenario #3 Setup





Scenario #3

Parameters



Traffic Generation Parameters

	<u>Site F (Low priority)</u>	<u>Site D (High Priority)</u>
Start Time	0.2	0.1
ON State Time	10	10
OFF State Time	0	0
Packet Size	1500	1500
Traffic generated	800 Mbps 3 Gbps	50 Mbps (OC12) 50 Mbps (OC48)



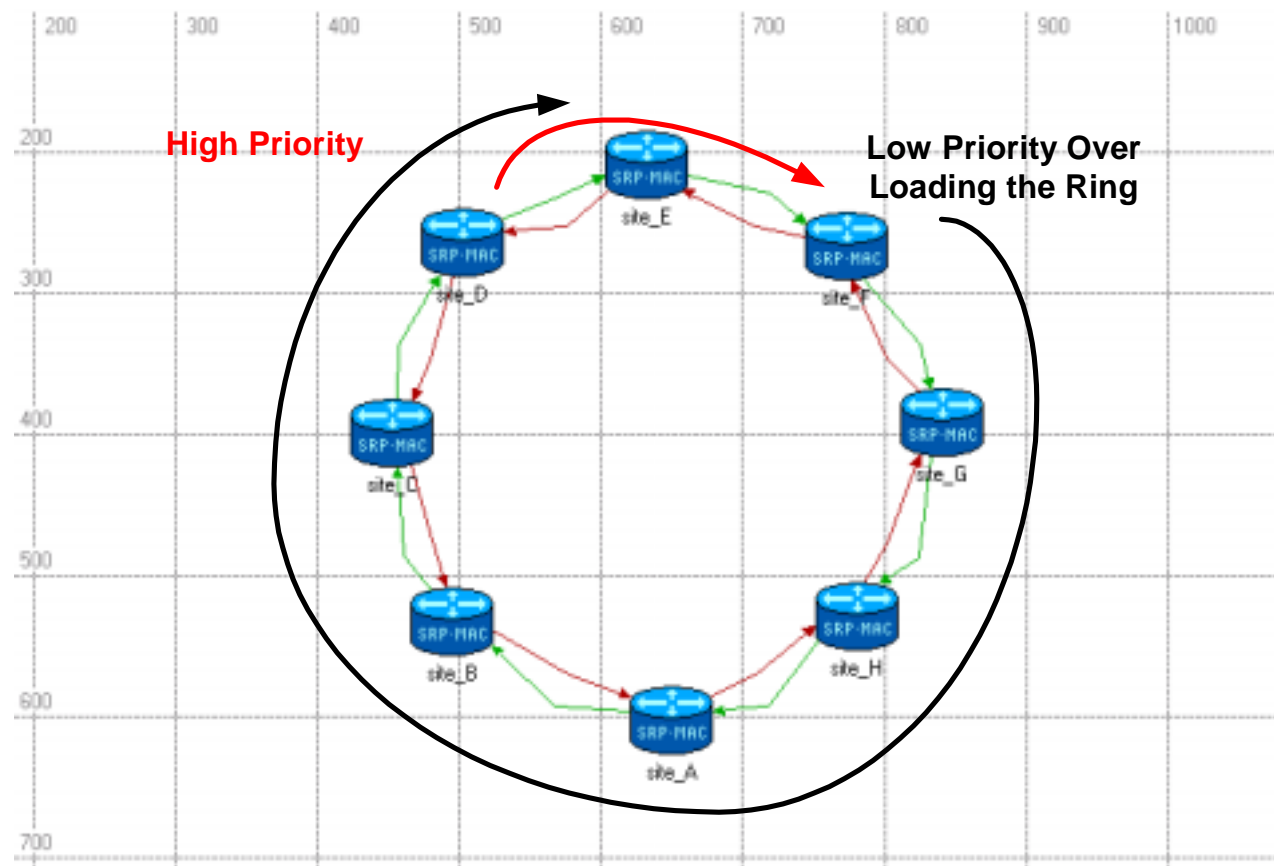
Scenario #4: Bursty High Priority



- **Assume loaded ring**
- **Add bursty high priority traffic**



Scenario #4 Setup





Scenario #4

Parameters



Traffic Generation Parameters

	<u>Site F (Low priority)</u>	<u>Site D (High Priority)</u>
Start Time	0.1	0.2
ON State Time	10	0.001
OFF State Time	0	0.02
Packet Size	1500	1500
Traffic generated	800 Mbps 3 Gbps	600 Mbps (OC12) 2.4 Gbps (OC48)



More input welcome

- **This is a suggested starting set representing:**
 - **General scenarios**
 - **Corner case scenarios**
- **Other suggested scenarios are welcome**