
Alcatel-Lucent Enterprise OmniSwitch 6860E GOLDEN RFP

Version 8.9R3

Contents

1. Introduction	3
2. OmniSwitch 6860E models and chassis components	5
2.1. OS6860E-24.....	5
2.2. OS6860E-P24.....	6
2.3. OS6860E-48.....	7
2.4. OS6860E-P48.....	8
2.5. OS6860E-U28	9
3. Resiliency and high availability functionalities	10
4. Layer-3 IPv4 routing protocols and features	10
5. Layer-3 IPv6 routing protocols and features	11
6. IPv4/IPv6 multicast protocols and features.....	12
7. Layer-2 switching and services	12
8. Security features	13
9. Quality of Service (QoS) features.....	14
10. Data Center and network transport features:	14
11. Software Defined Networking (SDN) features:.....	14
12. ITU-T recommendations:	15
13. Voice, video and data converged network	15
14. Management features:	15

1. Introduction

The Alcatel-Lucent OmniSwitch®6860E Stackable LAN Switches (SLS) are compact, high density Gigabit Ethernet (GigE), Multigigabit and 10 GigE platforms designed for the most demanding converged networks.



OmniSwitch 6860E are high performance and high availability switches that offer enhanced quality of service (QoS), user authentication, deep packet inspection (DPI) and comprehensive security features such as IEEE 802.1AE MACsec encryption to secure the network edge. The OS6860E Switch family enables seamless mobility for users and devices with a high degree of integration between the wired and wireless LAN. The OS6860E family includes support for next generation wireless LAN standards, 802.11ac wave 2, using the existing cabling infrastructure.

The enhanced models of the OmniSwitch 6860E family also supports emerging services such as application fingerprinting for network analytics and up to 75 watts of Power over Ethernet (PoE) per port, making it ready to meet the evolving business needs of enterprise networks.

All models of OmniSwitch 6860E support IEEE 1588v2 PTP for sub-microsecond time synchronization of devices on network and are hardware -capable of supporting Audio Video Bridging (AVB).

These versatile LAN switches can be positioned:

- At the edge of mid- to large-sized converged enterprise networks
- At the aggregation layer
- In a small enterprise network core

- In the data center for GigE server connectivity and SDN applications

The OmniSwitch 6860E family offers customers an extensive selection of fixed configuration switches with up to 60/75 watts of PoE per port and power supply options that accommodate the most demanding requirements. The models are in a 1RU form factor and are 19-inch rack-mountable.

They all have four built-ins 10 Gigabit SFP+ ports that support 10 Gigabits and 1000-X, USB ports and console ports. All models support two QSFP+ form factor VFL ports used for Virtual Chassis connections.

All the OmniSwitch 6860E PoE models support PoE+, up to 30 watts of PoE on all ports; the enhanced models also support up to 75 watts of IEEE 802.3bt compliant PoE on certain ports. The enhanced models have an Ethernet management port (EMP) port and a built-in co-processor that can be used for running enhanced network services such as application fingerprinting.

OmniSwitch 6860E links:

<https://www.al-enterprise.com/en/products/switches/omniswitch-6860>

Common Criteria - Network and Network-Related Devices and Systems

[Common Criteria](#)

FIPS certification – OmniSwitch AOS Cryptographic Module

csrc.nist.gov

JICT

[JITC](#)

2. OmniSwitch 6860E models and chassis components

2.1.OS6860E-24

The switch must support the following characteristics:

2.1.1.	Non-blocking architecture	C/PC/NC
2.1.2.	Total RU: 1 RU maximum	C/PC/NC
2.1.3.	Power-redundancy with hot swap (in-service) capabilities	C/PC/NC
2.1.4.	AC & DC power supply	C/PC/NC
2.1.5.	Copper and fiber (SFP) transceiver hot swap capability	C/PC/NC
2.1.6.	Minimum of 24 ports 10/100/1000 BaseT RJ45	C/PC/NC
2.1.7.	Minimum of 4 SFP+ ports (1G/10Gbps)	C/PC/NC
2.1.8.	The above minimum port count requirements cannot be combo ports. All ports must be capable to operate simultaneously	C/PC/NC
2.1.9.	MACsec support on 4 SFP+ ports (1G/10Gbps)	C/PC/NC
2.1.10.	Stack (virtual chassis) up to 8 elements (manageable with single IP address) with dedicated ports to build stack or virtual chassis	C/PC/NC
2.1.11.	Minimum two dedicated stacking ports (virtualization) supporting a minimum stacking aggregation throughput of 80Gbps	C/PC/NC
2.1.12.	Minimum raw fabric throughput capacity (Gbps): 224 Gbps	C/PC/NC
2.1.13.	Minimum forwarding capacity (Mpps): 154 Mpps	C/PC/NC
2.1.14.	Operating Temperature: 0 ° C to 45 ° C	C/PC/NC
2.1.15.	Humidity (operation): 5% to 95% non-condensing	C/PC/NC
2.1.16.	Maximum power consumption (idle) of 38.9W	C/PC/NC
2.1.17.	Maximum power consumption (full load) of 48W	C/PC/NC
2.1.18.	Minimum MTBF of 353,806 h	C/PC/NC

2.2.OS6860E-P24

The switch must support the following characteristics:

2.2.1.	Non-blocking architecture	C/PC/NC
2.2.2.	Total RU: 1 RU maximum	C/PC/NC
2.2.3.	Power-redundancy with hot swap (in-service) capabilities	C/PC/NC
2.2.4.	Power-redundancy with hot swap (in-service) capabilities	C/PC/NC
2.2.5.	Copper and fiber (SFP) transceiver hot swap capability	C/PC/NC
2.2.6.	Minimum of 24 ports 10/100/1000 BaseT RJ45	C/PC/NC
2.2.7.	Minimum Of 20x PoE+ & 4x 60W PoE of RJ45 ports	C/PC/NC
2.2.8.	Minimum of 4 SFP+ ports (1G/10Gbps)	C/PC/NC
2.2.9.	The above minimum port count requirements cannot be combo ports. All ports must be capable to operate simultaneously	C/PC/NC
2.2.10.	MACsec support on 4 SFP+ ports (1G/10Gbps)	C/PC/NC
2.2.11.	Minumum PoE budget of 450W with 1 PS	C/PC/NC
2.2.12.	Minumum PoE budget of 900W with 2 PS	C/PC/NC
2.2.13.	Stack (virtual chassis) up to 8 elements (manageable with single IP address) with dedicated ports to build stack or virtual chassis	C/PC/NC
2.2.14.	Minimum two dedicated stacking ports (virtualization) supporting a minimum stacking aggregation throughput of 80Gbps	C/PC/NC
2.2.15.	Minimum raw fabric throughput capacity (Gbps): 224 Gbps	C/PC/NC
2.2.16.	Minimum forwarding capacity (Mpps): 154 Mpps	C/PC/NC
2.2.17.	Operating Temperature: 0 ° C to 45 ° C	C/PC/NC
2.2.18.	Humidity (operation): 5% to 95% non-condensing	C/PC/NC
2.2.19.	Maximum power consumption (idle) of 65W	C/PC/NC
2.2.20.	Maximum power consumption (full load) of 76.1W	C/PC/NC
2.2.21.	Minimum MTBF of 126.601 h	C/PC/NC

2.3.OS6860E-48

The switch must support the following characteristics:

2.3.1.	Non-blocking architecture	C/PC/NC
2.3.2.	Total RU: 1 RU maximum	C/PC/NC
2.3.3.	Power-redundancy with hot swap (in-service) capabilities	C/PC/NC
2.3.4.	AC & DC power supply	C/PC/NC
2.3.5.	Copper and fiber (SFP) transceiver hot swap capability	C/PC/NC
2.3.6.	Minimum of 48 ports 10/100/1000 BaseT RJ45	C/PC/NC
2.3.7.	Minimum of 4 SFP+ ports (1G/10Gbps)	C/PC/NC
2.3.8.	The above minimum port count requirements cannot be combo ports. All ports must be capable to operate simultaneously	C/PC/NC
2.3.9.	MACsec support on 4 SFP+ ports (1G/10Gbps)	C/PC/NC
2.3.10.	Stack (virtual chassis) up to 8 elements (manageable with single IP address) with dedicated ports to build stack or virtual chassis	C/PC/NC
2.3.11.	Minimum two dedicated stacking ports (virtualization) supporting a minimum stacking aggregation throughput of 80Gbps	C/PC/NC
2.3.12.	Minimum raw fabric throughput capacity (Gbps): 264 Gbps	C/PC/NC
2.3.13.	Minimum forwarding capacity (Mpps): 190.6 Mpps	C/PC/NC
2.3.14.	Operating Temperature: 0 ° C to 45 ° C	C/PC/NC
2.3.15.	Humidity (operation): 5% to 95% non-condensing	C/PC/NC
2.3.16.	Maximum power consumption (idle) of 44.1W	C/PC/NC
2.3.17.	Maximum power consumption (full load) of 60W	C/PC/NC
2.3.18.	Minimum MTBF of 336.101 h	C/PC/NC

2.4.OS6860E-P48

The switch must support the following characteristics:

2.4.1.	Non-blocking architecture	C/PC/NC
2.4.2.	Total RU: 1 RU maximum	C/PC/NC
2.4.3.	Power-redundancy with hot swap (in-service) capabilities	C/PC/NC
2.4.4.	Copper and fiber (SFP) transceiver hot swap capability	C/PC/NC
2.4.5.	Minimum of 48 ports 10/100/1000 BaseT RJ45	C/PC/NC
2.4.6.	Minimum Of 44 PoE+ & 4x 60W PoE of RJ45 ports	C/PC/NC
2.4.7.	Minimum of 4 SFP+ ports (1G/10Gbps)	C/PC/NC
2.4.8.	The above minimum port count requirements cannot be combo ports. All ports must be capable to operate simultaneously	C/PC/NC
2.4.9.	MACsec support on 4 SFP+ ports (1G/10Gbps)	C/PC/NC
2.4.10.	Minumum PoE budget of 750W with 1 PS	C/PC/NC
2.4.11.	Minumum PoE budget of 1500W with 2 PS	C/PC/NC
2.4.12.	Stack (virtual chassis) up to 8 elements (manageable with single IP address) with dedicated ports to build stack or virtual chassis	C/PC/NC
2.4.13.	Minimum two dedicated stacking ports (virtualization) supporting a minimum stacking aggregation throughput of 80Gbps	C/PC/NC
2.4.14.	Minimum raw fabric throughput capacity (Gbps): 264 Gbps	C/PC/NC
2.4.15.	Minimum forwarding capacity (Mpps): 190.6 Mbps	C/PC/NC
2.4.16.	Operating Temperature: 0 ° C to 45 ° C	C/PC/NC
2.4.17.	Humidity (operation): 5% to 95% non-condensing	C/PC/NC
2.4.18.	Maximum power consumption (idle) of 72.9W	C/PC/NC
2.4.19.	Maximum power consumption (full load) of 93.2W	C/PC/NC
2.4.20.	Minimum MTBF of 198.869 h	C/PC/NC

2.5.OS6860E-U28

The switch must support the following characteristics:

2.5.1.	Non-blocking architecture	C/PC/NC
2.5.2.	Total RU: 1 RU maximum	C/PC/NC
2.5.3.	Power-redundancy with hot swap (in-service) capabilities	C/PC/NC
2.5.4.	AC & DC power supply	C/PC/NC
2.5.5.	Copper and fiber (SFP) transceiver hot swap capability	C/PC/NC
2.5.6.	Minimum of 28 ports 100/1000 Base-X, SFP	C/PC/NC
2.5.7.	Minimum of 4 SFP+ ports (1G/10Gbps)	C/PC/NC
2.5.8.	The above minimum port count requirements cannot be combo ports. All ports must be capable to operate simultaneously	C/PC/NC
2.5.9.	MACsec support on 4 SFP+ ports (1G/10Gbps)	C/PC/NC
2.5.10.	Stack (virtual chassis) up to 8 elements (manageable with single IP address) with dedicated ports to build stack or virtual chassis	C/PC/NC
2.5.11.	Minimum two dedicated stacking ports (virtualization) supporting a minimum stacking aggregation throughput of 80Gbps	C/PC/NC
2.5.12.	Minimum raw fabric throughput capacity (Gbps): 224 Gbps	C/PC/NC
2.5.13.	Minimum forwarding capacity (Mpps): 160.9 Mpps	C/PC/NC
2.5.14.	Operating Temperature: 0 ° C to 45 ° C	C/PC/NC
2.5.15.	Humidity (operation): 5% to 95% non-condensing	C/PC/NC
2.5.16.	Maximum power consumption (idle) of 70.1W	C/PC/NC
2.5.17.	Maximum power consumption (full load) of 72.2W	C/PC/NC
2.5.18.	Minimum MTBF of 292.509 h	C/PC/NC

3. Resiliency and high availability functionalities

The switch must support the following

3.1.	Unified management & control	C/PC/NC
3.2.	Virtual chassis technology	C/PC/NC
3.3.	Virtual Chassis 1+N redundant supervisor manager	C/PC/NC
3.4.	Virtual Chassis In-Service Software Upgrade (ISSU)	C/PC/NC
3.5.	Split Virtual Chassis protection	C/PC/NC
3.6.	IEEE 802.1s Multiple Spanning Tree Protocol (MSTP) encompasses IEEE 802.1D Spanning Tree Protocol (STP) and IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)	C/PC/NC
3.7.	Per-VLAN spanning tree (PVST+)	C/PC/NC
3.8.	1x1 STP mode	C/PC/NC
3.9.	IEEE 802.3ad/802.1AX Link Aggregation Control Protocol (LACP) and static LAG groups across modules	C/PC/NC
3.10.	Virtual Router Redundancy Protocol (VRRP) with tracking capabilities	C/PC/NC
3.11.	IEEE protocol auto-discovery	C/PC/NC
3.12.	Bidirectional Forwarding Detection (BFD) for fast failure detection and reduced re-convergence times in a routed environment	C/PC/NC
3.13.	Redundant and hot-swappable power supplies	C/PC/NC
3.14.	Built-in CPU protection against malicious attacks	C/PC/NC

4. Layer-3 IPv4 routing protocols and features

The switch must support the following:

4.1.	Multiple Virtual Routing and Forwarding (VRF) instances	C/PC/NC
4.2.	Static routing	C/PC/NC
4.3.	Routing Information Protocol (RIP) v1 and v2	C/PC/NC

4.4.	Open Shortest Path First (OSPF) v2 with Graceful Restart	C/PC/NC
4.5.	Intermediate System to Intermediate System (IS-IS) with Graceful Restart	C/PC/NC
4.6.	Border Gateway Protocol (BGP) v4 with Graceful Restart	C/PC/NC
4.7.	Generic Routing Encapsulation (GRE) and IP/IP tunneling	C/PC/NC
4.8.	Virtual Router Redundancy Protocol (VRRPv2)	C/PC/NC
4.9.	DHCP relay (including generic UDP relay)	C/PC/NC
4.10.	Address Resolution Protocol (ARP)	C/PC/NC
4.11.	Policy-based routing and server load balancing	C/PC/NC
4.12.	DHCP V4 server	

5. Layer-3 IPv6 routing protocols and features

The switch must support the following:

5.1.	Multiple Virtual Routing and Forwarding (VRF) instances	C/PC/NC
5.2.	Internet Control Message Protocol version 6 (ICMPv6)	C/PC/NC
5.3.	Static routing	C/PC/NC
5.4.	Routing Information Protocol Next Generation (RIPng)	C/PC/NC
5.5.	Open Shortest Path First (OSPF) v3 with Graceful Restart	C/PC/NC
5.6.	Intermediate System to Intermediate System (IS-IS) with Graceful Restart	C/PC/NC
5.7.	Multi-Topology IS-IS	C/PC/NC
5.8.	BGP v4 multiprotocol extensions for IPv6 routing (MP-BGP)	C/PC/NC
5.9.	Graceful Restart extensions for OSPF and BGP	C/PC/NC
5.10.	Virtual Router Redundancy Protocol version 3 (VRRPv3)	C/PC/NC
5.11.	Neighbor Discovery Protocol (NDP)	C/PC/NC
5.12.	Policy-based routing and server load balancing	C/PC/NC
5.13.	DHCPv6 server	C/PC/NC
5.14.	DHCPv6 relay & UDPv6 relay	C/PC/NC
5.15.	Generic Routing Encapsulation (GRE) and IP/IP tunneling	C/PC/NC

6. IPv4/IPv6 multicast protocols and features

The switch must support the following:

6.1.	IGMPv1/v2/v3 snooping and Multicast Listener Discovery (MLD) v1/v2 for fast client joins and leaves of multicast streams and limit bandwidth-intensive video traffic to only the requestors	C/PC/NC
6.2.	Protocol Independent Multicast - Sparse- Mode (PIM-SM), Source Specific Multicast (PIM-SSM)	C/PC/NC
6.3.	Protocol Independent Multicast - Dense-Mode (PIM-DM), Bidirectional Protocol Independent Multicast (PIM-BiDir)	C/PC/NC
6.4.	Distance Vector Multicast Routing Protocol (DVMRP)	C/PC/NC
6.5.	PIM to DVMRP gateway support	C/PC/NC

7. Layer-2 switching and services

The switch must support the following:

7.1.	Ethernet services support using IEEE 802.1ad Provider Bridges (also known as Q-in-Q or VLAN stacking)	C/PC/NC
7.2.	Ethernet OAM (802.1ag): Connectivity Fault Management (L2 ping & Link trace)	C/PC/NC
7.3.	Ethernet in First mile: Link OAM (802.3ah)	C/PC/NC
7.4.	Fabric virtualization services IEEE 802.1aq Shortest Path Bridging (SPB-M)	C/PC/NC
7.5.	In-band management for IEEE 802.1aq (SPB-M)	C/PC/NC
7.6.	AOS functionality of advertising SPB L3VPN routes is extended to exchange and inject the route-tag field to be carried across the SPB-ISIS network.	C/PC/NC
7.7.	Ethernet network-to-network interface (NNI) and user network interface (UNI)	C/PC/NC
7.8.	Service VLAN (SVLAN) and Customer VLAN (CVLAN) support	C/PC/NC
7.9.	Service Access Point (SAP) profile identification (ID) defining values for ingress bandwidth sharing, rate limiting, CVLAN tag processing (translate or preserve), and priority mapping (inner to outer tag or fixed value).	C/PC/NC
7.10.	Hybrid access port feature allows a single port to function both as an access port and a bridging port. Hybrid configured port can be understood as a bridge port with a default VLAN and tagged VLAN for bridging and the	C/PC/NC

	user can configure SAPs for services with mapped tagged VLANs.	
7.11.	VLAN translation and mapping including CVLAN to SVLAN	C/PC/NC
7.12.	Port Mapping controlling communication between peer users	C/PC/NC
7.13.	DHCP Option 82: Configurable relay agent information	C/PC/NC
7.14.	Multiple VLAN Registration Protocol (MVRP)	C/PC/NC
7.15.	High Availability (HA) -VLAN allowing for sending traffic to send traffic intended for a single destination MAC address to multiple switch ports for Layer 2 clusters such as MS-NLB and active-active Firewall clusters	C/PC/NC
7.16.	Private VLANs	C/PC/NC
7.17.	Jumbo frame	C/PC/NC
7.18.	Bridge Protocol Data Unit (BPDU) blocking	C/PC/NC
7.19.	STP Root Guard	C/PC/NC

8. Security features

The switch must support the following:

8.1.	Autosensing IEEE 802.1X multiclient, multi-VLAN support	C/PC/NC
8.2.	MAC-based authentication for non-IEEE 802.1X hosts	C/PC/NC
8.3.	Web based authentication (captive portal): a customizable web portal residing on the switch	C/PC/NC
8.4.	Dynamically providing pre-defined policy configuration to authenticated clients – VLAN, ACL, BW	C/PC/NC
8.5.	Secure Shell (SSH) with public key infrastructure (PKI) support	C/PC/NC
8.6.	Terminal Access Controller Access- Control System Plus (TACACS+) client	C/PC/NC
8.7.	Centralized Remote Access Dial- In User Service (RADIUS) and Lightweight Directory Access Protocol (LDAP) administrator authentication	C/PC/NC
8.8.	Learned Port Security (LPS) or MAC address lockdown	C/PC/NC
8.9.	Access Control Lists (ACLs); flow based filtering in hardware (Layer 1 to Layer 4)	C/PC/NC
8.10.	DHCP v4 & v6 Snooping, DHCP IP and Address Resolution Protocol (ARP) spoof protection	C/PC/NC
8.11.	DHCPv6 guard and DHCPv6 Client Guard	C/PC/NC
8.12.	ARP poisoning detection	C/PC/NC

8.13.	IP v4 & v6 Source Filtering as a protective and effective mechanism against ARP attacks	C/PC/NC
8.14.	Role-based authentication for routed domains	C/PC/NC
8.15.	MACsec is supported between two directly connected Service Access Ports or network ports for service type SPB/VXLAN/L2GRE to provide MACsec security on the tunneled traffic.	C/PC/NC
8.16.	The minimum password size range is 1-30 characters.	C/PC/NC
8.17.	Allows the switch to be authenticated as a supplicant device using X.509 certificates.	C/PC/NC

9. Quality of Service (QoS) features

The switch must support the following:

9.1.	Eight hardware based queues per port for flexible QoS management	C/PC/NC
9.2.	Flow-based QoS	C/PC/NC
9.3.	Flow-based traffic policing and bandwidth management	C/PC/NC
9.4.	32-bit IPv4/128-bit IPv6 non contiguous mask classification	C/PC/NC
9.5.	Egress traffic shaping	C/PC/NC
9.6.	DiffServ architecture	C/PC/NC
9.7.	Support for end- to-end head-of-line (E2EHOL) blocking prevention	C/PC/NC
9.8.	IEEE 802.3x Flow Control (FC)	C/PC/NC

10. Data Center and network transport features:

The switch must support the following:

10.1.	Dynamic Virtual Network Profiles (vNP) defining network access based on profile criteria (instead of mac address, IP address or port)	C/PC/NC
10.2.	IEEE 802.1aq Shortest Path bridging (SPB-M)	C/PC/NC
10.3.	Virtual eXtensible Local Area Network (VXLAN)	C/PC/NC

11. Software Defined Networking (SDN) features:

The switch must support the following:

11.1.	Programmable RESTful API	C/PC/NC
11.2.	Fully programmable OpenFlow 1.3.1 and 1.0 agent for control of native OpenFlow and hybrid ports	C/PC/NC
11.3.	OpenStack networking plug-in	C/PC/NC

12. ITU-T recommendations:

The switch must support the following:

12.1.	ITU-T G.8032/Y.1344 2010: Ethernet Ring Protection (ERPV2)	C/PC/NC
12.2.	ITU-T Y.1731 OA&M fault and performance management	C/PC/NC

13. Voice, video and data converged network

The switch must support the following:

13.1.	Session Initiation Protocol (SIP) detection, session monitoring and tracking	C/PC/NC
13.2.	Provides real-time conversation quality information contained in the SIP packets concerning packet loss, delay, jitter, MOS score, R-Factor in real time	C/PC/NC
13.3.	SIP profile for QoS, priority tuning for end-to-end processing	C/PC/NC
13.4.	Multicast DNS Relay: Bonjour protocol support for wired Airgroup	C/PC/NC

14. Management features:

The switch must support the following:

14.1.	Powerful WebView Graphical Web Interface via HTTP and HTTPS over IPv4/IPv6	C/PC/NC
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14.2.	Intuitive CLI in a scriptable BASH environment via console, Telnet, or Secure Shell (SSH) v2 over IPv4/IPv6	C/PC/NC
14.3.	This feature allows for a USB-to-Ethernet interface for switches that lack an OOB management port. This interface is treated just like an OOB interface. All functions and CLIs related to an OOB management port are applicable to the USB-to-Ethernet dongle.	C/PC/NC
14.4.	This feature allows for applying an ACL on the EMP port of the switch. It enables policy-based routing on the EMP ports. The configuration is enabled using the empacl policy-list type.	C/PC/NC
14.5.	The equipment can work in a “thin client” mode. In this mode no configuration can be saved in the “Running” directory of the switch. A basic configuration with minimal network reachability configuration is stored on the switch running directory. The final configuration of a thin client is pushed by a Network Management System (NMS).	C/PC/NC
14.6.	Must support hitless upgrade of IP services	C/PC/NC

15. Certifications

The switch must support the following:

15.1.	The switch proposed must possess a Common Criteria certification, ensuring compliance with internationally recognized security standards.	C/PC/NC
15.2.	The switch proposed must hold a valid Federal Information Processing Standards (FIPS) certification, meeting the designated FIPS publication 140-2.	C/PC/NC

16. Video surveillance

The switch must support the following:

16.1.	The switch support plugins that enable remote troubleshooting for common camera issues directly from the video surveillance management system.	C/PC/NC
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