

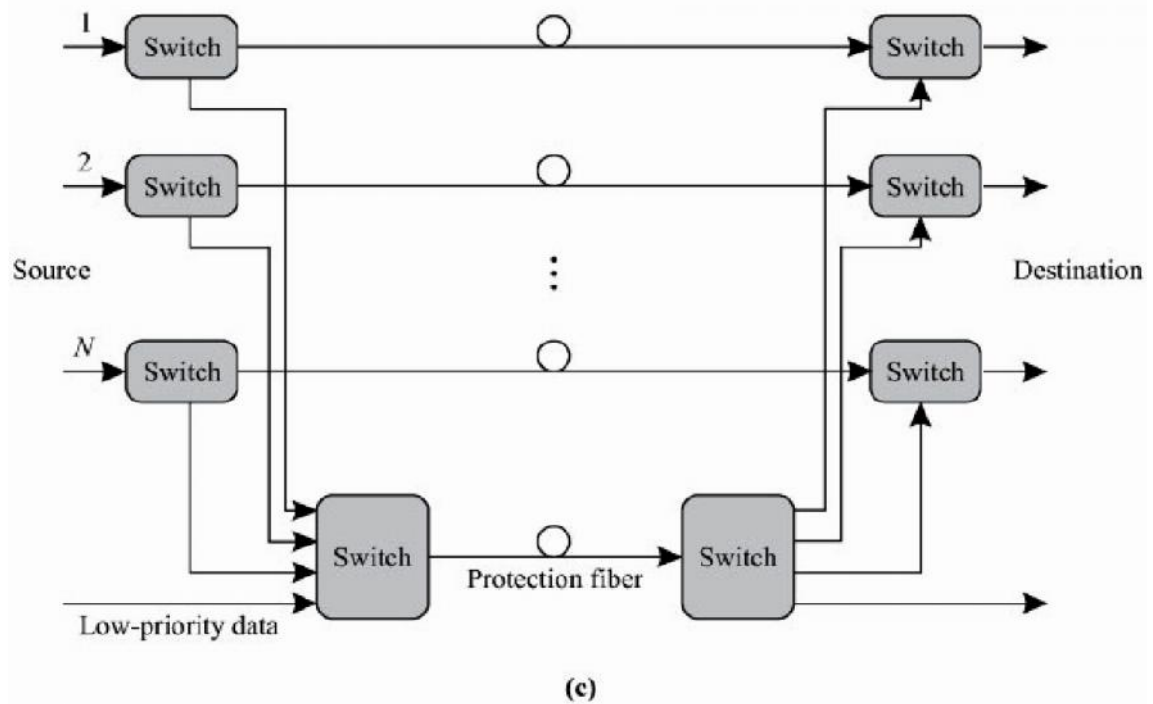
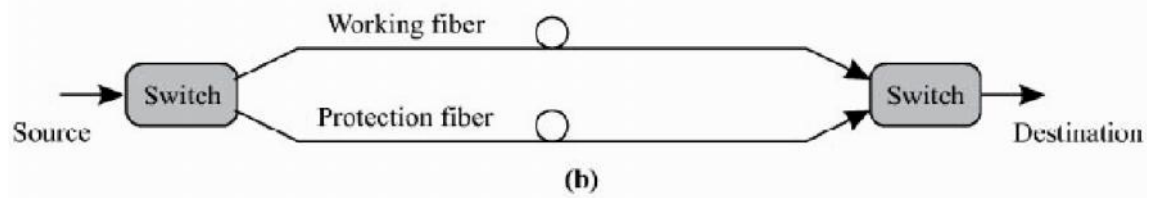
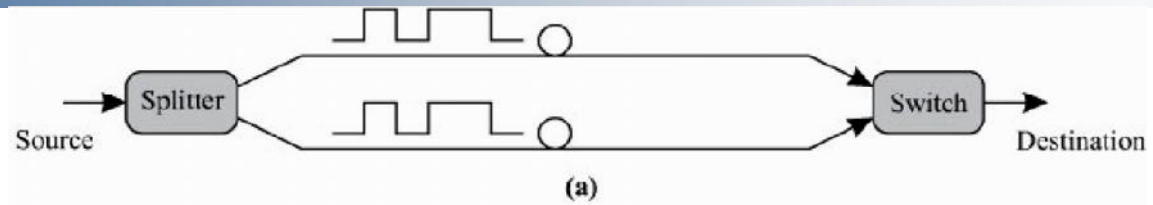


μ

T



a SONET/SDH



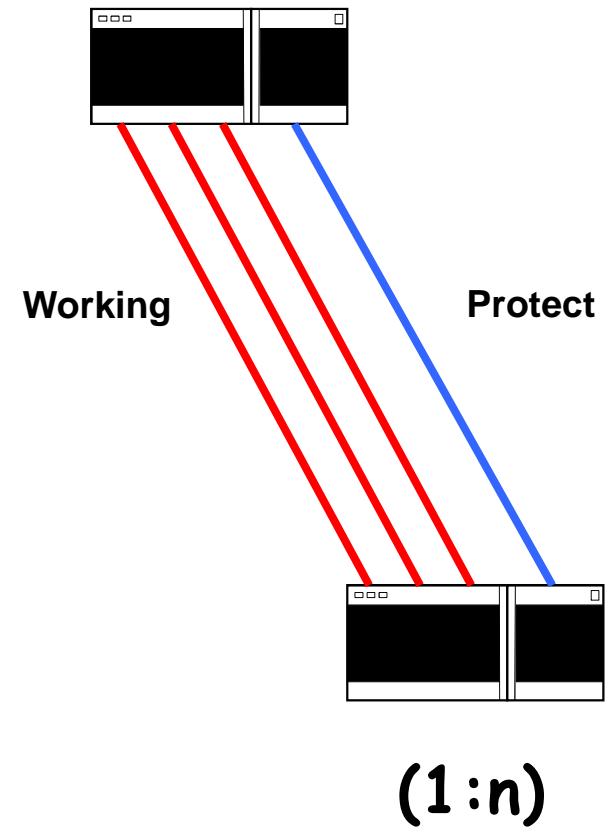
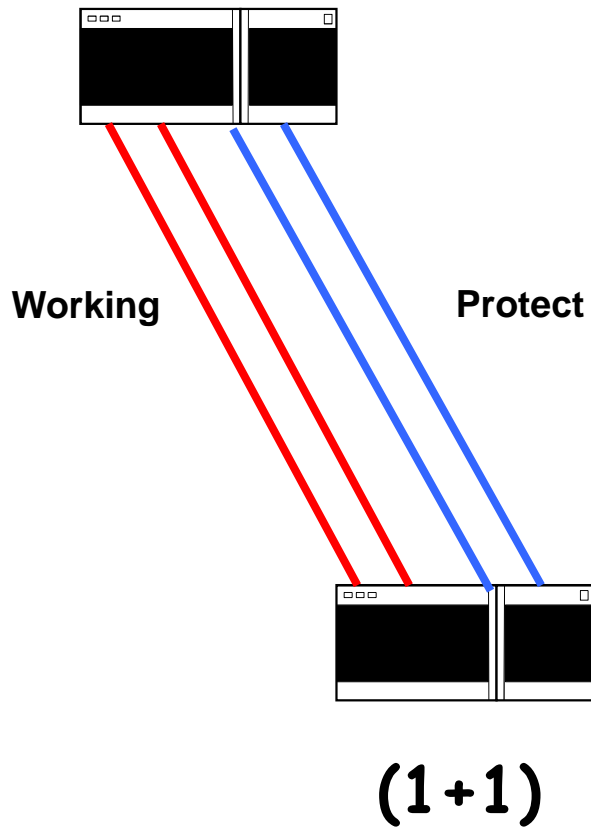


$\mu\mu$



μ

μ





μ

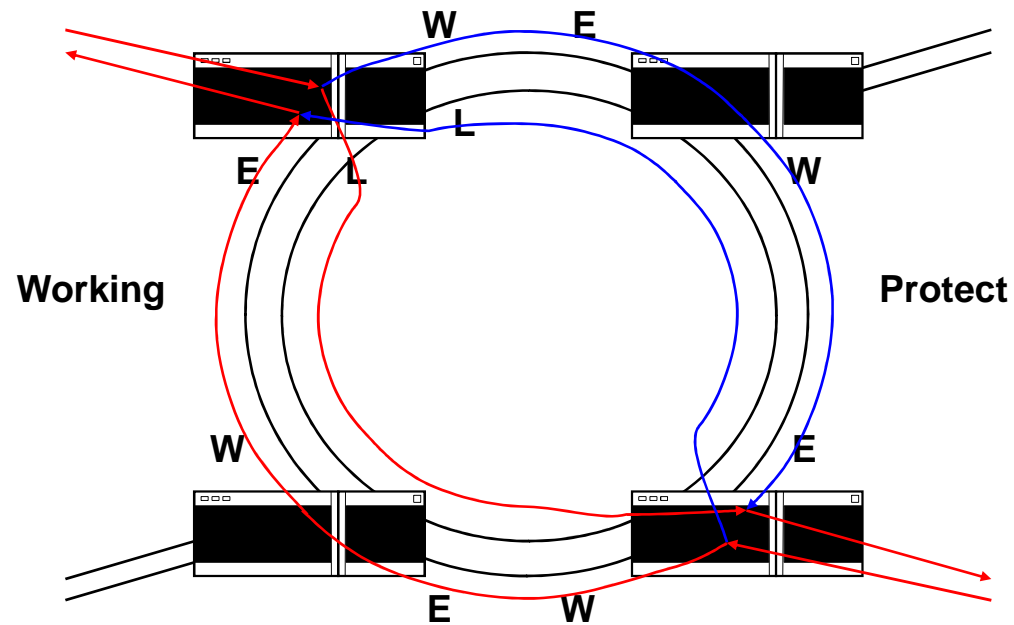


:



East

West interfaces





Mesh



μ

μ

.



$\mu \mu \mu$

μ

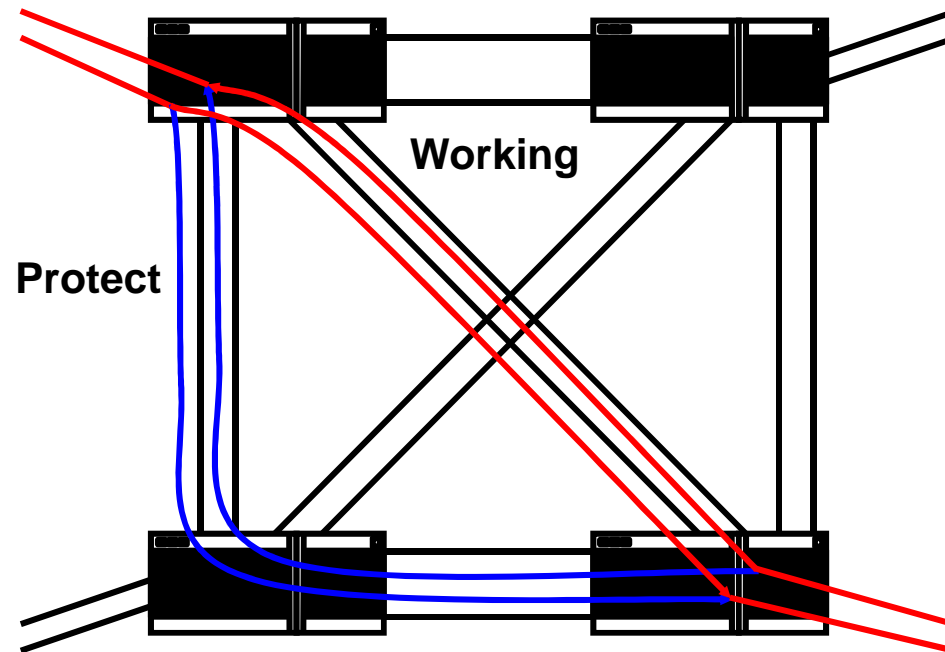


$\mu\mu$.

μ

$\mu \mu$

.





1+1

μ

μ



m:n

m μ

n

μ

μ

μ

, μ **m** μ

n

-

-



μ μ
(Dedicated)

1:1

1:n

(Shared):

μ

μ

μ

- 1+1

- 1:n



Automatic Protection Switching (APS)

□ $\mu\mu$ (Line Protection)

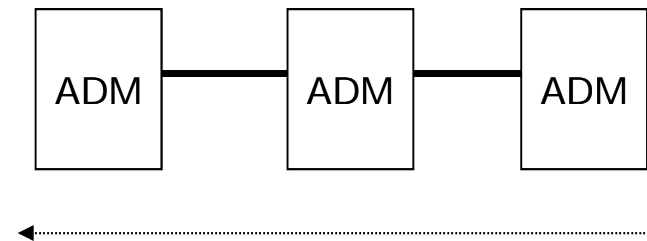
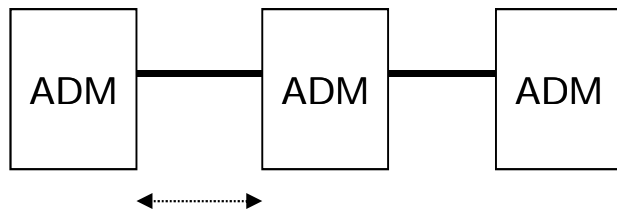
- μ LOH
- $\mu\mu$

□ $1:n, \mu$ $n=1, \dots, \mu$ (Path Protection)

- μ POH
- μ $\mu\mu$
- 1+1

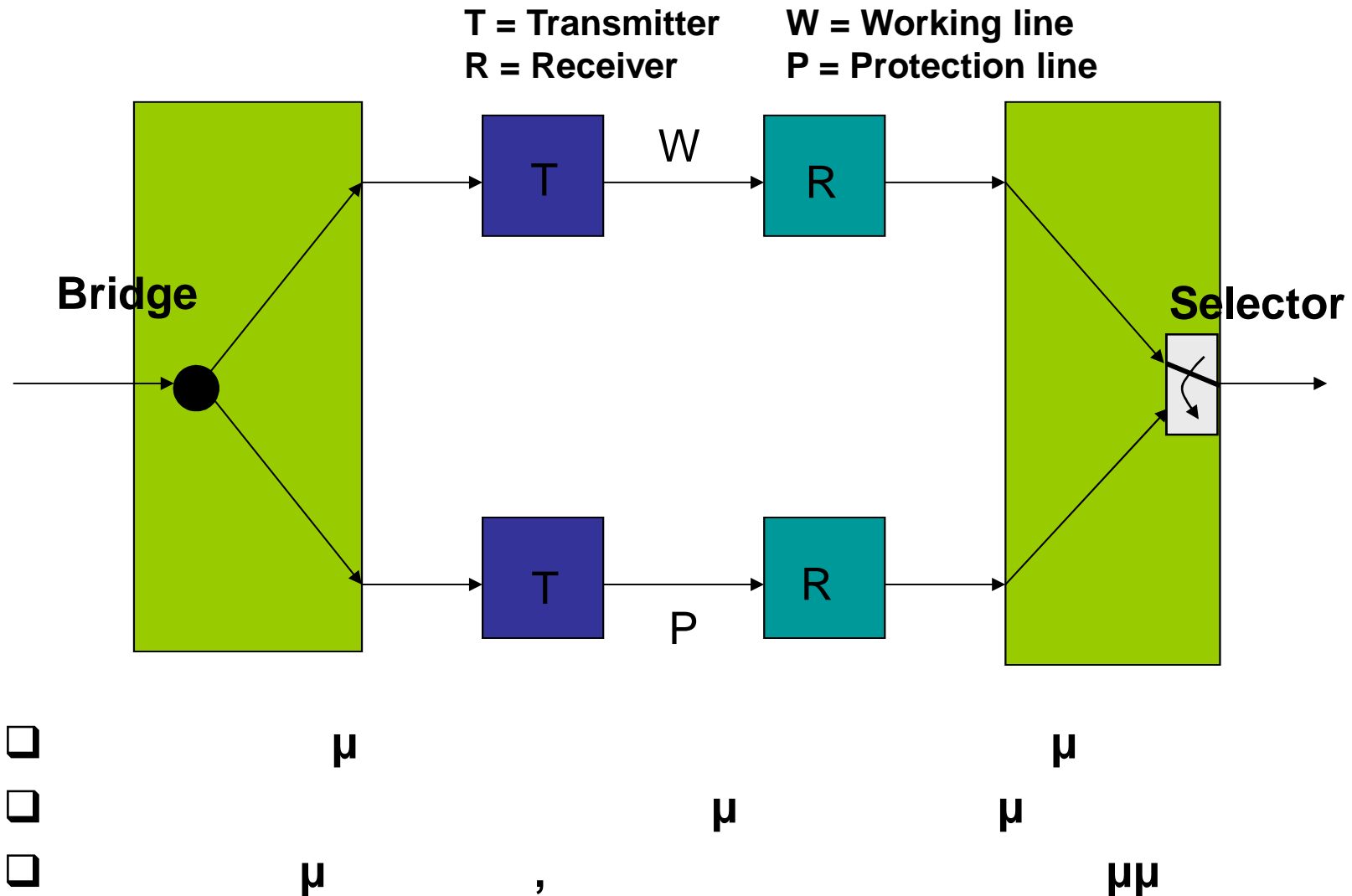
□ Automatic Protection Switching

- $\mu\mu$ μ
- ~ 50 ms
- byte K1 K2 μ



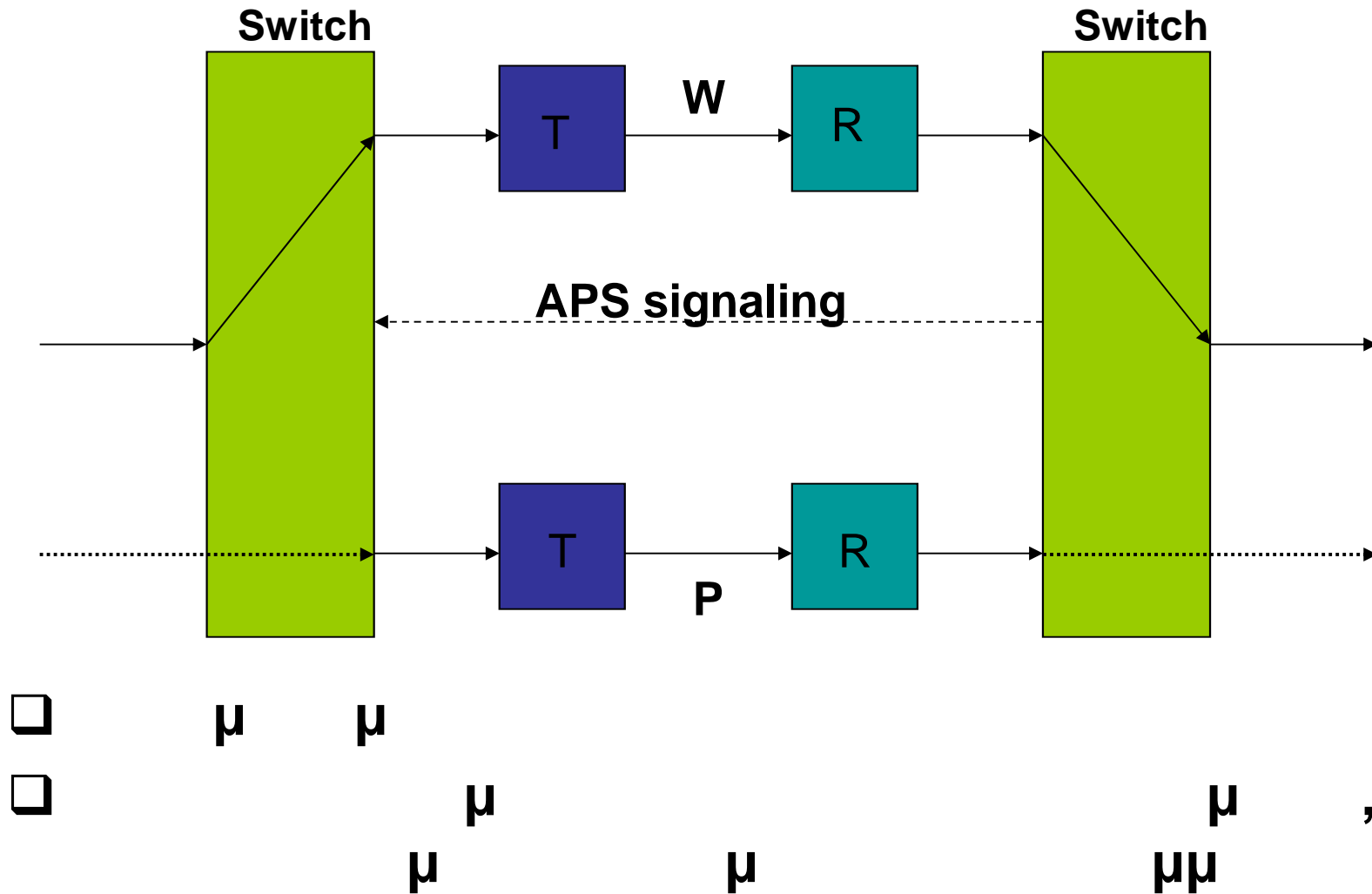


1+1 Automatic Protection Switching



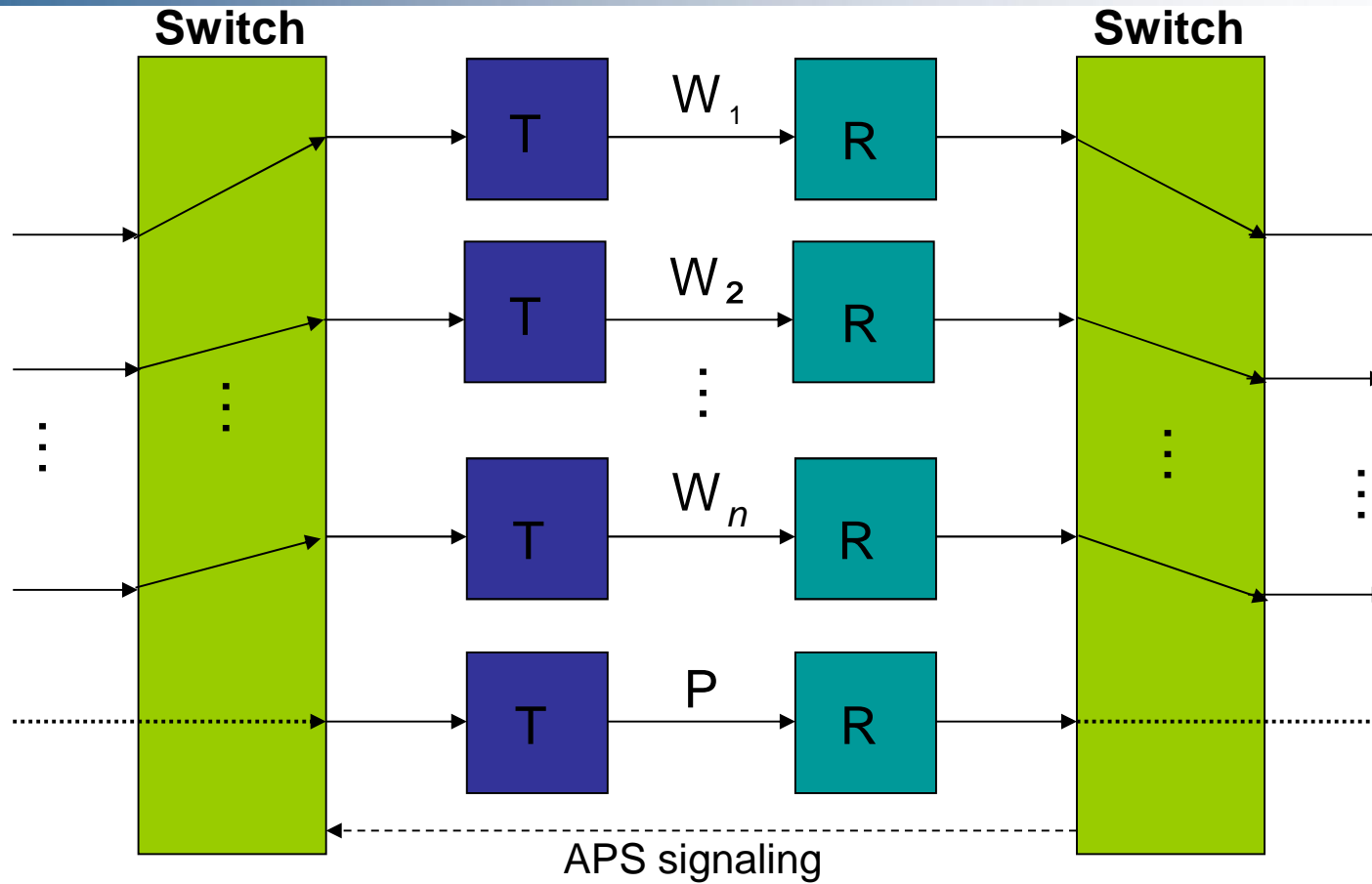


1:1 Automatic Protection Switching





1: Automatic Protection Switching



-
-
-

μ

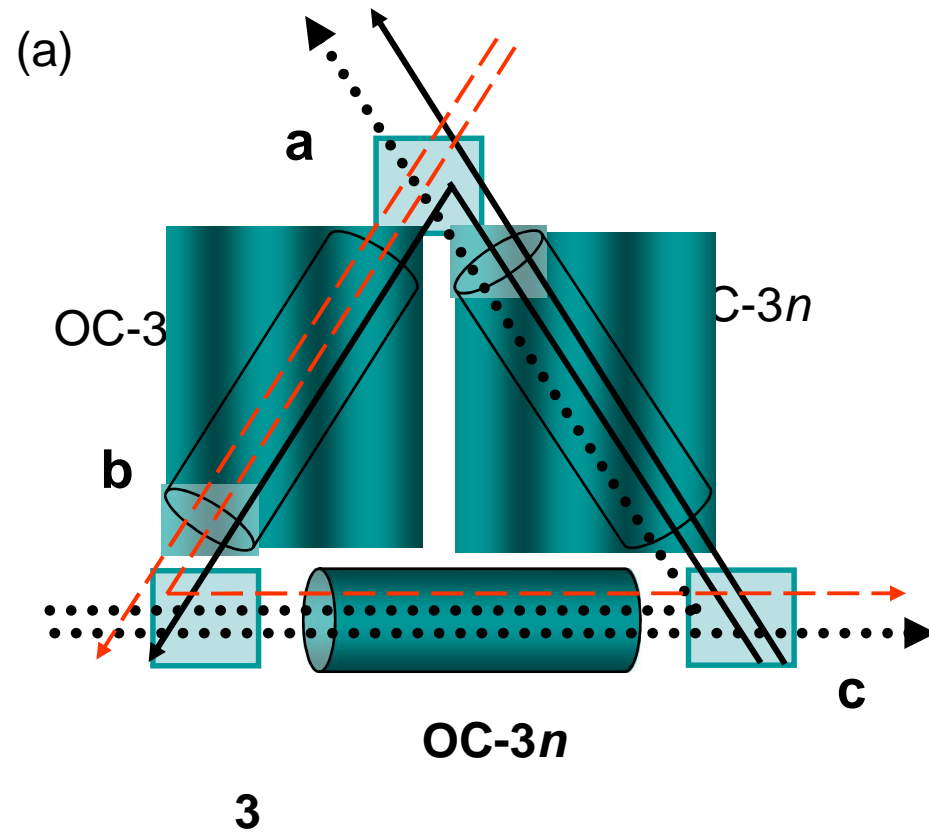
μ



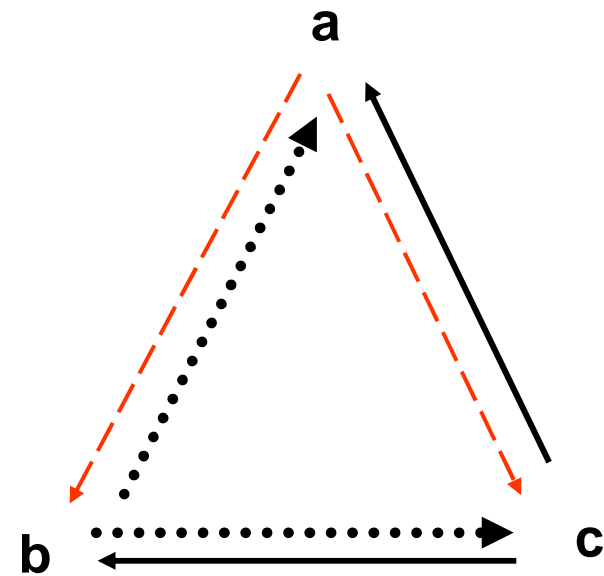
SONET

 μ  μ

SONET



(b)





SONET

- μ 2 4
- μ (unidirectional)
(bidirectional)
- $\mu\mu$ (line) μ (path)

- Unidirectional Path Switched Ring (UPSR)
- Bidirectional Line Switched Ring (BLSR)
 - 2 fiber BLSR
 - 4 fiber BLSR



μ

2 μ

2 :

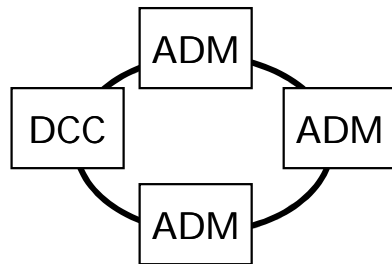
μ

μ

4 :

μ

μ



μ

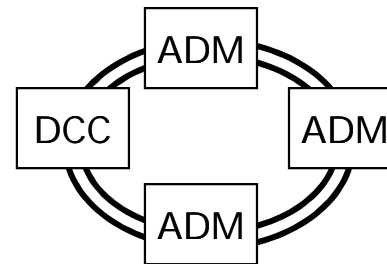
μ

μ

μ

μ

μ





□ μ (unidirectional)



μ



μ

μ

μ

μ

μ

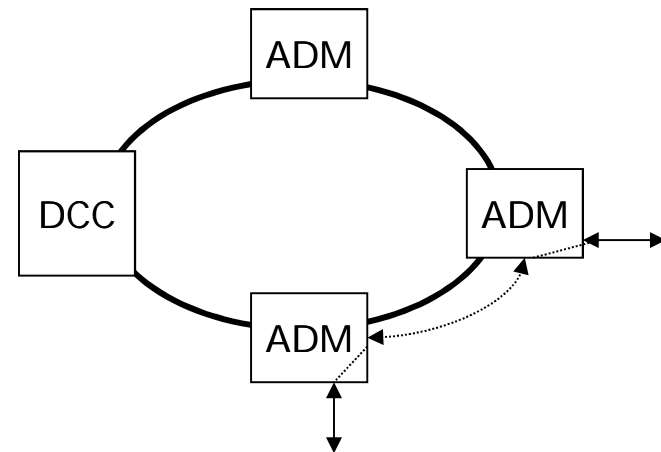
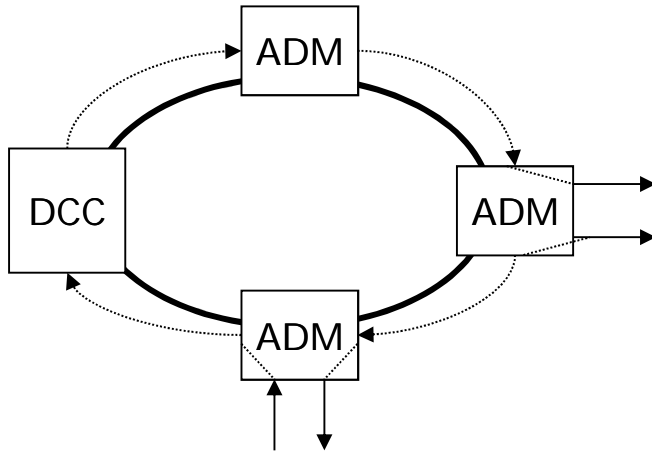
μμ

(bidirectional)

μ

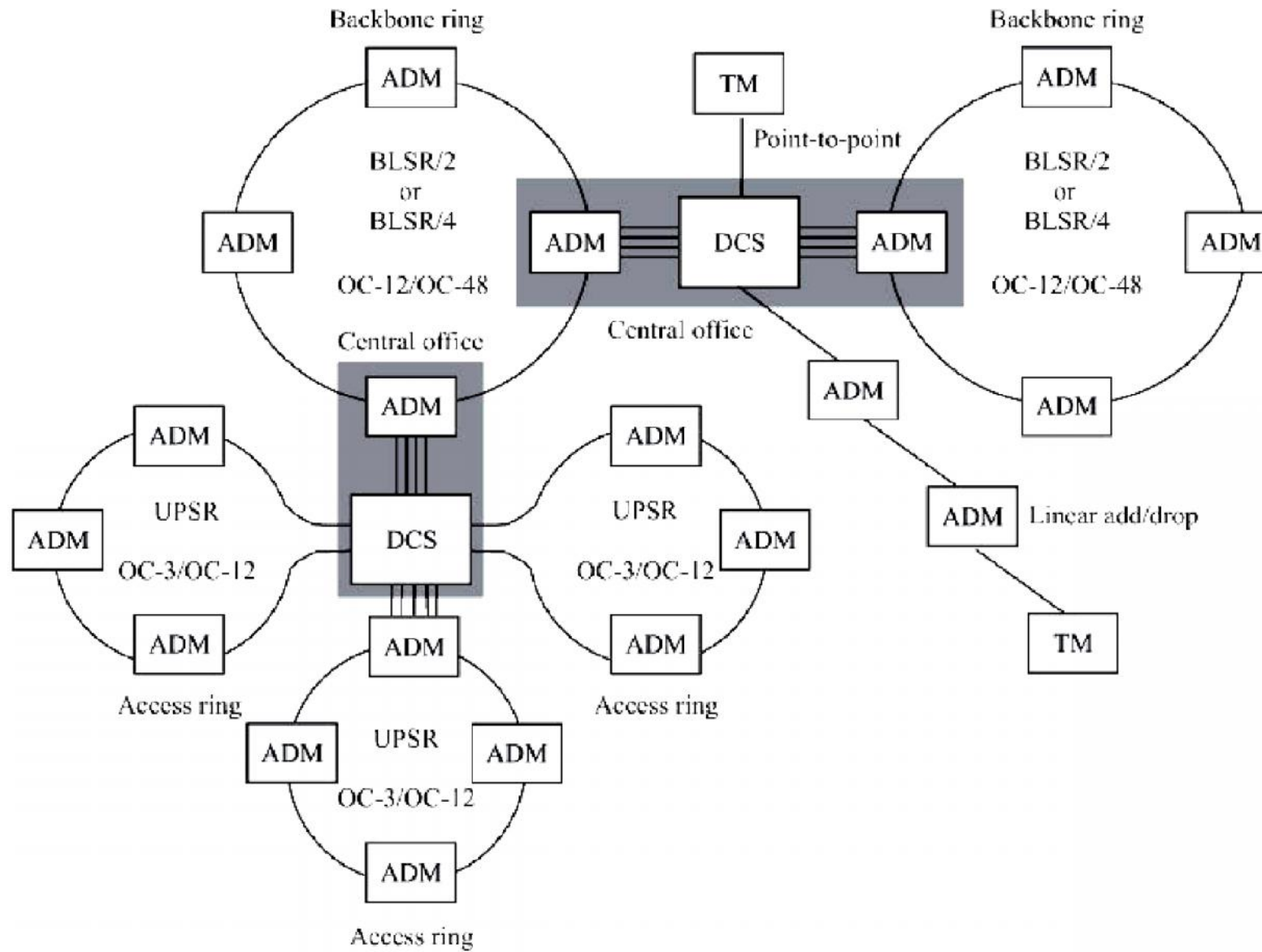
μ

μ





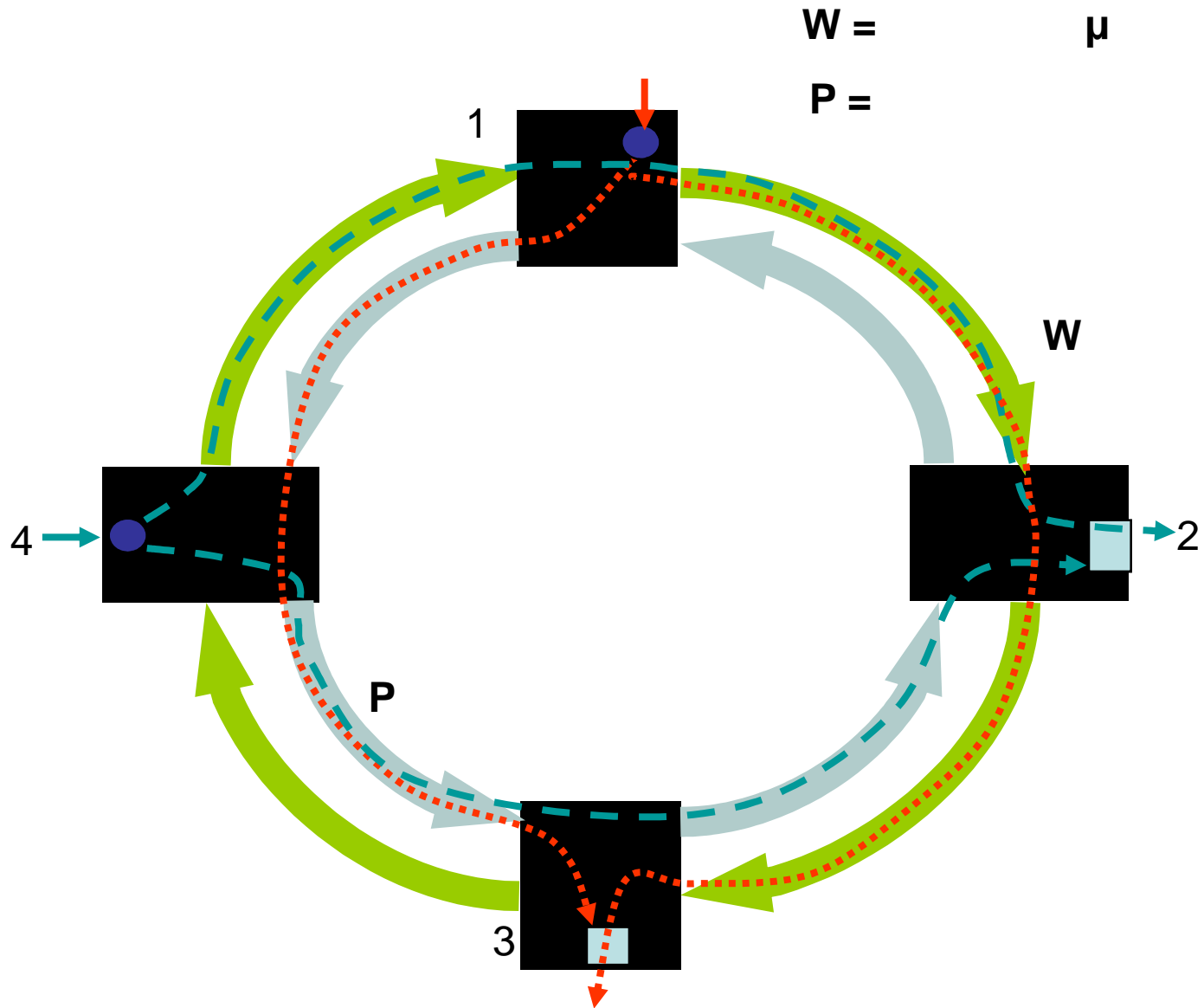
μ

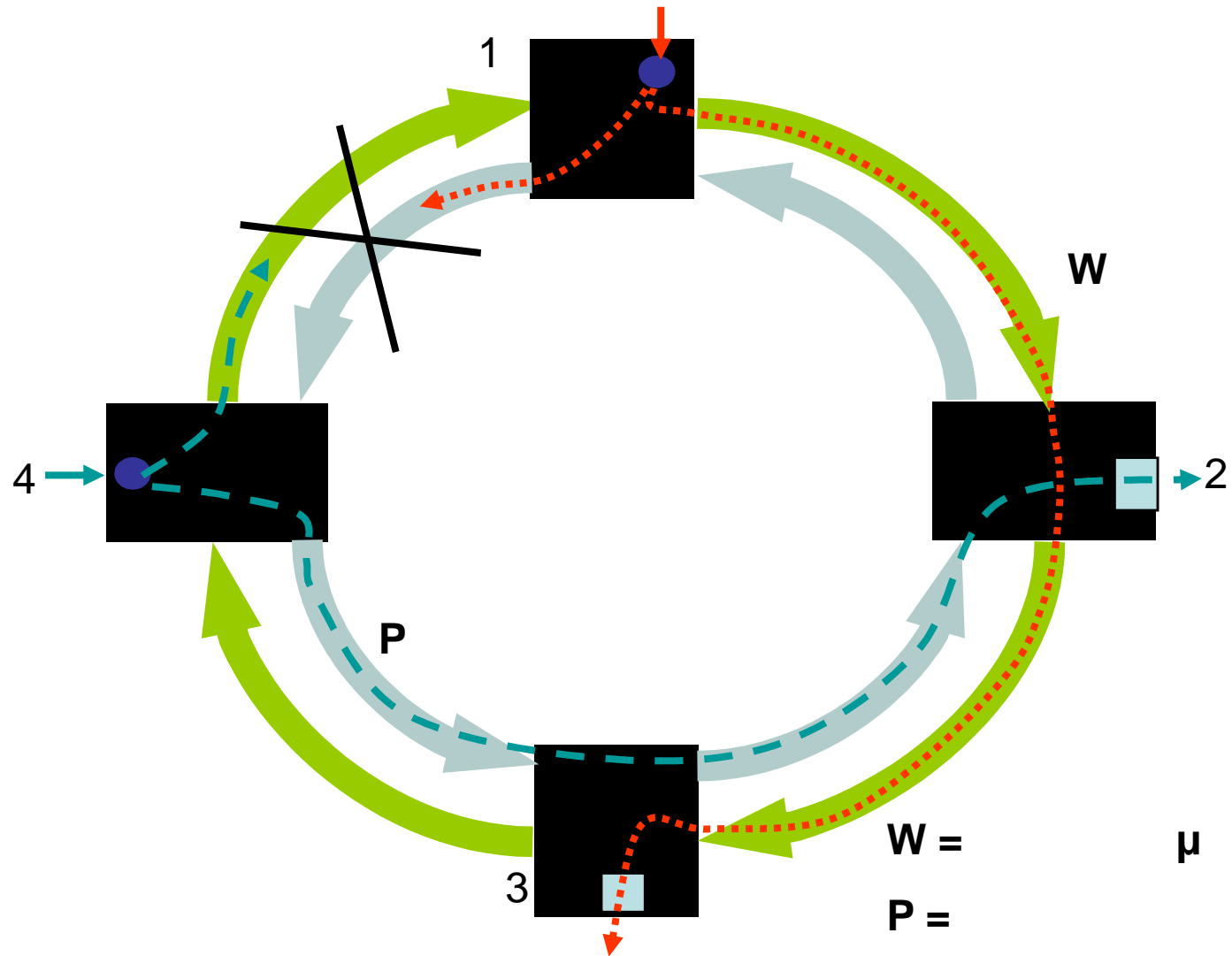




UPSR μ 2

- μ 2
- μ (unidirectional)
- $(\dots \mu \mu)$
- μ
- 1+1
- μ







UPSR

μ

2 TX/ RX

μ

μ

μ

UPSR

μ



1

1

(bidirectional)

—

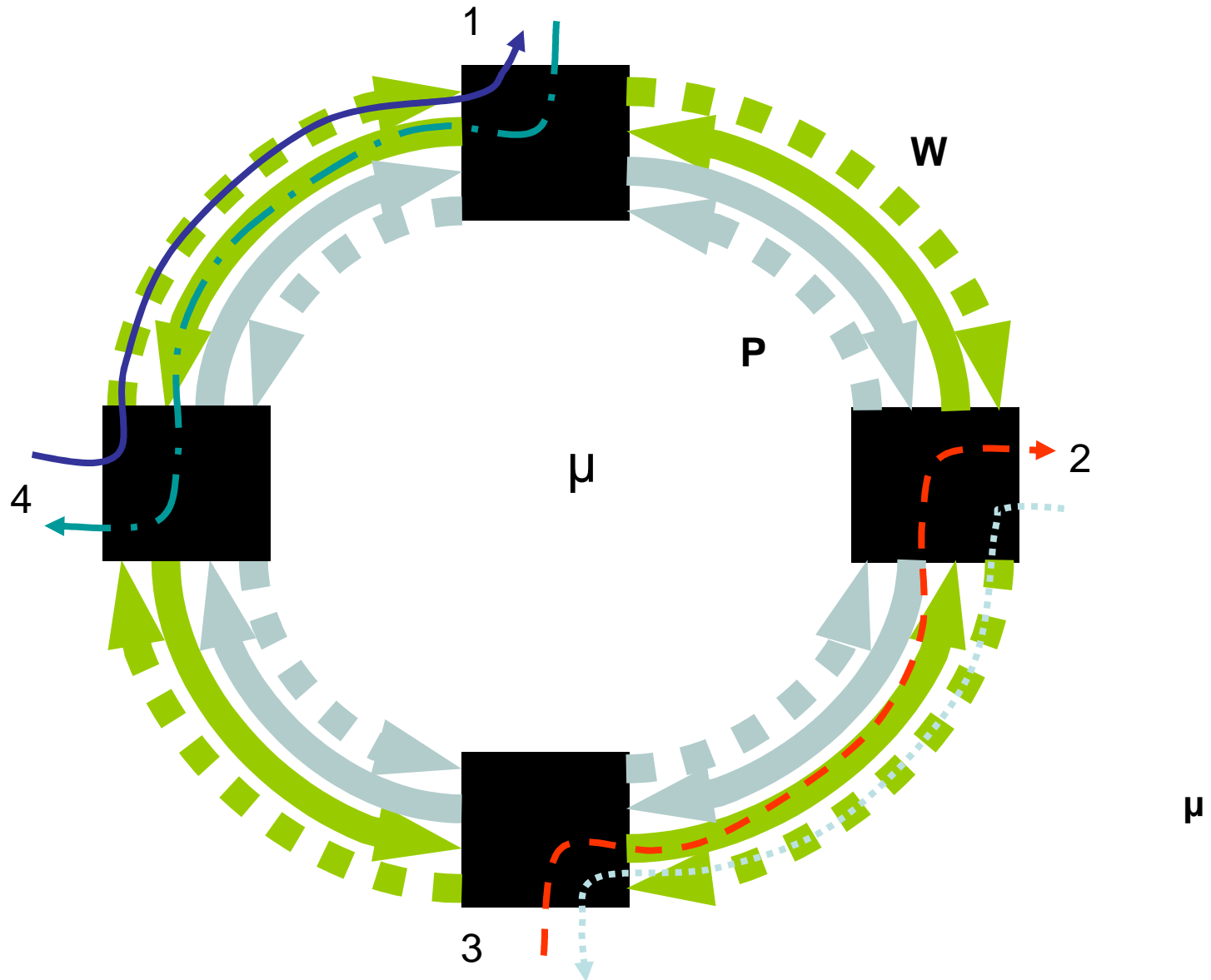
μ

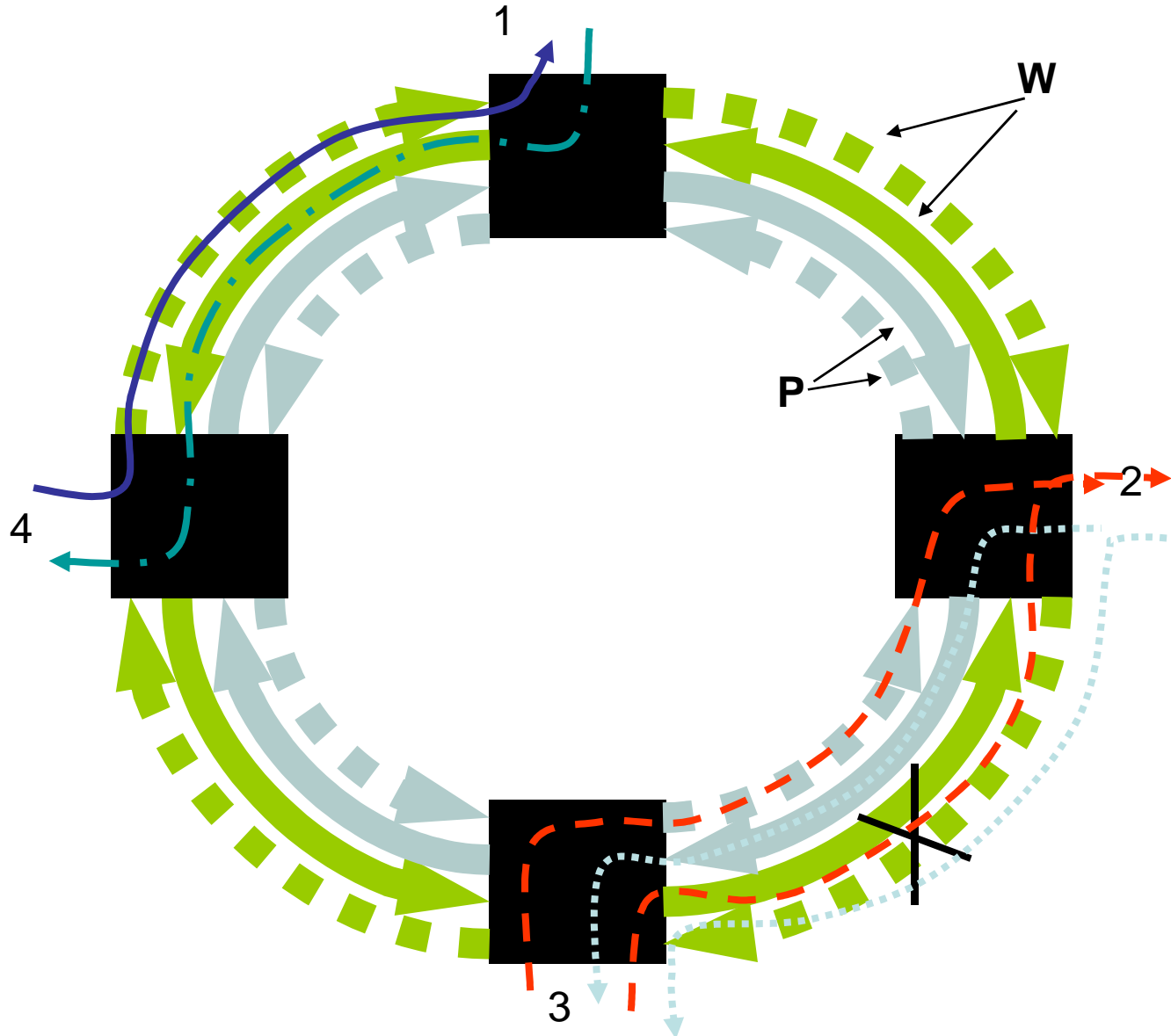
μ

— 1:N



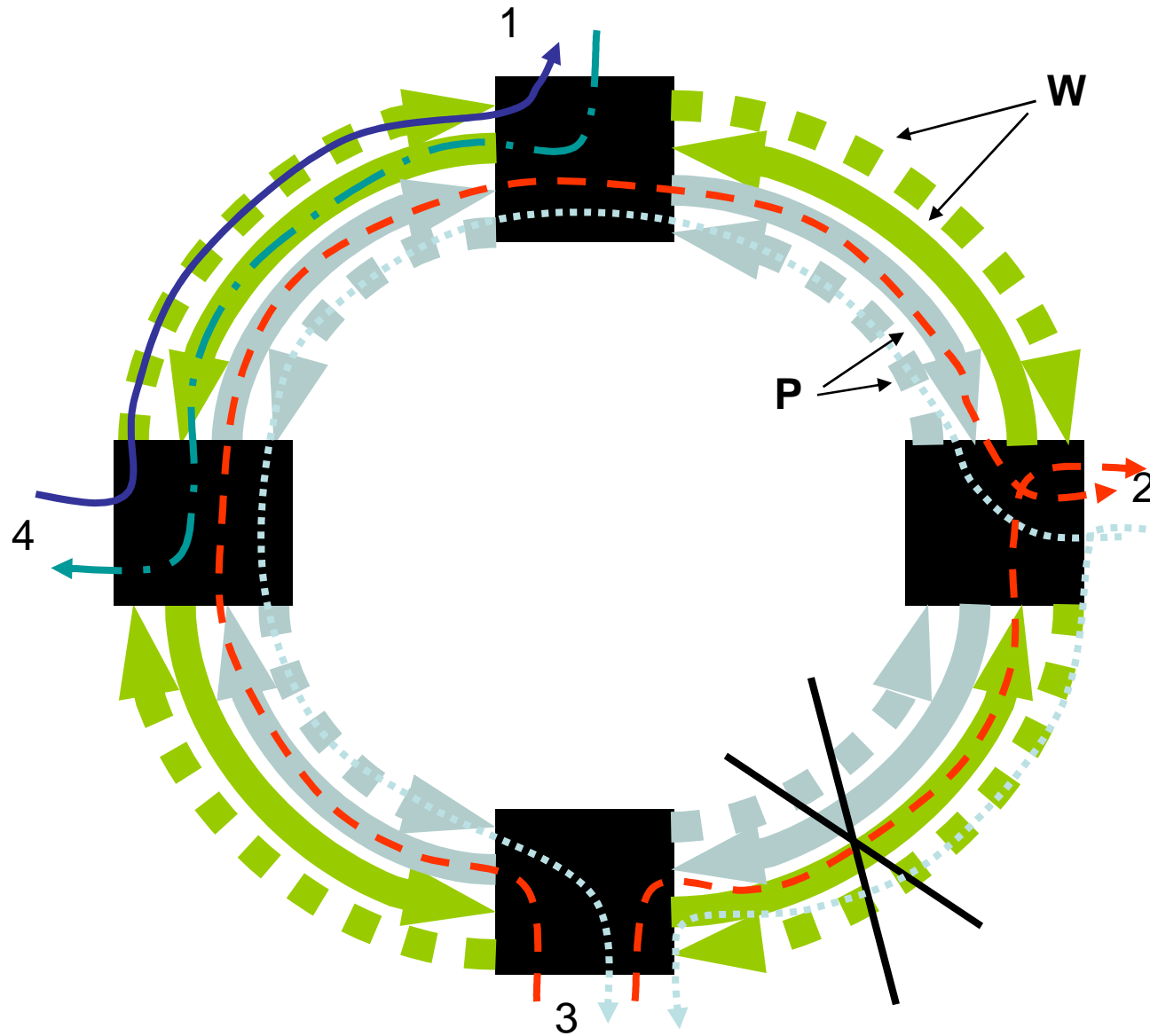
BLSR μ 4







μ BLSR





BLSR

- μ
- μ μ μ μ (16) (1200 km)
- 4 TX, 4 RX
- μ
- μ μ μ
- 1:n m:n μ μ
- BLSR
- BLSR μ
- μ