

"Instantly switches networks in the physical layer"  
– Smart Redundancy style.

## High Reliability Redundancy Configuration NSW Series

NTT-AT's optical switch unit NSW series is a new style of network solution that switches pathways instantly in the "physical layer." In addition to the functions of physically selecting, combing, and disconnecting the pathways of optical signals, NSW lets you enjoy the convenience of an Instantaneous, Automatic, Transparent, and Remote Controlled system. 24 hours a day, 365 days a year operation service and remote location operation brings a huge benefit to telecommunication enterprises. Since the single point link to other communication enterprises and equipment and transmission path of your side of a network can be transparently and simply duplicated, the resulting high availability hot standby redundant structure is especially advantageous. There is also the sense of security of being able to cut connections physically, and a reduction in risks of damage and loss due to problems such as packet storms. In other words, this optical switch unit is an automatic patch panel. Addressing the weak link in mission critical service of poor measures in the physical layer brings dramatic improvement in operations.



### Regular surveillance of optical power and physical switching to instantly restore networks

Dramatically cut network downtime by switching in the physical layer. Realizes an extraordinary network operating ratio of over 99.99%! Surveillance and operation from a remote location is also possible.

### Passive device puts top priority on Fail-Safe operation

Because it is a passive (transparent) device, even in the rare chance of a failure in the base or power supply, the communication itself is not affected. Also, brings a high flexibility applicable to all types of optical transmission, regardless of the communications protocol.

### Abundant installation record and customized results

NSW has a installation record of more than 10,000 ports in over 30 companies, ISP, CATV enterprises, etc., in Japan and around the world. We also do a wide variety of customizing to match the needs of our customers.

I would like to implement high density multi-channels to economize my rack system.



IX Provider

I wonder. Could I use an optical switch by a network controlled ON/OFF switch?



Telecom Provider

I would like to make a specific alarm signal become a trigger.



Operation and Maintenance Company

I want to do switching with not only optical fiber but RJ-45 metal cable as well.



Service Provider

Can this be used as a large-scale matrix switch in verification experiments for my research?



Research Institute



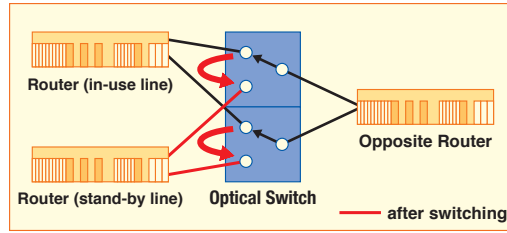
Just leave it to us! The new model base unit NSW-BU-02 is enhanced to accommodate a wide variety of customizing in order to respond to your needs!

# CASE

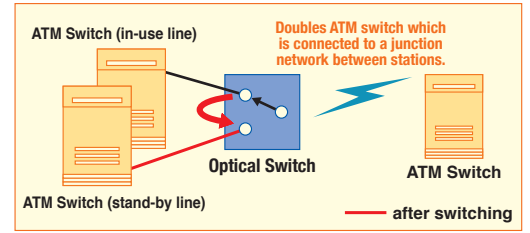
## Network Equipment Redundancy

Automatically detecting failures and automatically switching to backup systems greatly improve the availability and reliability of your facilities.

### Router Doubling



### ATM Switch Doubling

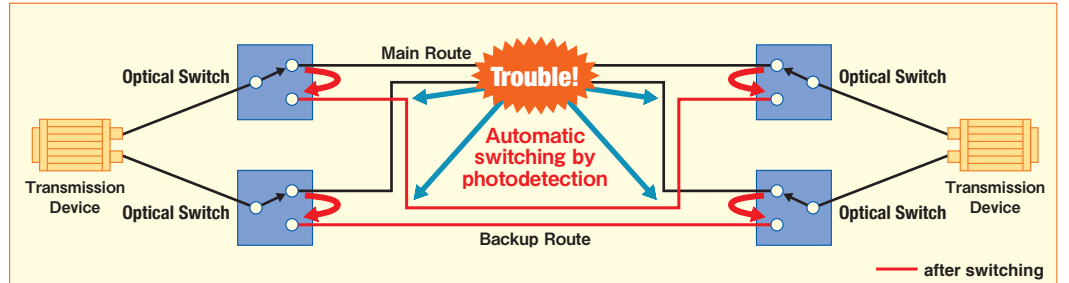


# CASE

## Transmission Pathway Redundancy

When deterioration of optical power in the transmission pathway is detected, switching is automatically performed, improving the availability and reliability of the transmission line. Switching back after restoration is also simple and safe.

### Backbone Doubling

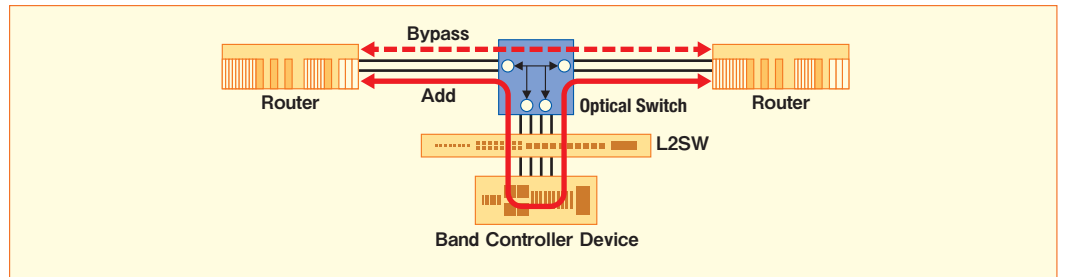


# CASE

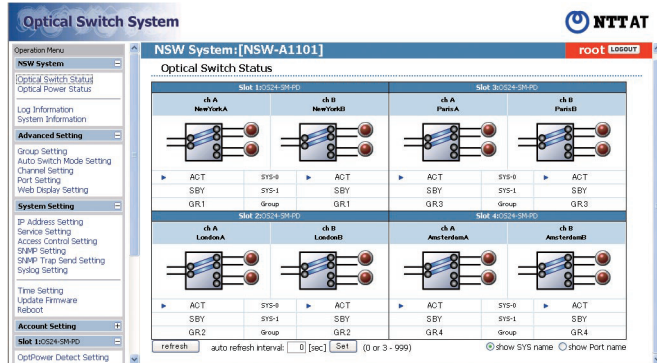
## Appliance Add Bypass

Connecting and disconnecting appliances, such as networks, firewalls and bandwidth control equipment, can be done at high speed.

### Appliance Add Bypass



### Operation Menu Screen



### Product Specifications: Base Unit (NSW-BU-02)

# of slots	4
# of channels	16CH (Max.)
Size	Rack Mount 1U Width 480 x Depth 405 x Height 44mm*1
Power Input Voltage	AC 85~250V
Power Consumption	50W $\geq$
Operating Temperature	0~55°C
Operating Humidity	15~85% (non condensing)
Notes	*1 Not including projections

### Product Specifications: Module

Types of Optical Switch	1x2, 2x2, 2x4
Optical Switch Operation	Self maintenance type (maintain the power-off state)
Compatible Optical Fibers	SM, MM 50 $\mu$ m
Optical Loss Detection Level	approx. -40dBm~+10dBm
Switching Protection Time	0-17000msec (1msec scale)
Wave Length	SM:1300nm~1600nm, MM:850nm, 1300nm
Insertion Loss	with automatic switch: 2dB $\geq$ *2 without automatic switch: 1dB $\geq$ *2
Optical Connector	SC/SPC, LC/SPC, SC/APC
Notes	*2 Not including connector

### Product Functions \*3

Functions	Automatic Changeover / Manual Switch / Remote Surveillance / Remote Control / Grouping Linkage / Switch Protection / Switch Mode
System Management	GUI:HTTP / CLI:Console TELNET SSH SNMP v1, v2C, v3 / Remote Confirmation(RADIUS, TACACS+)
High Availability	syslog / 3 types of account authorities / NTP Time / Synchronization / Fail-safe / External redundant power supply / Hot Swap
Notes	*3 Functions differ according to the module model. Please contact us for more details.

Notes:  
 • All company names, product names, etc., indicated herein are trademarks or registered trademarks of each respective company.  
 • Please understand that all comments and data recorded herein may be subject to change without prior notification. • Catalog descriptions: as of February, 2018

For more information, please contact

<http://www.ntt-at.com/product/optical-switch/>



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Switches the optical paths in the physical layer without interrupting network services.

## Compact Optical Switch CSW Series

NTT-AT's optical switch unit, CSW series, is a compact model of our existing brand, NSW. The CSW brings dedicated protection switching to optical networks for a reasonable cost.

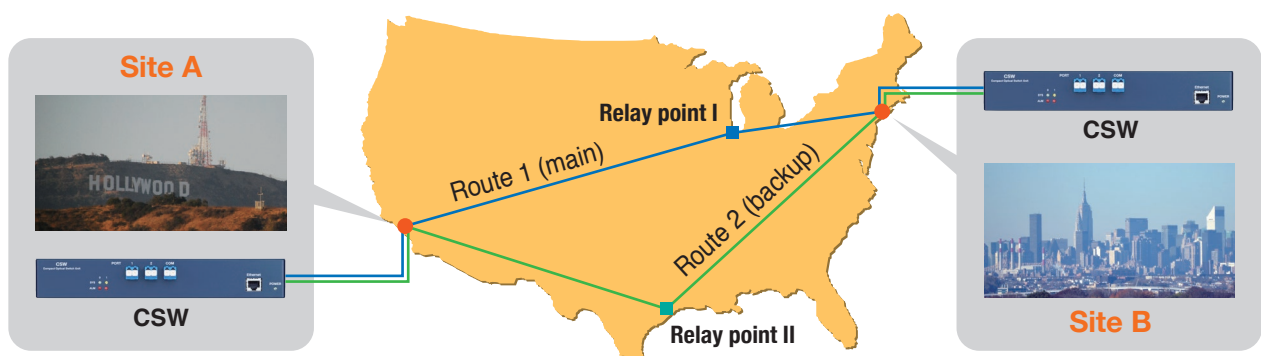


### Regular surveillance of optical power and physical switching to instantly restore networks

Dramatically cut network downtime by switching in the physical layer. Realizes an extraordinary availability of over **99.9999%**! CSW's automatic switching of the optical paths greatly reduces the network operating cost.

### Passive optical device puts top priority on Fail-Safe operation

Because it is a **passive** (transparent) device, even in the case of a power outage, the network communication itself is not affected. Also, the CSW brings high flexibility, applicable to all types of optical transmission, regardless of the communications protocol.

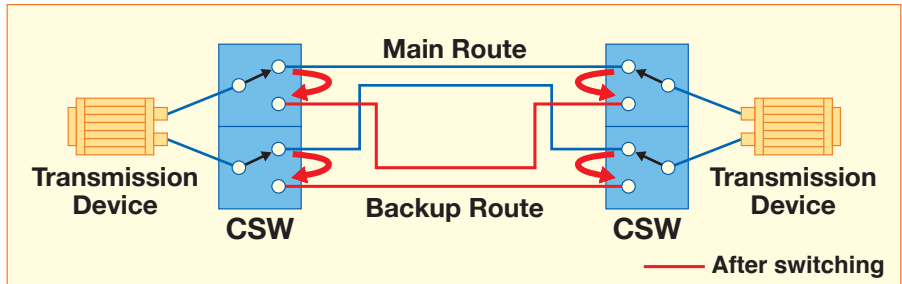


## CASE 1

### Transmission Pathway Redundancy

Automatically detecting failures and switching to the backup route without interrupting network services.

#### ■ Backbone Doubling

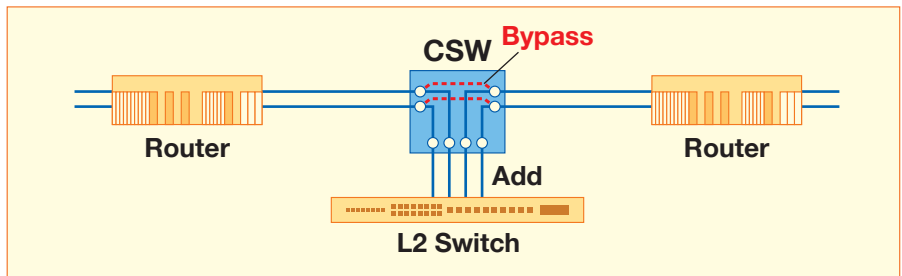


## CASE 2

### Ring Network Add / Bypass

Automatically bypassing the node when the power is lost so that the network services for other nodes continue.

#### ■ Bypassing The Node

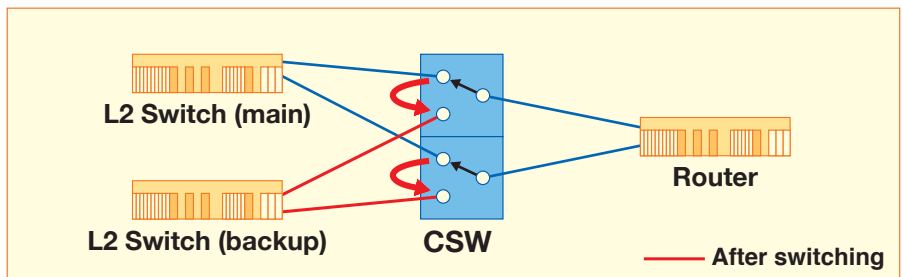


## CASE 3

### Network Equipment Redundancy

Automatically switching to backup, which greatly improves the availability and reliability of the services.

#### ■ L2 Switch Doubling



## ■ Product Specifications

Size (mm)	266 (W) x 150 (D) x 42 (H)
Optical Switching Time	10 msec (max)
System Management	Web GUI, SNMP, Telnet, CLI



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