MARVELL®

Marvell Yukon Teaming/RLMT introduction

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Overview

- **Definitions/introduction in brief**
- **Supported Devices**
- **Installing/Configuring CPA**
- **CPA Information**
- **Configuring Dual-Net**
- **Configuring Team with Link Aggregation**

Definition/introduction in brief

Definition of teaming – IEEE802.3ad

- Teaming is also “Link Aggregation” which is to set a more than one port to form a group and treat it as “a” high bandwidth port.
- IEEE 802.3ad defined a layer 2 protocol of how to form a team group between “Actor” and “partner”.
- IEEE 802.3ad packet format:

  DA=00-80-c2-00-00-02 (slow-protocol multicase address)

  SA=Unique unicast MAC address

  Length/Type=8809

  Sub Type= 1 for LACP, 2 for LACP Marker

  version= 2 byte

  LACP information (108 byte)

  FCS (4 byte)

Benefit of IEEE802.3ad

- Increased bandwidth
- Increased availability
- Linearly incremental bandwidth
- Load sharing
- Automatic configuration
- Rapid configuration and reconfiguration
- Support of existing IEEE802.3 MAC clients
- Backwards compatibility with aggregation-unaware devices
- No change to IEEE 802.3 frame format

Frame Distribution

- **Frame of same conversation will TX thru same physical Link**
- **Explicit marker insert into stream for conversation end**
- **Benefit: guarantees correct packet ordering**

Definition of RLMT (Redundant Link Management Technology)

Dual Link Ethernet Controllers provide two ports. Part of each driver is the Marvell® Redundant Link Management Technology (RLMT), which monitors the status of the ports. If the link of the active port fails, RLMT switches immediately to the standby link. The virtual link is maintained as long as at least one ‘physical’ link is up. In advanced modes, RLMT additionally monitors the network path between the two ports and is able to detect and report network segmentation. Being part of the driver, this function is independent of the operating system

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RLMT - MAC address assignment

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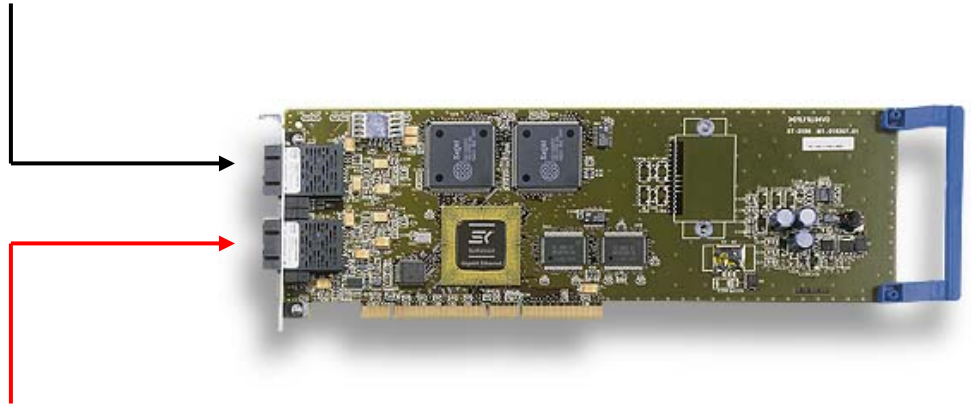
RLMT controls three MAC addresses:

- **one logical MAC address**
- **two physical MAC addresses**

Port B: 00-00-5A-98-10-1A (physical) standby port



Port A: 00-00-5A-98-10-19 (physical) active port

Port A: 00-00-5A-98-10-18 (logical)

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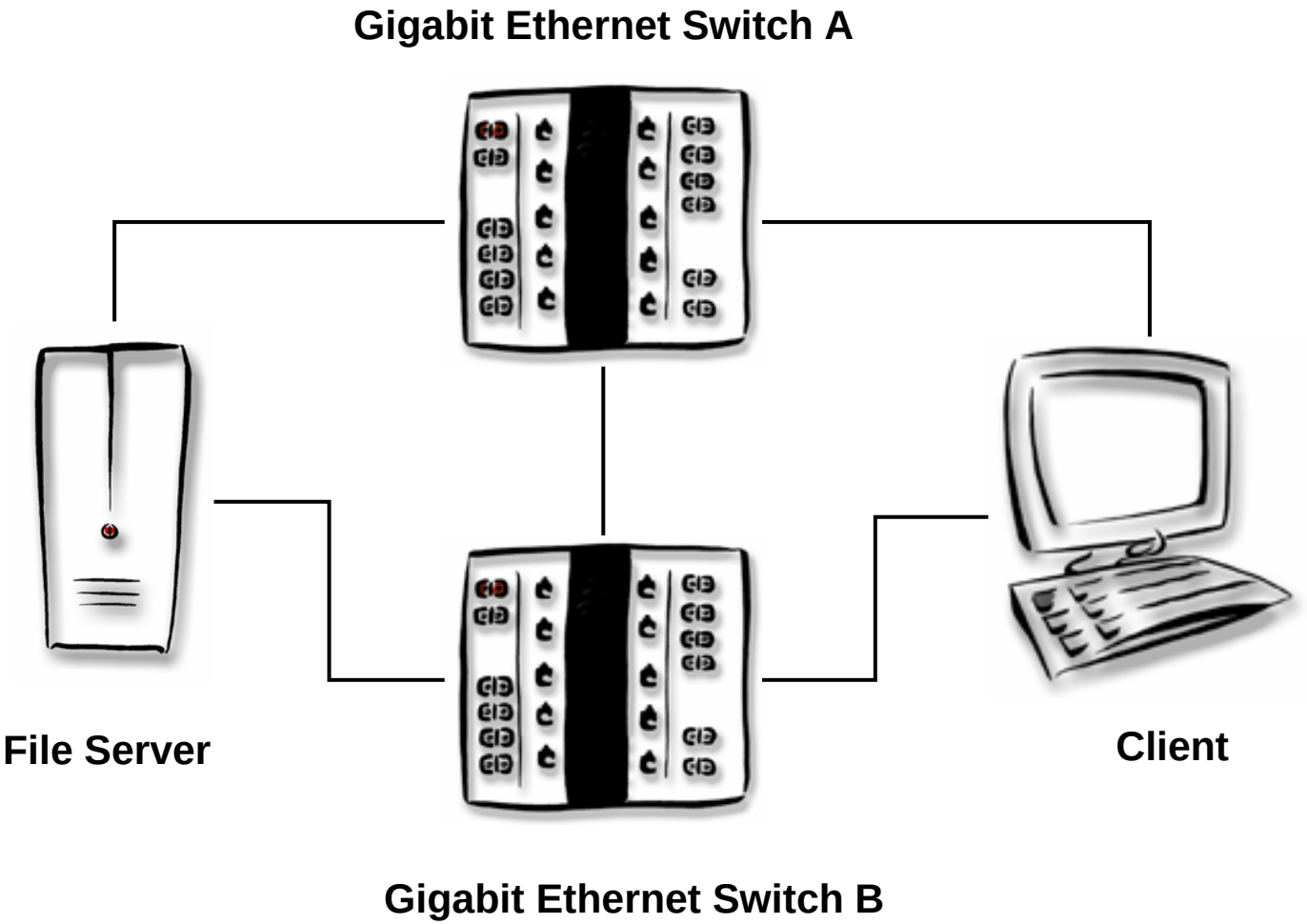
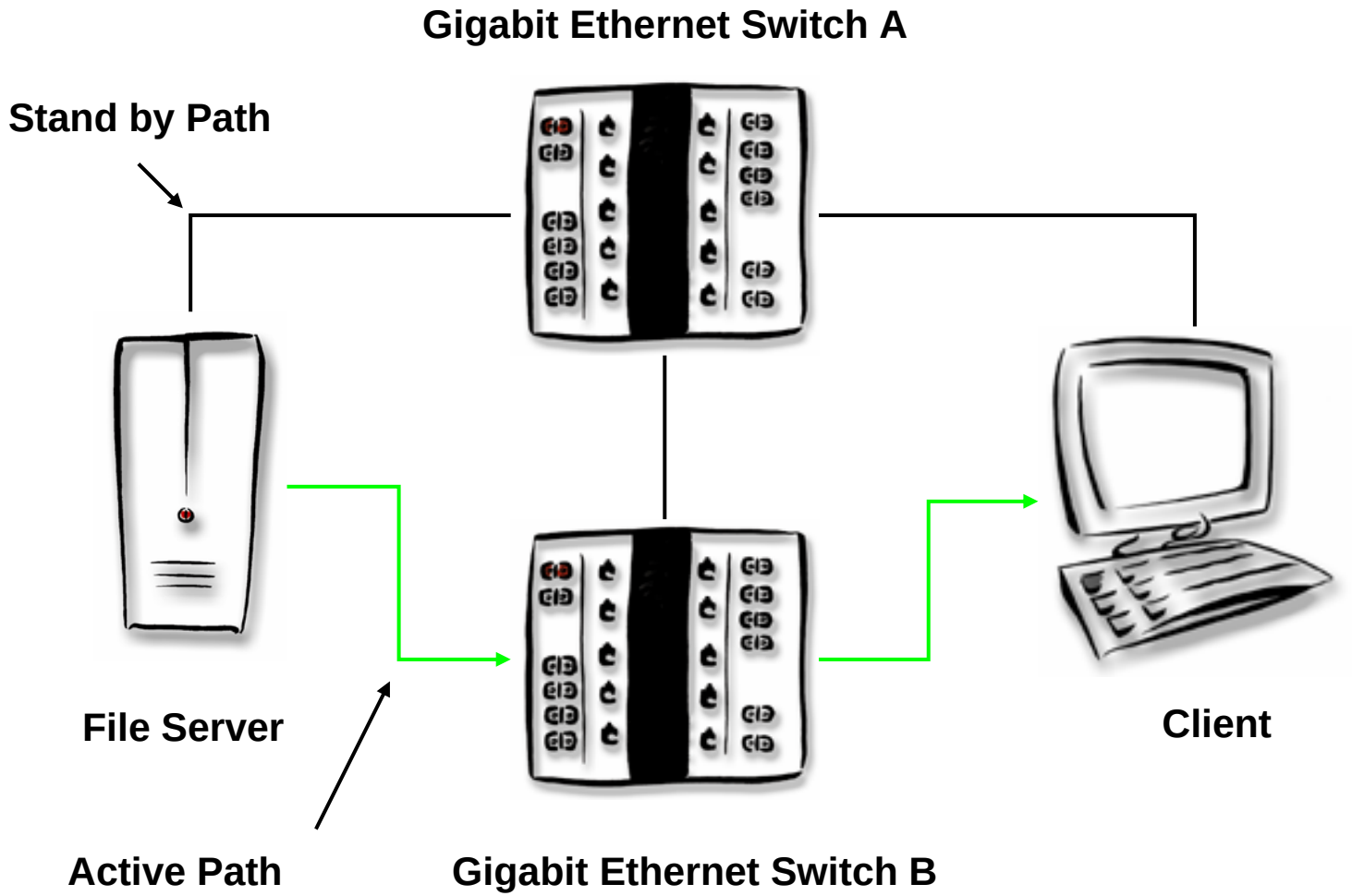
The Real World



Normal Dataflow



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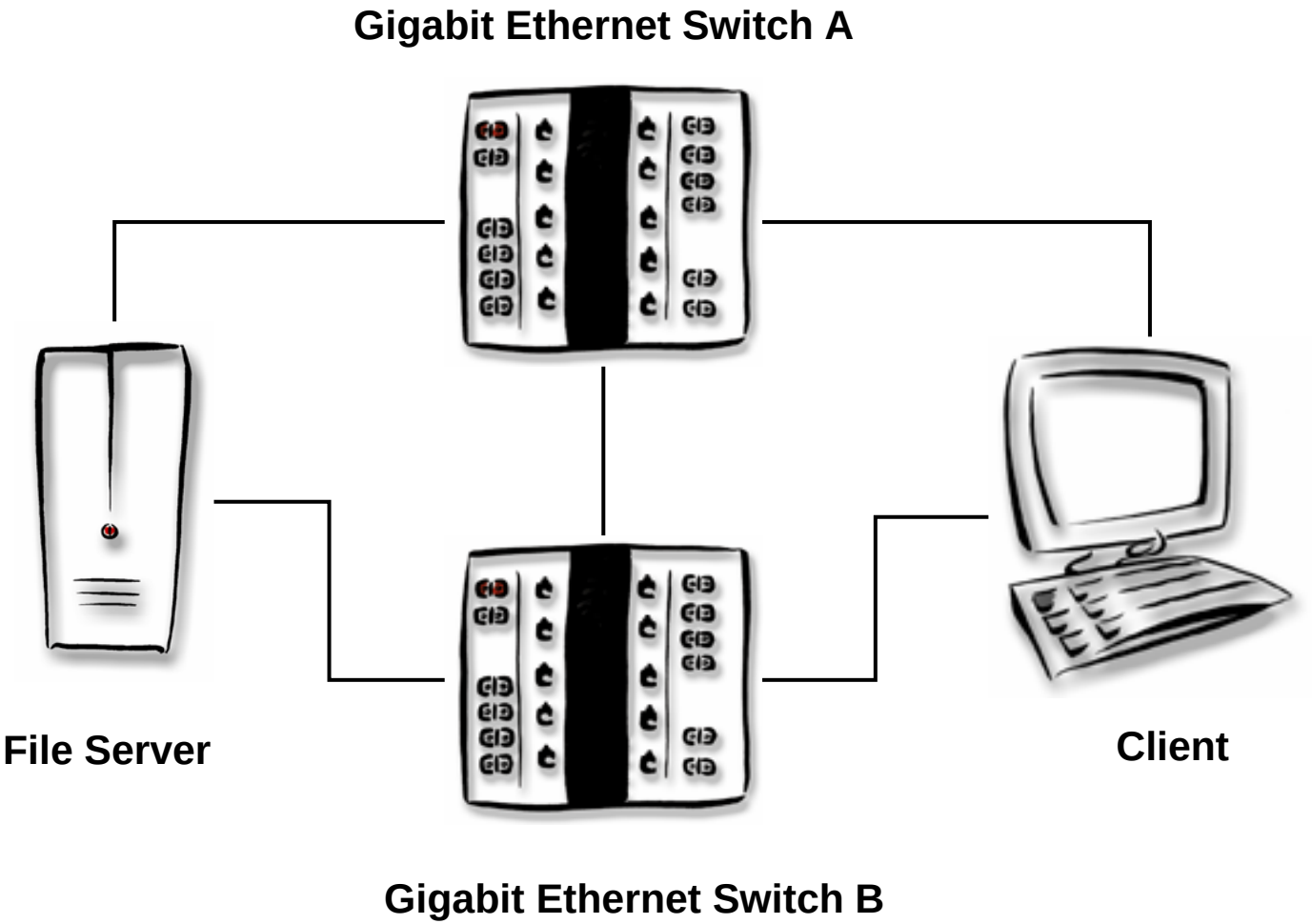
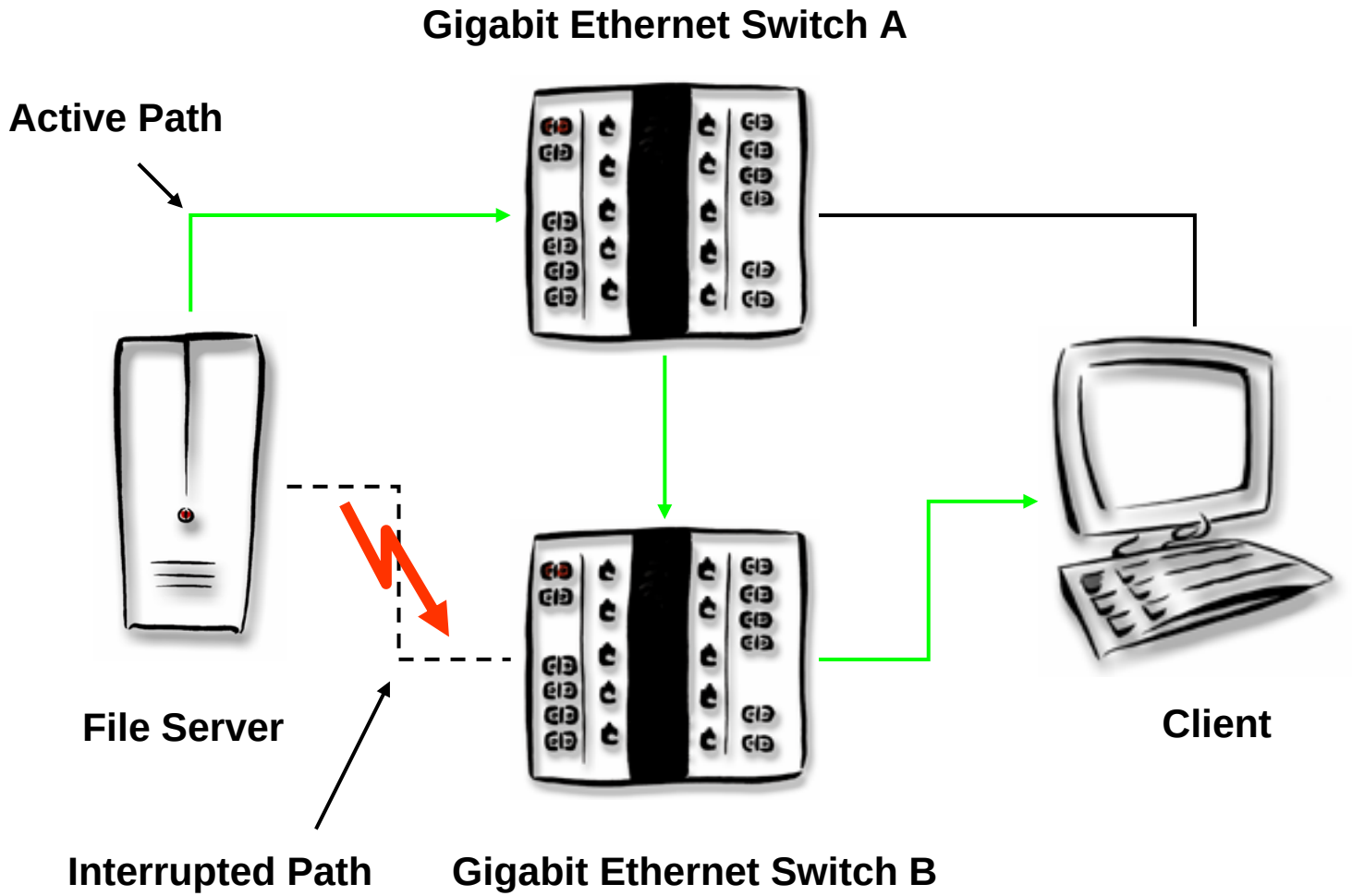
The Real World

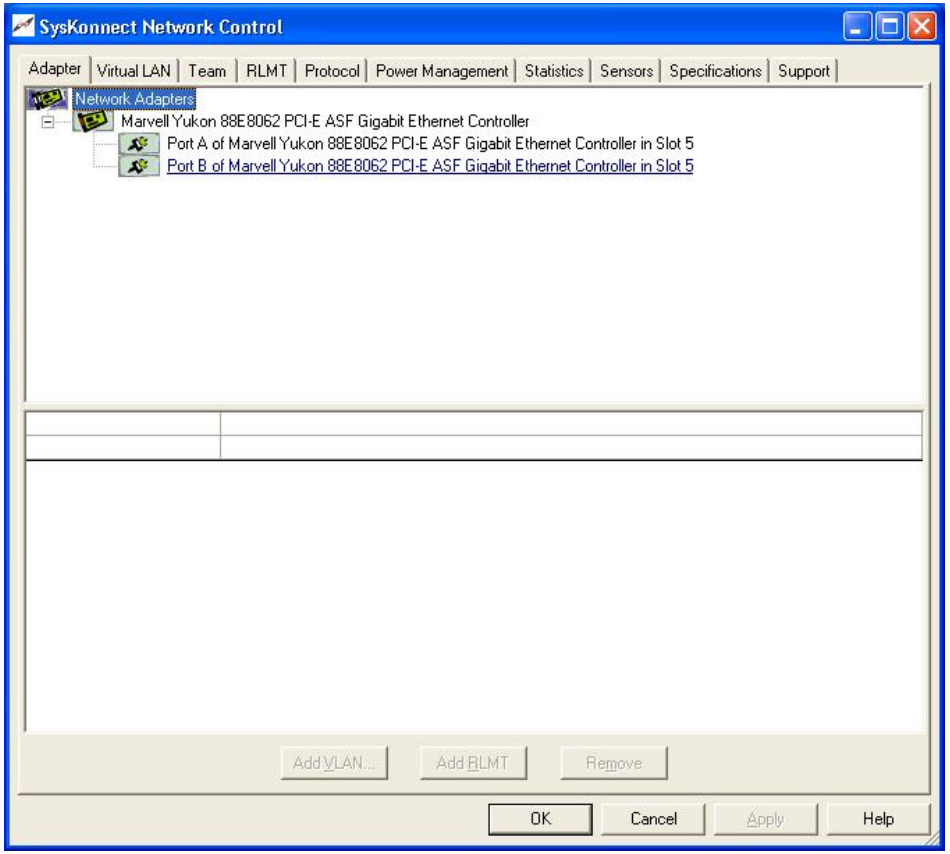


Network failure forcing RLMT to switch



Definition of CPA (Control Panel Applet)

Marvell® Network Control enables you to configure all Marvell® Yukon™ 805x and 806x Gigabit Ethernet Controllers in your system. The various tabs contain trees showing the installed adapters and their configuration.



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Definition of Dual-Net

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To achieved Dual-net, you will need to remove ports from RLMT mode. After applying the changes, the two ports will appear independently.

Supported Devices by CPA

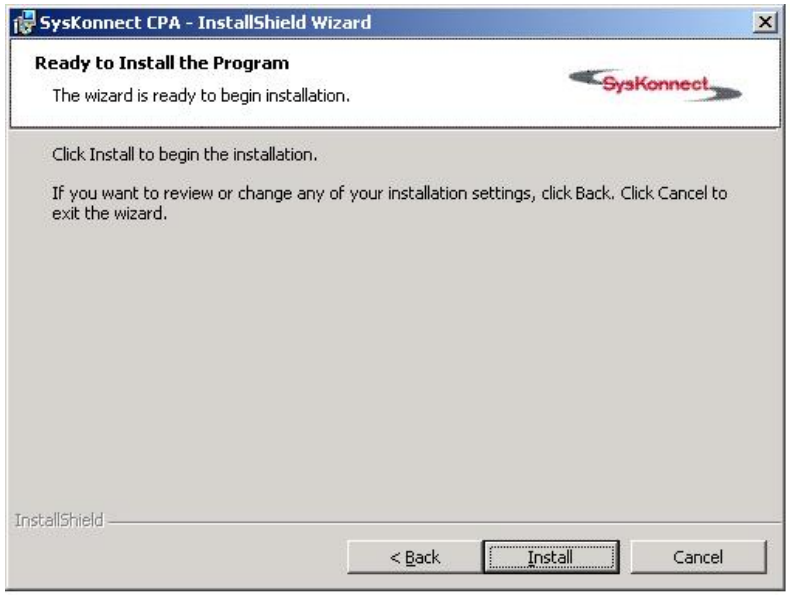
- **The Yukon EC and Yukon II Gigabit Ethernet devices will be supported by the CPA.**
- **Yukon EC: 805x**
- **Yukon II: 806x, 802x**

CPA Installation

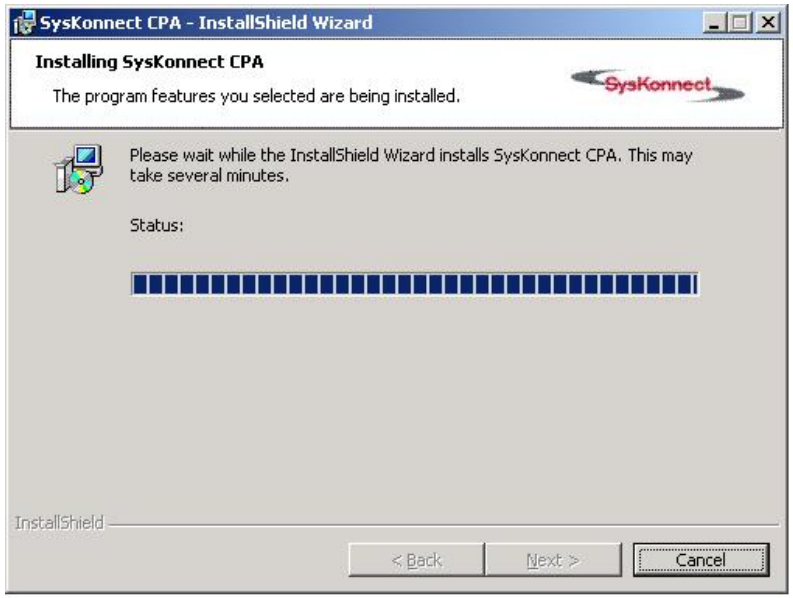
Installing CPA

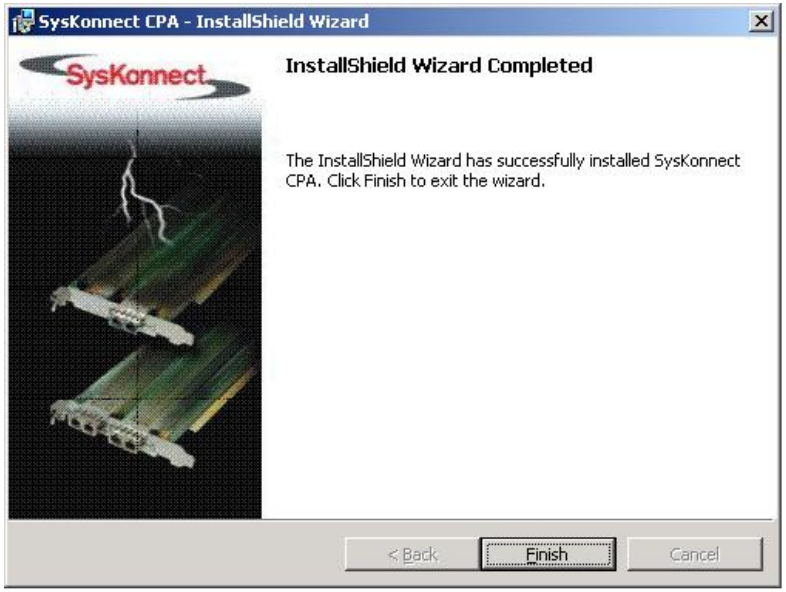
Double click on the file “SetupCPAwin.exe” to start CPA installation.

It is not necessary to install the “standalone” driver.



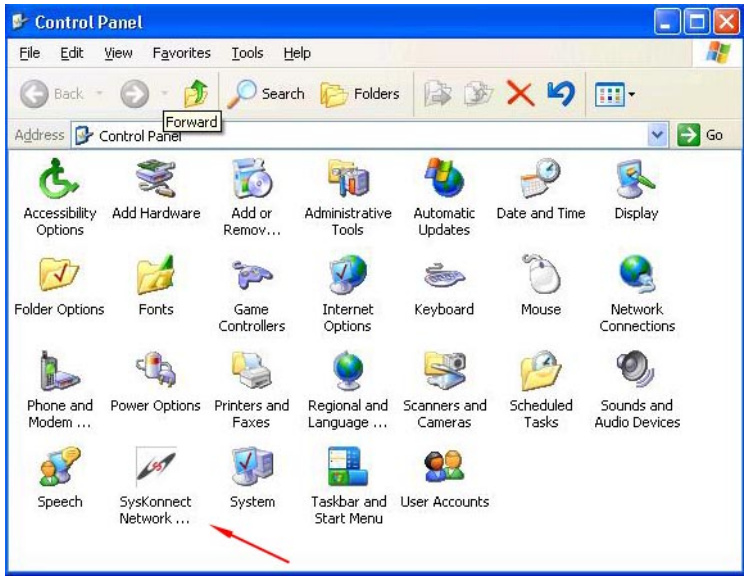
Installing CPA

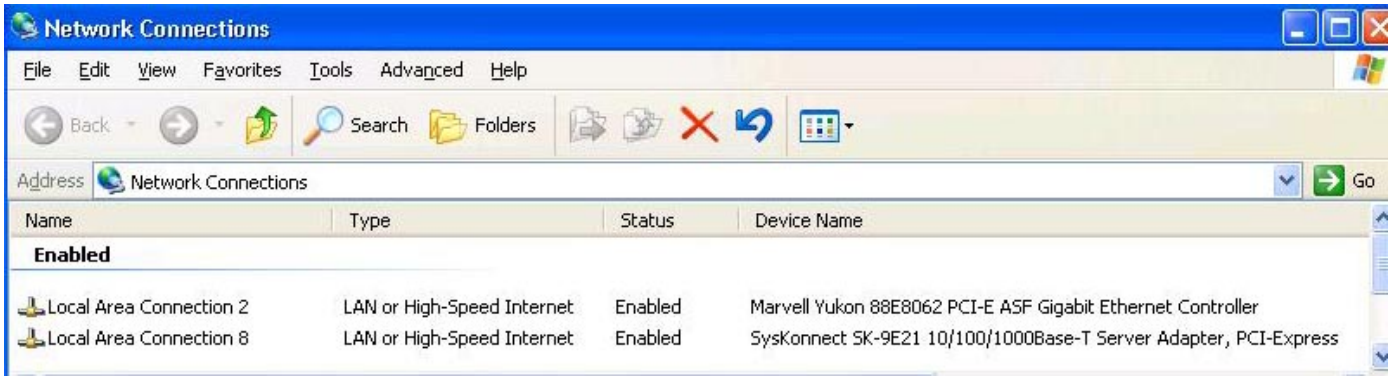




CPA Installation

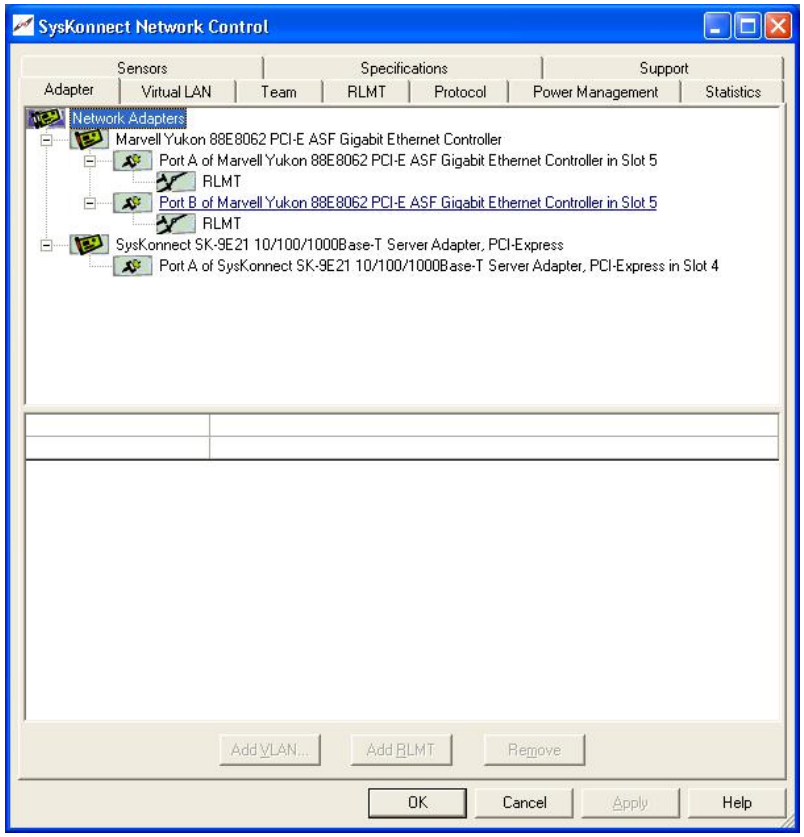
- **After installing the CPA, the icon to run the CPA will be in the Control Panel.**
- **The default setting for the two ports will only show one adapter because the second port is ready for fail-over.**





Adapters Tab

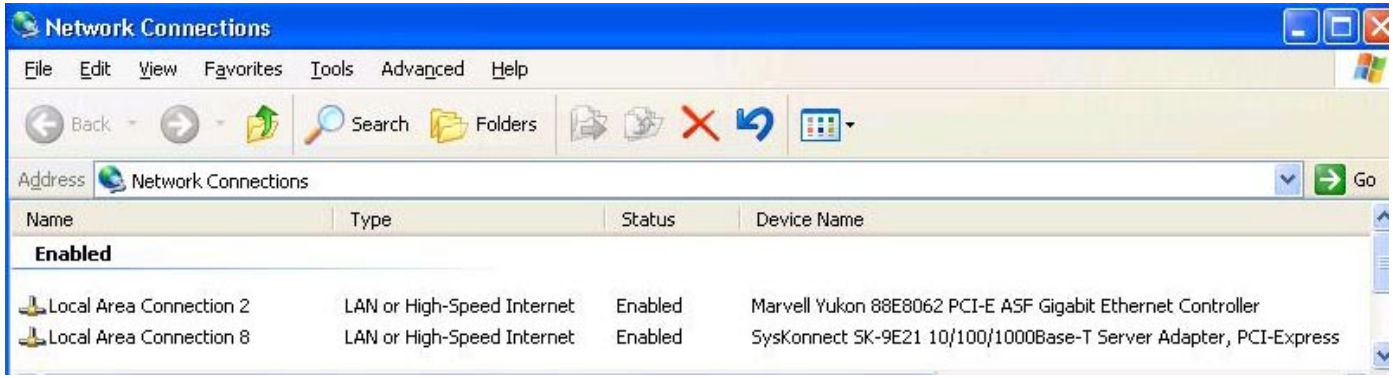
- **The first time the CPA loads, the list of available Yukon network devices and ports are displayed**
- **RLMT is the default setting for dual port adapters**

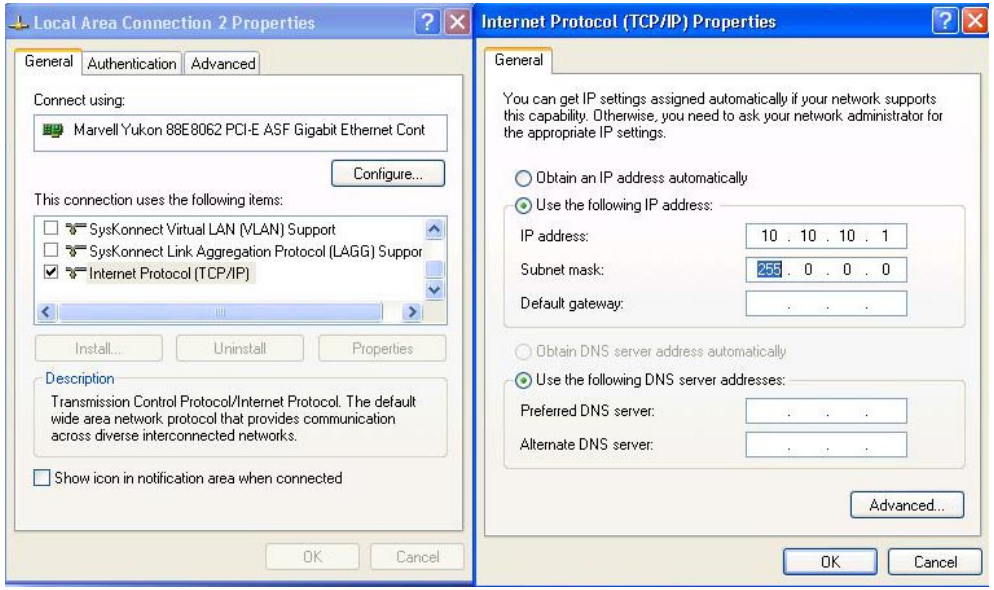


Configuring IP Address

Assigning IP Address After Installation

- **Assign IP address normally in Control Panel Network Connections**





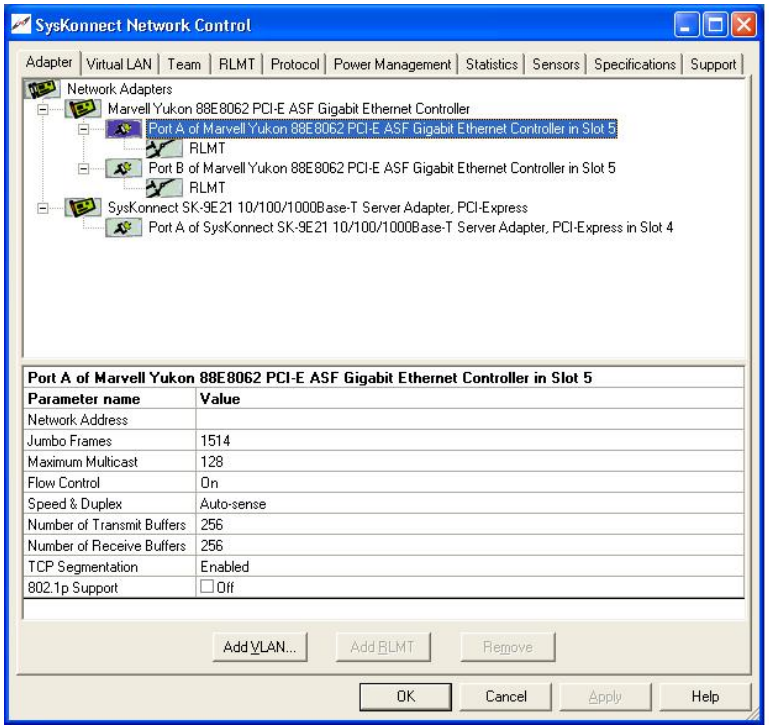
Marvell Yukon CPA (Control Panel Applet) Tabs

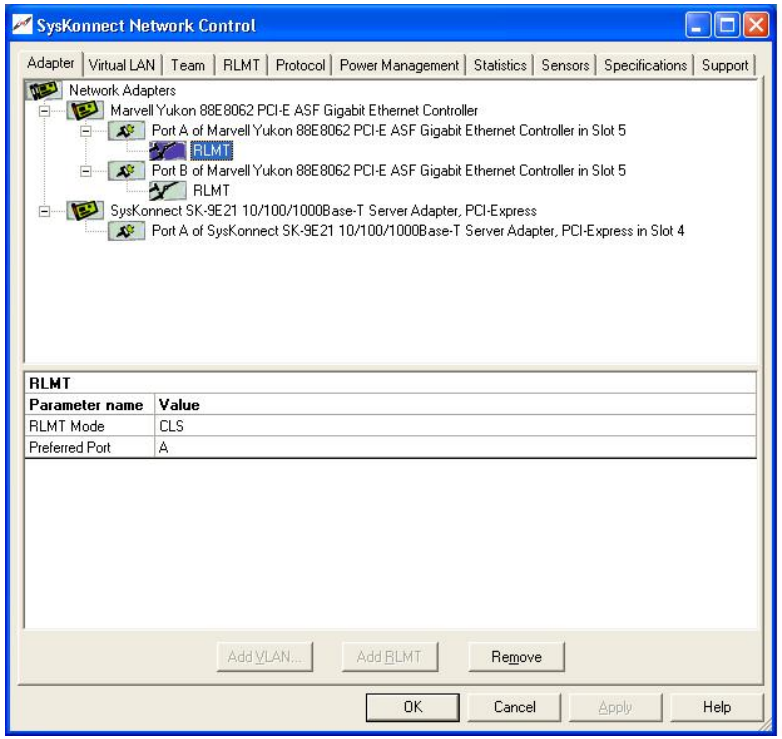
- Adapter
- Virtual LAN
- Team
- RLMT
- Protocol
- Power Management
- Statistics
- Sensors
- Specifications
- Support
- Enable Dual-net
- Teaming with LAGG

Configuring CPA

Adapter Information

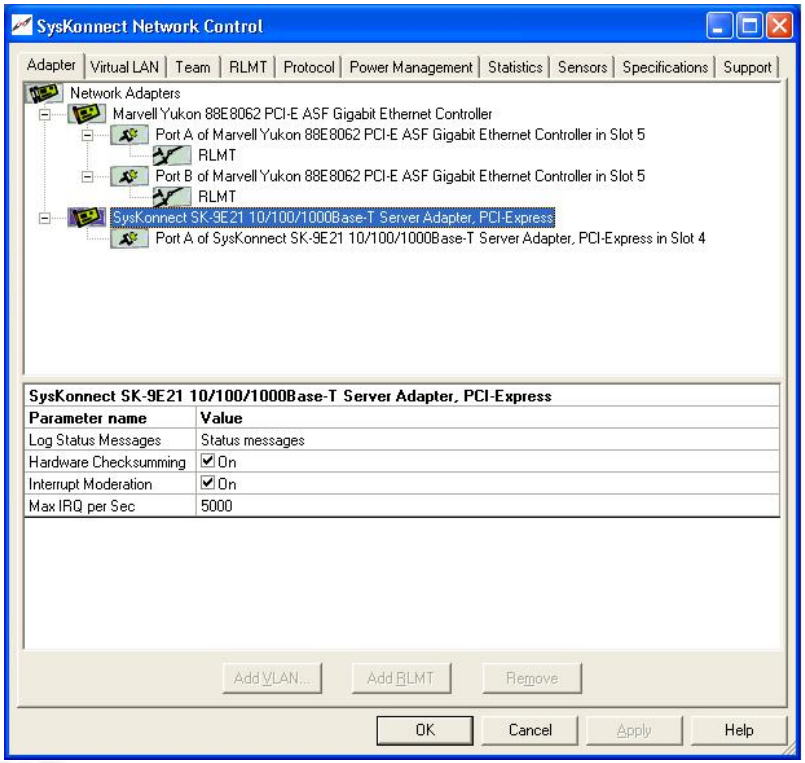
- **Yukon Dual Port Information**
- **Settings and configuration information is displayed for Jumbo Frames, Multicast, Flow Control, Speed/Duplex, Tx/Rx Buffers, WOL, TCP Segmentation, WOL from Shutdown, 802.1p, Interrupt Moderation, Max Irq/sec, Hardware Checksumming**

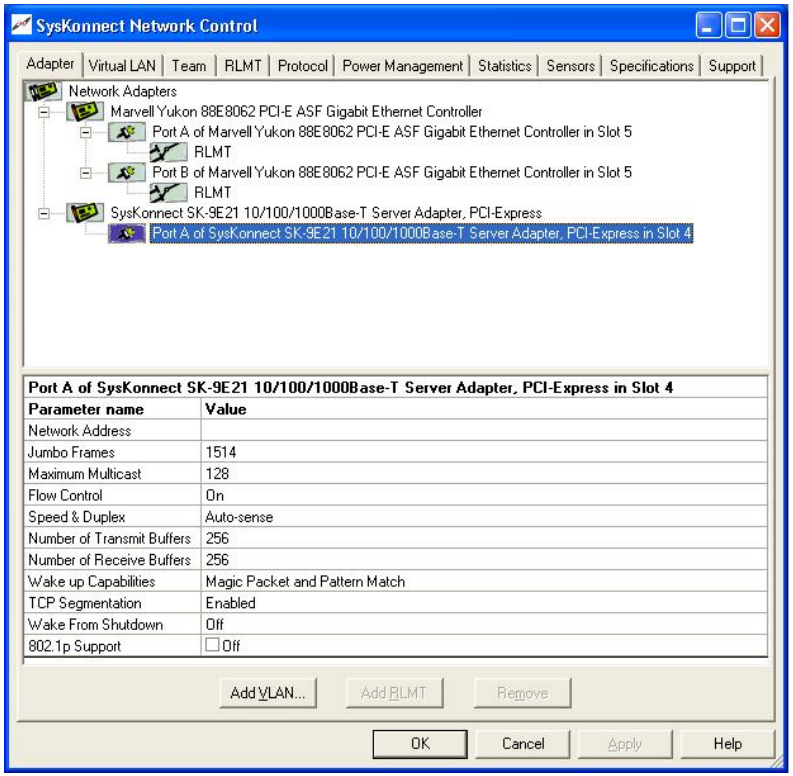




Adapter Information

- **Yukon Single Port Information**
- **Settings and configuration information is displayed for Jumbo Frames, Multicast, Flow Control, Speed/Duplex, Tx/Rx Buffers, WOL, TCP Seg, WOL from Shutdown, 802.1p, Int Moderation, Max Irq/sec, Hdw Checksumming**





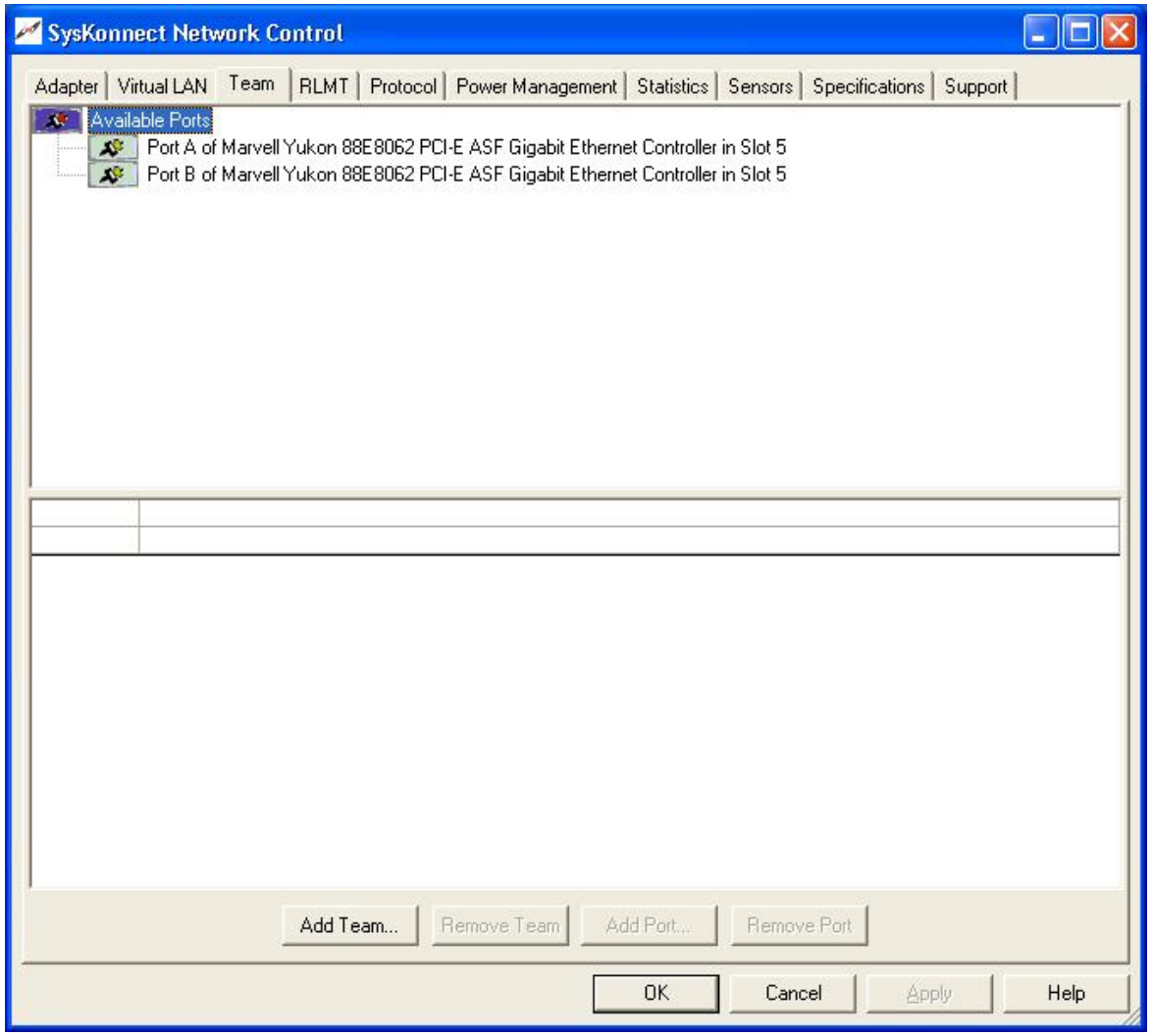
Configuring Team

Team Tab

The Team tab shows all links or ports which are available to be aggregated into a so-called team or have been already aggregated to form a team. If you select a team the corresponding parameters are displayed below the tree view. In this tab you are able to add teams, add ports to teams, remove teams, and rename teams.

Since RLMT is enable for the dual port, those ports do not appear available for the team.

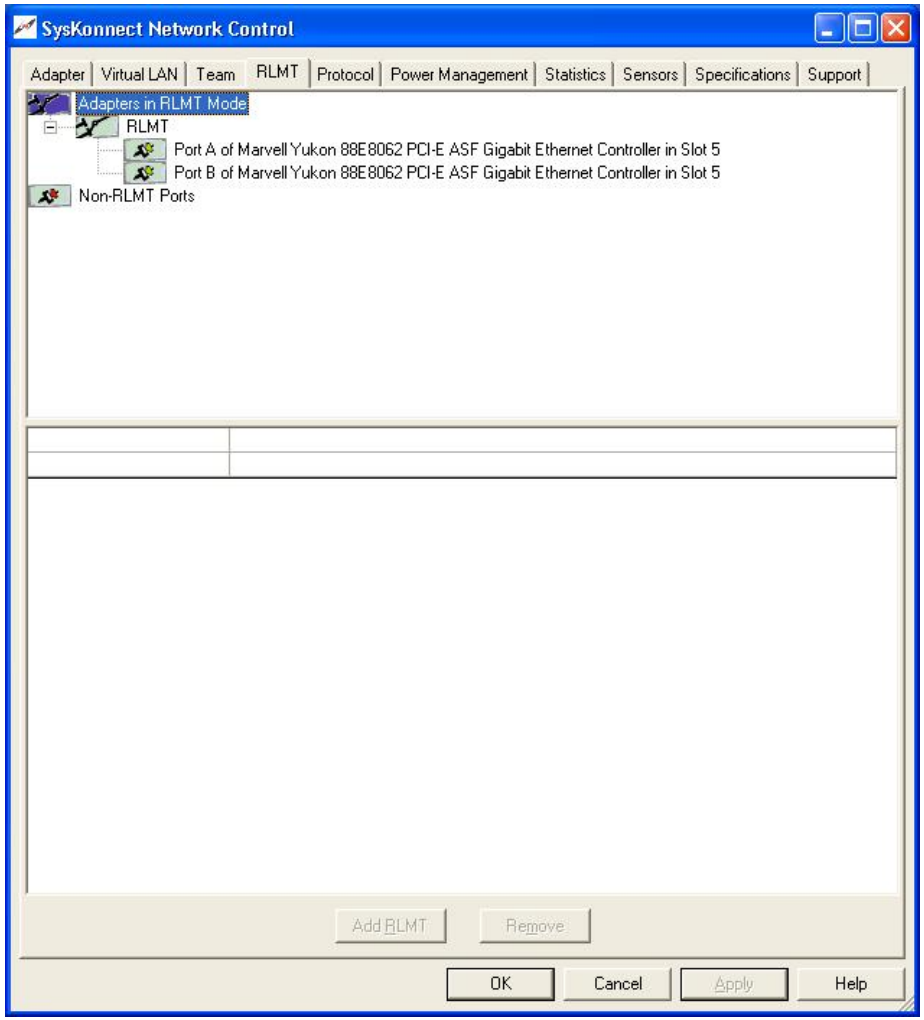
The Team tab shows all links or ports which are available to be aggregated into a so-called team or have been already aggregated to form a team. If you select a team the corresponding parameters are displayed below the tree view. In this tab you are able to add teams, add ports to teams, remove teams, and rename teams.



Configuring RLMT

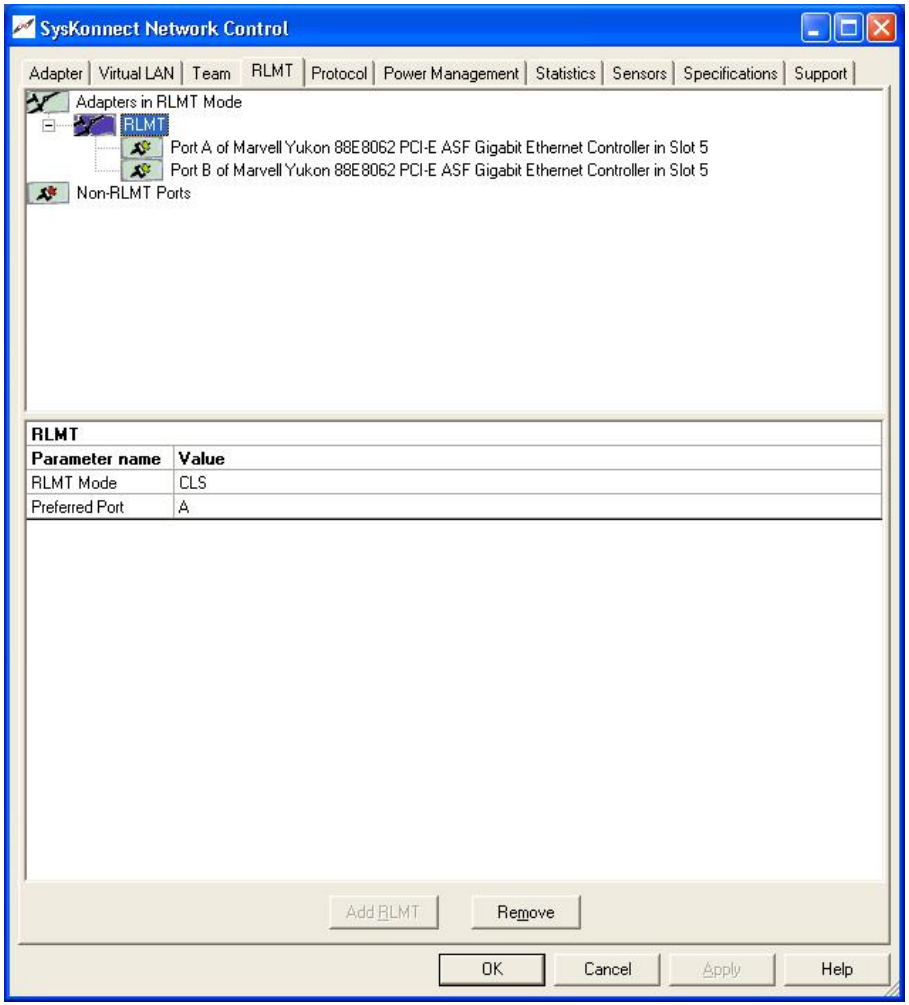
RLMT (Redundant Link Management Technology) Tab

Port A is the active port and Port B is the backup port in standby



RLMT Mode

- This parameter is only visible if RLMT has been configured. To view this parameter, select ”RLMT” in the tree.
- Default value: CLS (Check Link State)
  Possible modes: CLS (Check Link State)
  CLP (Check Local Port)
- CLPSS (Check Local Ports and Segmentation Status)
- CLS (Check Link State): RLMT uses the link state reported by the adapter hardware for each individual port to determine whether a port can be used for all network traffic or not.
- CLP (Check Local Port): In this mode, RLMT monitors the network path between the two ports of an adapter by regularly exchanging packets between them. This mode requires a network configuration in which the two ports are able to "see" each other (i.e. there must not be any router between the ports).
- CLPSS (Check Local Ports and Segmentation Status): This mode supports the same functions as the CLP mode and additionally checks network segmentation by sending BPDU hello packets. Therefore, this mode is only to be used if Gigabit Ethernet switches are installed on the network that have been configured to use the Spanning Tree protocol.
- This parameter is only available for dual link adapters.



Protocol Tab

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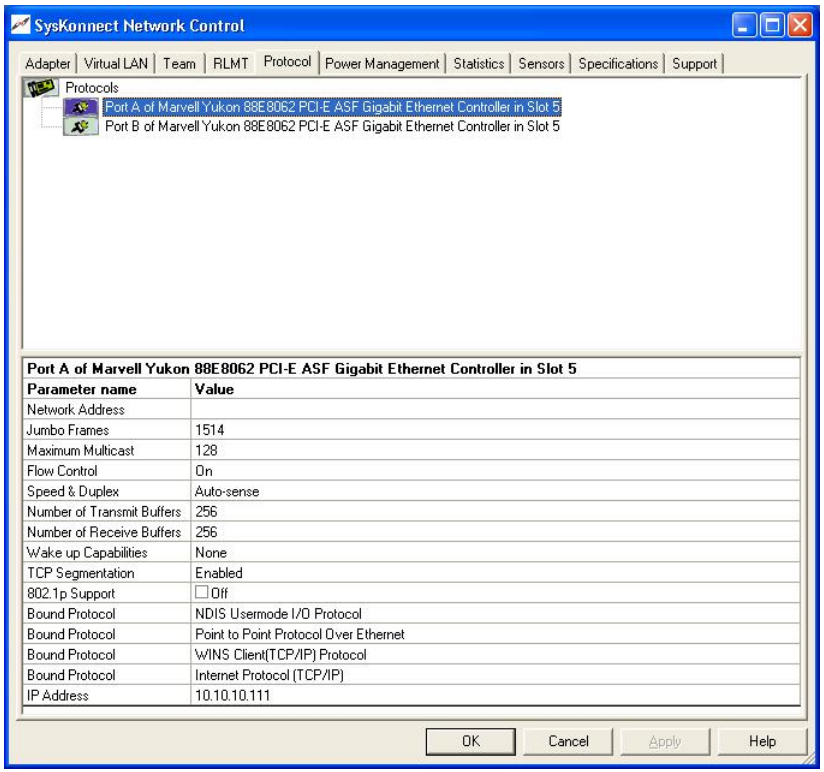
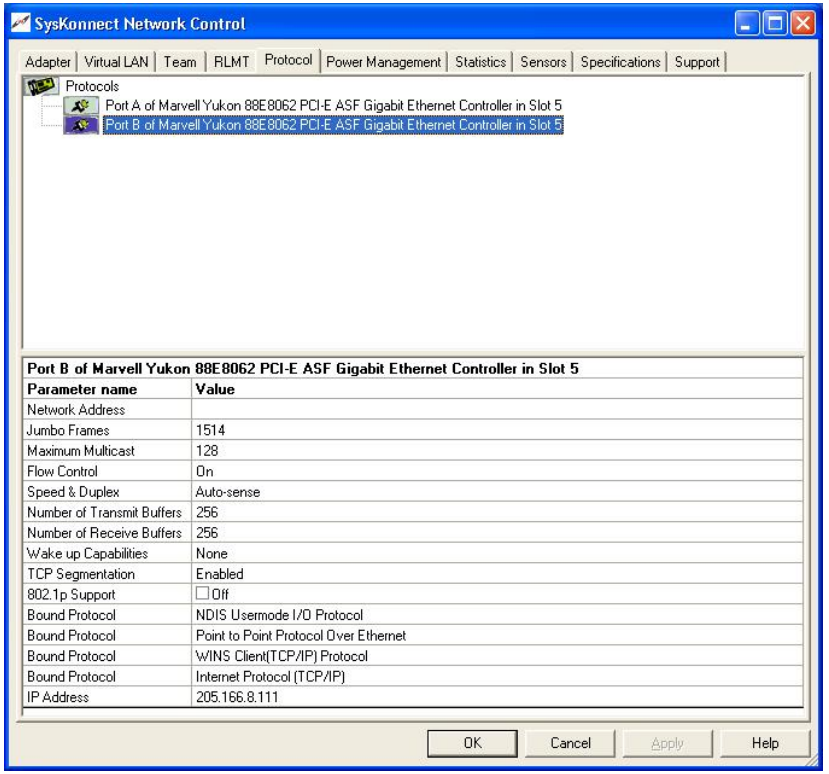
Protocol Tab

The tree on the tab Protocol lists all entities (Port, Virtual LAN, RLMT, Team) to which TCP/IP can be bound and to which an IP address can be assigned





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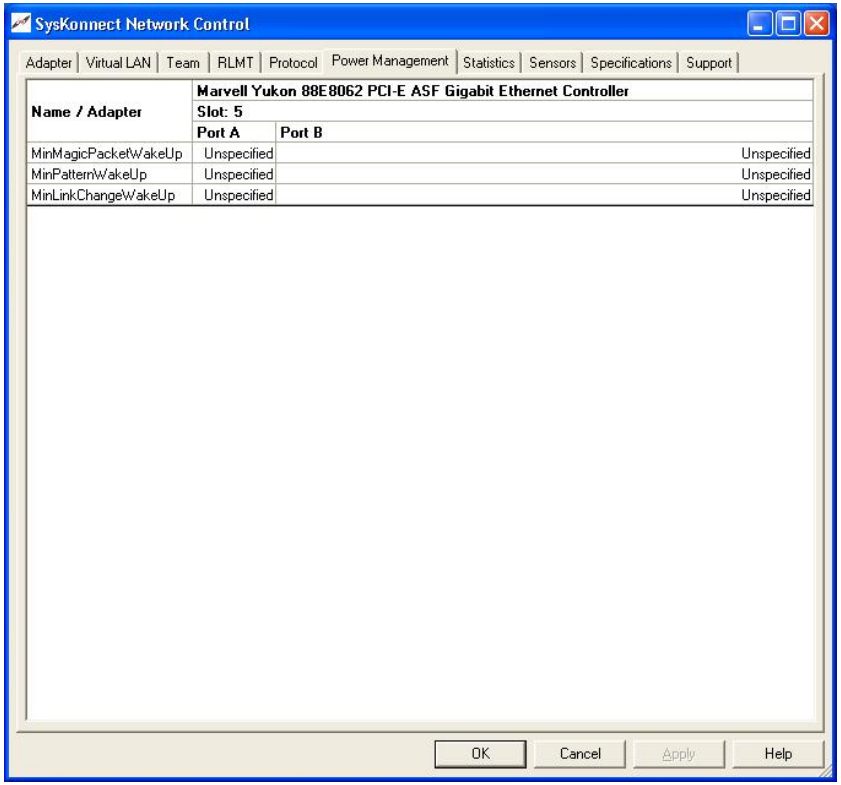
CPA Power Management

Power Management Tab

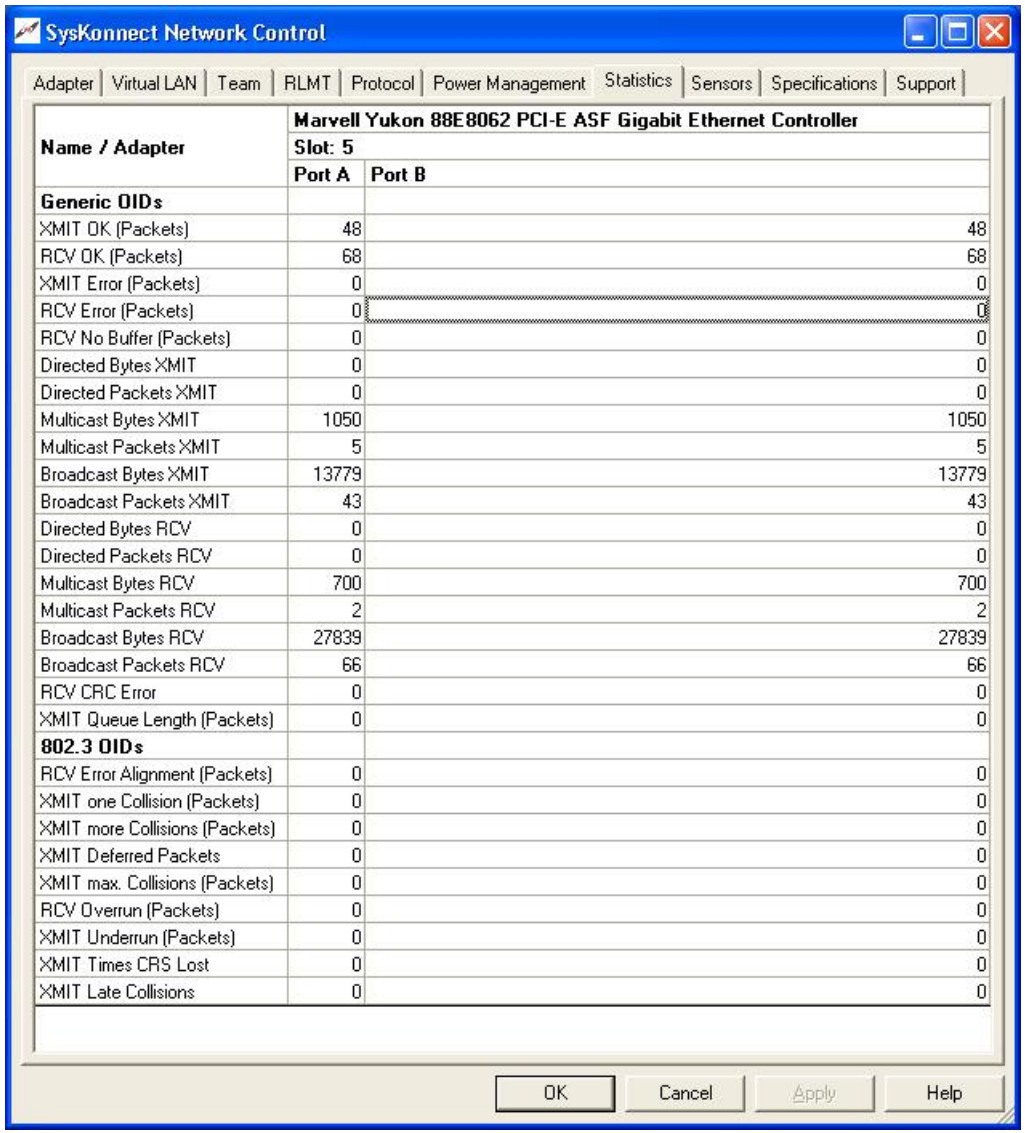
The Marvell® Yukon™ EC Gigabit Ethernet Controllers support power management as defined in the PCI Bus Power Management Interface Specification V1.1 and Network Device Class Power Management Reference Specification V2.0. The power management features are implemented according to the Advanced Configuration and Power Interface Specification, Revision 2.0.
The Marvell® Yukon™ EC Gigabit Ethernet Controllers utilize an auxiliary power supply to keep some parts running. This setting enables the network device to Wake on LAN.

Yukon II Dual Port Gigabit Ethernet controllers do not support WOL. Only Yukon EC and Yukon II Single Port adapters support WOL.



Statistics Tab

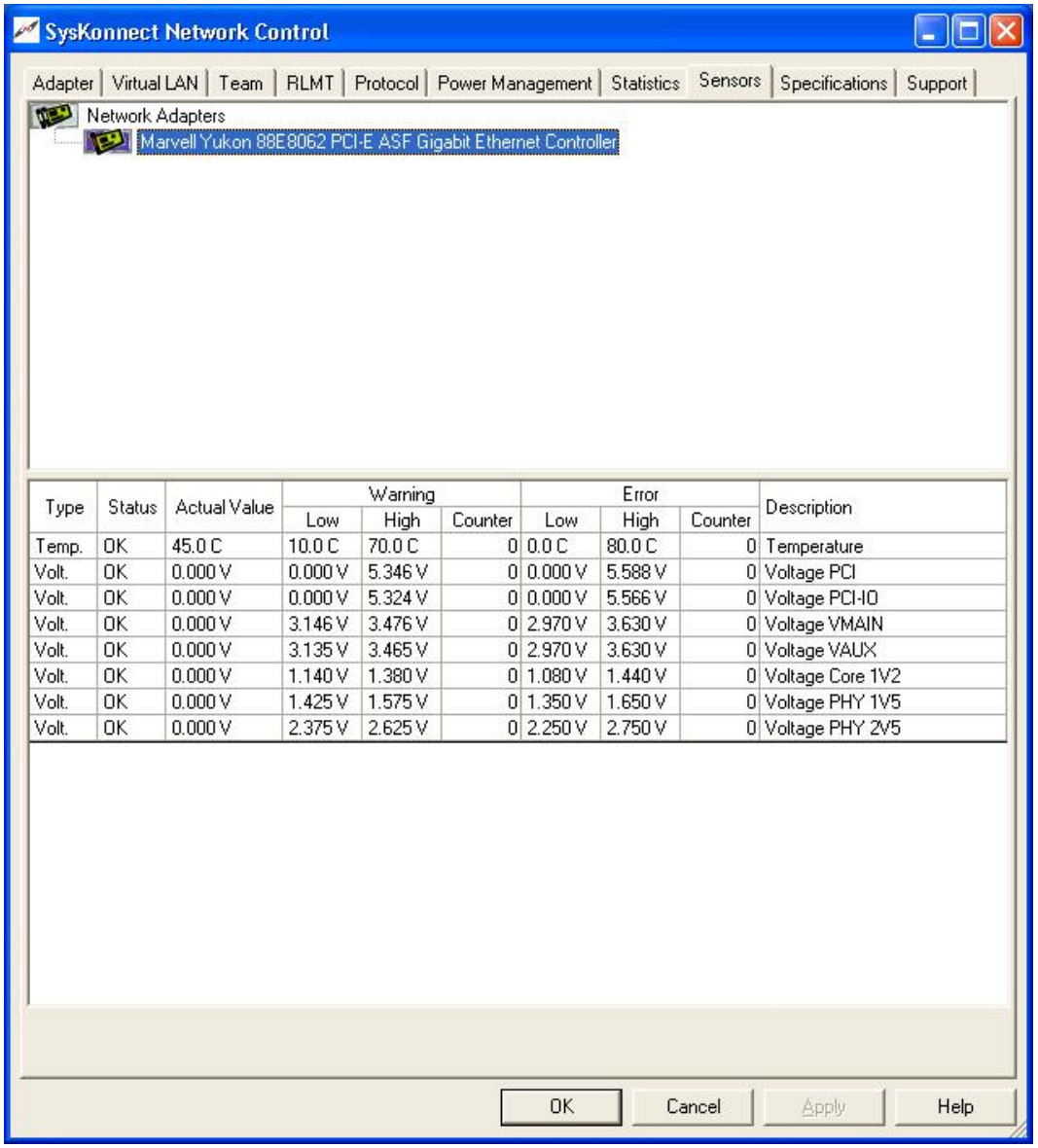
Dynamic statistic values for all installed Marvell® Yukon™ Gigabit Ethernet Controllers are displayed in this tab. These values are updated once per second and can change during operation. The values are divided into Generic OIDs/Values, which are specified by Windows for each adapter, and 802.3 OIDs/Values, which are specified in the corresponding IEEE Standard.



Name / Adapter	Marvell Yukon 88E8062 PCI-E ASF Gigabit Ethernet Controller	
	Slot: 5	
	Port A	Port B
Generic OIDs		
XMIT OK (Packets)	48	48
RCV OK (Packets)	68	68
XMIT Error (Packets)	0	0
RCV Error (Packets)	0	0
RCV No Buffer (Packets)	0	0
Directed Bytes XMIT	0	0
Directed Packets XMIT	0	0
Multicast Bytes XMIT	1050	1050
Multicast Packets XMIT	5	5
Broadcast Bytes XMIT	13779	13779
Broadcast Packets XMIT	43	43
Directed Bytes RCV	0	0
Directed Packets RCV	0	0
Multicast Bytes RCV	700	700
Multicast Packets RCV	2	2
Broadcast Bytes RCV	27839	27839
Broadcast Packets RCV	66	66
RCV CRC Error	0	0
XMIT Queue Length (Packets)	0	0
802.3 OIDs		
RCV Error Alignment (Packets)	0	0
XMIT one Collision (Packets)	0	0
XMIT more Collisions (Packets)	0	0
XMIT Deferred Packets	0	0
XMIT max. Collisions (Packets)	0	0
RCV Overrun (Packets)	0	0
XMIT Underrun (Packets)	0	0
XMIT Times CRS Lost	0	0
XMIT Late Collisions	0	0

Sensors Tab

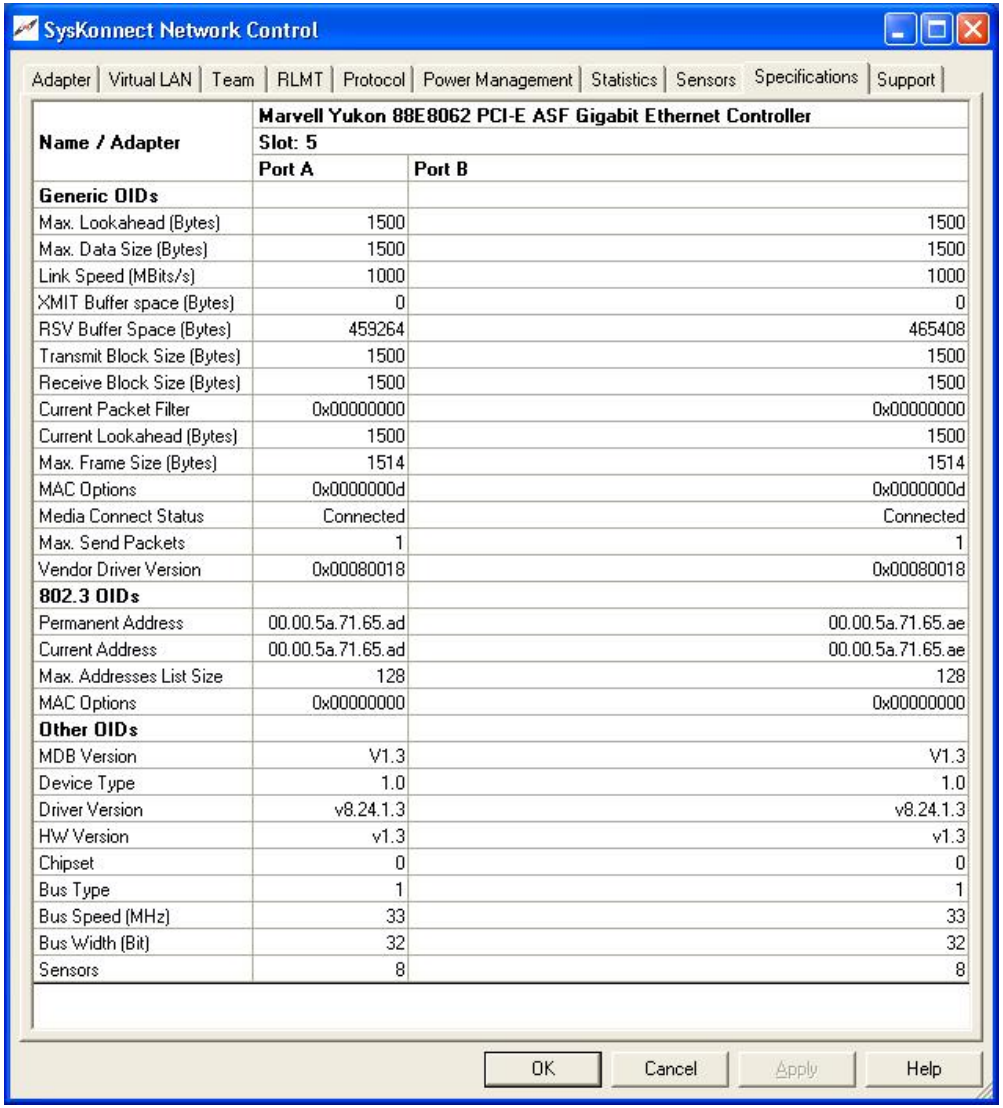
The sensor information for all installed Marvell® Yukon™ Gigabit Ethernet Controllers can be viewed in this tab. To view the sensors of a specific adapter, select the adapter in the list. A table listing all temperature and voltage sensors and their current states is displayed below the list. The table also contains a description of the corresponding sensor and the Warning and Error levels of each sensor.



Type	Status	Actual Value	Warning			Error			Description
			Low	High	Counter	Low	High	Counter	
Temp.	OK	45.0 C	10.0 C	70.0 C	0	0.0 C	80.0 C	0	Temperature
Volt.	OK	0.000 V	0.000 V	5.346 V	0	0.000 V	5.588 V	0	Voltage PCI
Volt.	OK	0.000 V	0.000 V	5.324 V	0	0.000 V	5.566 V	0	Voltage PCI-IO
Volt.	OK	0.000 V	3.146 V	3.476 V	0	2.970 V	3.630 V	0	Voltage VMAIN
Volt.	OK	0.000 V	3.135 V	3.465 V	0	2.970 V	3.630 V	0	Voltage VAUX
Volt.	OK	0.000 V	1.140 V	1.380 V	0	1.080 V	1.440 V	0	Voltage Core 1V2
Volt.	OK	0.000 V	1.425 V	1.575 V	0	1.350 V	1.650 V	0	Voltage PHY 1V5
Volt.	OK	0.000 V	2.375 V	2.625 V	0	2.250 V	2.750 V	0	Voltage PHY 2V5

Specifications Tab

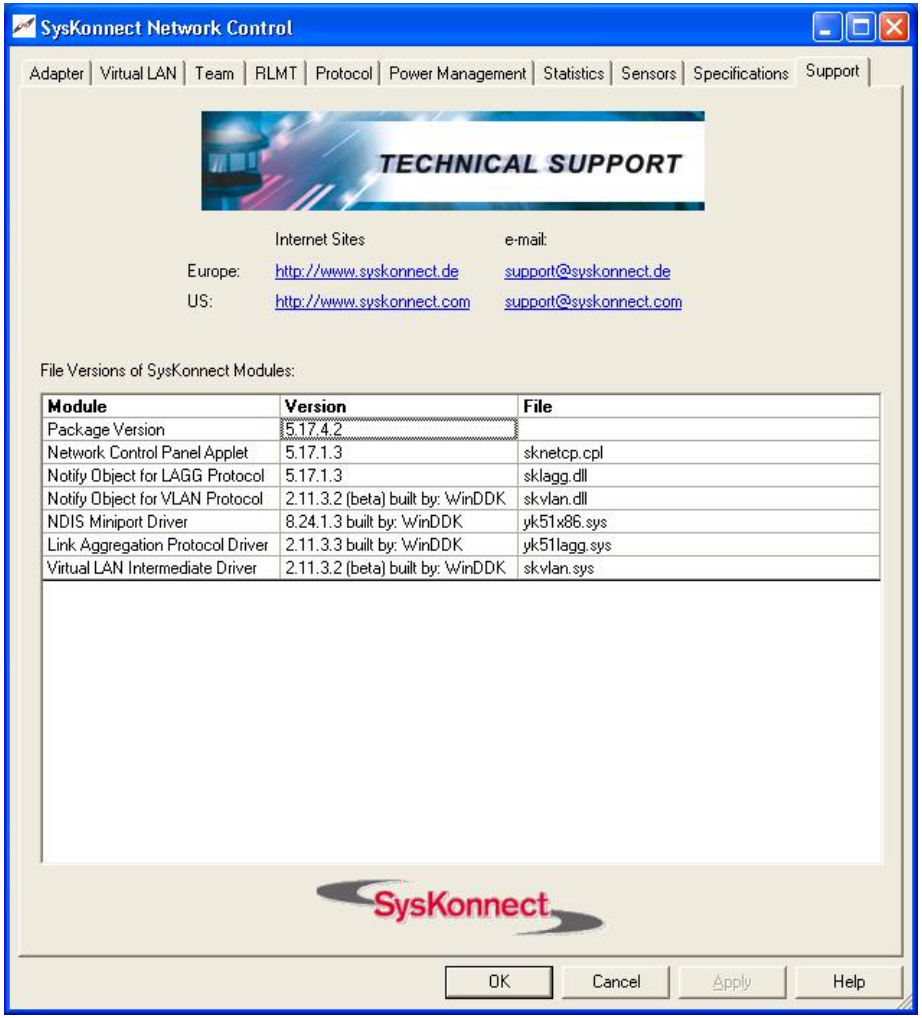
Current parameter settings of all installed Marvell® Yukon™ Gigabit Ethernet Controllers are displayed in this tab. The values are updated once per second. The values are divided into Generic OIDs/Values, which are specified by Windows for each adapter, 802.3 OIDs/Values, which are specified in the corresponding IEEE Standard, and Other OIDs/Values, which are specified by Marvell®



Name / Adapter	Marvell Yukon 88E8062 PCI-E ASF Gigabit Ethernet Controller	
	Slot: 5	
	Port A	Port B
Generic OIDs		
Max. Lookahead (Bytes)	1500	1500
Max. Data Size (Bytes)	1500	1500
Link Speed (MBits/s)	1000	1000
XMIT Buffer space (Bytes)	0	0
RSV Buffer Space (Bytes)	459264	465408
Transmit Block Size (Bytes)	1500	1500
Receive Block Size (Bytes)	1500	1500
Current Packet Filter	0x00000000	0x00000000
Current Lookahead (Bytes)	1500	1500
Max. Frame Size (Bytes)	1514	1514
MAC Options	0x0000000d	0x0000000d
Media Connect Status	Connected	Connected
Max. Send Packets	1	1
Vendor Driver Version	0x00080018	0x00080018
802.3 OIDs		
Permanent Address	00.00.5a.71.65.ad	00.00.5a.71.65.ae
Current Address	00.00.5a.71.65.ad	00.00.5a.71.65.ae
Max. Addresses List Size	128	128
MAC Options	0x00000000	0x00000000
Other OIDs		
MDB Version	V1.3	V1.3
Device Type	1.0	1.0
Driver Version	v8.24.1.3	v8.24.1.3
HW Version	v1.3	v1.3
Chipset	0	0
Bus Type	1	1
Bus Speed (MHz)	33	33
Bus Width (Bit)	32	32
Sensors	8	8

Support Tab

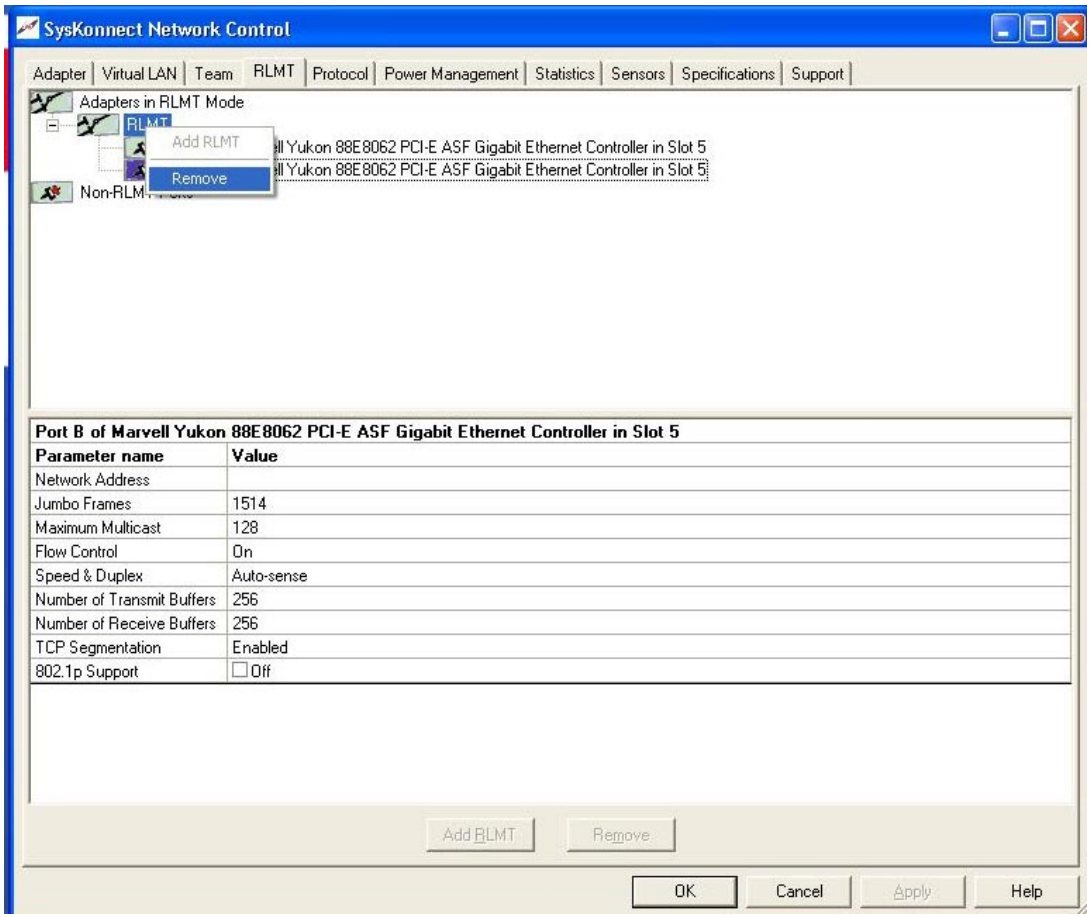
- **Version information for the CPA and the NDIS Miniport Driver**



Configuring Dual-Net

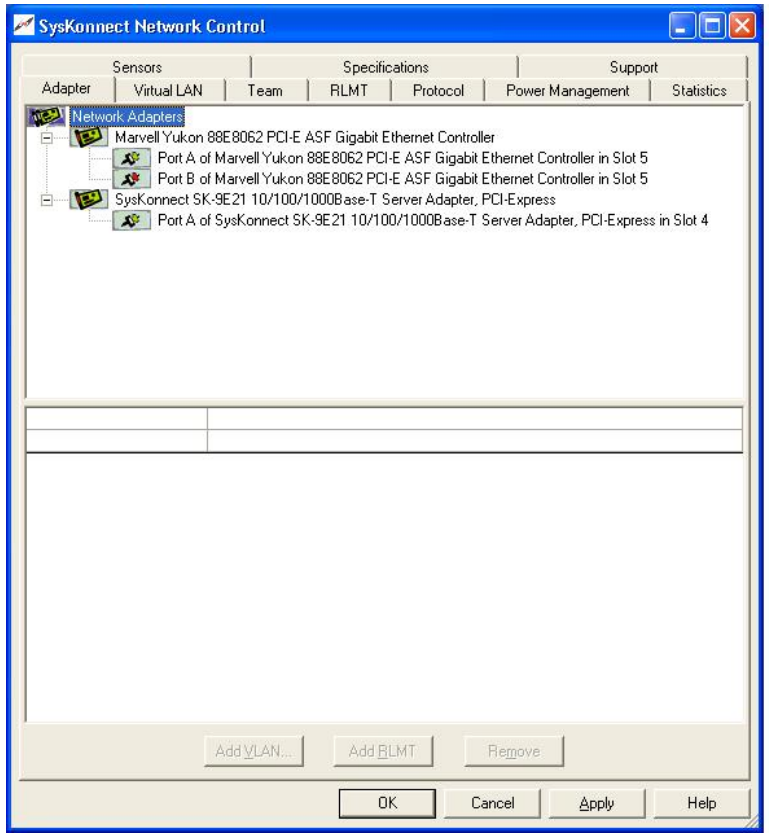
Enabling Dual Net

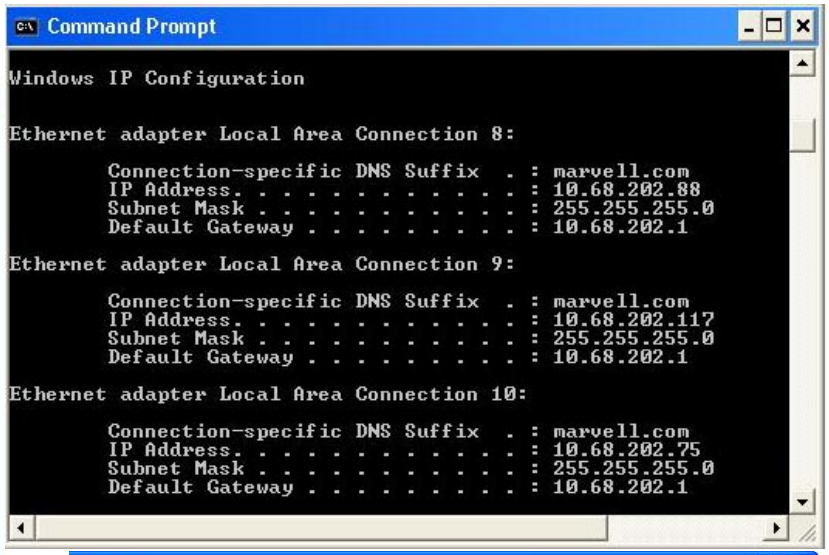
1. **'Remove' RLMT to activate the two ports independently and click on the "Apply" or "OK" button.**
2. **Next, the user must assign the IP address for each available port unless DHCP is enabled.**

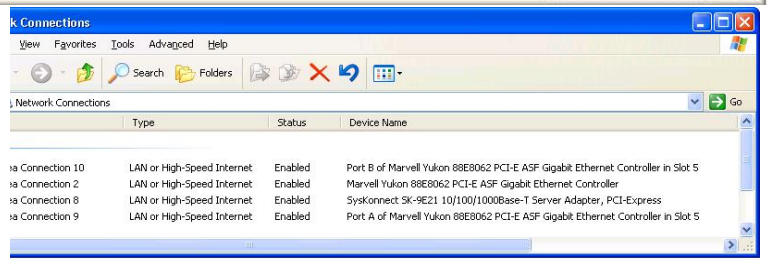


Enabling Dual Net

- **Both ports from the 88E8062/22 appear in Non-RLMT mode**
- **Window's network properties sees all ports with IP address assigned**





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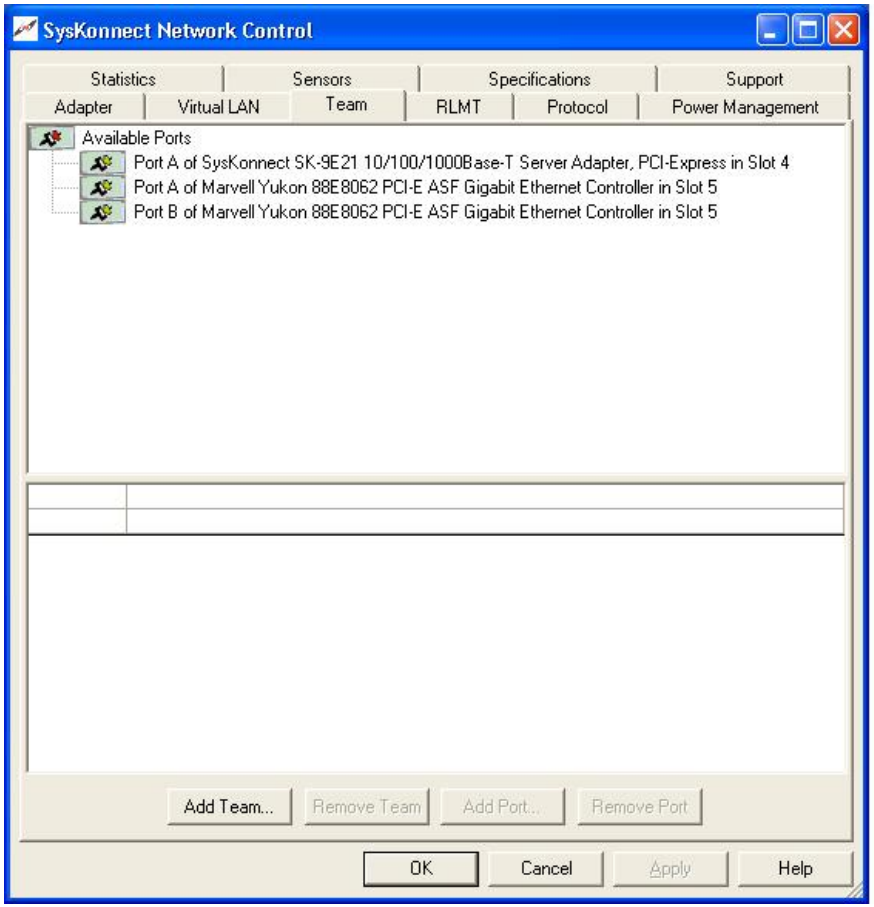
Link Aggregation with Teaming

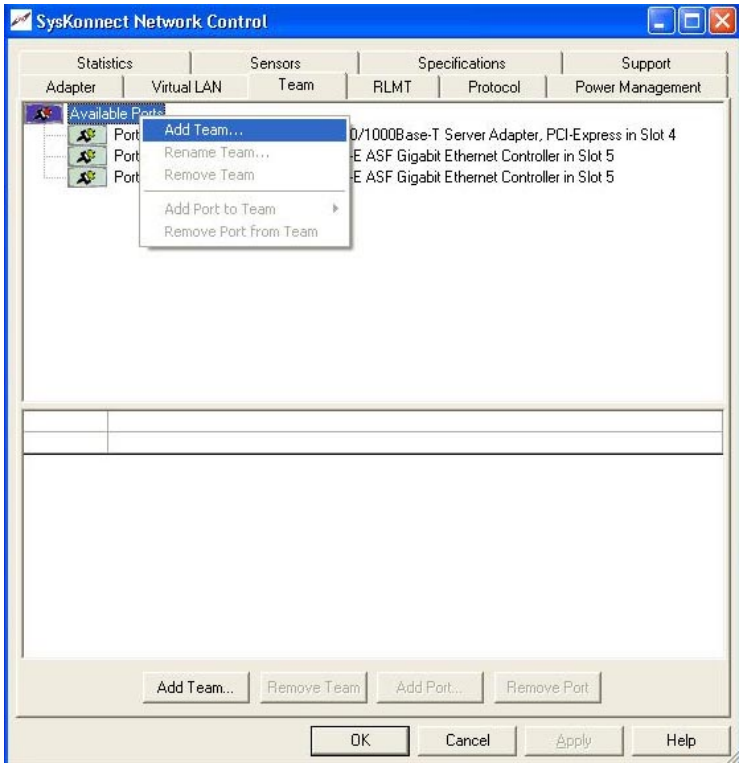
Link Aggregation with Teaming

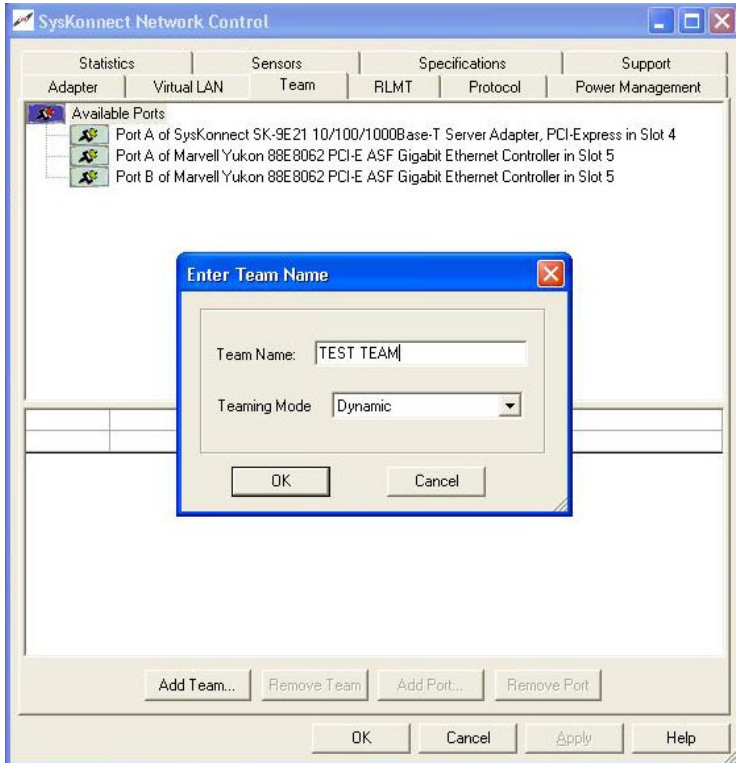
- **After enabling dual-net, the available ports for teaming are displayed**



Link Aggregation with Teaming

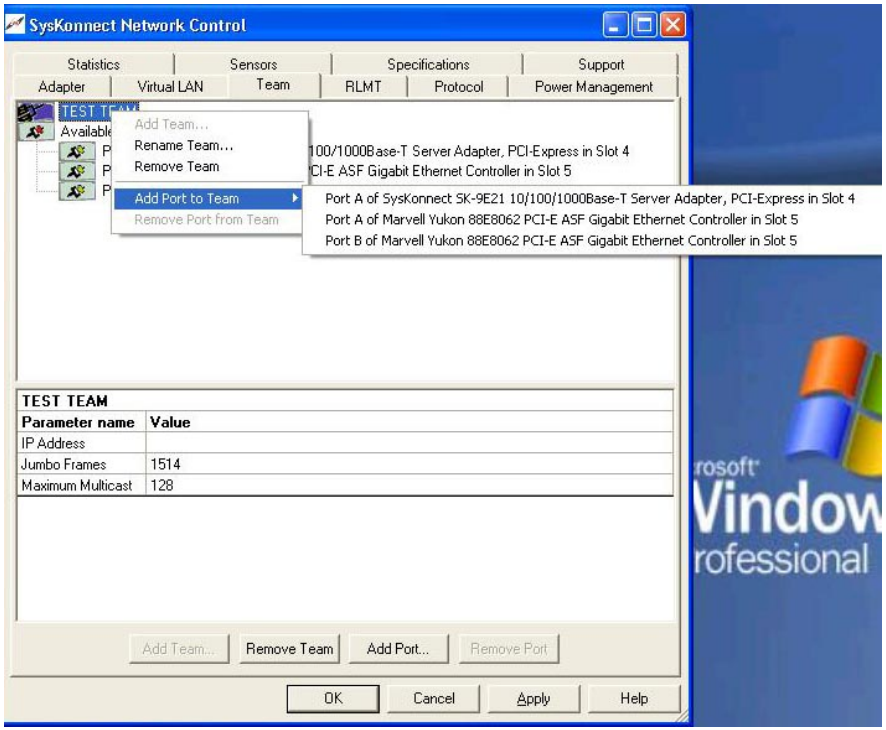
- **To enable teaming the user must add a team name**

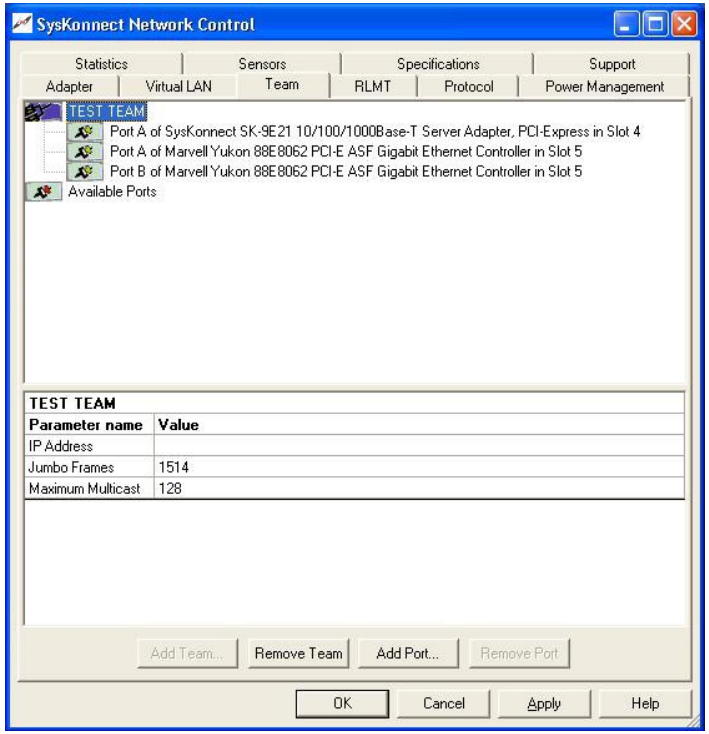




Link Aggregation with Teaming

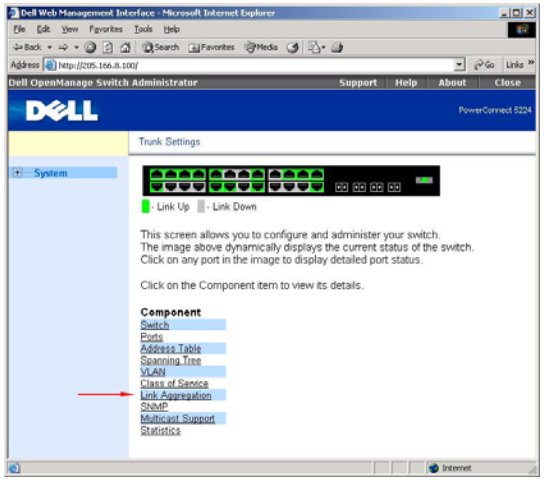
- **After creating the team name, add ports to the team**

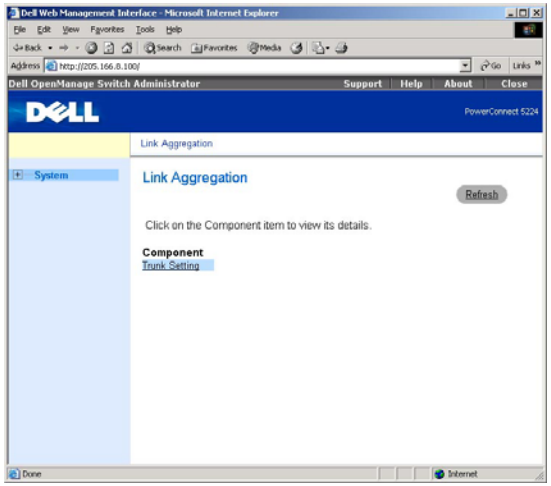


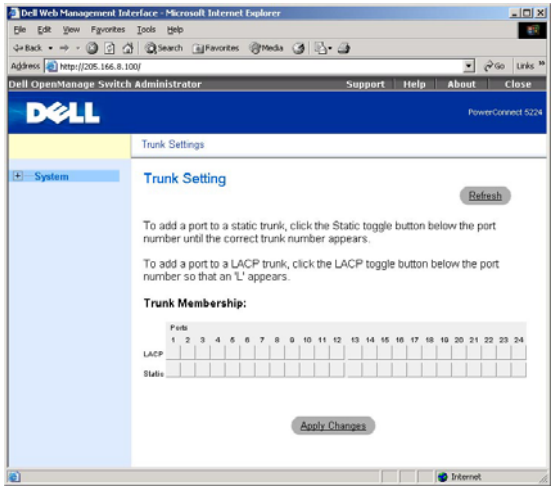


Configure LACP on Switch

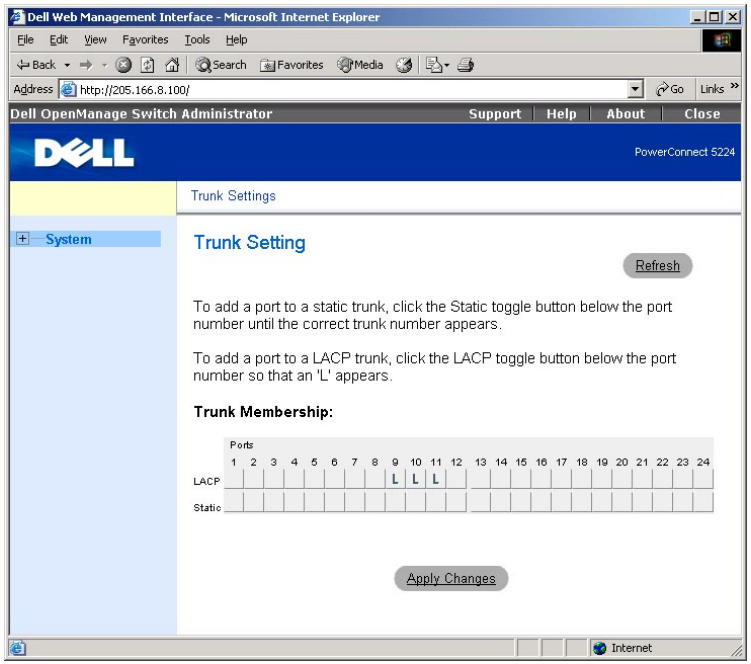
- **The Yukon LAGG (Link Aggregation) requires the switch to support LACP (Link Aggregation Control Protocol)**
- **The LACP must be enabled for each port which is used for teaming**

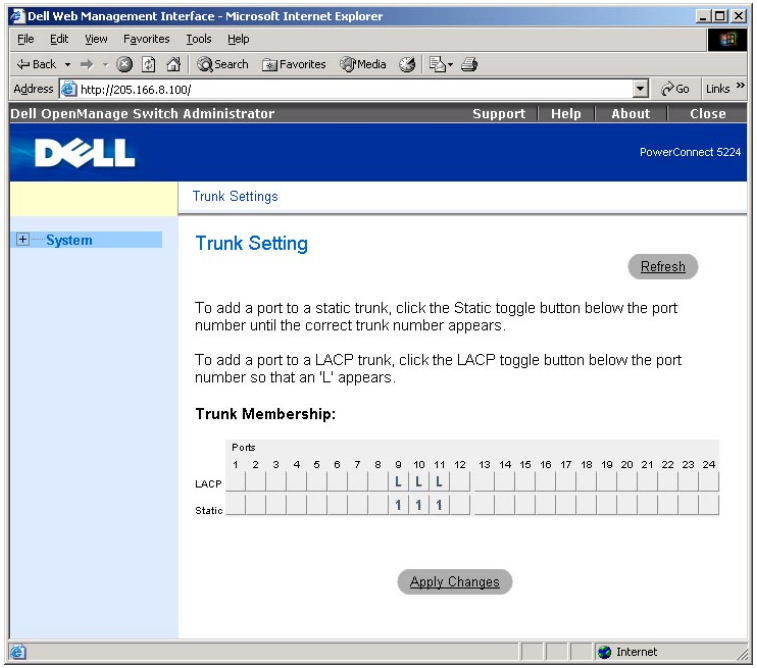






Configure LACP on Switch





Assign IP Address to Team