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White House Communications Agency (WHCA) Crisis Management System (CMS) Tray Interface Control Document (ICD) and Installation Guide

by Melvin Rose, Steven Callaway, Jack Landers, Brian Mays, and Michael Moraniec

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Melvin Rose, Steven Callaway, and Brian Mays
Computational and Information Sciences Directorate, CCDC Army Research Laboratory

Jack Landers and Michael Moraniec
Koniag Information Security Services, Inc.

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13. SUPPLEMENTARY NOTES

14. ABSTRACT
This report provides instructions for the employment of the White House Communications Agency (WHCA) Crisis Management System (CMS) tray system. The following outlines electrical and basic mechanical specifications for all interfaces on the WHCA CMS tray system. Detailed connectors, adapters, descriptions, and diagrams are included as a reference for correct system installation.

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1. Introduction

1.1 Background

The White House Communications Agency (WHCA) Crisis Management System (CMS) tray system is intended to be used with the WHCA Mobile Ad-Hoc Network (MANET) tray system. Together they provide advanced Ethernet-routing capabilities for increased reliability of secure toll quality voice mobile communications.

1.2 Purpose

This report provides instructions for the employment of the WHCA CMS tray system. The following outlines electrical and basic mechanical specifications for all interfaces on the WHCA CMS tray system. Detailed connectors, adapters, descriptions, and diagrams are included as a reference for correct system installation.

2. Connector Identification

Figure 1 shows a schematic of the WHCA CMS tray system and Table 1 provides descriptions of the connectors used within it.

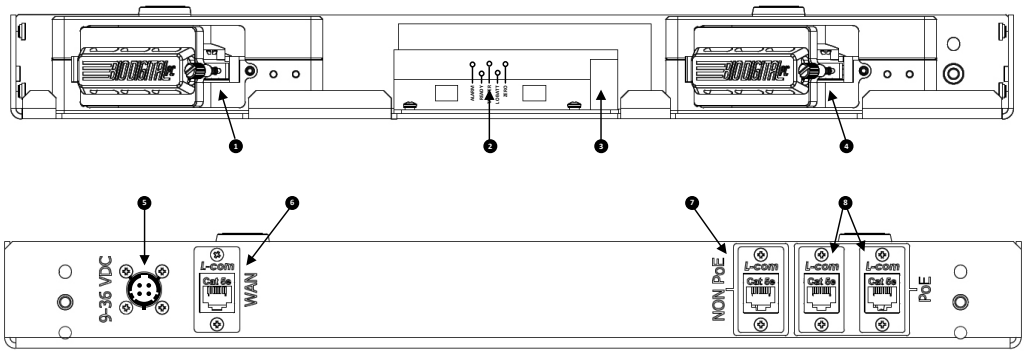

Fig. 1 WHCA CMS tray

Table 1 WHCA CMS tray connector description

Item	Type	Function
1	ADDC R8K PC card door	Insert Red Router BioDigitalPC router card
2	Viasat KG250xs	See the manufacturer's operating manual (Viasat 2017)
3	CIK slot	Receptacle for Mandatory Access Control (MAC) of the device. See the manufacturer's operating manual (Viasat 2017)
4	ADDC R8K PC card door	Insert Black Router BioDigitalPC router card
5	PT02E-8-4P connector	9-36 VDC Input
6	RJ45 coupler shielded	Unclassified wide-area network (WAN) connection
7	RJ45 coupler shielded	Classified Non-PoE Voice over Internet Protocol (VoIP) phone connection
8	RJ45 coupler shielded	Classified Power over Ethernet (PoE) VoIP phone connection

3. Electrical Characteristics

Table 2 lists the electrical specifications of the WMCA CMS tray.

Table 2 WHCA CMS tray electrical specification

Configuration parameter	WHCA CMS tray				
	Conditions	MIN	Nom	MAX	Units
DC supply input voltage	Operating	9	13.1	36	V
Under voltage lock out	Ignition sensing/ starting	…	8	…	V
Over voltage lock out	automotive transient	…	500	…	µs
Absolute voltage range	Protected	…	…	50	V
Average input current	14.1-VDC input	…	…	20	A

4. WHCA CMS Tray Pinout

4.1 DC Power Input

Figure 2 details the DC power input connector and Table 3 describes the pinout.

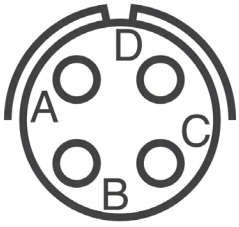

Fig. 2 DC power input connector. Use male pins.

Table 3 DC power input connector pinout for 4-pin bulkhead military power connector PT02E-8-4P

Pin	Signal	Description
A	Raw DC input	Nominal 9-36V unprotected input
B	N/A	Empty
C	Ground	Ground
D	N/A	Empty

The following is the recommended mating for the DC power input connector:

- PT06E-8-4S conn plug female 4pos solder cup.
    - Mating connectors are mated pin 1 male to pin 1 female. Refer to Table 3 for pin information.

4.2 RJ45 Coupler Shielded

Figure 3 shows the RJ45 coupler and Table 4 details the wiring for it.

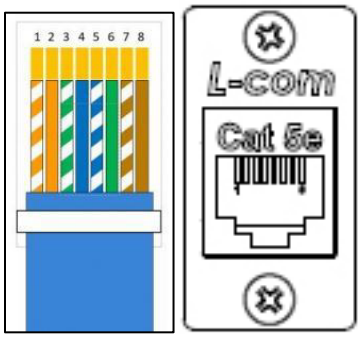

Fig. 3 RJ45 TIA/EIA Cat 5E

Table 4 TIA/EIA 568B wiring

Pin	Wire color T568B	10/100 T-base signal
1	White/orange	Transmit+
2	Orange	Transmit-
3	White/green	Receive+
4	Blue	Unused
5	White/blue	Unused
6	Green	Receive-
7	White/brown	Unused
8	Brown	Unused

4.3 Network Wiring

Figure 4 shows the network wiring and Table 5 details the items in the tray layout.

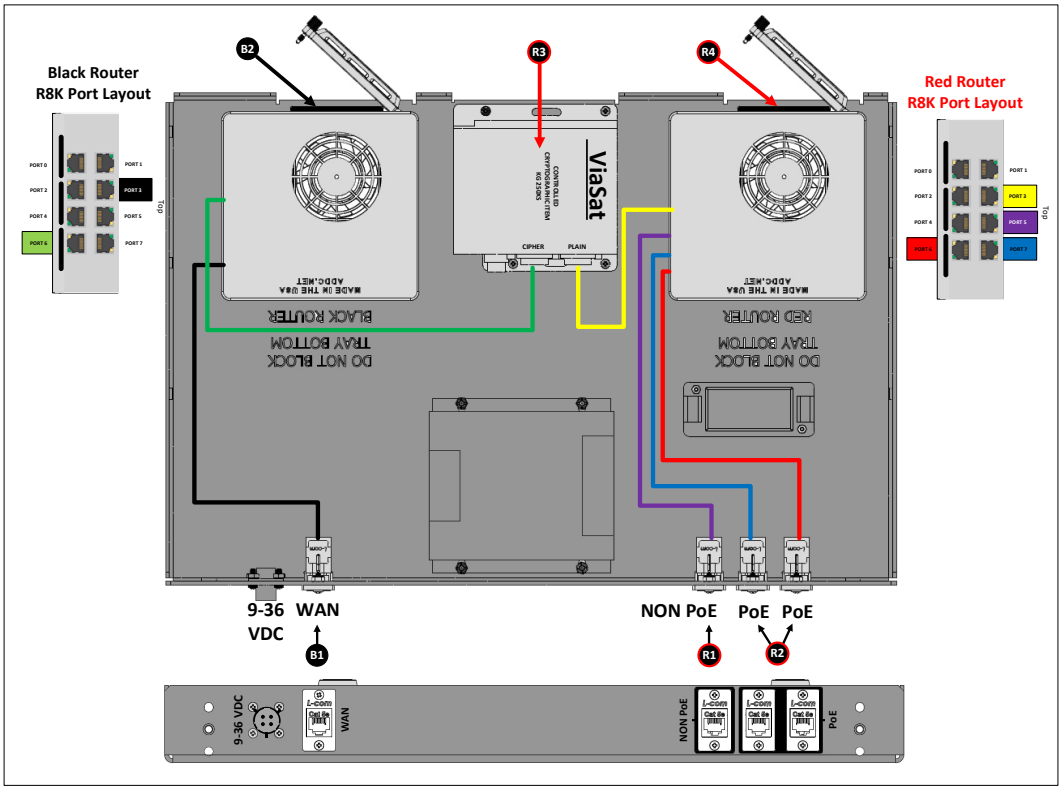

Fig. 4 Network wiring diagram

Table 5 WHCA CMS tray layout

#	Item	Description
B1	RJ45 coupler	Unclassified WAN connection; typically connected to WHCA MANET tray
B2	Black router / BioDigitalPC card	Unclassified black router on
R1	RJ45 coupler shielded	Classified Non-PoE VoIP phone connection
R2	RJ45 coupler shielded	Classified PoE VoIP phone connection
R3	KG-250XS	CCI KG 250xs inline network encryptor (INE)
R4	Red router / BioDigitalPC card	Classified red router

Figure 5 and Table 6 provide the details of the R8K black router port, while Fig. 6 and Table 7 provide the details of the R8K red router port.

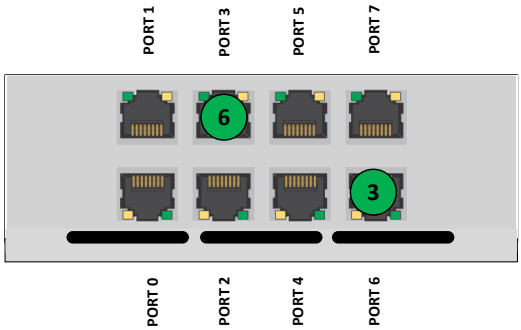

Fig. 5 R8K black router port layout

Table 6 R8K black router port layout

Port	Signal	Description
0	N/A	None
1	N/A	None
2	N/A	None
3	Unclassified Ethernet	Bidirectional encrypted data to KG250xs “cipher” port
4	N/A	None
5	N/A	None
6	Unclassified Ethernet	Unclassified WAN connection
7	N/A	None

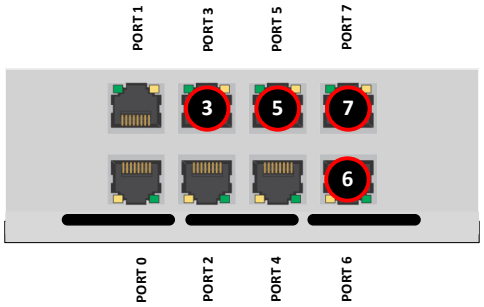

Fig. 6 R8K red router port layout

Table 7 R8K red router port layout

Port	Signal	Description
0	N/A	None
1	N/A	None
2	N/A	None
3	Classified Ethernet	Bidirectional plain text data to KG250xs “plain” port
4	N/A	None
5	Classified Ethernet	Plain text VoIP data – No power
6	Classified Ethernet	IEEE 802.3af-2003 PoE plain text VoIP data
7	Classified Ethernet	IEEE 802.3af-2003 PoE plain text VoIP data

5. (FOUO) Power Indicator and LED Colors

(FOUO) Figure 7 shows the power indicators and Table 8 lists the power indicator codes.

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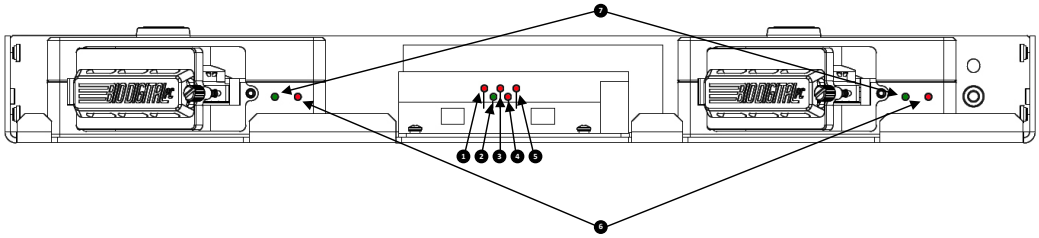

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Fig. 7 (FOUO) Power indicators

Table 8 (FOUO) Power indicator codes

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Item	LED status	Item	Description
1	ZEROIZE	Solid red	INE has no keys and is zeroized, needs the crypto-ignition key (CIK) to be provisioned
		Off	CIK is inserted and provisioned
2	TAMPER	Solid red	INE is tampered; requires use of field tamper recovery (FTR) CIK for recovery
		Off	INE is not tampered, normal operating state
3	ALARM	Solid red	INE is in alarm state, internal fault, try rebooting to recover
		Off	INE is not alarmed, normal operating state
4	Lo BATT	Solid red	External battery is removed or low voltage, needs replacement
		Off	External battery is inserted, and voltage is normal
5	READY	Solid red	INE is in configuration mode
		Solid green	INE is in traffic processing mode
		Blinking red (2 s)/ green (2s)	INE is within 5 °C of maximum temp
		Blinking red (1.5 s)/ green (0.5 s)	INE requires CIK to be inserted or provisioned
6	Power	Solid red	BioDigitalPC R8K is powered on
7	Card Inserted	Solid green	BioDigitalPC router card is inserted in R8K and powered on

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6. Basic Mechanical

The CMS tray is designed as a single package that can be installed in three different WHCA systems: Mobile Communications Vehicle (MCV), Executive Communications Vehicle (ECV), and Limo Communication Platform (LCP). The following describes the installation of the MANET tray in these systems. Note: The MCV and the ECV utilize the same installation scheme.

Figure 8 shows the WMCA CMS tray basic dimensions and Table 9 lists their details.

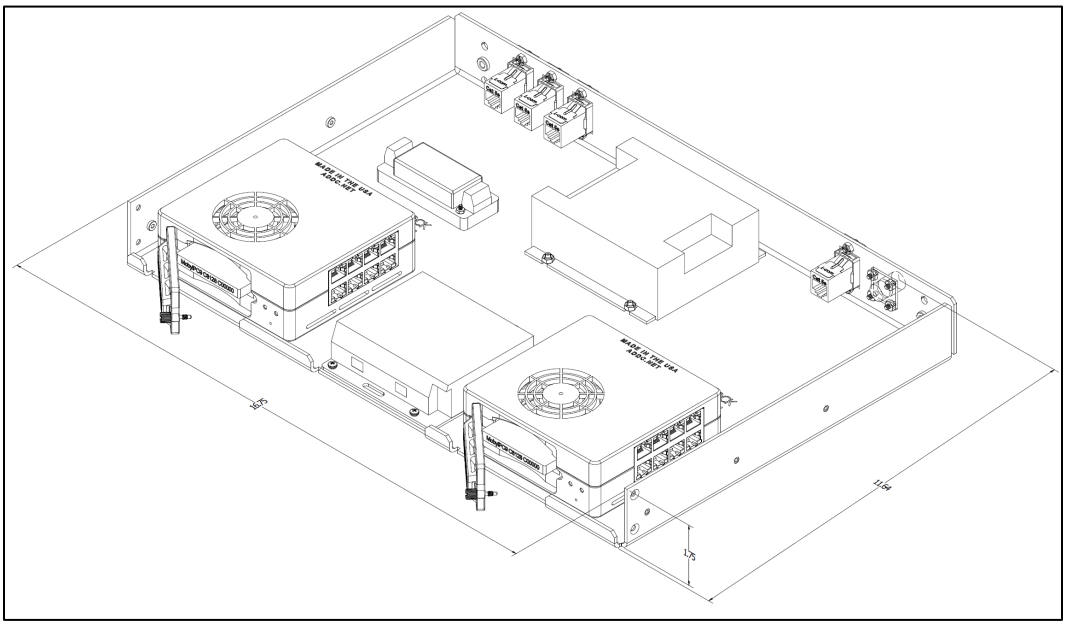

Fig. 8 WHCA CMS tray basic dimensions

Table 9 WHCA CMS tray basic dimensions

Dimension (inches)	Description
16.75	Width
11.64	Depth
1.75	Height

Figure 9 shows the WHCA CMS tray ECV and MCV tray mounting adapters and Table 10 provides the details. Appendix A provides a mechanical schematic of the CMS tray assembly vehicle configuration.

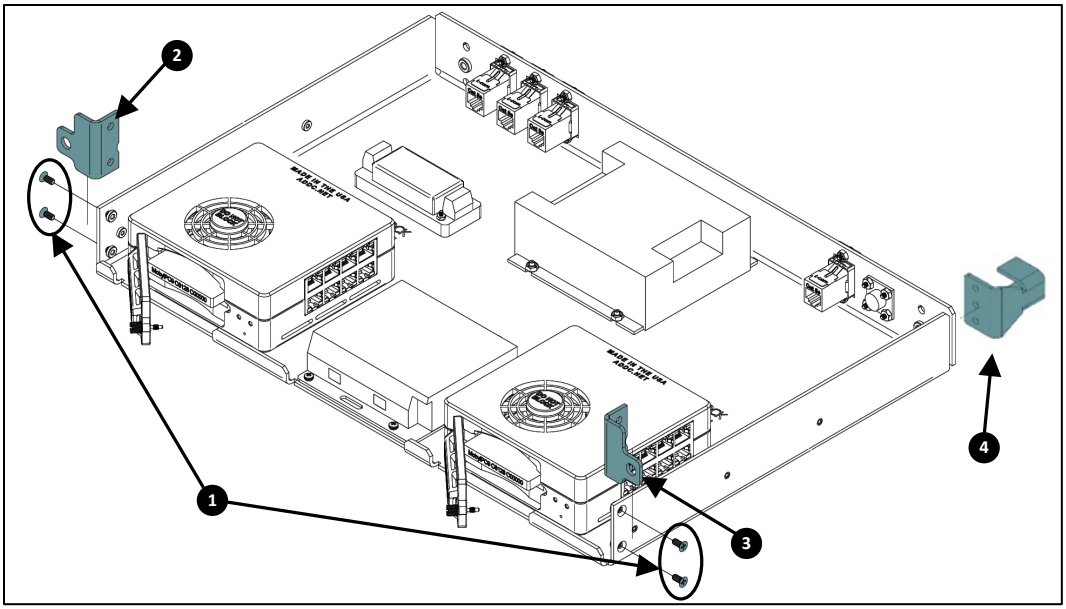

Fig. 9 WHCA CMS tray ECV and MCV tray mounting adapters

Table 10 WHCA CMS tray ECV and MCV tray mounting adapters

No.	Item	Description
1	Fastener	6-32 × ¼-inch flat head screw, 100°
2	Left mounting adapter	L EIA 19-inch rack ear
3	Right mounting adapter	R EIA 19-inch rack ear
4	Mount, cable arm	Jonathon® T1U-200-CMA 19/19 cable management arm bracket

Figure 10 shows the WHCA CMS tray LCP mounting slides.

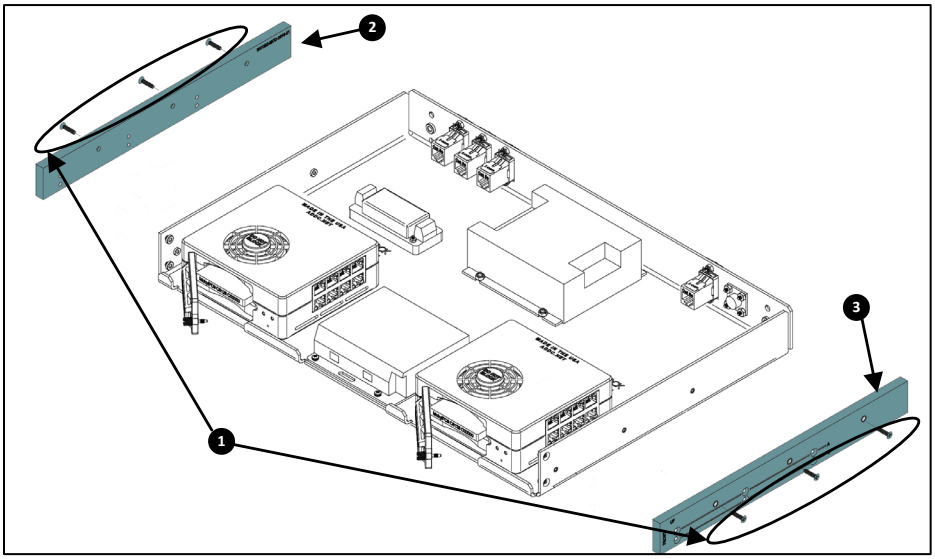

Fig. 10 WHCA CMS tray LCP mounting slides

The tray spacers/shims are designed to aid in the installation of both the CMS tray and the MANET tray in the LCP. The series of holes in the spacers allow for a single pair of spacers to be utilized to install the MANET and CMS trays in different locations inside the LCP. The A-series of attachment holes are intended to properly space the CMS tray when mounted in the LCP. Table 11 lists the specifications for the WHCA CMS tray LCP mounting slides and Fig. 11 illustrates their positioning.

Table 11 WHCA CMS tray LCP mounting slides

No.	Item	Description
1	Fastener	6-32 × ½-inch flat head screw, 100°
2	Left adapter	L LCP slide spacer
3	Right adapter	R LCP slide spacer

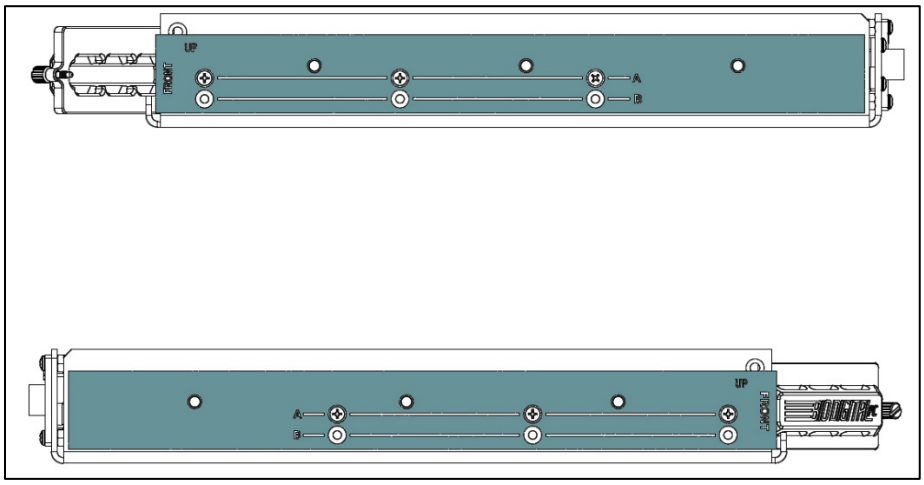

Fig. 11 WHCA CMS tray LCP mounting slides

Appendix B provides a mechanical schematic of the CMS tray assembly LCP configuration.

7. Conclusion

Using this report, the WHCA CMS tray system can be used in various configurations. Electrical and basic mechanical specifications for each interface have been defined. Detailed connectors, adapters, descriptions, and diagrams have also been included to assist in correct system installation.

8. References

Viasat Inc. Operator's manual for the Viasat KG-255X, KG-250X, KG-250X-FC, KG-250XS in-line network encryptor (INE) Document Number: 1268592. Rev. 002. Carlsbad (CA): Viasat Inc.; 2017 Aug 31. [FOR OFFICIAL USE ONLY]

Appendix A. CMS Tray Assembly – Vehicle Configuration SK549533-11000-2

This appendix appears as a pdf attached to the report.

Appendix B. CMS Tray Assembly – LCP Configuration SK549533-11000-1

This appendix appears as a pdf attached to the report.

List of Symbols, Abbreviations, and Acronyms

ARL	Army Research Laboratory
CCDC	US Army Combat Capabilities Development Command
CIK	crypto-ignition key
CMS	Crisis Management System
ECV	Executive Communications Vehicle
EIA	Electronic Industries Alliance
FTR	field tamper recovery
ICD	Interface Control Document
INE	Inline Network Encryptor
LCP	Limo Communication Platform
LED	light-emitting diode
MAC	Mandatory Access Control
MANET	mobile ad hoc network
MCV	Mobile Communications Vehicle
PoE	Power over Ethernet
TIA	Telecommunication Industries Association
VoIP	Voice over Internet Protocol
WAN	wide-area network
WHCA	White House Communications Agency

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