



## **MODBUS Configuration Guide, Cisco Catalyst IE9300 Rugged Series Switches**

**First Published:** 2023-07-28

### **Americas Headquarters**

Cisco Systems, Inc.  
170 West Tasman Drive  
San Jose, CA 95134-1706  
USA  
<http://www.cisco.com>  
Tel: 408 526-4000  
800 553-NETS (6387)  
Fax: 408 527-0883



# Full Cisco Trademarks with Software License

---

THE SPECIFICATIONS AND INFORMATION REGARDING THE PRODUCTS IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL STATEMENTS, INFORMATION, AND RECOMMENDATIONS IN THIS MANUAL ARE BELIEVED TO BE ACCURATE BUT ARE PRESENTED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. USERS MUST TAKE FULL RESPONSIBILITY FOR THEIR APPLICATION OF ANY PRODUCTS.

THE SOFTWARE LICENSE AND LIMITED WARRANTY FOR THE ACCOMPANYING PRODUCT ARE SET FORTH IN THE INFORMATION PACKET THAT SHIPPED WITH THE PRODUCT AND ARE INCORPORATED HEREIN BY THIS REFERENCE. IF YOU ARE UNABLE TO LOCATE THE SOFTWARE LICENSE OR LIMITED WARRANTY, CONTACT YOUR CISCO REPRESENTATIVE FOR A COPY.

The Cisco implementation of TCP header compression is an adaptation of a program developed by the University of California, Berkeley (UCB) as part of UCB's public domain version of the UNIX operating system. All rights reserved. Copyright © 1981, Regents of the University of California.

NOTWITHSTANDING ANY OTHER WARRANTY HEREIN, ALL DOCUMENT FILES AND SOFTWARE OF THESE SUPPLIERS ARE PROVIDED "AS IS" WITH ALL FAULTS. CISCO AND THE ABOVE-NAMED SUPPLIERS DISCLAIM ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, THOSE OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OR ARISING FROM A COURSE OF DEALING, USAGE, OR TRADE PRACTICE.

IN NO EVENT SHALL CISCO OR ITS SUPPLIERS BE LIABLE FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR LOSS OR DAMAGE TO DATA ARISING OUT OF THE USE OR INABILITY TO USE THIS MANUAL, EVEN IF CISCO OR ITS SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Any Internet Protocol (IP) addresses and phone numbers used in this document are not intended to be actual addresses and phone numbers. Any examples, command display output, network topology diagrams, and other figures included in the document are shown for illustrative purposes only. Any use of actual IP addresses or phone numbers in illustrative content is unintentional and coincidental.

All printed copies and duplicate soft copies of this document are considered uncontrolled. See the current online version for the latest version.

Cisco has more than 200 offices worldwide. Addresses and phone numbers are listed on the Cisco website at [www.cisco.com/go/offices](http://www.cisco.com/go/offices).

Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: <https://www.cisco.com/c/en/us/about/legal/trademarks.html>. Third-party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1721R)

# Communications, Services, and Additional Information

---

- To receive timely, relevant information from Cisco, sign up at [Cisco Profile Manager](#).
- To get the business impact you're looking for with the technologies that matter, visit [Cisco Services](#).
- To submit a service request, visit [Cisco Support](#).
- To discover and browse secure, validated enterprise-class apps, products, solutions, and services, visit [Cisco DevNet](#).
- To obtain general networking, training, and certification titles, visit [Cisco Press](#).
- To find warranty information for a specific product or product family, access [Cisco Warranty Finder](#).

## Cisco Bug Search Tool

[Cisco Bug Search Tool](#) (BST) is a gateway to the Cisco bug-tracking system, which maintains a comprehensive list of defects and vulnerabilities in Cisco products and software. The BST provides you with detailed defect information about your products and software.

## Documentation Feedback

To provide feedback about Cisco technical documentation, use the feedback form available in the right pane of every online document.



## CONTENTS

**Full Cisco Trademarks with Software License** iii

**Communications, Services, and Additional Information** iv

Cisco Bug Search Tool iv

Documentation Feedback iv

---

### CHAPTER 1

#### **MODBUS** 1

MODBUS Protocol 1

Cisco Catalyst IE9300 MODBUS TCP Registers 1

Interpreting the Port State Value 22

Configure MODBUS 23

Displaying MODBUS Commands 24

Feature History 25





# CHAPTER 1

## MODBUS

---

- [MODBUS Protocol, on page 1](#)
- [Cisco Catalyst IE9300 MODBUS TCP Registers, on page 1](#)
- [Interpreting the Port State Value, on page 22](#)
- [Configure MODBUS, on page 23](#)
- [Displaying MODBUS Commands, on page 24](#)
- [Feature History, on page 25](#)

## MODBUS Protocol

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.



---

**Note** MODBUS is supported only on standalone Cisco Catalyst IE9300 Rugged Series Switches.

---

## Cisco Catalyst IE9300 MODBUS TCP Registers

This document lists the read-only registers for IE9300 switches. MODBUS clients use them to communicate with a MODBUS server (the switch). There are no writable registers.

### System Information Registers

Address spaces 0x0800 through 0x0FFF are system information read-only registers. These 2048 registers are accessible by MODBUS function code 0x03 `Read Multiple Registers`.

**Table 1: System Information Registers**

Address	Number of Registers	Description	R/W	Format
0x0800	64	Product ID	R	Text
0x0840	64	Software image name	R	Text
0x0880	64	Software image version	R	Text
0x08C0	64	Host Name	R	Text
0x0900	1	Number of Gigabit Ethernet ports	R	Uint 16
0x0901	1	Number of 10 Gigabit Ethernet ports	R	Uint 16
0x0902	1	Number of mgig Ethernet ports	R	Uint 16
0x0903	1	Number of power supplies	R	Uint 16
0x0904	1	Power supply 1 status	R	Uint 16
0x0905	1	Power supply 2 status	R	Uint 16
0x0906	1	System or sensor ID 0 temperature	R	Uint 16

### Port Information Registers

Address spaces 0x1000 through 0x3FFF are port information read-only registers. These 12,000 registers are accessible by MODBUS function code 0x03 `Read Multiple Registers`. They are updated every time upon receiving a read request to the register(s).

The following table shows the memory map for all interface registers, with 64-bit counters (Address space 0x1000 through 0x2FFF, 8,000 registers).

**Table 2: Values for Getting Generic Port Information**

Address	Number of Registers	Description	R/W	Format
0x1000	64	LAN Port 1 name	R	Text
0x1040	64	LAN Port 2 name	R	Text
0x1080	64	LAN Port 3 name	R	Text
0x10C0	64	LAN Port 4 name	R	Text



Address	Number of Registers	Description	R/W	Format
0x1100	64	LAN Port 5 name	R	Text
0x1140	64	LAN Port 6 name	R	Text
0x1180	64	LAN Port 7 name	R	Text
0x11C0	64	LAN Port 8 name	R	Text
0x1200	64	LAN Port 9 name	R	Text
0x1240	64	LAN Port 10 name	R	Text
0x1280	64	LAN Port 11 name	R	Text
0x12C0	64	LAN Port 12 name	R	Text
0x1300	64	LAN Port 13 name	R	Text
0x1340	64	LAN Port 14 name	R	Text
0x1380	64	LAN Port 15 name	R	Text
0x13C0	64	LAN Port 15 name	R	Text
0x13C0	64	LAN Port 16 name	R	Text
0x1400	64	LAN Port 17 name	R	Text
0x1440	64	LAN Port 18 name	R	Text
0x1480	64	LAN Port 19 name	R	Text
0x14C0	64	LAN Port 20 name	R	Text
0x1500	64	LAN Port 21 name	R	Text
0x1540	64	LAN Port 22 name	R	Text
0x1580	64	LAN Port 23 name	R	Text
0x15C0	64	LAN Port 24 name	R	Text
0x1600	64	LAN Port 25 name	R	Text
0x1640	64	LAN Port 26 name	R	Text
0x1680	64	LAN Port 27 name	R	Text
0x16C0	64	LAN Port 28 name	R	Text
0x1700	1	LAN Port 1 state	R	Uint16
0x1701	1	LAN Port 2 state	R	Uint16
0x1702	1	LAN Port 3 state	R	Uint16

Address	Number of Registers	Description	R/W	Format
0x1703	1	LAN Port 4 state	R	Uint16
0x1704	1	LAN Port 5 state	R	Uint16
0x1705	1	LAN Port 6 state	R	Uint16
0x1706	1	LAN Port 7 state	R	Uint16
0x1707	1	LAN Port 8 state	R	Uint16
0x1708	1	LAN Port 9 state	R	Uint16
0x1709	1	LAN Port 10 state	R	Uint16
0x170A	1	LAN Port 11 state	R	Uint16
0x170B	1	LAN Port 12 state	R	Uint16
0x170C	1	LAN Port 13 state	R	Uint16
0x170D	1	LAN Port 14 state	R	Uint16
0x170E	1	LAN Port 15 state	R	Uint16
0x170F	1	LAN Port 16 state	R	Uint16
0x1710	1	LAN Port 17 state	R	Uint16
0x1711	1	LAN Port 18 state	R	Uint16
0x1712	1	LAN Port 19 state	R	Uint16
0x1713	1	LAN Port 20 state	R	Uint16
0x1714	1	LAN Port 21 state	R	Uint16
0x1715	1	LAN Port 22 state	R	Uint16
0x1716	1	LAN Port 23 state	R	Uint16
0x1717	1	LAN Port 24 state	R	Uint16
0x1718	1	LAN Port 25 state	R	Uint16
0x1719	1	LAN Port 26 state	R	Uint16
0x171A	1	LAN Port 27 state	R	Uint16
0x171B	1	LAN Port 28 state	R	Uint16

**Table 3: Values for Getting Port Information Using 64-bit Counters**

Address	Number of Registers	Description	R/W	Format
0x171C	4	LAN Port 1 statistics—number of packets received	R	Uint64
0x1720	4	LAN Port 2 statistics—number of packets received	R	Uint64
0x1724	4	LAN Port 3 statistics—number of packets received	R	Uint64
0x1728	4	LAN Port 4 statistics—number of packets received	R	Uint64
0x172C	4	LAN Port 5 statistics—number of packets received	R	Uint64
0x1730	4	LAN Port 6 statistics—number of packets received	R	Uint64
0x1734	4	LAN Port 7 statistics—number of packets received	R	Uint64
0x1738	4	LAN Port 8 statistics—number of packets received	R	Uint64
0x173C	4	LAN Port 9 statistics—number of packets received	R	Uint64
0x1740	4	LAN Port 10 statistics—number of packets received	R	Uint64
0x1744	4	LAN Port 11 statistics—number of packets received	R	Uint64
0x1748	4	LAN Port 12 statistics—number of packets received	R	Uint64

Address	Number of Registers	Description	R/W	Format
0x174C	4	LAN Port 13 statistics—number of packets received	R	Uint64
0x1750	4	LAN Port 14 statistics—number of packets received	R	Uint64
0x1754	4	LAN Port 15 statistics—number of packets received	R	Uint64
0x1758	4	LAN Port 16 statistics—number of packets received	R	Uint64
0x175C	4	LAN Port 17 statistics—number of packets received	R	Uint64
0x1760	4	LAN Port 18 statistics—number of packets received	R	Uint64
0x1764	4	LAN Port 19 statistics—number of packets received	R	Uint64
0x1768	4	LAN Port 20 statistics—number of packets received	R	Uint64
0x176C	4	LAN Port 21 statistics—number of packets received	R	Uint64
0x1770	4	LAN Port 22 statistics—number of packets received	R	Uint64
0x1774	4	LAN Port 23 statistics—number of packets received	R	Uint64
0x1778	4	LAN Port 24 statistics—number of packets received	R	Uint64
0x177C	4	LAN Port 25 statistics—number of packets received	R	Uint64

Address	Number of Registers	Description	R/W	Format
0x1780	4	LAN Port 26 statistics—number of packets received	R	Uint64
0x1784	4	LAN Port 27 statistics—number of packets received	R	Uint64
0x1788	4	LAN Port 28 statistics—number of packets received	R	Uint64
0x178C	4	LAN Port 1 statistics—number of packets sent	R	Uint64
0x1790	4	LAN Port 2 statistics—number of packets sent	R	Uint64
0x1794	4	LAN Port 3 statistics—number of packets sent	R	Uint64
0x1798	4	LAN Port 4 statistics—number of packets sent	R	Uint64
0x179C	4	LAN Port 5 statistics—number of packets sent	R	Uint64
0x17A0	4	LAN Port 6 statistics—number of packets sent	R	Uint64
0x17A4	4	LAN Port 7 statistics—number of packets sent	R	Uint64
0x17A8	4	LAN Port 8 statistics—number of packets sent	R	Uint64
0x17AC	4	LAN Port 9 statistics—number of packets sent	R	Uint64
0x17B0	4	LAN Port 10 statistics—number of packets sent	R	Uint64

Address	Number of Registers	Description	R/W	Format
0x17B4	4	LAN Port 11 statistics—number of packets sent	R	Uint64
0x17B8	4	LAN Port 12 statistics—number of packets sent	R	Uint64
0x17BC	4	LAN Port 13 statistics—number of packets sent	R	Uint64
0x17C0	4	LAN Port 14 statistics—number of packets sent	R	Uint64
0x17C4	4	LAN Port 15 statistics—number of packets sent	R	Uint64
0x17C8	4	LAN Port 16 statistics—number of packets sent	R	Uint64
0x17CC	4	LAN Port 17 statistics—number of packets sent	R	Uint64
0x17D0	4	LAN Port 18 statistics—number of packets sent	R	Uint64
0x17D4	4	LAN Port 19 statistics—number of packets sent	R	Uint64
0x17D8	4	LAN Port 20 statistics—number of packets sent	R	Uint64
0x17DC	4	LAN Port 21 statistics—number of packets sent	R	Uint64
0x17E0	4	LAN Port 22 statistics—number of packets sent	R	Uint64
0x17E4	4	LAN Port 23 statistics—number of packets sent	R	Uint64

Address	Number of Registers	Description	R/W	Format
0x17E8	4	LAN Port 24 statistics—number of packets sent	R	Uint64
0x17EC	4	LAN Port 25 statistics—number of packets sent	R	Uint64
0x17F0	4	LAN Port 26 statistics—number of packets sent	R	Uint64
0x17F4	4	LAN Port 27 statistics—number of packets sent	R	Uint64
0x17F8	4	LAN Port 28 statistics—number of packets sent	R	Uint64
0x17FC	4	LAN Port 1 statistics—number of bytes received	R	Uint64
0x1800	4	LAN Port 2 statistics—number of bytes received	R	Uint64
0x1804	4	LAN Port 3 statistics—number of bytes received	R	Uint64
0x1808	4	LAN Port 4 statistics—number of bytes received	R	Uint64
0x180C	4	LAN Port 5 statistics—number of bytes received	R	Uint64
0x1810	4	LAN Port 6 statistics—number of bytes received	R	Uint64
0x1814	4	LAN Port 7 statistics—number of bytes received	R	Uint64
0x1818	4	LAN Port 8 statistics—number of bytes received	R	Uint64

Address	Number of Registers	Description	R/W	Format
0x181C	4	LAN Port 9 statistics—number of bytes received	R	Uint64
0x1820	4	LAN Port 10 statistics—number of bytes received	R	Uint64
0x1824	4	LAN Port 11 statistics—number of bytes received	R	Uint64
0x1828	4	LAN Port 12 statistics—number of bytes received	R	Uint64
0x182C	4	LAN Port 13 statistics—number of bytes received	R	Uint64
0x1830	4	LAN Port 14 statistics—number of bytes received	R	Uint64
0x1834	4	LAN Port 15 statistics—number of bytes received	R	Uint64
0x1838	4	LAN Port 16 statistics—number of bytes received	R	Uint64
0x183C	4	LAN Port 17 statistics—number of bytes received	R	Uint64
0x1840	4	LAN Port 18 statistics—number of bytes received	R	Uint64
0x1844	4	LAN Port 19 statistics—number of bytes received	R	Uint64
0x1848	4	LAN Port 20 statistics—number of bytes received	R	Uint64
0x184C	4	LAN Port 21 statistics—number of bytes received	R	Uint64



Address	Number of Registers	Description	R/W	Format
0x1850	4	LAN Port 22 statistics—number of bytes received	R	Uint64
0x1854	4	LAN Port 23 statistics—number of bytes received	R	Uint64
0x1858	4	LAN Port 24 statistics—number of bytes received	R	Uint64
0x185C	4	LAN Port 25 statistics—number of bytes received	R	Uint64
0x1860	4	LAN Port 26 statistics—number of bytes received	R	Uint64
0x1864	4	LAN Port 27 statistics—number of bytes received	R	Uint64
0x1868	4	LAN Port 28 statistics—number of bytes received	R	Uint64
0x186C	4	LAN Port 1 statistics—number of bytes sent	R	Uint64
0x1870	4	LAN Port 2 statistics—number of bytes sent	R	Uint64
0x1874	4	LAN Port 3 statistics—number of bytes sent	R	Uint64
0x1878	4	LAN Port 4 statistics—number of bytes sent	R	Uint64
0x187C	4	LAN Port 5 statistics—number of bytes sent	R	Uint64
0x1880	4	LAN Port 6 statistics—number of bytes sent	R	Uint64

Address	Number of Registers	Description	R/W	Format
0x1884	4	LAN Port 7 statistics—number of bytes sent	R	Uint64
0x1888	4	LAN Port 8 statistics—number of bytes sent	R	Uint64
0x188C	4	LAN Port 9 statistics—number of bytes sent	R	Uint64
0x1890	4	LAN Port 10 statistics—number of bytes sent	R	Uint64
0x1894	4	LAN Port 11 statistics—number of bytes sent	R	Uint64
0x1898	4	LAN Port 12 statistics—number of bytes sent	R	Uint64
0x189C	4	LAN Port 13 statistics—number of bytes sent	R	Uint64
0x18A0	4	LAN Port 14 statistics—number of bytes sent	R	Uint64
0x18A4	4	LAN Port 15 statistics—number of bytes sent	R	Uint64
0x18A8	4	LAN Port 16 statistics—number of bytes sent	R	Uint64
0x18AC	4	LAN Port 17 statistics—number of bytes sent	R	Uint64
0x18B0	4	LAN Port 18 statistics—number of bytes sent	R	Uint64
0x18B4	4	LAN Port 19 statistics—number of bytes sent	R	Uint64

Address	Number of Registers	Description	R/W	Format
0x18B8	4	LAN Port 20 statistics—number of bytes sent	R	Uint64
0x18BC	4	LAN Port 21 statistics—number of bytes sent	R	Uint64
0x18C0	4	LAN Port 22 statistics—number of bytes sent	R	Uint64
0x18C4	4	LAN Port 23 statistics—number of bytes sent	R	Uint64
0x18C8	4	LAN Port 24 statistics—number of bytes sent	R	Uint64
0x18CC	4	LAN Port 25 statistics—number of bytes sent	R	Uint64
0x18D0	4	LAN Port 26 statistics—number of bytes sent	R	Uint64
0x18D4	4	LAN Port 27 statistics—number of bytes sent	R	Uint64
0x18D8	4	LAN Port 28 statistics—number of bytes sent	R	Uint64

**Table 4: Values for Getting Port Information Using 32-bit Counters**

Address	Number of Registers	Description	R/W	Format
0x18DC	2	LAN Port 1 statistics—number of packets received	R	Uint32
0x18DE	2	LAN Port 2 statistics—number of packets received	R	Uint32
0x18E0	2	LAN Port 3 statistics—number of packets received	R	Uint32

Address	Number of Registers	Description	R/W	Format
0x18E2	2	LAN Port 4 statistics—number of packets received	R	Uint32
0x18E4	2	LAN Port 5 statistics—number of packets received	R	Uint32
0x18E6	2	LAN Port 6 statistics—number of packets received	R	Uint32
0x18E8	2	LAN Port 7 statistics—number of packets received	R	Uint32
0x18EA	2	LAN Port 8 statistics—number of packets received	R	Uint32
0x18EC	2	LAN Port 9 statistics—number of packets received	R	Uint32
0x18EE	2	LAN Port 10 statistics—number of packets received	R	Uint32
0x18F0	2	LAN Port 11 statistics—number of packets received	R	Uint32
0x18F2	2	LAN Port 12 statistics—number of packets received	R	Uint32
0x18F4	2	LAN Port 13 statistics—number of packets received	R	Uint32
0x18F6	2	LAN Port 14 statistics—number of packets received	R	Uint32
0x18F8	2	LAN Port 15 statistics—number of packets received	R	Uint32
0x18FA	2	LAN Port 16 statistics—number of packets received	R	Uint32

Address	Number of Registers	Description	R/W	Format
0x18FC	2	LAN Port 17 statistics—number of packets received	R	Uint32
0x18FE	2	LAN Port 18 statistics—number of packets received	R	Uint32
0x1900	2	LAN Port 19 statistics—number of packets received	R	Uint32
0x1902	2	LAN Port 20 statistics—number of packets received	R	Uint32
0x1904	2	LAN Port 21 statistics—number of packets received	R	Uint32
0x1906	2	LAN Port 22 statistics—number of packets received	R	Uint32
0x1908	2	LAN Port 23 statistics—number of packets received	R	Uint32
0x190A	2	LAN Port 24 statistics—number of packets received	R	Uint32
0x190C	2	LAN Port 25 statistics—number of packets received	R	Uint32
0x190E	2	LAN Port 26 statistics—number of packets received	R	Uint32
0x1910	2	LAN Port 27 statistics—number of packets received	R	Uint32
0x1912	2	LAN Port 28 statistics—number of packets received	R	Uint32
0x1914	2	LAN Port 1 statistics—number of packets sent	R	Uint32

Address	Number of Registers	Description	R/W	Format
0x1916	2	LAN Port 3 statistics—number of packets sent		Uint32
0x1918	2	LAN Port 3 statistics—number of packets sent	R	Uint32
0x191A	2	LAN Port 4 statistics—number of packets sent	R	Uint32
0x191C	2	LAN Port 5 statistics—number of packets sent	R	Uint32
0x191E	2	LAN Port 6 statistics—number of packets sent	R	Uint32
0x1920	2	LAN Port 7 statistics—number of packets sent	R	Uint32
0x1922	2	LAN Port 8 statistics—number of packets sent	R	Uint32
0x1924	2	LAN Port 9 statistics—number of packets sent	R	Uint32
0x1926	2	LAN Port 10 statistics—number of packets sent	R	Uint32
0x1928	2	LAN Port 11 statistics—number of packets sent	R	Uint32
0x192A	2	LAN Port 12 statistics—number of packets sent	R	Uint32
0x192C	2	LAN Port 13 statistics—number of packets sent	R	Uint32
0x192E	2	LAN Port 14 statistics—number of packets sent	R	Uint32

Address	Number of Registers	Description	R/W	Format
0x1930	2	LAN Port 15 statistics—number of packets sent	R	Uint32
0x1932	2	LAN Port 16 statistics—number of packets sent	R	Uint32
0x1934	2	LAN Port 17 statistics—number of packets sent	R	Uint32
0x1936	2	LAN Port 18 statistics—number of packets sent	R	Uint32
0x1938	2	LAN Port 19 statistics—number of packets sent	R	Uint32
0x193A	2	LAN Port 20 statistics—number of packets sent	R	Uint32
0x193C	2	LAN Port 21 statistics—number of packets sent	R	Uint32
0x193E	2	LAN Port 22 statistics—number of packets sent	R	Uint32
0x1940	2	LAN Port 23 statistics—number of packets sent	R	Uint32
0x1942	2	LAN Port 24 statistics—number of packets sent	R	Uint32
0x1944	2	LAN Port 25 statistics—number of packets sent	R	Uint32
0x1946	2	LAN Port 26 statistics—number of packets sent	R	Uint32
0x1948	2	LAN Port 27 statistics—number of packets sent	R	Uint32

Address	Number of Registers	Description	R/W	Format
0x194A	2	LAN Port 28 statistics—number of packets sent	R	Uint32
0x194C	2	LAN Port 1 statistics—number of bytes received	R	Uint32
0x194E	2	LAN Port 2 statistics—number of bytes received	R	Uint32
0x1950	2	LAN Port 3 statistics—number of bytes received	R	Uint32
0x1952	2	LAN Port 4 statistics—number of bytes received	R	Uint32
0x1954	2	LAN Port 5 statistics—number of bytes received	R	Uint32
0x1956	2	LAN Port 6 statistics—number of bytes received	R	Uint32
0x1958	2	LAN Port 7 statistics—number of bytes received	R	Uint32
0x195A	2	LAN Port 8 statistics—number of bytes received	R	Uint32
0x195C	2	LAN Port 9 statistics—number of bytes received	R	Uint32
0x195E	2	LAN Port 10 statistics—number of bytes received	R	Uint32
0x1960	2	LAN Port 11 statistics—number of bytes received	R	Uint32
0x1962	2	LAN Port 12 statistics—number of bytes received	R	Uint32



Address	Number of Registers	Description	R/W	Format
0x1964	2	LAN Port 13 statistics—number of bytes received	R	Uint32
0x1966	2	LAN Port 14 statistics—number of bytes received	R	Uint32
0x1968	2	LAN Port 15 statistics—number of bytes received	R	Uint32
0x196A	2	LAN Port 16 statistics—number of bytes received	R	Uint32
0x196C	2	LAN Port 17 statistics—number of bytes received	R	Uint32
0x196E	2	LAN Port 18 statistics—number of bytes received	R	Uint32
0x1970	2	LAN Port 19 statistics—number of bytes received	R	Uint32
0x1972	2	LAN Port 20 statistics—number of bytes received	R	Uint32
0x1974	2	LAN Port 21 statistics—number of bytes received	R	Uint32
0x1976	2	LAN Port 22 statistics—number of bytes received	R	Uint32
0x1978	2	LAN Port 23 statistics—number of bytes received	R	Uint32
0x197A	2	LAN Port 24 statistics—number of bytes received	R	Uint32
0x197C	2	LAN Port 25 statistics—number of bytes received	R	Uint32

Address	Number of Registers	Description	R/W	Format
0x197E	2	LAN Port 26 statistics—number of bytes received	R	Uint32
0x1980	2	LAN Port 27 statistics—number of bytes received	R	Uint32
0x1982	2	LAN Port 28 statistics—number of bytes received	R	Uint32
0x1984	2	LAN Port 1 Statistics – Number of bytes sent	R	Uint32
0x1986	2	LAN Port 2 Statistics – Number of bytes sent	R	Uint32
0x1988	2	LAN Port 3 Statistics – Number of bytes sent	R	Uint32
0x198A	2	LAN Port 4 statistics—number of bytes sent	R	Uint32
0x198C	2	LAN Port 5 statistics—number of bytes sent	R	Uint32
0x198E	2	LAN Port 6 statistics—number of bytes sent	R	Uint32
0x1990	2	LAN Port 7 statistics—number of bytes sent	R	Uint32
0x1992	2	LAN Port 8 statistics—number of bytes sent	R	Uint32
0x1994	2	LAN Port 9 statistics—number of bytes sent	R	Uint32
0x1996	2	LAN Port 10 statistics—number of bytes sent	R	Uint32

Address	Number of Registers	Description	R/W	Format
0x1998	2	LAN Port 11 statistics—number of bytes sent	R	Uint32
0x199A	2	LAN Port 12 statistics—number of bytes sent	R	Uint32
0x199C	2	LAN Port 13 statistics—number of bytes sent	R	Uint32
0x199E	2	LAN Port 14 statistics—number of bytes sent	R	Uint32
0x19A0	2	LAN Port 15 statistics—number of bytes sent	R	Uint32
0x19A2	2	LAN Port 16 statistics—number of bytes sent	R	Uint32
0x19A4	2	LAN Port 17 statistics—number of bytes sent	R	Uint32
0x19A6	2	LAN Port 18 statistics—number of bytes sent	R	Uint32
0x19A8	2	LAN Port 19 statistics—number of bytes sent	R	Uint32
0x19AA	2	LAN Port 20 statistics—number of bytes sent	R	Uint32
0x19AC	2	LAN Port 21 statistics—number of bytes sent	R	Uint32
0x19AE	2	LAN Port 22 statistics—number of bytes sent	R	Uint32
0x19B0	2	LAN Port 23 statistics—number of bytes sent	R	Uint32

Address	Number of Registers	Description	R/W	Format
0x19B2	2	LAN Port 24 statistics—number of bytes sent	R	Uint32
0x19B4	2	LAN Port 25 statistics—number of bytes sent	R	Uint32
0x19B6	2	LAN Port 26 statistics—number of bytes sent	R	Uint32
0x19B8	2	LAN Port 27 statistics—number of bytes sent	R	Uint32
0x19BA	2	LAN Port 28 statistics—number of bytes sent	R	Uint32

## Interpreting the Port State Value

This section provides information for determining the port state.

In the following table, the upper byte represents the interface state, and the lower byte represents the line protocol state.

Address	Description	Value
0x1700 to 0x171B	Port state information	Upper byte: <ul style="list-style-type: none"> <li>• 0x0: Interface is down</li> <li>• 0x1: Interface is going down</li> <li>• 0x2: Interface is in the initializing state</li> <li>• 0x3: Interface is coming up</li> <li>• 0x4: Interface is up and running</li> <li>• 0x5: Interface is reset by the user</li> <li>• 0x6: Interface is shut down by the user</li> <li>• 0x7: Interface is being deleted</li> </ul>
		The lower byte: <ul style="list-style-type: none"> <li>• 0x0: Line protocol state is down</li> <li>• 0x1: Line protocol state is up</li> </ul>

## Configure 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.



**Note** MODBUS is supported only on standalone Cisco Catalyst IE9300 Rugged Series Switches.

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 Commands

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

The following is an example of the **show scada modbus tcp server** command and its output:

```
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
```

## Feature History

The following table provides release and related information for the features that are documented in this guide. The features are available in all the releases after the one they were introduced in, unless noted otherwise.

Release	Feature	Feature Information
Cisco IOS XE Dublin 17.12.1	MODBUS	Beginning in this release, Cisco Catalyst IE9300 Rugged Series Switches are supported for Modicon Communication Bus (MODBUS).

