

## Issue: Configuring a Turbo Chain

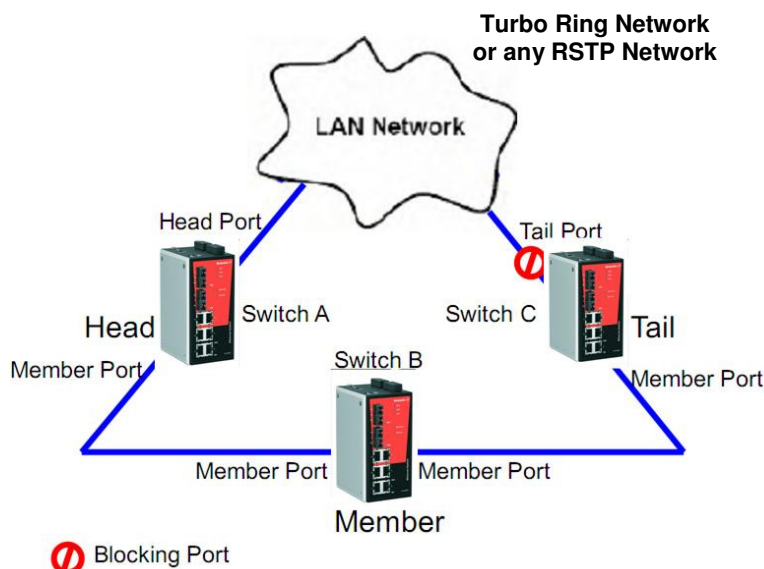
This Tech Note applies the following Weidmüller Industrial Ethernet switches:

- IE-SW-VL08MT-8TX
- IE-SW-VL08MT-5TX-3SC
- IE-SW-VL08MT-6TX-2ST
- IE-SW-VL08MT-6TX-2SCS
- IE-SW-PL08M-8TX
- IE-SW-PL08M-6TX-2SC
- IE-SW-PL08M-6TX-2ST
- IE-SW-PL08M-6TX-2SCS
- IE-SW-PL16M-16TX
- IE-SW-PL16M-14TX-2SC
- IE-SW-PL16M-14TX-2ST
- IE-SW-PL10M-3GT-7TX
- IE-SW-PL10M-1GT-2GS-7TX
- IE-SW-PL18M-2GC-16TX
- IE-SW-PL18M-2GC14TX2SC
- IE-SW-PL18M-2GC14TX2ST
- IE-SW-PL18M-2GC14TX2SCS
- IE-SW-PL09M-5GC-4GT
- IE-SW-PL06M-2TX-4PoE

## What is a Turbo Chain?

The Turbo Chain is an advanced software-technology that gives network administrators the flexibility of constructing any type of redundant network topology. When using the “chain” concept, you first connect Ethernet switches in a chain and then simply link the two ends of the chain to an Ethernet network.

Switches in the chain architecture can be divided into three categories: the Head switch, the Tail switch, and the Member switches. The Head port of the Head switch usually acts as the external port for the entire chain. The Tail port of the Tail switch acts as the redundant port. When the Head port is disconnected, the Tail port is immediately activated for data transfer.



## Enabling Turbo Chain

**Note:** Enabling Turbo Chain will be done by using the web console

### 1. Prepare 3 switches (e.g. Switch A, B, C) to form 1 chain

→ Do the followings steps 1.1 to 1.5 for each switch

- 1.1 Make sure that all DIP switches are set to OFF and then power on the switch.
- 1.2 Connect the host PC with the switch by Ethernet cable
- 1.3 Adjust the IP settings as necessary so that the switch is on the same network as your PC. You may also need to modify the host PC's IP configuration. Make sure you can ping the Weidmüller switch from your host PC.

**Note:** By default all Weidmüller managed switches have the IP address 192.168.1.110

- 1.4 Restore the Weidmüller switch to default settings via web console
- 1.5 Configure a unique IP address for the Turbo Chain network

**Note:** Assign the IP addresses in that way that each switch has its own IP address and all switches and connected PC's are in the same subnet

### Now set up the 3 switches as Head switch, Member switch and Tail switch

**Note:** Until the switches are not finally configured the devices should not be connected together

### 3. Set up the 3 switches (A = Head switch, B = Member switch, C = Tail switch)

This can be done through the web console as follows:

► Communication Redundancy → Field “Redundancy Protocol” → Select Turbo Chain

The screenshot shows the 'Communication Redundancy' configuration page in the Weidmüller web console. The page title is 'Weidmüller Switch Configuration' and the Weidmüller logo is in the top right. The main content area is titled 'Communication Redundancy' and shows the 'Current Status' and 'Settings' sections.

**Current Status**  
Root/Not root: ---

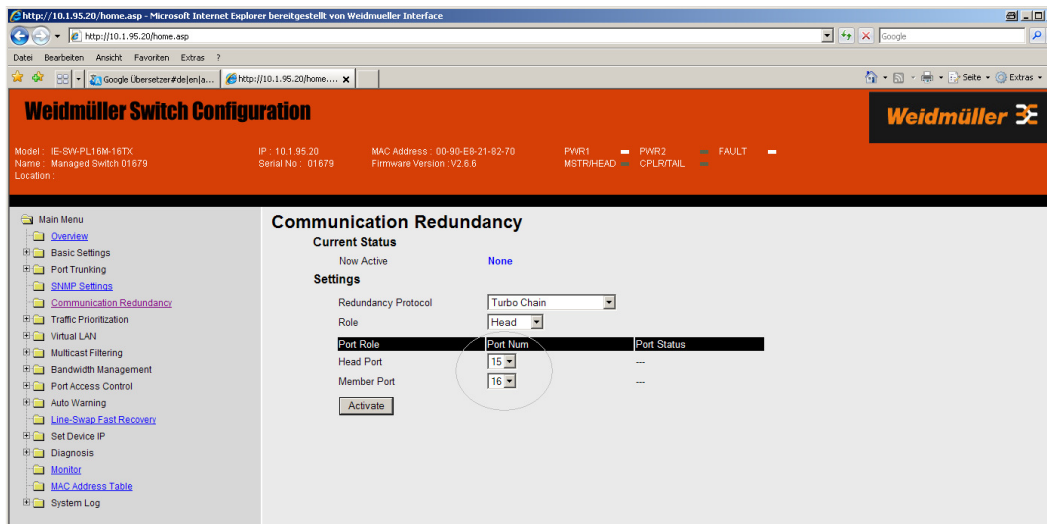
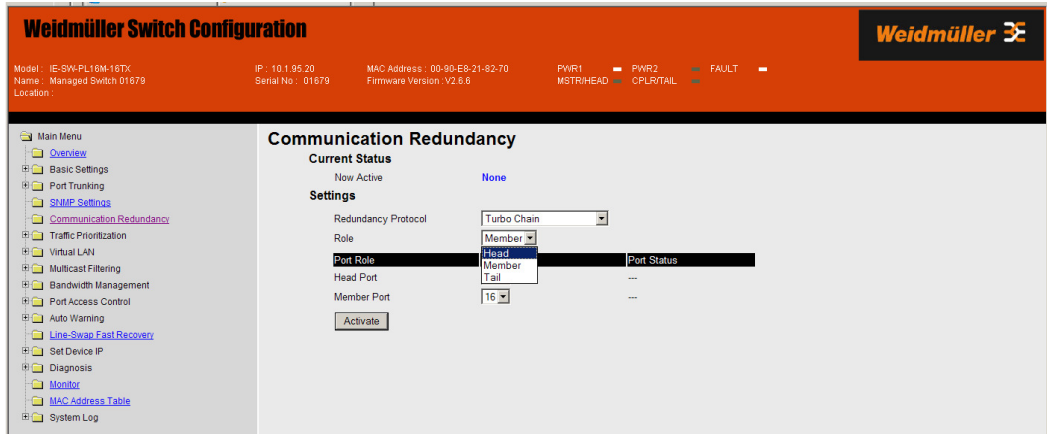
**Settings**  
Redundancy Protocol: RSTP (IEEE 802.1W/1D) (dropdown menu)  
Bridge Priority: 32768 (input field)  
Forwarding Delay: 15 (input field)

Port	Enable RSTP	Port Priority	Port Cost	Status
1	<input type="checkbox"/>	128	200000	---
2	<input type="checkbox"/>	128	200000	---
3	<input type="checkbox"/>	128	200000	---
4	<input type="checkbox"/>	128	200000	---
5	<input type="checkbox"/>	128	200000	---
6	<input type="checkbox"/>	128	200000	---

Buttons: 'Activate' and 'Cancel' are visible at the bottom of the table.

- 3.1 Configure switch A as Head switch  
→ Select Field “Role” = Head

- Configure one port as the Head port and one port as the Member port (Select by yourself the ports you will use)
- Click Activate Button



### 3.2 Configure switch B as Member switch

- Select Field “Role” = Member
- Configure 2 ports as Member port (Select by yourself the ports you will use)
- Click Activate Button

### 3.3 Configure switch C as Tail switch

- Select Field “Role” = Tail
- Configure one port as Member port and one port as Tail port (Select by yourself the ports you will use)
- Click Activate Button

## 4. Connect the 3 switches (Head, Member and Tail) according to the configured Turbo Chain ports

## 5. Monitor the status of the Head switch, Tail switch and Member switch

**Weidmüller Switch Configuration**

Model : IE-SW-PL16M-16TX    IP : 10.1.95.20    MAC Address : 00-90-E8-21-82-70    PWR1 : MSTR/HEAD    PWR2 : CPLR/TAIL    FAULT : -  
 Name : Managed Switch 01679    Serial No. : 01679    Firmware Version : V2.6.6

**Communication Redundancy**

Current Status: Now Active **None**

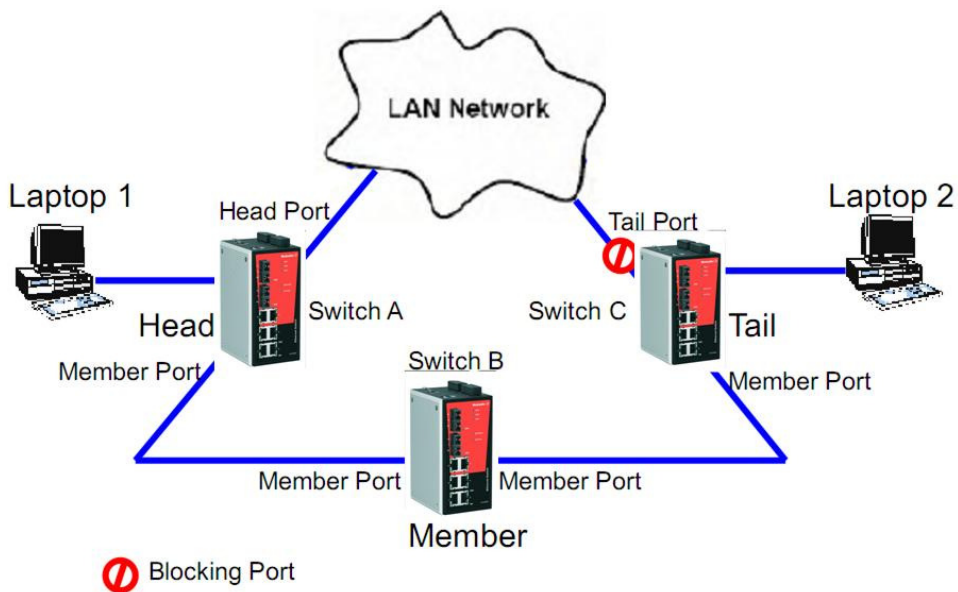
Settings

Redundancy Protocol: Turbo Chain  
 Role: Member

Port Role	Port Num	Port Status
Head Port	15	---
Member Port	16	---

Activate

## Testing Turbo Chain



1. Configure Laptop 1 and 2 to be located in the same subnet.
2. Connect Laptop 1 and 2 to switch A and C, separately.
3. Run a **Ping** x.x.x.x command from Laptop 1. (x.x.x.x is Laptop 2's IP address)
4. **Unplug** the Head port of switch A and make sure the ping session recovers immediately.
5. Monitor the status of the Head port, Tail port, and Member port.
6. **Plug in** the Head port of switch A and make sure the ping session recovers immediately.
7. Monitor the status of the Head port, Tail port, and Member port.