Data sheet Cisco public

CISCO
The bridge to possible

# Cisco Firepower Management Center

## Contents

Product overview	3
Features and benefits	4
Exceptional visibility and insight	6
Management before, during, and after an attack	7
Automated security for dynamic defense	7
Open APIs for easy integration	8
Threat Intelligence Director	8
SecureX and Cisco Threat Response	9
Deployment options	9
Hypervisor compatibility and cloud support	9
Platform specifications	10
Ordering information	13
Warranty information	15
Cisco environmental sustainability	15
Cisco Services	15
Cisco Capital	15
For more information	16

The Cisco Firepower™ Management Center increases the effectiveness of your Cisco® network security solutions by providing centralized, integrated, and streamlined management.

#### Product overview

The Cisco Firepower Management Center is the administrative nerve center for select Cisco security products running on a number of different platforms. It provides complete and unified management of firewalls, application control, intrusion prevention, URL filtering, and advanced malware protection. The Management Center is the centralized point for event and policy management for the following solutions:

- Cisco Firepower Next-Generation Firewall (NGFW)
- Cisco ASA with FirePOWER Services
- Cisco Firepower Next-Generation IPS (NGIPS)
- Cisco FirePOWER Threat Defense for ISR
- Cisco Advanced Malware Protection (AMP)

The Cisco Firepower Management Center provides extensive intelligence about the users, applications, devices, threats and vulnerabilities that exist in your network. It also uses this information to analyze your network's vulnerabilities. It then provides tailored recommendations on what security policies to put in place and what security events you should investigate.

The Management Center provides easy-to-use policy screens to control access and guard against known attacks. It integrates with advanced malware protection and sandboxing technology, and it provides tools to track malware infections throughout your network. It unifies all these capabilities in a single management interface. You can go from managing a firewall to controlling applications to investigating and remediating malware outbreaks with ease.

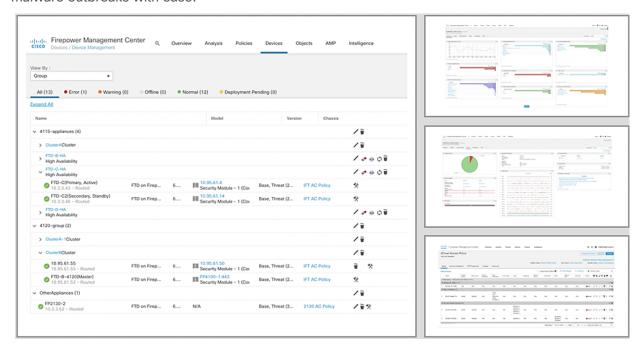


Figure 1.
Centralized Policy, Event, and Device Management

#### **Enterprise-Class Management**

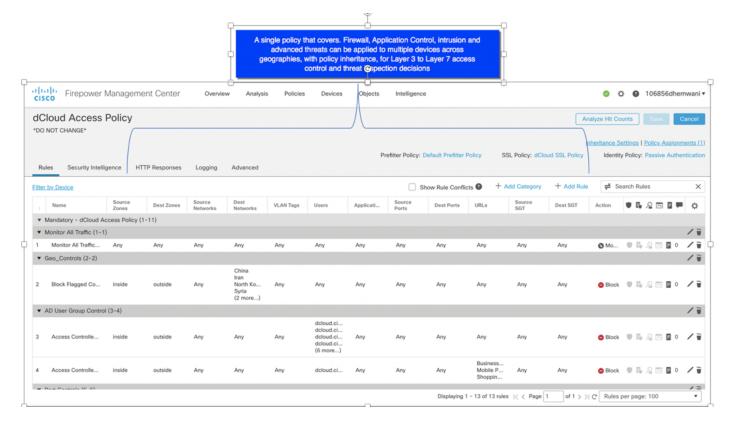
The Cisco Firepower Management Center discovers real-time information about changing network resources and operations. You get a full contextual basis for making informed decisions (see Figure 1). In addition to providing a wide breadth of intelligence, the Management Center delivers a fine level of detail, including:

- **Trends and high-level statistics.** This information helps you understand your security posture at a given moment in time as well as how it's changing, for better or worse
- Event detail, compliance, and forensics. These provide an understanding of what happened during a security event. They help improve defenses, support breach containment efforts, and aid in legal enforcement actions
- Workflow data. You can easily export this data to other solutions to improve incident response management

#### Features and benefits

Feature	Benefit
Unified management of multiple security functions across multiple solutions	Facilitates the centralized management of the Cisco security environment, including:  Cisco Firepower Next-Generation Firewall (NGFW)  Cisco ASA with FirePOWER Services  Cisco Firepower NGIPS  Cisco FirePOWER Threat Defense for ISR  Cisco AMP
Integrated policy management over multiple security functions	Configures firewall access, application control, threat prevention, URL filtering, and advanced malware protection settings in a single policy  Eases policy administration, reduces errors, and promotes consistency  Enables a single policy to be deployed to multiple security solutions
Integrated access policy control with Cisco Identify Services Engine	Controls access based on ISE security group tag, device type and location IP, and rapid threat containment  Helps enforce compliance, enhance infrastructure security, and streamline service operation
Superior threat intelligence	Integrates Cisco Talos® Group's security, threat, and vulnerability intelligence for up-to-minute threat protection  Addresses new attack methods with both IP-based and URL-based security intelligence  Includes Cisco Umbrella for threat visibility outside the network perimeter  Enables ingestion and correlation of threat intelligence from third-party threat feeds and threat intelligence platforms in STIX/TAXII or flat file formats
Application visibility and control	Further reduces threats to your network with precise control of more than 4000 commercial applications  Uses the open-source standard Open App ID for detailed identification and control over custom applications

Feature	Benefit
Multitenancy management and policy inheritance	Creates up to 100 management domains with separate event data, reporting, and network mapping, enforced through role-based access control
	Implements consistent and efficient management through its policy hierarchy structure, with each level inheriting policies above it
Reporting and dashboards	Provides the visibility you need through customizable dashboards with custom and template-based reports
	Delivers comprehensive alerts and reports for both general and focused information
	Displays event and contextual information in hyperlinked tables, graphs, and charts for easy-to-use analysis
	Monitors network behavior and performance to identify anomalies and maintain system health
Secure boot	Secure boot is a mechanism to validate the integrity of Cisco software running on the FMC hardware as your system boots. If a signature is missing or software is invalid, it will not load and boot will fail. (FMC 1600, FMC 2600, FMC 4600 only)



**Figure 2.**Single Policy for multiple security functions

## Exceptional visibility and insight

You can't protect what you can't see. The Cisco Firepower Management Center automatically collects, collates, and displays contextual information about everything running in your environment. Table 1 illustrates the breadth of contextual awareness provided into threat vectors that more traditional security technologies do not detect. This critical insight into your network is available for use in your protection policies and gives you a level of protection that other solutions cannot.

Table 1. Full stack visibility

Category	Cisco Firepower Management Center	Typical IPS	Typical Next-Generation Firewall
Threats	Yes	Yes	Yes
Users	Yes	Yes	Yes
Web applications	Yes	No	Yes
Application protocols	Yes	No	Yes
File transfers	Yes	No	Yes
Malware	Yes	No	No
Command-and-control servers	Yes	No	No
Client applications	Yes	No	No
Network servers	Yes	No	No
Operating systems	Yes	No	No
Routers and switches	Yes	No	No
Mobile devices	Yes	No	No
Printers	Yes	No	No
VoIP phones	Yes	No	No
Virtual machines	Yes	No	No
Vulnerability information	Yes	No	No

## Management before, during, and after an attack

The Cisco Firepower Management Center provides unified management across the entire "attack continuum" – before, during, and after an attack.

#### **Before**

- Provides exceptional visibility into what is running in your network so you can see what needs to be protected
- Creates firewall rules, and controls how more than 4000 commercial and custom applications are used in your environment

#### **During**

- Defines the intrusion prevention levels, URL reputation rules, and advanced malware protection pieces to be put in place
- Applies policies such as: "When network traffic is coming from this country using this particular
  application with a file attached, I will apply this level of intrusion inspection and analyze the file for
  malware, and even send it to the integrated sandbox, if necessary"

#### **After**

- · Generates a graphical representation of all the devices the attack has infected
- Provides the ability to easily create a custom rule to stop the attack from advancing
- · Gives a detailed analysis of the malware to safely remediate it

## Automated security for dynamic defense

The Cisco Firepower Management Center continually monitors how your network is changing. It streamlines operations and improves your security by:

- Automatically correlating and prioritizing new attack events with your network's vulnerabilities to alert you to attacks that may have been successful. Your security team can focus on those events that matter the most
- Analyzing your network's vulnerabilities and automatically recommending the appropriate security
  policies to put in place. You can adapt your defenses to changing conditions and implement security
  measures tailored specifically to your network
- Correlating specific events from network, endpoint, intrusion, and security intelligence sources. You're
  alerted if individual hosts show signs of compromise from unknown attacks
- Applying file policy criteria. If those are met, it automatically analyzes the file to identify known malware and/or sends the file to an integrated sandbox to identify unknown malware

## Open APIs for easy integration

The Cisco Firepower Management Center makes integration with third-party technologies possible through powerful, feature-rich application programming interfaces. The APIs provide connection points for:

- Moving event data from the Management Center to another platform, such as a Security Information and Event Management (SIEM) solution
- Enhancing the information contained in the Cisco Firepower database with third-party data. Such data might include vulnerability management data or operating system information from active scanners
- Kicking off workflows and remediation steps that are activated by user-defined correlation rules. You
  could, for example, integrate your workflow with a Network Access Control (NAC) solution to quarantine
  an infected endpoint or initiate a digital forensic process
- Supporting third-party reporting and analytics by enabling those solutions to query the Management Center database

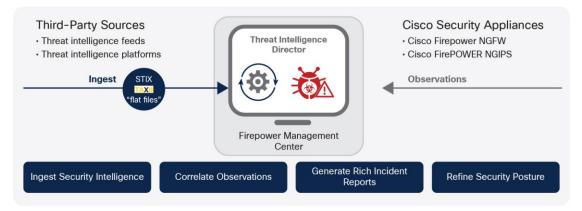
These APIs are also used to integrate with a number of Cisco security products and workflows. These include Cisco AMP Threat Grid for sandboxing; the Cisco Identity Services Engine for identity data and network segmentation; and Cisco Umbrella for Internet-wide domain visibility.

## Threat Intelligence Director

The Threat Intelligence Director is an integrated module within Cisco Firepower Management Center. Using open APIs, the director facilitates the ingestion of third-party threat intelligence from sources such as threat feeds and Threat Intelligence Platforms (TIPs). The director supports the ingestion of Structured Threat Information Expression (STIX) and the Trusted Automated Exchange of Indicator Information (TAXII) or select, flat (unformatted) file formats. The Threat Intelligence Director deconstructs the ingested intelligence into observables (IoCs), including IP (IPv4, IPv6), domain, URL, and SHA-256. These are published to Cisco security appliances, which can automatically block malicious activity inline or monitor the network for rapid response.

The Threat Intelligence Director operationalizes available threat intelligence with the following Cisco security appliances:

- Cisco Firepower NGFW
- Cisco Firepower NGIPS



**Figure 3.**Threat Intelligence Director Integrates Third-Party Security Intelligence

To see the latest list of third-party cyber threat intelligence and TIP partners, visit the <u>Cisco Technical Alliance</u> <u>Partners Listing</u>.

## SecureX and Cisco Threat Response

SecureX connects the breadth of Cisco's integrated security portfolio and your entire security infrastructure for a consistent experience that unifies visibility, enables automation, and strengthens your security across the network, endpoint, cloud, and applications. The result is simplified security, built into the solutions that you already have.

Cisco Threat Response integrates threat intelligence from Cisco Talos and third-party sources to automatically research indicators of compromise (IOCs), also known as observables, and confirm threats quickly.

#### How does it work?

Cisco Firepower devices send data to Threat Response via a secure intermediary cloud service called Cisco Security Service Exchange (SSE). Cisco Threat Response queries the SSE for sightings related to the IP address being investigated and provides the SOC analyst with the additional context. Intrusion events are promoted to investigation-worthy incidents in the Incident Manager based on Talos poor IP reputation or user-defined filters for notable IP addresses or by the user manually. This allows your team to investigate incidents and speeds up the time needed to perform triage and analytics on intrusion events.

SecureX and Cisco Threat Response are available for all Cisco Next-Generation Firewall customers.

## Deployment options

The Cisco Firepower Management Center can be deployed as a physical or virtual appliance, or from the cloud (Table 2). You can choose which options work best for your environment. The virtual appliances provide the convenience of being able to use your existing VM infrastructure. You can also use cloud computing services to host the Management Center. These services can help you manage security without you having to invest in computing power and database storage and they will give you the flexibility to scale quickly as needs change.

When using Threat Intelligence Director on NGFWv, for optimal performance, we recommend installing 15 GB memory on the host hardware. For FMC versions supported please visit the current release notes at <a href="https://www.cisco.com/c/en/us/support/security/defense-center/products-release-notes-list.html">https://www.cisco.com/c/en/us/support/security/defense-center/products-release-notes-list.html</a>.

## Hypervisor compatibility and cloud support

The Cisco Firepower Management Center virtual appliance supports the following hypervisor types. All models of the FMCv platform (VMware, KVM, AWS, Azure) will operate with the same RAM requirements; 32 GB recommended, 28 GB required. For current versions supported and compatibility with FMC versions, visit the current Release Notes.

**Table 2.** Virtual appliance hypervisor and cloud support

Hypervisor	Version and Details
VMware vSphere	<ul> <li>5.1, 5.5, 6.0, 6.5</li> <li>ESXi Server</li> <li>vCenter Server (optional)</li> <li>vSphere Web Client, vSphere Client, or OVF Tool for Windows or Linux</li> </ul>

Hypervisor	Version and Details
KVM	Ubuntu 14.04 LTS Red Hat Enterprise Linux (RHEL) Version 7.1
Amazon Web Services	c3.4xlarge: 16 vCPUs, 30 GB c4.4xlarge: 16 vCPUs, 30 GB c5.4xlarge: 16 vCPUs, 32 GB
Microsoft Azure	Standard_D4_v2 : 8 vCPUs, 28 GB

**Note:** Please refer to the <u>Cisco Firepower Management Virtual Getting Started Guide</u> for version compatibility details.

## Platform specifications

There are a number of Cisco Firepower Management Center models. Choose the one that's right for your organization based on the number of sensor appliances to be monitored (both physical and virtual), the number of hosts in your environment, and the anticipated security events rate (see Table 3). All models provide the same management capabilities, including:

- · Centralized device, license, event, and policy management
- Role-based management (segmented and isolated views and duties based on administrator role or group)
- Customizable dashboard with custom and template-based reports
- Comprehensive reporting and alerts for both general and focused information
- · Event and contextual information displayed in hyperlinked tables, graphs, and charts
- Network behavior and performance monitoring
- Robust high-availability options to help ensure there's no single point of failure
- Correlation and remediation features for real-time threat response
- Open APIs for integration with third-party solutions and customer work streams, such as firewalls, network infrastructure, log management, SIEM, trouble ticketing, and patch management

Table 3 compares the capacities of available Cisco Firepower Management Center physical appliances.

 Table 3.
 Cisco Firepower Management Center Hardware Models

Performance and Functionality	FMC 1600	FMC 2600	FMC 4600
Maximum number of sensors managed	50	300	750
Maximum IPS events	30 million	60 million	300 million
Management interface	Two built-in RJ-45 SFP+ ports; Support for 100 Mbps, 1 Gbps, and 10 Gbps; The primary management port is eth0. You can use eth1, eth2, and eth3 as secondary management or event ports.		

Performance and Functionality	FMC 1600	FMC 2600	FMC 4600
USB ports	Two USB 3.0 Type A		
VGA ports	One 3-row 15-pin DB-15 connector; Enabled by default		
SFP ports	Two fixed SFP+ ports		
Supported SFP+	SFP-10G-SR (10 GB)	SFP-10G-SR (10 GB) SFP-10G-LR (10 GB)	SFP-10G-SR (10 GB) SFP-10G-LR (10 GB)
Memory	32 GB	64 GB	128 GB
RDIMMs (Internal component only; not field replaceable)	Two 16-GB DDR4-2400-MHz DIMMs	Four 16-GB DDR4-2400- MHz DIMMs	Eight 16-GB DDR4-2400- MHz DIMMs
CPU	One Intel Xeon 4110 processor	Two Intel Xeon 4110 processors	Two Intel Xeon 4116 processors
Event storage space	900 GB	1.8 TB	3.2 TB
Maximum network map size (hosts/users)	50,000/50,000	150,000/150,000	600,000/600,000
Maximum flow rate (flows per second)	5,000 fps	12,000 fps	20,000 fps
Network interfaces	2 x 1 Gbps	2 x 1 Gbps RJ45 onboard 2 x 10 Gbps SFP+ (order SFPs via Cisco Commerce Workplace)	2 x 1 Gbps RJ45 onboard 2 x 10 Gbps SFP+ (order SFPs via Cisco Commerce Workplace)
Secure boot	Yes	Yes	Yes
Redundancy features	Redundancy features		
Supports high availability	Yes	Yes	Yes
System power	Two 770-W AC power supplies; Hot swappable and redundant as 1+1		
Power consumption	2626 BTU/hr		
Storage	Ten 1.2 TB 10-K SAS HDDs RAID-1, hot swappable	Four 600-GB 10-K SAS SSDs RAID 5, hot-swappable	Ten 1.2 TB 10-K SAS HDDs RAID-6, hot swappable
RAID controller	One; The chassis has a dedicated internal riser for a PCle-style Cisco modular RAID controller card. Internal component only; not field replaceable		
Physical and environmental			
Form factor	1RU	1RU	1RU
Dimensions (D x W x H)	29.8 x 16.9 x 1.7 (75.7 x 43 x 4.3 cm)		
Shipping weight	32.2 lb. (16.6 kg)	34.1 lb. (16.8 kg)	36 lb. (17.0 kg)

Performance and Functionality	FMC 1600	FMC 2600	FMC 4600
Watts (max)	770W	770W	770W
Power supply	100-240 VAC (nominal) 90-264 VAC (min/max) 9.5 amp max at 100 VAC 4.5 amp max at 208 VAC	100-240 VAC (nominal) 90-264 VAC (min/max) 9.5 amp max at 100 VAC 4.5 amp max at 208 VAC	100-240 VAC (nominal) 90-264 VAC (min/max) 9.5 amp max at 100 VAC 4.5 amps max at 208 VAC
Airflow	Front to back	Front to back	Front to back
Operating temperature	50 to 95°F (10 to 35°C)		

For access to previous FMC model datasheets, visit:

www.cisco.com/c/en/us/products/collateral/security/firesight-management-center/datasheet-c78-743216.html

Additionally, for virtual environments, the following options are available based on the number of managed devices. The licensing details are in Table 7.

Table 4 compares the capacities of available Cisco Firepower Management Center virtual appliances.

 Table 4.
 Cisco Firepower Management Center Virtual Models

Performance and Functionality	FMCv	FMCv300
Maximum number of sensors managed	25	300
	10	
	2	
Maximum IPS events	10 million	60 million
Memory	32 GB	64 GB
CPU	8/4 vCPUs	32 vCPUs
Event storage space	250 GB	2.2 TB
Maximum network map size (hosts/users)	50,000/50,000	150,000/150,000
Maximum flow rate (flows per second)	Varies*	12,000 fps
Supports high availability	No	No

#### **Shared features**

- Integrated Lights-Out Management (LOM)
- Central management of Cisco next-generation security solutions: NGIPS, NGIPS plus application control, NGFW

**Note:** When dealing with Cisco ASA with FirePOWER Services products, the Cisco Firepower Management Center manages only the FirePOWER portion of the deployment.

Table 5 lists the supported versions of Cisco Firepower products that the Management Center is able to manage, along with associated hardware platforms.

**Table 5.** Supported firepower versions and their associated platforms

Management Platform	Software Revision Level	Hardware Platform
Cisco Firepower Management Center  Cisco Firepower Threat Defense 6.x (NGFW)	ASA 5500-X (except ASA 5585-X) Cisco 2100 Series (min FMC 6.2.1) Cisco Firepower 4100 Series Cisco Firepower 9300	
	FirePOWER Services 6.x	ASA 5500-X
	Cisco Firepower NGIPS 6.x	Cisco Firepower 7000 Cisco Firepower 8000
	FirePOWER Threat Defense for ISR 6.x (Cisco Firepower Services)	4000 Series ISR ISR G2
	FirePOWER Services 5.4.x	ASA 5500-X
	Cisco Firepower NGIPS 5.4.x	Cisco Firepower 7000 Cisco Firepower 8000

## Ordering information

#### Licensing

Smart Licensing is Cisco's new licensing system. It enables customers to easily move licenses themselves between similar systems in their organization, overcoming limitations associated with previous device-locked Product Authorization Key (PAK)-based licenses. Become familiar with the new Smart Software Licensing portion of the ordering process.

Cisco Firepower Management Center physical or virtual appliances running version 6.0 or later do not require separate management licenses. You can purchase either a physical Firepower Management Center or a Firepower Management Center Virtual Appliance. Managed devices still require classic or Smart subscription feature licenses. Firepower Management Center Virtual Appliance Smart SKUs can manage any device running Firepower Threat Defense software.

### **Cisco Smart Net Total Care support**

The award-winning Cisco Smart Net Total Care<sup>™</sup> technical support service gives your IT staff direct, anytime access to Cisco Technical Assistance Center (TAC) engineers and Cisco.com resources. You receive the fast, expert response and the dedicated accountability you need to resolve critical network issues.

Smart Net Total Care provides the following device-level support:

- Global access 24 hours a day, 365 days a year to specialized engineers in the Cisco TAC
- Anytime access to the extensive Cisco.com online knowledge base, resources, and tools

- Hardware replacement options that include 2-hour, 4-hour, and Next-Business-Day (NDB) advance replacement, as well as Return For Repair (RFR)
- Ongoing operating system software updates, including both minor and major releases within your licensed feature set
- Proactive diagnostics and real-time alerts on select devices with Cisco Smart Call Home

In addition, the Cisco Smart Net Total Care Onsite Service is an option that provides a field engineer who will install replacement parts at your location and help ensure that your network operates at the highest levels. For more information on Smart Net Total Care please visit:

https://www.cisco.com/c/en/us/services/portfolio/product-technical-support/smart-net-total-care.html.

#### **How to order**

Table 6 provides ordering information for virtual and physical Cisco Firepower Management Center appliances and spare hardware. Please consult the <u>Cisco Network Security Ordering Guide</u> for additional configuration options and accessories.

 Table 6.
 Ordering information

Cisco Firepower Management Center (Hardware) Appliances		
Part Number	Product Description	
FMC1600-K9	Cisco Firepower Management Center 1600 Chassis, 1RU	
FMC2600-K9	Cisco Firepower Management Center 2600 Chassis, 1RU	
FMC4600-K9	Cisco Firepower Management Center 4600 Chassis, 1RU	
Cisco Firepower Managem	nent Center (Hardware) Spare	
FMC-M5-PS-AC-770W=	Cisco AC Power Supply 770W for FMC1600, FMC2600, FMC4600	
Smart Licensing-enabled	Cisco Firepower Management Center (Software) Virtual Appliance	
SF-FMC-VMW-K9	Cisco Firepower Management Center (VMware) License, for 25 devices	
SF-FMC-VMW-10-K9	Cisco Firepower Management Center (VMware) License, for 10 devices	
SF-FMC-VMW-2-K9	Cisco Firepower Management Center (VMware) License, for 2 devices	
SF-FMC-VMW-300-K9	Cisco Firepower Management Center (VMware) License, for 300 devices	
SF-FMC-VMW-25-300	Upgrade SKU from FMCv25 to FMCv300 Cisco Firepower Management Center (VMware)	
SF-FMC-KVM-K9	Cisco Firepower Management Center (KVM) License, for 25 devices	
SF-FMC-KVM-2-K9	Cisco Firepower Management Center (KVM) License, for 2 devices	
SF-FMC-KVM-10-K9	Cisco Firepower Management Center (KVM) License, for 10 devices	

To place an order, visit the Cisco ordering homepage.

## Warranty information

Find warranty information on Cisco.com at the Product Warranties page.

## Cisco environmental sustainability

Information about Cisco's environmental sustainability policies and initiatives for our products, solutions, operations, and extended operations or supply chain is provided in the "Environment Sustainability" section of Cisco's <u>Corporate Social Responsibility</u> (CSR) Report.

Reference links to information about key environmental sustainability topics (mentioned in the "Environment Sustainability" section of the CSR Report) are provided in the following table:

Sustainability topic	Reference
Information on product material content laws and regulations	<u>Materials</u>
Information on electronic waste laws and regulations, including products, batteries, and packaging	WEEE compliance

Cisco makes the packaging data available for informational purposes only. It may not reflect the most current legal developments, and Cisco does not represent, warrant, or guarantee that it is complete, accurate, or up to date. This information is subject to change without notice.

#### Cisco Services

Cisco offers a wide range of service programs to accelerate customer success. These innovative services programs are delivered through a unique combination of people, processes, tools, and partners, resulting in high levels of customer satisfaction. Cisco services help you protect your network investment, optimize network operations, and prepare your network for new applications to extend network intelligence and the power of your business. For more information about Cisco services for security, visit <a href="https://www.cisco.com/go/services/security">https://www.cisco.com/go/services/security</a>.

## Cisco Capital

#### Flexible payment solutions to help you achieve your objectives

Cisco Capital makes it easier to get the right technology to achieve your objectives, enable business transformation and help you stay competitive. We can help you reduce the total cost of ownership, conserve capital, and accelerate growth. In more than 100 countries, our flexible payment solutions can help you acquire hardware, software, services and complementary third-party equipment in easy, predictable payments. Learn more.

#### For more information

For more information, please visit the following links:

- Cisco Firepower Management Center
- Cisco Firepower Next-Generation Firewalls
- Cisco Firepower Next-Generation IPS (NGIPS)
- Cisco Advanced Malware Protection (AMP)
- Cisco FirePOWER Threat Defense for ISR
- Cisco Security Services

For information about Cisco Firepower in service provider environments, please visit: <a href="https://www.cisco.com/c/en/us/solutions/enterprise-networks/service-provider-security-solutions/">https://www.cisco.com/c/en/us/solutions/enterprise-networks/service-provider-security-solutions/</a>.

Americas Headquarters Cisco Systems, Inc. San Jose, CA Asia Pacific Headquarters Cisco Systems (USA) Pte. Ltd. Singapore Europe Headquarters Cisco Systems International BV Amsterdam, The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at https://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/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. (1110R)

Printed in USA C78-736775-11 04/20