CIP and MODBUS Configuration Guide, Cisco Catalyst IE3x00 and IE3100 Rugged, and IE3400 Heavy Duty Series Switches

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Common Industrial Protocol (CIP)

Information About CIP

The Common Industrial Protocol (CIP) is an industrial protocol for industrial automation applications. Previously known as Control and Information Protocol, CIP encompasses a comprehensive suite of messages and services for the collection of manufacturing automation applications - control, safety, synchronization, motion, configuration and information. It is supported by Open DeviceNet Vendors Association (ODVA), an organization that supports network technologies based upon CIP such as DeviceNet, EtherNet/IP, CIP Safety and CIP Sync. CIP allows users to integrate these manufacturing applications with enterprise-level Ethernet networks and the Internet.

CIP Restrictions

CIP can be enabled on only one VLAN on the switch.

Enabling CIP

Before you begin

By default, CIP is not enabled.

SUMMARY STEPS

1. **Configure Terminal**
2. **cip security** { **password** *password* | **window timeout** *value* }
3. **interface vlan 20**
4. **cip enable**
5. **end**

6. **show running-config**
7. **copy running-config startup-config**
8. **show cip** { **connection** | **faults** | **file** | **miscellaneous** | **object** | **security** | **session** | **status** }
9. **debug cip** { **assembly** | **connection manager** | **dlr** | **errors** | **event** | **file** | **io** | **packet** | **request response** | **security** | **session** | **socket** }

DETAILED STEPS

	Command or Action	Purpose
Step 1	**Configure Terminal**	Enters global configuration mode.
Step 2	**cip security** { **password** *password*	**window timeout** *value* }	Sets CIP security options on the switch.
Step 3	**interface vlan 20**	Enters interface configuration mode.
Step 4	**cip enable**	Enables CIP on a VLAN.
Step 5	**end**	Returns to privileged EXEC mode.
Step 6	**show running-config**	Verifies your entries.
Step 7	**copy running-config startup-config**	(Optional) Saves your entries in the configuration file.
Step 8	**show cip** { **connection**	**faults**	**file**	**miscellaneous**	**object**	**security**	**session**	**status** }	(Optional) Displays information about the CIP subsystem.
Step 9	**debug cip** { **assembly**	**connection manager**	**dlr**	**errors**	**event**	**file**	**io**	**packet**	**request response**	**security**	**session**	**socket** }	(Optional) Enables debugging of the CIP subsystem.

Additional References

Related Documents

Related Topic	Document Title
Cisco IOS basic commands	*Cisco IOS Configuration Fundamentals Command Reference*

Standards and RFCs

Standard/RFC	Title
No new or modified standards are supported by this feature, and support for existing standards has not been modified by this feature.	
No new or modified RFCs are supported by this feature, and support for existing RFCs has not been modified by this feature.	

MIBs

MB	MIBs Link
	To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL: https://mibs.cloudapps.cisco.com/ITDIT/MIBS/servlet/index?dtid=osscdc000283

Technical Assistance

Description	Link
The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies. To receive security and technical information about your products, you can subscribe to various services, such as the Product Alert Tool (accessed from Field Notices), the Cisco Technical Services Newsletter, and Really Simple Syndication (RSS) Feeds. Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.	http://www.cisco.com/support

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MODBUS

MODBUS Overview

Modicon Communication Bus (MODBUS) is an application layer protocol for client-server communication between a switch (server) and a device in the network running MODBUS client software (client). You can use MODBUS over a serial line to connect a computer to a remote terminal unit (RTU) in supervisory control and data acquisition (SCADA) systems.

MODBUS also runs on Ethernet TCP/IP networks. Use MODBUS TCP over an Ethernet network when connecting the switch to devices such as intelligent electronic devices (IEDs), distributed controllers, substation routers, IP phones, Wireless Access Points, and other network devices such as redundant substation switches.

The client can be an IED or a human machine interface (HMI) application that remotely configures and manages devices running MODBUS TCP. The switch functions as the server.

The switch encapsulates a request or response message in a MODBUS TCP application data unit (ADU). A client sends a message to a TCP port on the switch.

Cisco Catalyst IE 3x00 Modbus TCP Registers

This document lists the read-only registers for IE 3x00 models. MODBUS clients use them to communicate with a MODBUS server (the switch). There are no writable registers.

Table 1: 10 Port Registers

Address	# of registers	Description	R/W	Format
1000	64	Port 1 Name	R	Text
1040	64	Port 2 Name	R	Text
1080	64	Port 3 Name	R	Text

Address	# of registers	Description	R/W	Format
10C0	64	Port 4 Name	R	Text
1100	64	Port 5 Name	R	Text
1140	64	Port 6 Name	R	Text
1180	64	Port 7 Name	R	Text
11C0	64	Port 8 Name	R	Text
1200	64	Port 9 Name	R	Text
1240	64	Port 10 Name	R	Text
1280	1	Port 1 State	R	Uint16
1281	1	Port 2 State	R	Uint16
1282	1	Port 3 State	R	Uint16
1283	1	Port 4 State	R	Uint16
1284	1	Port 5 State	R	Uint16
1285	1	Port 6 State	R	Uint16
1286	1	Port 7 State	R	Uint16
1287	1	Port 8 State	R	Uint16
1288	1	Port 9 State	R	Uint16
1289	1	Port 10 State	R	Uint16
128A	4	Port 1 Statistics – Number of packets received	R	Uint64
128E	4	Port 2 Statistics – Number of packets received	R	Uint64
1292	4	Port 3 Statistics – Number of packets received	R	Uint64
1296	4	Port 4 Statistics – Number of packets received	R	Uint64
129A	4	Port 5 Statistics – Number of packets received	R	Uint64
129E	4	Port 6 Statistics – Number of packets received	R	Uint64
12A2	4	Port 7 Statistics – Number of packets received	R	Uint64
12A6	4	Port 8 Statistics – Number of packets received	R	Uint64
12AA	4	Port 9 Statistics – Number of packets received	R	Uint64
12AE	4	Port 10 Statistics – Number of packets received	R	Uint64
12B2	4	Port 1 Statistics – Number of packets sent	R	Uint64
12B6	4	Port 2 Statistics – Number of packets sent	R	Uint64
12BA	4	Port 3 Statistics – Number of packets sent	R	Uint64
12BE	4	Port 4 Statistics – Number of packets sent	R	Uint64
12C2	4	Port 5 Statistics – Number of packets sent	R	Uint64

Address	# of registers	Description	R/W	Format
12C6	4	Port 6 Statistics – Number of packets sent	R	Uint64
12CA	4	Port 7 Statistics – Number of packets sent	R	Uint64
12CE	4	Port 8 Statistics – Number of packets sent	R	Uint64
12D2	4	Port 9 Statistics – Number of packets sent	R	Uint64
12D6	4	Port 10 Statistics – Number of packets sent	R	Uint64
12DA	4	Port 1 Statistics – Number of bytes received	R	Uint64
12DE	4	Port 2 Statistics – Number of bytes received	R	Uint64
12E2	4	Port 3 Statistics – Number of bytes received	R	Uint64
12E6	4	Port 4 Statistics – Number of bytes received	R	Uint64
12EA	4	Port 5 Statistics – Number of bytes received	R	Uint64
12EE	4	Port 6 Statistics – Number of bytes received	R	Uint64
12F2	4	Port 7 Statistics – Number of bytes received	R	Uint64
12F6	4	Port 8 Statistics – Number of bytes received	R	Uint64
12FA	4	Port 9 Statistics – Number of bytes received	R	Uint64
12FE	4	Port 10 Statistics – Number of bytes received	R	Uint64
1302	4	Port 1 Statistics – Number of bytes sent	R	Uint64
1306	4	Port 2 Statistics – Number of bytes sent	R	Uint64
130A	4	Port 3 Statistics – Number of bytes sent	R	Uint64
130E	4	Port 4 Statistics – Number of bytes sent	R	Uint64
1312	4	Port 5 Statistics – Number of bytes sent	R	Uint64
1316	4	Port 6 Statistics – Number of bytes sent	R	Uint64
131A	4	Port 7 Statistics – Number of bytes sent	R	Uint64
131E	4	Port 8 Statistics – Number of bytes sent	R	Uint64
1322	4	Port 9 Statistics – Number of bytes sent	R	Uint64
1326	4	Port 10 Statistics – Number of bytes sent	R	Uint64

Table 2: 18 Port Registers

Address	# of registers	Description	R/W	Format
1000	64	Port 1 Name	R	Text
1040	64	Port 2 Name	R	Text
1080	64	Port 3 Name	R	Text

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Address	# of registers	Description	R/W	Format
10C0	64	Port 4 Name	R	Text
1100	64	Port 5 Name	R	Text
1140	64	Port 6 Name	R	Text
1180	64	Port 7 Name	R	Text
11C0	64	Port 8 Name	R	Text
1200	64	Port 9 Name	R	Text
1240	64	Port 10 Name	R	Text
1280	64	Port 11 Name	R	Text
12C0	64	Port 12 Name	R	Text
1300	64	Port 13 Name	R	Text
1340	64	Port 14 Name	R	Text
1380	64	Port 15 Name	R	Text
13C0	64	Port 16 Name	R	Text
1400	64	Port 17 Name	R	Text
1440	64	Port 18 Name	R	Text
1480	1	Port 1 State	R	Uint16
1481	1	Port 2 State	R	Uint16
1482	1	Port 3 State	R	Uint16
1483	1	Port 4 State	R	Uint16
1484	1	Port 5 State	R	Uint16
1485	1	Port 6 State	R	Uint16
1486	1	Port 7 State	R	Uint16
1487	1	Port 8 State	R	Uint16
1488	1	Port 9 State	R	Uint16
1489	1	Port 10 State	R	Uint16
148A	1	Port 11 State	R	Uint16
148B	1	Port 12 State	R	Uint16
148C	1	Port 13 State	R	Uint16
148D	1	Port 14 State	R	Uint16
148E	1	Port 15 State	R	Uint16
148F	1	Port 16 State	R	Uint16
1490	1	Port 17 State	R	Uint16

Address	# of registers	Description	R/W	Format
1491	1	Port 18 State	R	Uint16
1492	4	Port 1 Statistics – Number of packets received	R	Uint64
1496	4	Port 2 Statistics – Number of packets received	R	Uint64
149A	4	Port 3 Statistics – Number of packets received	R	Uint64
149E	4	Port 4 Statistics – Number of packets received	R	Uint64
14A2	4	Port 5 Statistics – Number of packets received	R	Uint64
14A6	4	Port 6 Statistics – Number of packets received	R	Uint64
14AA	4	Port 7 Statistics – Number of packets received	R	Uint64
14AE	4	Port 8 Statistics – Number of packets received	R	Uint64
14B2	4	Port 9 Statistics – Number of packets received	R	Uint64
14B6	4	Port 10 Statistics – Number of packets received	R	Uint64
14BA	4	Port 11 Statistics – Number of packets received	R	Uint64
14BE	4	Port 12 Statistics – Number of packets received	R	Uint64
14C2	4	Port 13 Statistics – Number of packets received	R	Uint64
14C6	4	Port 14 Statistics – Number of packets received	R	Uint64
14CA	4	Port 15 Statistics – Number of packets received	R	Uint64
14CE	4	Port 16 Statistics – Number of packets received	R	Uint64
14D2	4	Port 17 Statistics – Number of packets received	R	Uint64
14D6	4	Port 18 Statistics – Number of packets received	R	Uint64
14DA	4	Port 1 Statistics – Number of packets sent	R	Uint64
14DE	4	Port 2 Statistics – Number of packets sent	R	Uint64
14E2	4	Port 3 Statistics – Number of packets sent	R	Uint64
14E6	4	Port 4 Statistics – Number of packets sent	R	Uint64
14EA	4	Port 5 Statistics – Number of packets sent	R	Uint64
14EE	4	Port 6 Statistics – Number of packets sent	R	Uint64
14F2	4	Port 7 Statistics – Number of packets sent	R	Uint64
14F6	4	Port 8 Statistics – Number of packets sent	R	Uint64
14FA	4	Port 9 Statistics – Number of packets sent	R	Uint64
14FE	4	Port 10 Statistics – Number of packets sent	R	Uint64
1502	4	Port 11 Statistics – Number of packets sent	R	Uint64
1506	4	Port 12 Statistics – Number of packets sent	R	Uint64
150A	4	Port 13 Statistics – Number of packets sent	R	Uint64

Address	# of registers	Description	R/W	Format
150E	4	Port 14 Statistics – Number of packets sent	R	Uint64
1512	4	Port 15 Statistics – Number of packets sent	R	Uint64
1516	4	Port 16 Statistics – Number of packets sent	R	Uint64
151A	4	Port 17 Statistics – Number of packets sent	R	Uint64
151E	4	Port 18 Statistics – Number of packets sent	R	Uint64
1522	4	Port 1 Statistics – Number of bytes received	R	Uint64
1526	4	Port 2 Statistics – Number of bytes received	R	Uint64
152A	4	Port 3 Statistics – Number of bytes received	R	Uint64
152E	4	Port 4 Statistics – Number of bytes received	R	Uint64
1532	4	Port 5 Statistics – Number of bytes received	R	Uint64
1536	4	Port 6 Statistics – Number of bytes received	R	Uint64
153A	4	Port 7 Statistics – Number of bytes received	R	Uint64
153E	4	Port 8 Statistics – Number of bytes received	R	Uint64
1542	4	Port 9 Statistics – Number of bytes received	R	Uint64
1546	4	Port 10 Statistics – Number of bytes received	R	Uint64
154A	4	Port 11 Statistics – Number of bytes received	R	Uint64
154E	4	Port 12 Statistics – Number of bytes received	R	Uint64
1552	4	Port 13 Statistics – Number of bytes received	R	Uint64
1556	4	Port 14 Statistics – Number of bytes received	R	Uint64
155A	4	Port 15 Statistics – Number of bytes received	R	Uint64
155E	4	Port 16 Statistics – Number of bytes received	R	Uint64
1562	4	Port 17 Statistics – Number of bytes received	R	Uint64
1566	4	Port 18 Statistics – Number of bytes received	R	Uint64
156A	4	Port 1 Statistics – Number of bytes sent	R	Uint64
156E	4	Port 2 Statistics – Number of bytes sent	R	Uint64
1572	4	Port 3 Statistics – Number of bytes sent	R	Uint64
1576	4	Port 4 Statistics – Number of bytes sent	R	Uint64
157A	4	Port 5 Statistics – Number of bytes sent	R	Uint64
157E	4	Port 6 Statistics – Number of bytes sent	R	Uint64
1582	4	Port 7 Statistics – Number of bytes sent	R	Uint64
1586	4	Port 8 Statistics – Number of bytes sent	R	Uint64
158A	4	Port 9 Statistics – Number of bytes sent	R	Uint64

Address	# of registers	Description	R/W	Format
158E	4	Port 10 Statistics – Number of bytes sent	R	Uint64
1592	4	Port 11 Statistics – Number of bytes sent	R	Uint64
1596	4	Port 12 Statistics – Number of bytes sent	R	Uint64
159A	4	Port 13 Statistics – Number of bytes sent	R	Uint64
159E	4	Port 14 Statistics – Number of bytes sent	R	Uint64
15A2	4	Port 15 Statistics – Number of bytes sent	R	Uint64
15A6	4	Port 16 Statistics – Number of bytes sent	R	Uint64
15AA	4	Port 17 Statistics – Number of bytes sent	R	Uint64
15AE	4	Port 18 Statistics – Number of bytes sent	R	Uint64

Table 3: 26 Port Registers

Address	# of registers	Description	R/W	Format
1000	64	Port 1 Name	R	Text
1040	64	Port 2 Name	R	Text
1080	64	Port 3 Name	R	Text
10C0	64	Port 4 Name	R	Text
1100	64	Port 5 Name	R	Text
1140	64	Port 6 Name	R	Text
1180	64	Port 7 Name	R	Text
11C0	64	Port 8 Name	R	Text
1200	64	Port 9 Name	R	Text
1240	64	Port 10 Name	R	Text
1280	64	Port 11 Name	R	Text
12C0	64	Port 12 Name	R	Text
1300	64	Port 13 Name	R	Text
1340	64	Port 14 Name	R	Text
1380	64	Port 15 Name	R	Text
13C0	64	Port 16 Name	R	Text
1400	64	Port 17 Name	R	Text
1440	64	Port 18 Name	R	Text
1480	64	Port 19 Name	R	Text
14C0	64	Port 20 Name	R	Text

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Address	# of registers	Description	R/W	Format
1500	64	Port 21 Name	R	Text
1540	64	Port 22 Name	R	Text
1580	64	Port 23 Name	R	Text
15C0	64	Port 24 Name	R	Text
1600	64	Port 25 Name	R	Text
1640	64	Port 26 Name	R	Text
1680	1	Port 1 State	R	Uint16
1681	1	Port 2 State	R	Uint16
1682	1	Port 3 State	R	Uint16
1683	1	Port 4 State	R	Uint16
1684	1	Port 5 State	R	Uint16
1685	1	Port 6 State	R	Uint16
1686	1	Port 7 State	R	Uint16
1687	1	Port 8 State	R	Uint16
1688	1	Port 9 State	R	Uint16
1689	1	Port 10 State	R	Uint16
168A	1	Port 11 State	R	Uint16
168B	1	Port 12 State	R	Uint16
168C	1	Port 13 State	R	Uint16
168D	1	Port 14 State	R	Uint16
168E	1	Port 15 State	R	Uint16
168F	1	Port 16 State	R	Uint16
1690	1	Port 17 State	R	Uint16
1691	1	Port 18 State	R	Uint16
1692	1	Port 19 State	R	Uint16
1693	1	Port 20 State	R	Uint16
1694	1	Port 21 State	R	Uint16
1695	1	Port 22 State	R	Uint16
1696	1	Port 23 State	R	Uint16
1697	1	Port 24 State	R	Uint16
1698	1	Port 25 State	R	Uint16
1699	1	Port 26 State	R	Uint16

Address	# of registers	Description	R/W	Format
169A	4	Port 1 Statistics – Number of packets received	R	Uint64
169E	4	Port 2 Statistics – Number of packets received	R	Uint64
16A2	4	Port 3 Statistics – Number of packets received	R	Uint64
16A6	4	Port 4 Statistics – Number of packets received	R	Uint64
16AA	4	Port 5 Statistics – Number of packets received	R	Uint64
16AE	4	Port 6 Statistics – Number of packets received	R	Uint64
16B2	4	Port 7 Statistics – Number of packets received	R	Uint64
16B6	4	Port 8 Statistics – Number of packets received	R	Uint64
16BA	4	Port 9 Statistics – Number of packets received	R	Uint64
16BE	4	Port 10 Statistics – Number of packets received	R	Uint64
16C2	4	Port 11 Statistics – Number of packets received	R	Uint64
16C6	4	Port 12 Statistics – Number of packets received	R	Uint64
16CA	4	Port 13 Statistics – Number of packets received	R	Uint64
16CE	4	Port 14 Statistics – Number of packets received	R	Uint64

Address	# of registers	Description	R/W	Format
16D2	4	Port 15 Statistics – Number of packets received	R	Uint64
16D6	4	Port 16 Statistics – Number of packets received	R	Uint64
16DA	4	Port 17 Statistics – Number of packets received	R	Uint64
16DE	4	Port 18 Statistics – Number of packets received	R	Uint64
16E2	4	Port 19 Statistics – Number of packets received	R	Uint64
16E6	4	Port 20 Statistics – Number of packets received	R	Uint64
16EA	4	Port 21 Statistics – Number of packets received	R	Uint64
16EE	4	Port 22 Statistics – Number of packets received	R	Uint64
16F2	4	Port 23 Statistics – Number of packets received	R	Uint64
16F6	4	Port 24 Statistics – Number of packets received	R	Uint64
16FA	4	Port 25 Statistics – Number of packets received	R	Uint64
16FE	4	Port 26 Statistics – Number of packets received	R	Uint64
1702	4	Port 1 Statistics – Number of packets sent	R	Uint64
1706	4	Port 2 Statistics – Number of packets sent	R	Uint64

Address	# of registers	Description	R/W	Format
170A	4	Port 3 Statistics – Number of packets sent	R	Uint64
170E	4	Port 4 Statistics – Number of packets sent	R	Uint64
1712	4	Port 5 Statistics – Number of packets sent	R	Uint64
1716	4	Port 6 Statistics – Number of packets sent	R	Uint64
171A	4	Port 7 Statistics – Number of packets sent	R	Uint64
171E	4	Port 8 Statistics – Number of packets sent	R	Uint64
1722	4	Port 9 Statistics – Number of packets sent	R	Uint64
1726	4	Port 10 Statistics – Number of packets sent	R	Uint64
172A	4	Port 11 Statistics – Number of packets sent	R	Uint64
172E	4	Port 12 Statistics – Number of packets sent	R	Uint64
1732	4	Port 13 Statistics – Number of packets sent	R	Uint64
1736	4	Port 14 Statistics – Number of packets sent	R	Uint64
173A	4	Port 15 Statistics – Number of packets sent	R	Uint64
173E	4	Port 16 Statistics – Number of packets sent	R	Uint64

Address	# of registers	Description	R/W	Format
1742	4	Port 17 Statistics – Number of packets sent	R	Uint64
1746	4	Port 18 Statistics – Number of packets sent	R	Uint64
174A	4	Port 19 Statistics – Number of packets sent	R	Uint64
174E	4	Port 20 Statistics – Number of packets sent	R	Uint64
1752	4	Port 21 Statistics – Number of packets sent	R	Uint64
1756	4	Port 22 Statistics – Number of packets sent	R	Uint64
175A	4	Port 23 Statistics – Number of packets sent	R	Uint64
175E	4	Port 24 Statistics – Number of packets sent	R	Uint64
1762	4	Port 25 Statistics – Number of packets sent	R	Uint64
1766	4	Port 26 Statistics – Number of packets sent	R	Uint64
176A	4	Port 1 Statistics – Number of bytes received	R	Uint64
176E	4	Port 2 Statistics – Number of bytes received	R	Uint64
1772	4	Port 3 Statistics – Number of bytes received	R	Uint64
1776	4	Port 4 Statistics – Number of bytes received	R	Uint64

Address	# of registers	Description	R/W	Format
177A	4	Port 5 Statistics – Number of bytes received	R	Uint64
177E	4	Port 6 Statistics – Number of bytes received	R	Uint64
1782	4	Port 7 Statistics – Number of bytes received	R	Uint64
1786	4	Port 8 Statistics – Number of bytes received	R	Uint64
178A	4	Port 9 Statistics – Number of bytes received	R	Uint64
178E	4	Port 10 Statistics – Number of bytes received	R	Uint64
1792	4	Port 11 Statistics – Number of bytes received	R	Uint64
1796	4	Port 12 Statistics – Number of bytes received	R	Uint64
179A	4	Port 13 Statistics – Number of bytes received	R	Uint64
179E	4	Port 14 Statistics – Number of bytes received	R	Uint64
17A2	4	Port 15 Statistics – Number of bytes received	R	Uint64
17A6	4	Port 16 Statistics – Number of bytes received	R	Uint64
17AA	4	Port 17 Statistics – Number of bytes received	R	Uint64
17AE	4	Port 18 Statistics – Number of bytes received	R	Uint64

Address	# of registers	Description	R/W	Format
17B2	4	Port 19 Statistics – Number of bytes received	R	Uint64
17B6	4	Port 20 Statistics – Number of bytes received	R	Uint64
17BA	4	Port 21 Statistics – Number of bytes received	R	Uint64
17BE	4	Port 22 Statistics – Number of bytes received	R	Uint64
17C2	4	Port 23 Statistics – Number of bytes received	R	Uint64
17C6	4	Port 24 Statistics – Number of bytes received	R	Uint64
17CA	4	Port 25 Statistics – Number of bytes received	R	Uint64
17CE	4	Port 26 Statistics – Number of bytes received	R	Uint64
17D2	4	Port 1 Statistics – Number of bytes sent	R	Uint64
17D6	4	Port 2 Statistics – Number of bytes sent	R	Uint64
17DA	4	Port 3 Statistics – Number of bytes sent	R	Uint64
17DE	4	Port 4 Statistics – Number of bytes sent	R	Uint64
17E2	4	Port 5 Statistics – Number of bytes sent	R	Uint64
17E6	4	Port 6 Statistics – Number of bytes sent	R	Uint64

Address	# of registers	Description	R/W	Format
17EA	4	Port 7 Statistics – Number of bytes sent	R	Uint64
17EE	4	Port 8 Statistics – Number of bytes sent	R	Uint64
17F2	4	Port 9 Statistics – Number of bytes sent	R	Uint64
17F6	4	Port 10 Statistics – Number of bytes sent	R	Uint64
17FA	4	Port 11 Statistics – Number of bytes sent	R	Uint64
17FE	4	Port 12 Statistics – Number of bytes sent	R	Uint64
1802	4	Port 13 Statistics – Number of bytes sent	R	Uint64
1806	4	Port 14 Statistics – Number of bytes sent	R	Uint64
180A	4	Port 15 Statistics – Number of bytes sent	R	Uint64
180E	4	Port 16 Statistics – Number of bytes sent	R	Uint64
1812	4	Port 17 Statistics – Number of bytes sent	R	Uint64
1816	4	Port 18 Statistics – Number of bytes sent	R	Uint64
181A	4	Port 19 Statistics – Number of bytes sent	R	Uint64
181E	4	Port 20 Statistics – Number of bytes sent	R	Uint64

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Address	# of registers	Description	R/W	Format
1822	4	Port 21 Statistics – Number of bytes sent	R	Uint64
1826	4	Port 22 Statistics – Number of bytes sent	R	Uint64
182A	4	Port 23 Statistics – Number of bytes sent	R	Uint64
182E	4	Port 24 Statistics – Number of bytes sent	R	Uint64
1832	4	Port 25 Statistics – Number of bytes sent	R	Uint64
1836	4	Port 26 Statistics – Number of bytes sent	R	Uint64

Table 4: System Info Registers

Address	# of registers	Description	R/W	Format
800	64	Product ID	R	Text
840	64	Software Image Name	R	Text
880	64	Software Image Version	R	Text
8C0	64	Host Name	R	Text
900	64	Alarm 1 – Description	R	Text
940	64	Alarm 2 – Description	R	Text
980	1	Alarm 1 – Status	R	Uint16
981	1	Alarm 2 – Status	R	Uint16
982	1	Number of 10/100 Ethernet Ports	R	Uint16
983	1	Number of Gig Ethernet Ports	R	Uint16
984	1	Number of Alarms	R	Uint16
985	1	Number of Power Supplies	R	Uint16
986	1	PS1 – Status	R	Uint16
987	1	PS2 – Status	R	Uint16
988	1	System Temperature (in Celsius)	R	Uint16

Configuring MODBUS

The MODBUS TCP server listens for MODBUS client requests on TCP port 502 by default. Port 502 is enabled when MODBUS server is started unless you configure a different port for MODBUS communications. The MODBUS server is disabled by default.

To configure MODBUS:

Before you begin

If a firewall or other security services are enabled, the switch TCP port might be blocked, and the switch and the client cannot communicate. If a firewall and other security services are disabled, a denial-of-service attack might occur on the switch. To add security when using MODBUS TCP, configure an ACL to permit traffic from specific clients or configure QoS to rate-limit traffic.

Step 1 Enter global configuration mode:

configure terminal

Step 2 Enable MODBUS TCP on the switch:

scada modbus tcp server

To disable MODBUS on the switch and return to the default settings, enter the **no scada modbus tcp server** global configuration command.

The system displays a message to warn you that starting the MODBUS TCP server is a security risk:

WARNING: Starting Modbus TCP server is a security risk. Please understand the security issues involved before proceeding further. Do you still want to start the server? [yes/no]:

Step 3 Enter **yes** to confirm that you understand the security issues and to proceed with starting the server.

Step 4 (Optional) Set the TCP port to which clients send messages:

scada modbus tcp server port *tcp-port-number*

The range for *tcp-port-number* is 1 to 65535. The default is 502.

Step 5 (Optional) Set the number of simultaneous connection requests sent to the switch:

scada modbus tcp server connection *connection-requests*

The range for *connection-requests* is 1 to 5. The default is 1.

Step 6 Return to privileged EXEC mode:

end

Example

```
Switch# configure terminal
Switch(config)# scada modbus tcp server
WARNING: Starting Modbus TCP server is a security risk. Please understand the security
```

```
issues involved
before proceeding further. Do you still want to start the server? [yes/no]: y
Switch(config)# end
```

Displaying MODBUS Information

Use the commands listed below to display information for MODBUS TCP.

Command	Purpose
show scada modbus tcp server	Displays the server information and statistics
show scada modbus tcp server connections	Shows information and statistics for each client connection
clear scada modbus tcp server statistics	Clears all the statistics for the Modbus server, including statistics for each client connection

```
Switch# show scada modbus tcp server
Summary: enabled, running, process id 142
Conn Stats: listening on port 801, 4 max simultaneous connections
    0 current client connections
    0 total accepted connections, 0 accept connection errors
    0 closed connections, 0 close connection errors
Send Stats: 0 tcp msgs sent, 0 tcp bytes sent, 0 tcp errors
    0 responses sent, 0 exceptions sent, 0 send errors
Recv Stats: 0 tcp msgs received, 0 tcp bytes received, 0 tcp errors
    0 requests received, 0 receive errors
```