# CISCO

# IE 5000 and IE 4010 MODBUS TCP Registers

First Published: July 1, 2019

This document lists the IE 5000 and IE 4010-specific read-only registers for IE 5000 and IE 4010 models, listed below. MODBUS clients use these registers to communicate with a MODBUS server (the switch). There are no writable registers. For information about MODBUS TCP, see Configuring MODBUS TCP.

- IE-5000-12S12P-10G
- IE-5000-16S12P
- IE-4010-4S24P
- IE-4010-16S12P

Note: MODBUS TCP registers for the IE 4010 requires Cisco IOS release 15.2(7)E1 or later.

#### System Information Registers

Table 1 IE 5000 and IE 4010 System Information Registers

Address	Number of registers	Description	R/W	Format	Example/Note
800	64	Product ID	R	Text	"IE-5000-12S12P-10G"
840	64	Software Image Name	R	Text	"IE5000-UNIVERSALK9-M"
880	64	Software Image Version	R	Text	"15.2(20150203:201530)"
08C0	64	Host Name	R	Text	"su-moreno"
900	64	Alarm 1 - Description	R	Text	"external alarm contact 1"
940	64	Alarm 2 - Description	R	Text	"external alarm contact 2"
980	64	Alarm 3 - Description	R	Text	"external alarm contact 3"
09C0	64	Alarm 4 - Description	R	Text	"external alarm contact 4"
0A00	1	Alarm 1 - Status	R	Uint16	0x1
0A01	1	Alarm 2 - Status	R	Uint16	0x0
0A02	1	Alarm 3 - Status	R	Uint16	0x0
0A03	1	Alarm 4 - Status	R	Uint16	0x0
0A04	1	Number of Gig Ethernet Ports	R	Uint16	0x1C
0A05	1	Number of 10 Gig Ethernet Ports	R	Uint16	0x04
0A06	1	Number of Alarms	R	Uint16	0x4

Table 1 IE 5000 and IE 4010 System Information Registers (continued)

Address	Number of registers	Description	R/W	Format	Example/Note
0A07	1	Number of Power Supplies	R	Uint16	0x2
0A08	1	PS1 - Status	R	Uint16	0x0
0A09	1	PS2 - Status	R	Uint16	0x2
0A0A	1	System Temperature (in Celsius)	R	Uint16	0x34

## Port Information Registers

Table 2 IE 5000 and IE 4010 Port Information Registers

Address in Hex	Number 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
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	64	Port 27 Name	R	Text
16c0	64	Port 28 Name	R	Text

Table 2 IE 5000 and IE 4010 Port Information Registers (continued)

Address in Hex	Number of registers	Description	R/W	Format
1700	1	Port 1 State	R	Uint16
1701	1	Port 2 State	R	Uint16
1702	1	Port 3 State	R	Uint16
1703	1	Port 4 State	R	Uint16
1704	1	Port 5 State	R	Uint16
1705	1	Port 6 State	R	Uint16
1706	1	Port 7 State	R	Uint16
1707	1	Port 8 State	R	Uint16
1708	1	Port 9 State	R	Uint16
1709	1	Port 10 State	R	Uint16
170a	1	Port 11 State	R	Uint16
170b	1	Port 12 State	R	Uint16
170c	1	Port 13 State	R	Uint16
170d	1	Port 14 State	R	Uint16
170e	1	Port 15 State	R	Uint16
170f	1	Port 16 State	R	Uint16
1710	1	Port 17 State	R	Uint16
1711	1	Port 18 State	R	Uint16
1712	1	Port 19 State	R	Uint16
1713	1	Port 20 State	R	Uint16
1714	1	Port 21 State	R	Uint16
1715	1	Port 22 State	R	Uint16
1716	1	Port 23 State	R	Uint16
1717	1	Port 24 State	R	Uint16
1718	1	Port 25 State	R	Uint16
1719	1	Port 26 State	R	Uint16
171a	1	Port 27 State	R	Uint16
171b	1	Port 28 State	R	Uint16
171c	4	Port 1 Statistics - Number of packets received	R	Uint64
1720	4	Port 2 Statistics - Number of packets received	R	Uint64
1724	4	Port 3 Statistics - Number of packets received	R	Uint64
1728	4	Port 4 Statistics - Number of packets received	R	Uint64
172c	4	Port 5 Statistics - Number of packets received	R	Uint64
1730	4	Port 6 Statistics - Number of packets received	R	Uint64
1734	4	Port 7 Statistics - Number of packets received	R	Uint64
1738	4	Port 8 Statistics - Number of packets received	R	Uint64
173c	4	Port 9 Statistics - Number of packets received	R	Uint64

Table 2 IE 5000 and IE 4010 Port Information Registers (continued)

Address in Hex	Number of registers	Description	R/W	Format
1740	4	Port 10 Statistics - Number of packets received	R	Uint64
1744	4	Port 11 Statistics - Number of packets received	R	Uint64
1748	4	Port 12 Statistics - Number of packets received	R	Uint64
174c	4	Port 13 Statistics - Number of packets received	R	Uint64
1750	4	Port 14 Statistics - Number of packets received	R	Uint64
1754	4	Port 14 Statistics - Number of packets received	R	Uint64
1758	4	Port 16 Statistics - Number of packets received	R	Uint64
175c	4	Port 17 Statistics - Number of packets received	R	Uint64
1760	4	Port 18 Statistics - Number of packets received	R	Uint64
1764	4	Port 19 Statistics - Number of packets received	R	Uint64
1768	4	Port 20 Statistics - Number of packets received	R	Uint64
176c	4	Port 21 Statistics - Number of packets received	R	Uint64
1770	4	Port 22 Statistics - Number of packets received	R	Uint64
1774	4	Port 23 Statistics - Number of packets received	R	Uint64
1778	4	Port 24 Statistics - Number of packets received	R	Uint64
177c	4	Port 25 Statistics - Number of packets received	R	Uint64
1780	4	Port 26 Statistics - Number of packets received	R	Uint64
1784	4	Port 27 Statistics - Number of packets received	R	Uint64
1788	4	Port 28 Statistics - Number of packets received	R	Uint64
178c	4	Port 1 Statistics - Number of packets sent	R	Uint64
1790	4	Port 2 Statistics - Number of packets sent	R	Uint64
1794	4	Port 3 Statistics - Number of packets sent	R	Uint64
1798	4	Port 4 Statistics - Number of packets sent	R	Uint64
179c	4	Port 5 Statistics - Number of packets sent	R	Uint64
17a0	4	Port 6 Statistics - Number of packets sent	R	Uint64
17a4	4	Port 7 Statistics - Number of packets sent	R	Uint64
17a8	4	Port 8 Statistics - Number of packets sent	R	Uint64
17ac	4	Port 9 Statistics - Number of packets sent	R	Uint64
17b0	4	Port 10 Statistics - Number of packets sent	R	Uint64
17b4	4	Port 11 Statistics - Number of packets sent	R	Uint64
17b8	4	Port 12 Statistics - Number of packets sent	R	Uint64
17bc	4	Port 13 Statistics - Number of packets sent	R	Uint64
17c0	4	Port 14 Statistics - Number of packets sent	R	Uint64
17c4	4	Port 15 Statistics - Number of packets sent	R	Uint64
17c8	4	Port 16 Statistics - Number of packets sent	R	Uint64
17cc	4	Port 17 Statistics - Number of packets sent	R	Uint64
17d0	4	Port 18 Statistics - Number of packets sent	R	Uint64
17d4	4	Port 19 Statistics - Number of packets sent	R	Uint64

Table 2 IE 5000 and IE 4010 Port Information Registers (continued)

Address in Hex	Number of registers	Description	R/W	Format
17d8	4	Port 20 Statistics - Number of packets sent	R	Uint64
17dc	4	Port 21 Statistics - Number of packets sent	R	Uint64
17E0	4	Port 22 Statistics - Number of packets sent	R	Uint64
17E4	4	Port 23 Statistics - Number of packets sent	R	Uint64
17E8	4	Port 24 Statistics - Number of packets sent	R	Uint64
17EC	4	Port 25 Statistics - Number of packets sent	R	Uint64
17f0	4	Port 26 Statistics - Number of packets sent	R	Uint64
17f4	4	Port 27 Statistics - Number of packets sent	R	Uint64
17f8	4	Port 28 Statistics - Number of packets sent	R	Uint64
17fc	4	Port 1 Statistics - Number of bytes received	R	Uint64
1800	4	Port 2 Statistics - Number of bytes received	R	Uint64
1804	4	Port 3 Statistics - Number of bytes received	R	Uint64
1808	4	Port 4 Statistics - Number of bytes received	R	Uint64
180c	4	Port 5 Statistics - Number of bytes received	R	Uint64
1810	4	Port 6 Statistics - Number of bytes received	R	Uint64
1814	4	Port 7 Statistics - Number of bytes received	R	Uint64
1818	4	Port 8 Statistics - Number of bytes received	R	Uint64
181c	4	Port 9 Statistics - Number of bytes received	R	Uint64
1820	4	Port 10 Statistics - Number of bytes received	R	Uint64
1824	4	Port 11 Statistics - Number of bytes received	R	Uint64
1828	4	Port 12 Statistics - Number of bytes received	R	Uint64
182c	4	Port 13 Statistics - Number of bytes received	R	Uint64
1830	4	Port 14 Statistics - Number of bytes received	R	Uint64
1834	4	Port 15 Statistics - Number of bytes received	R	Uint64
1838	4	Port 16 Statistics - Number of bytes received	R	Uint64
183c	4	Port 17 Statistics - Number of bytes received	R	Uint64
1840	4	Port 18 Statistics - Number of bytes received	R	Uint64
1844	4	Port 19 Statistics - Number of bytes received	R	Uint64
1848	4	Port 20 Statistics - Number of bytes received	R	Uint64
184c	4	Port 21 Statistics - Number of bytes received	R	Uint64
1850	4	Port 22 Statistics - Number of bytes received	R	Uint64
1854	4	Port 23 Statistics - Number of bytes received	R	Uint64
1858	4	Port 24 Statistics - Number of bytes received	R	Uint64
185c	4	Port 25 Statistics - Number of bytes received	R	Uint64
1860	4	Port 26 Statistics - Number of bytes received	R	Uint64
1864	4	Port 27 Statistics - Number of bytes received	R	Uint64
1868	4	Port 28 Statistics - Number of bytes received	R	Uint64

Table 2 IE 5000 and IE 4010 Port Information Registers (continued)

Address in Hex	Number of registers	Description	R/W	Format
186c	4	Port 1 Statistics - Number of bytes sent	R	Uint64
1870	4	Port 2 Statistics - Number of bytes sent	R	Uint64
1874	4	Port 3 Statistics - Number of bytes sent	R	Uint64
1878	4	Port 4 Statistics - Number of bytes sent	R	Uint64
187c	4	Port 5 Statistics - Number of bytes sent	R	Uint64
1880	4	Port 6 Statistics - Number of bytes sent	R	Uint64
1884	4	Port 7 Statistics - Number of bytes sent	R	Uint64
1888	4	Port 8 Statistics - Number of bytes sent	R	Uint64
188c	4	Port 9 Statistics - Number of bytes sent	R	Uint64
1890	4	Port 10 Statistics - Number of bytes sent	R	Uint64
1894	4	Port 11 Statistics - Number of bytes sent	R	Uint64
1898	4	Port 12 Statistics - Number of bytes sent	R	Uint64
189c	4	Port 13 Statistics - Number of bytes sent	R	Uint64
18a0	4	Port 14 Statistics - Number of bytes sent	R	Uint64
18a4	4	Port 15 Statistics - Number of bytes sent	R	Uint64
18a8	4	Port 16 Statistics - Number of bytes sent	R	Uint64
18ac	4	Port 17 Statistics - Number of bytes sent	R	Uint64
18b0	4	Port 18 Statistics - Number of bytes sent	R	Uint64
18b4	4	Port 19 Statistics - Number of bytes sent	R	Uint64
18b8	4	Port 20 Statistics - Number of bytes sent	R	Uint64
18bc	4	Port 21 Statistics - Number of bytes sent	R	Uint64
18c0	4	Port 22 Statistics - Number of bytes sent	R	Uint64
18c4	4	Port 23 Statistics - Number of bytes sent	R	Uint64
18c8	4	Port 24 Statistics - Number of bytes sent	R	Uint64
18cc	4	Port 25 Statistics - Number of bytes sent	R	Uint64
18d0	4	Port 26 Statistics - Number of bytes sent	R	Uint64
18d4	4	Port 27 Statistics - Number of bytes sent	R	Uint64
18d8	4	Port 28 Statistics - Number of bytes sent	R	Uint64
18dc	2	Port 1 Statistics - Number of packets received	R	Uint32
18de	2	Port 2 Statistics - Number of packets received	R	Uint32
18e0	2	Port 3 Statistics - Number of packets received	R	Uint32
18e2	2	Port 4 Statistics - Number of packets received	R	Uint32
18e4	2	Port 5 Statistics - Number of packets received	R	Uint32
18e6	2	Port 6 Statistics - Number of packets received	R	Uint32
18e8	2	Port 7 Statistics - Number of packets received	R	Uint32
18ea	2	Port 8 Statistics - Number of packets received	R	Uint32
18ec	2	Port 9 Statistics - Number of packets received	R	Uint32
18ee	2	Port 10 Statistics - Number of packets received	R	Uint32

Table 2 IE 5000 and IE 4010 Port Information Registers (continued)

Address in Hex	Number of registers	Description	R/W	Format
18f0	2	Port 11 Statistics - Number of packets received	R	Uint32
18f2	2	Port 12 Statistics - Number of packets received	R	Uint32
18f4	2	Port 13 Statistics - Number of packets received	R	Uint32
18f6	2	Port 14 Statistics - Number of packets received	R	Uint32
18f8	2	Port 15 Statistics - Number of packets received	R	Uint32
18fa	2	Port 16 Statistics - Number of packets received	R	Uint32
18fc	2	Port 17 Statistics - Number of packets received	R	Uint32
18fe	2	Port 18 Statistics - Number of packets received	R	Uint32
1900	2	Port 19 Statistics - Number of packets received	R	Uint32
1902	2	Port 20 Statistics - Number of packets received	R	Uint32
1904	2	Port 21 Statistics - Number of packets received	R	Uint32
1906	2	Port 22 Statistics - Number of packets received	R	Uint32
1908	2	Port 23 Statistics - Number of packets received	R	Uint32
190a	2	Port 24 Statistics - Number of packets received	R	Uint32
190c	2	Port 25 Statistics - Number of packets received	R	Uint32
190e	2	Port 26 Statistics - Number of packets received	R	Uint32
1910	2	Port 27 Statistics - Number of packets received	R	Uint32
1912	2	Port 28 Statistics - Number of packets received	R	Uint32
1914	2	Port 1 Statistics - Number of packets sent	R	Uint32
1916	2	Port 2 Statistics - Number of packets sent	R	Uint32
1918	2	Port 3 Statistics - Number of packets sent	R	Uint32
191a	2	Port 4 Statistics - Number of packets sent	R	Uint32
191c	2	Port 5 Statistics - Number of packets sent	R	Uint32
191e	2	Port 6 Statistics - Number of packets sent	R	Uint32
1920	2	Port 7 Statistics - Number of packets sent	R	Uint32
1922	2	Port 8 Statistics - Number of packets sent	R	Uint32
1924	2	Port 9 Statistics - Number of packets sent	R	Uint32
1926	2	Port 10 Statistics - Number of packets sent	R	Uint32
1928	2	Port 11 Statistics - Number of packets sent	R	Uint32
192a	2	Port 12 Statistics - Number of packets sent	R	Uint32
192c	2	Port 13 Statistics - Number of packets sent	R	Uint32
192e	2	Port 14 Statistics - Number of packets sent	R	Uint32
1930	2	Port 15 Statistics - Number of packets sent	R	Uint32
1932	2	Port 16 Statistics - Number of packets sent	R	Uint32
1934	2	Port 17 Statistics - Number of packets sent	R	Uint32
1936	2	Port 18 Statistics - Number of packets sent	R	Uint32
1938	2	Port 19 Statistics - Number of packets sent	R	Uint32

Table 2 IE 5000 and IE 4010 Port Information Registers (continued)

Address in Hex	Number of registers	Description	R/W	Format
193a	2	Port 20 Statistics - Number of packets sent	R	Uint32
193c	2	Port 21 Statistics - Number of packets sent	R	Uint32
193e	2	Port 22 Statistics - Number of packets sent	R	Uint32
1940	2	Port 23 Statistics - Number of packets sent	R	Uint32
1942	2	Port 24 Statistics - Number of packets sent	R	Uint32
1944	2	Port 25 Statistics - Number of packets sent	R	Uint32
1946	2	Port 26 Statistics - Number of packets sent	R	Uint32
1948	2	Port 27 Statistics - Number of packets sent	R	Uint32
194a	2	Port 28 Statistics - Number of packets sent	R	Uint32
194c	2	Port 1 Statistics - Number of bytes received	R	Uint32
194e	2	Port 2 Statistics - Number of bytes received	R	Uint32
1950	2	Port 3 Statistics - Number of bytes received	R	Uint32
1952	2	Port 4 Statistics - Number of bytes received	R	Uint32
1954	2	Port 5 Statistics - Number of bytes received	R	Uint32
1956	2	Port 6 Statistics - Number of bytes received	R	Uint32
1958	2	Port 7 Statistics - Number of bytes received	R	Uint32
195a	2	Port 8 Statistics - Number of bytes received	R	Uint32
195c	2	Port 9 Statistics - Number of bytes received	R	Uint32
195e	2	Port 10 Statistics - Number of bytes received	R	Uint32
1960	2	Port 11 Statistics - Number of bytes received	R	Uint32
1962	2	Port 12 Statistics - Number of bytes received	R	Uint32
1964	2	Port 13 Statistics - Number of bytes received	R	Uint32
1966	2	Port 14 Statistics - Number of bytes received	R	Uint32
1968	2	Port 15 Statistics - Number of bytes received	R	Uint32
196a	2	Port 16 Statistics - Number of bytes received	R	Uint32
196c	2	Port 17 Statistics - Number of bytes received	R	Uint32
196e	2	Port 18 Statistics - Number of bytes received	R	Uint32
1970	2	Port 19 Statistics - Number of bytes received	R	Uint32
1972	2	Port 20 Statistics - Number of bytes received	R	Uint32
1974	2	Port 21 Statistics - Number of bytes received	R	Uint32
1976	2	Port 22 Statistics - Number of bytes received	R	Uint32
1978	2	Port 23 Statistics - Number of bytes received	R	Uint32
197a	2	Port 24 Statistics - Number of bytes received	R	Uint32
197c	2	Port 25 Statistics - Number of bytes received	R	Uint32
197e	2	Port 26 Statistics - Number of bytes received	R	Uint32
1980	2	Port 27 Statistics - Number of bytes received	R	Uint32
1982	2	Port 28 Statistics - Number of bytes received	R	Uint32
1984	2	Port 1 Statistics - Number of bytes sent	R	Uint32

**Related Documents** 

Table 2 IE 5000 and IE 4010 Port Information Registers (continued)

Address in Hex	Number of registers	Description	R/W	Format
1986	2	Port 2 Statistics - Number of bytes sent	R	Uint32
1988	2	Port 3 Statistics - Number of bytes sent	R	Uint32
198a	2	Port 4 Statistics - Number of bytes sent	R	Uint32
198c	2	Port 5 Statistics - Number of bytes sent	R	Uint32
198e	2	Port 6 Statistics - Number of bytes sent	R	Uint32
1990	2	Port 7 Statistics - Number of bytes sent	R	Uint32
1992	2	Port 8 Statistics - Number of bytes sent	R	Uint32
1994	2	Port 9 Statistics - Number of bytes sent	R	Uint32
1996	2	Port 10 Statistics - Number of bytes sent	R	Uint32
1998	2	Port 11 Statistics - Number of bytes sent	R	Uint32
199a	2	Port 12 Statistics - Number of bytes sent	R	Uint32
199c	2	Port 13 Statistics - Number of bytes sent	R	Uint32
199e	2	Port 14 Statistics - Number of bytes sent	R	Uint32
19a0	2	Port 15 Statistics - Number of bytes sent	R	Uint32
19a2	2	Port 16 Statistics - Number of bytes sent	R	Uint32
19a4	2	Port 17 Statistics - Number of bytes sent	R	Uint32
19a6	2	Port 18 Statistics - Number of bytes sent	R	Uint32
19a8	2	Port 19 Statistics - Number of bytes sent	R	Uint32
19aa	2	Port 20 Statistics - Number of bytes sent	R	Uint32
19ac	2	Port 21 Statistics - Number of bytes sent	R	Uint32
19ae	2	Port 22 Statistics - Number of bytes sent	R	Uint32
19b0	2	Port 23 Statistics - Number of bytes sent	R	Uint32
19b2	2	Port 24 Statistics - Number of bytes sent	R	Uint32
19b4	2	Port 25 Statistics - Number of bytes sent	R	Uint32
19b6	2	Port 26 Statistics - Number of bytes sent	R	Uint32
19b8	2	Port 27 Statistics - Number of bytes sent	R	Uint32
19ba	2	Port 28 Statistics - Number of bytes sent	R	Uint32

### **Related Documents**

For Cisco Industrial Ethernet 5000 Series and IE 4010 Switches documentation, see https://www.cisco.com/go/ie5000 and https://www.cisco.com/go/ie4010.

# 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.

Cisco Bug Search Tool

- To discover and browse secure, validated enterprise-class apps, products, solutions and services, visit Cisco Marketplace.
- 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 web-based tool that acts as a gateway to the Cisco bug tracking system that maintains a comprehensive list of defects and vulnerabilities in Cisco products and software. BST provides you with detailed defect information about your products and software.

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 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, phone numbers, and fax numbers are listed on the Cisco website at 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: www.cisco.com/go/trademarks. 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)

No combinations are authorized or intended under this document.

© 2019 Cisco Systems, Inc. All rights reserved.