DEFENSE INFORMATION SYSTEMS AGENCY
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IN REPLY REFER TO: Joint Interoperability Test Command (JTE) 7 February 2025

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Joint Interoperability Certification of the G&D North America, Inc Keyboard-Video-Mouse over Internet Protocol (KVM-over-IP) with Software Release 1.x

References: (a) Department of Defense Instruction 8100.04, "DoD Unified Capabilities (UC)," 9 December 2010
(b) Office of the Department of Defense Chief Information Officer, "Department of Defense Unified Capabilities Requirements 2013 (UCR 2013) Change 2," September 2017
(c) through (e), see Enclosure 1

**1. Certification Authority.** Reference (a) establishes the Joint Interoperability Test Command (JITC) as the Joint Interoperability Certification Authority for the Department of Defense Information Network (DoDIN) products, Reference (b).

**2. Conditions of Certification.** G&D North America, Inc Keyboard-Video-Mouse over Internet Protocol (KVM-over-IP) with Software Release 1.x, hereinafter referred to as the System Under Test (SUT), meets the critical requirements of the Unified Capabilities Requirements, Reference (b), and is certified for joint use as a (Closed Video Distribution System (VDS) System or Video Distribution System (VDS) over IP System (VDS-IP)) with the conditions described in Table 1.

This certification expires upon changes which affect interoperability, but no later than the expiration date specified in the DoDIN Approved Products List (APL) memorandum.

**Table 1. Conditions**

| Description | | Operational Impact | Remarks |
|---|---|---|---|
| **UCR Waivers** | | | |
| The DoD CIO granted a one-year Department of DoDIN APL IPv6 Waiver, Reference (e). (Applies for TDRs GAD 1835-001, -003, and -006 through -063) | | Minor with POA&M | This IPv6 waiver expires one (1) year from the date this product receives DoDIN APL approval. |
| **TDR#** | **Conditions of Fielding** | | |
| GAD-1835-002 | VDS-000140 - Partial Comply: Per the Vendor's LoC, scaling is not supported on CON/CPU devices but the refresh rate can be modified.<br>CoF: This mitigation must be documented in the Vendor's MUDG. | Minor with CoF | On 10 December 2024, DISA adjudicated this discrepancy as Minor with CoF. |

(Table continues next page)

**Table 1. Conditions** (continued)

| Description | | Operational Impact | Remarks |
|---|---|---|---|
| **TDR#** | **Open Test Discrepancies** | | |
| GAD-1835-001 | VDS-000050 – Non-Comply: Per the Vendor's LoC, the SUT does not support IPv6. | Minor with POA&M | On 10 December 2024, DISA adjudicated this discrepancy as Minor with DoD CIO IPv6 Waiver and Vendor POA&M. |
| GAD-1835-003 | VDS-000650 – Non-Comply: Per the Vendor's LoC, the SUT does not support IPv6. | Minor with POA&M | On 10 December 2024, DISA adjudicated this discrepancy as Minor with DoD CIO IPv6 Waiver and Vendor POA&M. |
| GAD-1835-004 | VDS-000690 - Non-Comply: Per the Vendor's LoC, the SUT is a VDS-IP system with an Open Distribution, not a proprietary distribution. | None UCR Change Requirement | On 10 December 2024, DISA adjudicated this discrepancy as a UCR Change Requirement – from Required to Conditional |
| GAD-1835-005 | VDS-000700 - Non-Comply: Per the Vendor's LoC, the SUT uses a proprietary compression method, but this is only internal to the system. Video is available through standard video interfaces (DP, DVI) and is not compressed on this output. | None UCR Change Requirement | On 10 December 2024, DISA adjudicated this discrepancy as a UCR Change Requirement – from Required to Conditional |
| GAD-1835-006 through GAD-1835-063 | IP6-000010 – IP6-001150 – Non-Comply: Per the Vendor's LoC, the SUT does not support IPv6. | Minor with POA&M | On 10 December 2024, DISA adjudicated this discrepancy as Minor with DoD CIO IPv6 Waiver and Vendor POA&M. |

**LEGEND:**

| | | | |
|---|---|---|---|
| APL | Approved Products List | GAD | Guntermann & Drunck GmbH G&D North America |
| CIO | Chief Information Officer | IP | Internet Protocol |
| CoF | Condition of Fielding | LoC | Letter of Compliance |
| CON | Console | MUDG | Military Unique Deployment Guide |
| CPU | Central Processing Unit | POA&M | Plan of Action and Milestone |
| DISA | Defense Information Systems Agency | SUT | System Under Test |
| DoDIN | DoD Information Networks | TDR | Test Discrepancy Report |
| DP | Display Port | UCR | Unified Capabilities Requirement |
| DVI | Digital Video Interface | v | version |
| GAD | Guntermann & Drunck | VDS | Video Distribution System |

**3. Interoperability Status.** Table 2 provides the SUT interface interoperability status, Table 3 provides the Capability Requirements and Functional Requirements status, and Table 4 provides a DoDIN APL Product Summary, to include subsequent Desktop Review (DTR) updates.

**Table 2. Interface Status**

| Interface | Applicability | Status | Remarks |
|---|---|---|---|
| **Closed VDS** (See note 1.) | | | |
| RS-232 | C (See note 2.) | Not Tested | See note 1. |
| RS-422 | C (See note 2.) | Not Tested | See note 1. |
| RS-485 | C (See note 2.) | Not Tested | See note 1. |
| USB | O | Not Tested | See note 1. |
| Ethernet – IEEE 802.3i (10BaseT UTP) | O (See note 3.) | Not Tested | See note 1. |
| Ethernet - IEEE 802.3u (100BaseT UTP) | O (See note 3.) | Not Tested | See note 1. |
| Ethernet - IEEE 802.3u (100BaseFX) | O (See note 3.) | Not Tested | See note 1. |
| Ethernet - IEEE 802.3ab (1000BaseT UTP) | O (See note 3.) | Not Tested | See note 1. |
| Ethernet - IEEE 802.3z (1000BaseX Fiber) | O (See note 3.) | Not Tested | See note 1. |
| Ethernet - IEEE 802.3ae (10GBaseX) | O (See note 3.) | Not Tested | See note 1. |

(Table continues next page)

**Table 2. Interface Status** (continued)

| Interface | Applicability | Status | Remarks |
|---|---|---|---|
| **VDS Over IP System** (See notes 1 and 4.) | | | |
| RS-232 | C | Not Tested | See note 5. |
| USB | C | Met | |
| Ethernet – IEEE 802.3i (10BaseT UTP) | C (See note 6.) | Met | |
| Ethernet - IEEE 802.3u (100BaseFX) | C (See note 6.) | Met | |
| Ethernet - IEEE 802.3ab (1000BaseT UTP) | C (See note 6.) | Met | |
| Ethernet - IEEE 802.3z (1000BaseX Fiber) | C (See note 6.) | Met | |
| Ethernet - IEEE 802.3ae (10GBaseX) | O (See note 6.) | Met | |
| VDS Matrix Controller | R | Met | |
| **Network Management Interfaces for VDS Products** (See note 7.) | | | |
| IEEE 802.3i (10BaseT UTP) | C | Met | |
| IEEE 802.3u (100BaseT UTP) | C | Met | |
| IEEE 802.3ab (1000BaseT UTP) | C | Met | |
| IEEE 802.3z (1000BaseX Fiber) | C | Met | |
| **VDS Subcomponents** (See note 8.) | | | |
| **VDS Signal Extenders** (See note 9.) | | | |
| Coaxial | C | Not Tested | See note 10. |
| Twisted Pair | C | Met | |
| Fiber Optical | C | Met | |
| **VDS Peripheral Connectors** (See note 11.) | | | |
| BNC | C | Not Tested | See note 10. |
| DVI | C | Met | |
| VGA | C | Not Tested | See note 10. |
| HDMI | C | Not Tested | See note 10. |
| RCA | C | Not Tested | See note 10. |
| Fiber | C | Met | |
| Modular Connectors | C | Not Tested | See note 10. |
| **VDS Peripheral Connector Conversion Devices** (See note 12.) | | | |
| BNC | C | Not Tested | See notes 5 and 13. |
| DVI | C | Met | See note 13. |
| VGA | C | Not Tested | See notes 5 and 13. |
| HDMI | C | Met | See note 13. |
| RCA | C | Not Tested | See notes 5 and 13. |
| Fiber | C | Met | |
| Modular Connectors | C | Not Tested | See notes 5 and 13. |

**NOTE(S):**
1. The UCR defines two VDS products – a Closed VDS System and a VDS-IP System. The SUT is a VDS-IP System.
2. The UCR requires Closed VDS Systems support RS-232, RS-422, or RS-485.
3. The UCR specifies a Closed VDS Systems may support an Ethernet interface but does not specify media or data rate. The SUT may support one or more of the specified interfaces.
4. The UCR specifies that VDS-IP subcomponents shall support serial RS-232, USB, or Ethernet.
5. The SUT supports this conditional requirement, however due to test lab limitations, this requirement was not tested.
6. The UCR specifies a VDS-IP System support an Ethernet interface but does not specify media or data rate. The SUT must support at least one of the specified interfaces.
7. The UCR specifies all network appliances must be managed via an Ethernet interface but does not specify media or data rate. The SUT must support at least one of the specified interfaces.
8. Closed VDS Systems and VDS-IP Systems may support VDS Signal Extenders, Peripheral Connectors, or Peripheral Connector Conversion devices. If supported, these subcomponents must meet the applicable UCR requirements specified in Section 9.
9. If the SUT supports VDS Signal Extenders it must provide one of the specified interfaces.
10. The SUT does not support this conditional requirement.
11. If the SUT supports peripheral connectors it must support at least one of the specified interfaces.
12. If the SUT supports VDS Peripheral Connector Conversion devices it must support at least one of the specified interfaces.
13. The SUT requires a third party converter to support this conditional requirement.

(Table continues next page)

**Table 2. Interface Status** (continued)

**LEGEND:**

| | | | |
|---|---|---|---|
| BaseFX | Megabit Ethernet over fiber | O | Optional |
| BaseT | Megabit (Baseband Operation, Twisted Pair) Ethernet | R | Required |
| BaseX | Megabit Ethernet over Fiber or Copper | RCA | Radio Corporation of America |
| BNC | Bayonet Neill-Concelman | RS | Recommended Standard |
| C | Conditional | SUT | System Under Test |
| DVI | Digital Visual Interface | UCR | Unified Capabilities Requirements |
| GBaseX | Gigabit Ethernet over Fiber or Copper | USB | Universal Serial Board |
| HDMI | High-Definition Multimedia Interface | UTP | Unshielded Twisted Pair |
| ID | Identification | VDS | Video Distribution System |
| IEEE | Institute of Electrical and Electronics Engineers | VGA | Video Graphics Array |
| IP | Internet Protocol | | |

**Table 3. Capability Requirements and Functional Requirements Status**

| CR/FR ID | UCR Requirement (See note 1.) | UCR 2013 Change 2 Reference | Status |
|---|---|---|---|
| 1 | Cybersecurity Requirements (R) | See note 2. | Met (See note 2.) |
| 2 | General VDS System (R) | 9.1 | Partially Met (See note 3.) |
| 3 | Closed VDS System (C) | 9.2 | Not Tested (See note 4.) |
| 4 | VDS over IP (VDS-IP) (C) | 9.3 | Partially Met (See note 3.) |
| 5 | VDS Recording (C) | 9.4 | Not Tested (See note 5.) |
| 6 | Internet Protocol version 6 (IPv6) (R) | Section 5, Table 5.2-1 | Not Met (See note 6.) |

**NOTE(S):**

1. The annotation of "required" refers to a high-level requirement category. Table 3-2 in Enclosure 3 addresses the applicability of each sub-requirement.
2. A NIWC-led Cybersecurity test team tested Security and published the results in a separate report, Reference (d).
3. Not all requirements were met. Refer to Table 3-2 in Enclosure 3 for sub-requirement details and Table 1 for conditions and limitations.
4. The SUT is a VDS over IP system; therefore, these requirements are not applicable to the SUT.
5. The SUT does not support condtional VDS Recording requirements.
6. Per the Vendor's LoC, the SUT does not support IPv6. The DoD CIO granted a one-year IPv6 waiver for the SUT. See Conditions in Table 1 for additional information.

**LEGEND:**

| | | | |
|---|---|---|---|
| APL | Approved Products List | NIWC | Naval Information Warfare Center |
| C | Conditional | R | Required |
| CIO | Chief Information Officer | SUT | System Under Test |
| CR | Capability Requirement | TDR | Test Descrepancy Reports |
| FR | Functional Requirement | UCR | Unified Capabilities Requirements |
| ID | Identification | VDS | Video Distribution System |
| IP | Internet Protocol | | |

## Table 4. DoDIN APL Product Summary

| **Product Identification** | | | |
|---|---|---|---|
| Product Name | G&D North America, Inc KVM-over-IP | | |
| Software Release | 1.x | | |
| UCR Product Type(s) | Video Distribution System | | |
| Product Description | G&D's KVM-over-IP solution provides, video, audio, USB, and serial switching over an IP network. Either a ControlCenter-IP or ControlCenter-IP-XS (referred to as ControlCenter-IP(-XS) throughout this document), along with a layer 2 managed switch, provides matrix switching functionality for the system. | | |
| **DoDIN Certified Function** | **Component Name** (See notes 1, 2, and 3.) | **Tested Version** | **Remarks** |
| Video Distribution System (VDS) | **Matrix Switches** | | |
| | **ControlCenter-IP 2.0** | **1.x** with SecureCert | Matrix switch component - main management interface |
| | **ControlCenter-IP-XS** | | Smaller form-factor, reduced functionality on the XS. |
| | **Digital Video Interfaces** | | |
| | **DP1.2-Vision-IP-AR-CON**<br>DL-DVI-Vision-IP-AR-CON<br>DL-DVI-Vision-IP-Fiber(M)-AR-CON<br>DL-DVI-Vision-IP-Fiber(S)-AR-CON<br>DP1.2-Vision-IP-Fiber(M)-AR-CON<br>DP1.2-Vision-IP-Fiber(S)-AR-CON<br>DP-Vision-IP-AR-CON<br>DP-Vision-IP-Fiber(M)-AR-CON<br>DP-Vision-IP-Fiber(S)-AR-CON<br>DVI-Vision-IP-AR-CON<br>**DVI-Vision-IP-Fiber(M)-AR-CON**<br>DVI-Vision-IP-Fiber(S)-AR-CON<br>DP1.2-Vision-IP-Fiber(M)-AR-CON<br>DP1.2-Vision-IP-AR-CPU<br>DP1.2-Vision-IP-Fiber(M)-AR-CPU<br>DP1.2-Vision-IP-Fiber(S)-AR-CPU<br>DP-Vision-IP-AR-CPU<br>DP-Vision-IP-Fiber(M)-AR-CPU<br>DP-Vision-IP-Fiber(S)-AR-CPU<br>DVI-Vision-IP-AR-CPU<br>DVI-Vision-IP-Fiber(M)-AR-CPU<br>DVI-Vision-IP-Fiber(S)-AR-CPU | **2.x** with SecureCert | Display port 1.2 console module - provides video, keyboard, and mouse switching for ethernet and fiber transmission. |
| | **Console Modules** | | |
| | **VisionXS-IP-CON-C-DP-UHR-AR-DT**<br>**VisionXS-IP-CON-F(M)-DP-UHR-AR-DT**<br>VisionXS-IP-CON-C-DP-HR<br>VisionXS-IP-CON-C-DP-HR-AR-DT<br>VisionXS-IP-CON-C-DP-HR-AR-DT-PoE<br>VisionXS-IP-CON-C-DP-HR-DH<br>VisionXS-IP-CON-C-DP-HR-DH-AR-DT<br>VisionXS-IP-CON-C-DP-HR-DH-AR-DT-PoE<br>VisionXS-IP-CON-C-DP-HR-DH-DT<br>VisionXS-IP-CON-C-DP-HR-DH-DT-PoE<br>VisionXS-IP-CON-C-DP-HR-DH-PoE<br>VisionXS-IP-CON-C-DP-HR-DT<br>VisionXS-IP-CON-C-DP-HR-DT-PoE<br>VisionXS-IP-CON-C-DP-HR-PoE<br>VisionXS-IP-CON-F(M)-DP-HR<br>VisionXS-IP-CON-F(M)-DP-HR-AR-DT<br>VisionXS-IP-CON-F(M)-DP-HR-DH<br>VisionXS-IP-CON-F(M)-DP-HR-DH-AR-DT<br>VisionXS-IP-CON-F(M)-DP-HR-DH-DT<br>VisionXS-IP-CON-F(M)-DP-HR-DT | **1.x** with SecureCert | Small form-factor console module - provides video, keyboard, and mouse switching for ethernet and fiber transmission |

(Table continues next page.)

**Table 4. DoDIN APL Product Summary** (continued)

| DoDIN Certified Function | **Component Name** (See notes 1, 2, and 3.) | Tested Version | Remarks |
|---|---|---|---|
| Video Distribution System (VDS) | **Console Modules** (Continued) | | |
| | VisionXS-IP-CON-F(S)-DP-HR<br>VisionXS-IP-CON-F(S)-DP-HR-AR-DT<br>VisionXS-IP-CON-F(S)-DP-HR-DH<br>VisionXS-IP-CON-F(S)-DP-HR-DH-AR-DT<br>VisionXS-IP-CON-F(S)-DP-HR-DH-DT<br>VisionXS-IP-CON-F(S)-DP-HR-DT<br>VisionXS-IP-CON-C-DP-UHR<br>VisionXS-IP-CON-C-DP-UHR-AR-DT-PoE<br>VisionXS-IP-CON-C-DP-UHR-DT<br>VisionXS-IP-CON-C-DP-UHR-DT-PoE<br>VisionXS-IP-CON-C-DP-UHR-PoE<br>VisionXS-IP-CON-F(M)-DP-UHR<br>VisionXS-IP-CON-F(M)-DP-UHR-DT<br>VisionXS-IP-CON-F(S)-DP-UHR<br>VisionXS-IP-CON-F(S)-DP-UHR-AR-DT<br>VisionXS-IP-CON-F(S)-DP-UHR-DT<br>VisionXS-IP-CON-C-DVI-I<br>VisionXS-IP-CON-C-DVI-I-AR-DT<br>VisionXS-IP-CON-C-DVI-I-AR-DT-PoE<br>VisionXS-IP-CON-C-DVI-I-DT<br>VisionXS-IP-CON-C-DVI-I-DT-PoE<br>VisionXS-IP-CON-C-DVI-I-PoE<br>VisionXS-IP-CON-F(M)-DVI-I<br>VisionXS-IP-CON-F(M)-DVI-I-AR-DT<br>VisionXS-IP-CON-F(M)-DVI-I-DT<br>VisionXS-IP-CON-F(S)-DVI-I<br>VisionXS-IP-CON-F(S)-DVI-I-AR-DT<br>VisionXS-IP-CON-F(S)-DVI-I-DT<br>VisionXS-IP-CON-C-HDM-HR<br>VisionXS-IP-CON-C-HDM-HR-AR-DT<br>VisionXS-IP-CON-C-HDM-HR-AR-DT-PoE<br>VisionXS-IP-CON-C-HDM-HR-DH<br>VisionXS-IP-CON-C-HDM-HR-DH-AR-DT<br>VisionXS-IP-CON-C-HDM-HR-DH-AR-DT-PoE<br>VisionXS-IP-CON-C-HDM-HR-DH-DT<br>VisionXS-IP-CON-C-HDM-HR-DH-DT-PoE<br>VisionXS-IP-CON-C-HDM-HR-DH-PoE<br>VisionXS-IP-CON-C-HDM-HR-DT<br>VisionXS-IP-CON-C-HDM-HR-DT-PoE<br>VisionXS-IP-CON-C-HDM-HR-PoE<br>VisionXS-IP-CON-C-HDM-UHR<br>VisionXS-IP-CON-C-HDM-UHR-AR-DT<br>VisionXS-IP-CON-C-HDM-UHR-AR-DT-PoE<br>VisionXS-IP-CON-C-HDM-UHR-DT<br>VisionXS-IP-CON-C-HDM-UHR-DT-PoE<br>VisionXS-IP-CON-C-HDM-UHR-PoE<br>VisionXS-IP-CON-F(M)-HDM-HR<br>VisionXS-IP-CON-F(M)-HDM-HR-AR-DT<br>VisionXS-IP-CON-F(M)-HDM-HR-DH<br>VisionXS-IP-CON-F(M)-HDM-HR-DH-AR-DT<br>VisionXS-IP-CON-F(M)-HDM-HR-DH-DT<br>VisionXS-IP-CON-F(M)-HDM-HR-DT<br>VisionXS-IP-CON-F(M)-HDM-UHR<br>VisionXS-IP-CON-F(M)-HDM-UHR-AR-DT<br>VisionXS-IP-CON-F(M)-HDM-UHR-DT | **1.x**<br>with<br>SecureCert | Small form-factor console module - provides video, keyboard, and mouse switching for ethernet and fiber transmission |

(Table continues next page.)

**Table 4. DoDIN APL Product Summary** (continued)

| DoDIN Certified Function | **Component Name** (See notes 1, 2, and 3.) | Tested Version | Remarks |
|---|---|---|---|
| Video Distribution System (VDS) | **Console Modules** (continued) | | |
| | VisionXS-IP-CON-F(S)-HDM-HR<br>VisionXS-IP-CON-F(S)-HDM-HR-AR-DT<br>VisionXS-IP-CON-F(S)-HDM-HR-DH<br>VisionXS-IP-CON-F(S)-HDM-HR-DH-AR-DT<br>VisionXS-IP-CON-F(S)-HDM-HR-DH-DT<br>VisionXS-IP-CON-F(S)-HDM-HR-DT<br>VisionXS-IP-CON-F(S)-HDM-UHR<br>VisionXS-IP-CON-F(S)-HDM-UHR-AR-DT<br>VisionXS-IP-CON-F(S)-HDM-UHR-DT<br>VisionXS-IP-CON-C-TypeC-UHR<br>VisionXS-IP-CON-C-TypeC-UHR-AR-DT<br>VisionXS-IP-CON-C-TypeC-UHR-AR-DT-PoE<br>VisionXS-IP-CON-C-TypeC-UHR-DT<br>VisionXS-IP-CON-C-TypeC-UHR-DT-PoE<br>VisionXS-IP-CON-C-TypeC-UHR-PoE<br>VisionXS-IP-CON-F(M)-TypeC-UHR<br>VisionXS-IP-CON-F(M)-TypeC-UHR-AR-DT<br>VisionXS-IP-CON-F(M)-TypeC-UHR-DT<br>VisionXS-IP-CON-F(S)-TypeC-UHR<br>VisionXS-IP-CON-F(S)-TypeC-UHR-AR-DT<br>VisionXS-IP-CON-F(S)-TypeC-UHR-DT | **1.x**<br>with<br>SecureCert | Small form-factor console module - provides video, keyboard, and mouse switching for ethernet and fiber transmission |
| | **Computer Modules** | | |
| | **VisionXS-IP-CPU-F(M)-DP-HR-AR-UG-DT**<br>**VisionXS-IP-CPU-C-DP-UHR-AR-UG-DT**<br>VisionXS-IP-CPU-C-DP-HR<br>VisionXS-IP-CPU-C-DP-HR-A<br>VisionXS-IP-CPU-C-DP-HR-A-PoE<br>VisionXS-IP-CPU-C-DP-HR-AR-DT<br>VisionXS-IP-CPU-C-DP-HR-AR-DT-PoE<br>VisionXS-IP-CPU-C-DP-HR-AR-UG-DT<br>VisionXS-IP-CPU-C-DP-HR-AR-UG-DT-PoE<br>VisionXS-IP-CPU-C-DP-HR-A-UG<br>VisionXS-IP-CPU-C-DP-HR-A-UG-PoE<br>VisionXS-IP-CPU-C-DP-HR-DH<br>VisionXS-IP-CPU-C-DP-HR-DH-A<br>VisionXS-IP-CPU-C-DP-HR-DH-A-PoE<br>VisionXS-IP-CPU-C-DP-HR-DH-AR-DT<br>VisionXS-IP-CPU-C-DP-HR-DH-AR-DT-PoE<br>VisionXS-IP-CPU-C-DP-HR-DH-AR-UG-DT<br>VisionXS-IP-CPU-C-DP-HR-DH-AR-UG-DT-PoE<br>VisionXS-IP-CPU-C-DP-HR-DH-A-UG<br>VisionXS-IP-CPU-C-DP-HR-DH-A-UG-PoE<br>VisionXS-IP-CPU-C-DP-HR-DH-DT<br>VisionXS-IP-CPU-C-DP-HR-DH-DT-PoE<br>VisionXS-IP-CPU-C-DP-HR-DH-PoE<br>VisionXS-IP-CPU-C-DP-HR-DH-UG<br>VisionXS-IP-CPU-C-DP-HR-DH-UG-DT<br>VisionXS-IP-CPU-C-DP-HR-DH-UG-DT-PoE<br>VisionXS-IP-CPU-C-DP-HR-DH-UG-PoE<br>VisionXS-IP-CPU-C-DP-HR-DT<br>VisionXS-IP-CPU-C-DP-HR-DT-PoE<br>VisionXS-IP-CPU-C-DP-HR-PoE<br>VisionXS-IP-CPU-C-DP-HR-UG<br>VisionXS-IP-CPU-C-DP-HR-UG-DT<br>VisionXS-IP-CPU-C-DP-HR-UG-DT-PoE<br>VisionXS-IP-CPU-C-DP-HR-UG-PoEVisionXS-IP-CPU-F(M)-DP-HR<br>VisionXS-IP-CPU-F(M)-DP-HR-A<br>VisionXS-IP-CPU-F(M)-DP-HR-AR-DT<br>VisionXS-IP-CPU-F(M)-DP-HR-A-UG | **1.x**<br>with<br>SecureCert | Small form-factor computer modules for ethernet and fiber transmission medium |

(Table continues next page.)

**Table 4. DoDIN APL Product Summary** (continued)

| DoDIN Certified Function | **Component Name** (See notes 1, 2, and 3.) | Tested Version | Remarks |
|---|---|---|---|
| Video Distribution System (VDS) | **Computer Modules** (continued) | | |
| | VisionXS-IP-CPU-F(M)-DP-HR-DH<br>VisionXS-IP-CPU-F(M)-DP-HR-DH-A<br>VisionXS-IP-CPU-F(M)-DP-HR-DH-AR-DT<br>VisionXS-IP-CPU-F(M)-DP-HR-DH-AR-UG-DT<br>VisionXS-IP-CPU-F(M)-DP-HR-DH-A-UG<br>VisionXS-IP-CPU-F(M)-DP-HR-DH-DT<br>VisionXS-IP-CPU-F(M)-DP-HR-DH-UG<br>VisionXS-IP-CPU-F(M)-DP-HR-DH-UG-DT<br>VisionXS-IP-CPU-F(M)-DP-HR-DT<br>VisionXS-IP-CPU-F(M)-DP-HR-UG<br>VisionXS-IP-CPU-F(M)-DP-HR-UG-DT<br>VisionXS-IP-CPU-F(S)-DP-HR<br>VisionXS-IP-CPU-F(S)-DP-HR-A<br>VisionXS-IP-CPU-F(S)-DP-HR-AR-DT<br>VisionXS-IP-CPU-F(S)-DP-HR-AR-UG-DT<br>VisionXS-IP-CPU-F(S)-DP-HR-A-UG<br>VisionXS-IP-CPU-F(S)-DP-HR-DH<br>VisionXS-IP-CPU-F(S)-DP-HR-DH-A<br>VisionXS-IP-CPU-F(S)-DP-HR-DH-AR-DT<br>VisionXS-IP-CPU-F(S)-DP-HR-DH-AR-UG-DT<br>VisionXS-IP-CPU-F(S)-DP-HR-DH-A-UG<br>VisionXS-IP-CPU-F(S)-DP-HR-DH-DT<br>VisionXS-IP-CPU-F(S)-DP-HR-DH-UG<br>VisionXS-IP-CPU-F(S)-DP-HR-DH-UG-DT<br>VisionXS-IP-CPU-F(S)-DP-HR-DT<br>VisionXS-IP-CPU-F(S)-DP-HR-UG<br>VisionXS-IP-CPU-F(S)-DP-HR-UG-DT<br>VisionXS-IP-CPU-C-DP-UHR<br>VisionXS-IP-CPU-C-DP-UHR-A<br>VisionXS-IP-CPU-C-DP-UHR-A-PoE<br>VisionXS-IP-CPU-C-DP-UHR-AR-DT<br>VisionXS-IP-CPU-C-DP-UHR-AR-DT-PoE<br>VisionXS-IP-CPU-C-DP-UHR-AR-UG-DT-PoE<br>VisionXS-IP-CPU-C-DP-UHR-A-UG<br>VisionXS-IP-CPU-C-DP-UHR-A-UG-PoE<br>VisionXS-IP-CPU-C-DP-UHR-DT<br>VisionXS-IP-CPU-C-DP-UHR-DT-PoE<br>VisionXS-IP-CPU-C-DP-UHR-PoE<br>VisionXS-IP-CPU-C-DP-UHR-UG<br>VisionXS-IP-CPU-C-DP-UHR-UG-DT<br>VisionXS-IP-CPU-C-DP-UHR-UG-DT-PoE<br>VisionXS-IP-CPU-C-DP-UHR-UG-PoE<br>VisionXS-IP-CPU-F(M)-DP-UHR<br>VisionXS-IP-CPU-F(M)-DP-UHR-A<br>VisionXS-IP-CPU-F(M)-DP-UHR-AR-DT<br>VisionXS-IP-CPU-F(M)-DP-UHR-AR-UG-DT<br>VisionXS-IP-CPU-F(M)-DP-UHR-A-UG<br>VisionXS-IP-CPU-F(M)-DP-UHR-DT<br>VisionXS-IP-CPU-F(M)-DP-UHR-UG<br>VisionXS-IP-CPU-F(M)-DP-UHR-UG-DT<br>VisionXS-IP-CPU-F(S)-DP-UHR<br>VisionXS-IP-CPU-F(S)-DP-UHR-A<br>VisionXS-IP-CPU-F(S)-DP-UHR-AR-DT<br>VisionXS-IP-CPU-F(S)-DP-UHR-AR-UG-DT<br>VisionXS-IP-CPU-F(S)-DP-UHR-A-UG<br>VisionXS-IP-CPU-F(S)-DP-UHR-DT<br>VisionXS-IP-CPU-F(S)-DP-UHR-UG<br>VisionXS-IP-CPU-F(S)-DP-UHR-UG-DT | **1.x**<br>with<br>SecureCert | Small form-factor computer modules for ethernet and fiber transmission medium |

(Table continues next page.)

**Table 4. DoDIN APL Product Summary** (continued)

| DoDIN Certified Function | **Component Name** (See notes 1, 2, and 3.) | Tested Version | Remarks |
|---|---|---|---|
| Video Distribution System (VDS) | **Computer Modules** (continued) | | |
| | VisionXS-IP-CPU-C-DVI-I<br>VisionXS-IP-CPU-C-DVI-I-A<br>VisionXS-IP-CPU-C-DVI-I-A-PoE<br>VisionXS-IP-CPU-C-DVI-I-AR-DT<br>VisionXS-IP-CPU-C-DVI-I-AR-DT-PoE<br>VisionXS-IP-CPU-C-DVI-I-AR-UG-DT<br>VisionXS-IP-CPU-C-DVI-I-AR-UG-DT-PoE<br>VisionXS-IP-CPU-C-DVI-I-A-UG<br>VisionXS-IP-CPU-C-DVI-I-A-UG-PoE<br>VisionXS-IP-CPU-C-DVI-I-DT<br>VisionXS-IP-CPU-C-DVI-I-DT-PoE<br>VisionXS-IP-CPU-C-DVI-I-PoE<br>VisionXS-IP-CPU-F(S)-HDM-UHR-UG<br>VisionXS-IP-CPU-F(S)-HDM-UHR-UG-DT<br>VisionXS-IP-CPU-C-TypeC-UHR<br>VisionXS-IP-CPU-C-TypeC-UHR-A<br>VisionXS-IP-CPU-C-TypeC-UHR-A-PoE<br>VisionXS-IP-CPU-C-HDM-HR-PoE<br>VisionXS-IP-CPU-C-HDM-HR-UG<br>VisionXS-IP-CPU-C-HDM-HR-UG-DT<br>VisionXS-IP-CPU-C-HDM-HR-UG-DT-PoE<br>VisionXS-IP-CPU-C-HDM-UHR-AR-DT-PoE<br>VisionXS-IP-CPU-C-HDM-UHR-AR-UG-DT<br>VisionXS-IP-CPU-C-HDM-UHR-AR-UG-DT-PoE<br>VisionXS-IP-CPU-C-HDM-UHR-A-UG<br>VisionXS-IP-CPU-C-HDM-UHR-A-UG-PoE<br>VisionXS-IP-CPU-C-HDM-UHR-DT<br>VisionXS-IP-CPU-C-HDM-UHR-DT-PoE<br>VisionXS-IP-CPU-C-HDM-UHR-PoE<br>VisionXS-IP-CPU-C-HDM-UHR-UG<br>VisionXS-IP-CPU-C-HDM-UHR-UG-DT<br>VisionXS-IP-CPU-C-HDM-UHR-UG-DT-PoE<br>VisionXS-IP-CPU-C-HDM-UHR-UG-PoE<br>VisionXS-IP-CPU-F(M)-HDM-UHR<br>VisionXS-IP-CPU-C-TypeC-UHR-A-UG<br>VisionXS-IP-CPU-C-TypeC-UHR-A-UG-PoE<br>VisionXS-IP-CPU-C-TypeC-UHR-DT<br>VisionXS-IP-CPU-C-TypeC-UHR-DT-PoE<br>VisionXS-IP-CPU-C-TypeC-UHR-PoE<br>VisionXS-IP-CPU-C-TypeC-UHR-UG<br>VisionXS-IP-CPU-C-TypeC-UHR-UG-DT<br>VisionXS-IP-CPU-C-TypeC-UHR-UG-DT-PoE<br>VisionXS-IP-CPU-C-TypeC-UHR-UG-PoE<br>VisionXS-IP-CPU-F(M)-HDM-HR<br>VisionXS-IP-CPU-F(M)-HDM-HR-A<br>VisionXS-IP-CPU-F(M)-HDM-HR-AR-DT<br>VisionXS-IP-CPU-F(M)-HDM-HR-AR-UG-DT<br>VisionXS-IP-CPU-F(M)-HDM-HR-A-UG<br>VisionXS-IP-CPU-F(M)-HDM-HR-DH<br>VisionXS-IP-CPU-F(M)-HDM-HR-DH-A<br>VisionXS-IP-CPU-F(M)-HDM-HR-DH-AR-DT<br>VisionXS-IP-CPU-F(M)-HDM-HR-DH-AR-UG-DT<br>VisionXS-IP-CPU-F(M)-HDM-HR-DH-A-UG<br>VisionXS-IP-CPU-F(M)-HDM-HR-DH-DT<br>VisionXS-IP-CPU-F(M)-HDM-HR-DH-UG<br>VisionXS-IP-CPU-F(M)-HDM-HR-DH-UG-DT<br>VisionXS-IP-CPU-F(S)-HDM-HR-DH-UG<br>VisionXS-IP-CPU-F(S)-HDM-HR-DH-UG-DT<br>VisionXS-IP-CPU-F(S)-HDM-HR-DT<br>VisionXS-IP-CPU-F(S)-HDM-HR-UG<br>VisionXS-IP-CPU-F(S)-HDM-HR-UG-DT | **1.x**<br>with<br>SecureCert | Small form-factor computer modules for ethernet and fiber transmission medium |

(Table continues next page.)

**Table 4. DoDIN APL Product Summary** (continued)

| DoDIN Certified Function | Component Name (See notes 1, 2, and 3.) | Tested Version | Remarks |
|---|---|---|---|
| Video Distribution System (VDS) | **Computer Modules** (continued) | | |
| | VisionXS-IP-CPU-F(S)-TypeC-UHR<br>VisionXS-IP-CPU-F(S)-TypeC-UHR-A<br>VisionXS-IP-CPU-F(S)-TypeC-UHR-AR-DT<br>VisionXS-IP-CPU-F(S)-TypeC-UHR-AR-UG-DT<br>VisionXS-IP-CPU-F(S)-TypeC-UHR-A-UG<br>VisionXS-IP-CPU-F(S)-TypeC-UHR-DT<br>VisionXS-IP-CPU-F(S)-TypeC-UHR-UG<br>VisionXS-IP-CPU-F(S)-TypeC-UHR-UG-DT | **1.x** with SecureCert | Small form-factor computer modules for ethernet and fiber transmission medium |
| | **Virtual Machine Access Components** | | |
| | **RemoteAccess-IP-CPU-Fiber(M) Basic**<br>**RemoteAccess-IP-CPU-UG Basic**<br>RemoteAccess-IP-CON<br>RemoteAccess-IP-CON-Fiber(M)<br>RemoteAccess-IP-CON-Fiber(S)<br>RemoteAccess-IP-CPU Basic<br>RemoteAccess-IP-CPU incl. PowerPack<br>RemoteAccess-IP-CPU-Fiber(M) incl. PowerPack<br>RemoteAccess-IP-CPU-Fiber(M)-UG Basic<br>RemoteAccess-IP-CPU-Fiber(M)-UG incl. PowerPack<br>RemoteAccess-IP-CPU-Fiber(S) Basic<br>RemoteAccess-IP-CPU-Fiber(S) incl. PowerPack<br>RemoteAccess-IP-CPU-Fiber(S)-UG Basic<br>RemoteAccess-IP-CPU-Fiber(S)-UG incl. PowerPack<br>RemoteAccess-IP-CPU-UG incl. PowerPack | **1.x** with SecureCert | Virtual machine control and access for ethernet and fiber transmission medium |
| Client Workstation (Site-provided) | Windows | Windows 10 Enterprise | Workstation to access management interface |
| | Axway Desktop Validator | 5.2.31494 | |
| | ActivClient | 7.1.0.153 | |

**NOTE(S):**
1. NIWC tested the bolded and underlined components. The other components in the family series were not tested. However, JITC certified the other components for joint use because they operate on the same software and have similar hardware as compared to the tested and certified components and JITC analysis determined they were functionally identical for interoperability certification purposes.
2. Enclosure 3 provides a detailed component and subcomponent list.
3. Any perceived acronym not defined in the LEGEND (below) is part of the product or component name.

**LEGEND:**

| | | | |
|---|---|---|---|
| APL | Approved Products List | JITC | Joint Interoperability Test Command |
| CON | Console | KVM | Keyboard-Video-Mouse |
| CPU | Central Processing Unit | M | Multimode |
| DoDIN | Department of Defense Information Networks | NIWC | Naval Information Warfare Center |
| DP | Display Port | PoE | Power Over Ethernet |
| DVI | Digital Video Interface | S | Single Mode |
| F | Fiber | UCR | Unified Capabilities Requirements |
| G&D | Guntermann & Drunck GmbH | USB | Universal Serial Bus |
| HD | High Definition | VDS | Video Distribution System |
| HDM | High Definition Module | XS | Extra Small |
| IP | Internet Protocol | | |

JITC Memo, JTE, Joint Interoperability Certification of the G&D North America, Inc Keyboard-Video-Mouse over Internet Protocol (KVM-over-IP) with Software Release 1.x

**4. Test Details.** This certification is based on interoperability testing, review of the Vendor's Letter of Compliance (LoC), Defense Information Systems Agency (DISA) adjudication of open Test Discrepancy Reports (TDRs), and DISA Certifying Authority (CA) Recommendation for inclusion on the DoDIN APL. NIWC completed review of the Vendor's LoC on 18 October 2024 and conducted IO testing at the NIWC Assured Real-Time Communications Lab at Norfolk, Virginia from 4 November through 8 November 2024, using test procedures derived from Reference (c). DISA adjudicated outstanding TDRs on 10 December 2024. A NIWC-led Cybersecurity (CS) test team conducted CS testing and published the results in a separate report, Reference (d). Enclosure 2 documents the test results and describes the test network and system configurations. Enclosure 3 provides a detailed list of the interface, capability, and functional requirements.

**5. Additional Information.** JITC distributes interoperability information via the JITC Electronic Report Distribution (ERD) system, which uses Sensitive but Unclassified Internet Protocol Data (formerly known as NIPRNet) e-mail. Interoperability status information is available via the JITC System Tracking Program (STP). STP is accessible by .mil/.gov users at https://stp.jitc.disa.mil/. Test reports, lessons learned, and related testing documents and references are on the JITC Industry Toolkit (JIT) at https://jit.fhu.disa.mil/. Due to the sensitivity of the information, the CS Assessment Package containing the approved configuration and deployment guide must be requested directly from the Approved Products Certification Office (APCO) via e-mail: disa.meade.peo-transport.list.approved-products-certification-of@mail.mil. All associated information is available on the DISA APCO website located at https://aplits.disa.mil/.

**6. Point of Contact (POC).** NIWC Testing POC: Amber Reed; Phone: 757-407-1126; Email: amber.a.reed.civ@us.navy.mil. JITC Certification POC: Jody Norris; Phone: (667) 890-7858; Teams DSN: 94 (323) 890-7858; FAX: (520) 538-4347, E-mail: jody.a.norris.civ@mail.mil; Mailing Address: Joint Interoperability Test Command, C/O JTE - Ms. Jody Norris, 2001 Brainard Road (MB59), Fort Huachuca, AZ 85613. The APCO tracking number for the SUT is 2403001.

FOR THE COMMANDER:

MACARI.ELAINE.SUSAN.1067225585 Digitally signed by MACARI.ELAINE.SUSAN.1067225585 Date: 2025.02.07 14:48:36 -07'00'

3 Enclosures a/s

FOR LAWRENCE T. DORN
Chief
Specialized Test Division

JITC Memo, JTE, Joint Interoperability Certification of the G&D North America, Inc Keyboard-Video-Mouse over Internet Protocol (KVM-over-IP) with Software Release 1.x

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US Coast Guard, CG-64
DISA/ISG REP
OUSD Intel, IS&A/Enterprise Programs of Record
DLA, Test Directorate, J621C
NSA/DT
NGA, Compliance and Assessment Team
DOT&E
Medical Health Systems, JMIS PEO T&IVV
HQUSAISEC, AMSEL-IE-ME
APCO

## ADDITIONAL REFERENCES

(c) Joint Interoperability Test Command, "Video Distribution System (VDS) Test Procedures Version 1.1 for Unified Capabilities Requirements (UCR) 2013 Change 2" September 2022 (Draft)
(d) Naval Information Warfare Command, "Cybersecurity Assessment Report for G&D North America, Inc KVM-over-IP Video Distribution System (VDS) Software Release 1.x (Tracking Number (TN) 2403001," January 2025
(e) Department of Defense, “Department of Defense Information Network Approved Products List Internet Protocol Version 6 Requirements Waiver” 18 April 2024

## CERTIFICATION SUMMARY

**1. SYSTEM AND REQUIREMENTS IDENTIFICATION.** The G&D North America, Inc Keyboard-Video-Mouse over Internet Protocol (KVM-over-IP) with Software Release 1.x is hereinafter referred to as the System Under Test (SUT). Table 2-1 depicts the SUT identifying information and requirements source.

**Table 2-1. System and Requirements Identification**

| | |
|---|---|
| **System Identification** | |
| Sponsor | US Navy |
| Sponsor Point of Contact | Christopher Maucher, Supervisory Engineer NM-05, E-mail: Christopher.m.maucher.civ@us.navy.mil, Telephone: 301-757-0989 |
| Vendor Point of Contact | Jon Litt, E-mail: Jon.Litt@gdsys.com, Telephone: 713-551-3179 |
| System Name | KVM-Over-IP |
| Increment and/or Version | 1.x |
| Product Category | VDS-IP |
| **System Background** | |
| Previous certifications | NA |
| **Tracking** | |
| APCO ID | 2403001 |
| System Tracking Program ID | 12697 |
| **Requirements Source** | |
| Unified Capabilities Requirements | Unified Capabilities Requirements 2013, Change 2, Sections 9.1, 9.2, 9.3, 9.4 |
| Remarks | None |
| **Test Organization(s)** | NIWC |

**LEGEND:**

| | | | |
|---|---|---|---|
| APCO | Approved Products Certification Office | NIWC | Naval Information Warfare Center |
| ID | Identification | OS | Operating System |
| IP | Internet Protocol | POC | Point of Contact |
| JITC | Joint Interoperability Test Command | SUT | System Under Test |
| KVM | Keyboard-Video-Mouse | SW | Software |
| NA | Not Applicable | VDS | Video Distribution System |

**2. SYSTEM DESCRIPTION.** A Video Distribution System (VDS) is a complement of audio and video equipment designed for interfacing, switching/bridging, and distributing digital and/or analog audio and video signals sourced from multiple devices and destined to multiple devices. Unlike a Video Teleconferencing (VTC) Multipoint Conferencing Unit (MCU), which performs solely many-to-one audio and video signal bridging, the VDS can perform many-to-one, one-to-many, and many-to-many bridging. The VDS can distribute signal feeds to geographically dispersed locations and may include types of "METADATA" that might include intelligence about the feed (e.g., signal feed coordinates, Predator target) or industry standard information such as Extended Display Identification Data (EDID), which is a data structure that provides additional information about the intended display devices. The VDS is fielded in one of two categories: Closed VDS or VDS Over Internet Protocol (VDS-IP).

**Closed VDS System:** Closed VDS systems do not interface with the Defense Information Systems Network (DISN) core. A Closed VDS System is considered to be a traditional VDS that enables video distribution over a Time Division Multiplexing (TDM)-based network that can occasionally support IP capabilities in a closed environment, and is capable of enabling Society

of Motion Picture and TV Engineers (SMPTE) signals to be transmitted over a digital infrastructure. Closed VDS systems can leverage legacy standards and traditional TDM VDS, and are inaccessible from DoD IP-routed networks. However, a Closed VDS system may use a peripheral device to extract video from an IP transport and convert it to an SMTP digital data stream, and pass it through the VDS.

**VDS over IP System (VDS-IP):** VDS-IP systems interface with the DISN core. A VDS-IP is an extension of a traditional VDS that enables added features such as enhanced compression procedures that allow for very low latency distribution over an IP transport. VDS-IP leverages standards based Moving Picture Compression Algorithms (MPCAs) and/or Picture Compression Algorithms (PCAs) to enable performance driven features and advantages over traditional TDM VDS. This approach allows VDS-IP systems to extend and reach across networking infrastructures where TDM based and Closed VDS systems have physical and architectural limitations. VDS-IP systems are accessible from and are capable of interfacing with DoD IP-routed networks.

The SUT is a VDS-IP system. G&D's KVM-over-IP solution provides, video, audio, USB, and serial switching over an IP network. Either a ControlCenter-IP or ControlCenter-IP-XS (referred to as ControlCenter-IP(-XS) throughout this document), along with a layer 2 managed switch, provides matrix switching functionality for the system.

The KVM modules are either computer models with the extension "Central Processing Unit (CPU) that connect to a workstation or server or a console (CON) model with the extension "CON" that connects to a monitor, serial devices, keyboard/mouse, and other USB devices. The combination of the CON and CPU allow a system to view multiple screens or multiple systems to view a screen. The RemoteAccess-IP series connects to a hypervisor and provides control and access to virtual machines (VMs), allowing Secure Shell (SSH), Virtual Network Computing (VNC), and Remot Desktop Protocol (RDP) access to the VMs (the SUT does not have a VM component). Each device includes a web-based Config Panel that provides basic configurations. When connected to the ControlCenter-IP(-XS) matrix switch, management occurs through ControlCenter-IP(-XS)'s web-based interface.

**ControlCenter-IP 2.0** – Matrix switch component. Main management interface

**ControlCenter-IP-XS** – Matrix switch component. Main management interface. Smaller form factor, reduced functionality.

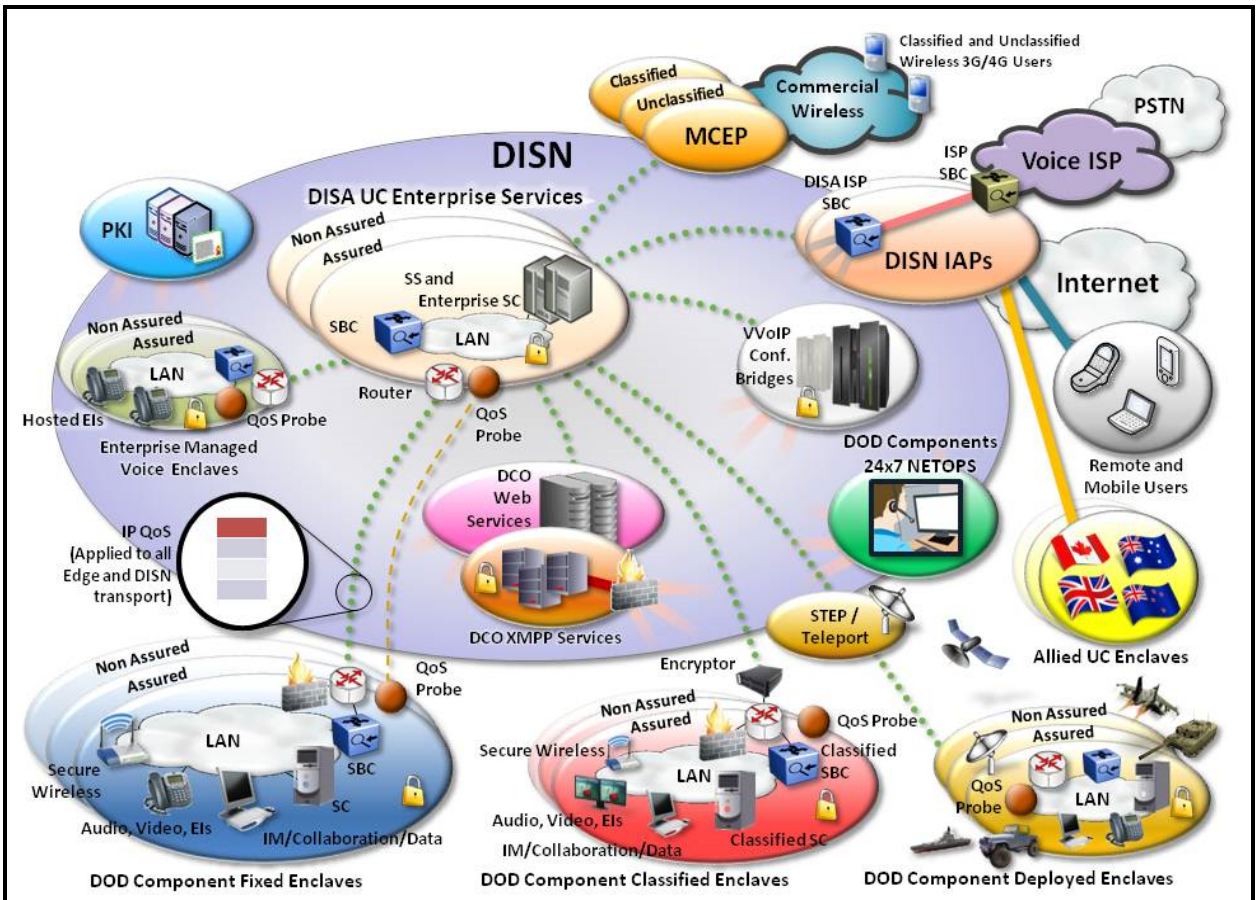
**Display Port (DP)1.2-Vision-IP-AR-CON** – Display port 1.2 console module that provides video, keyboard, and mouse switching.

**VisionXS-IP-CON-C-DP-UHR-AR-UG-DT**– Small form factor console module that provides video, keyboard, and mouse switching.

**VisionXS-IP-CON-C-DP-UHR-AR-UG-DT**– Small form factor computer modules.
**RemoteAccess-IP-CPU-UG** – VM control and access.

**3. OPERATIONAL ARCHITECTURE.** The DoD Information Network (DoDIN) architecture is a two-level network hierarchy consisting of DISN backbone switches and Service/Agency installation switches. The Department of Defense (DoD) Chief Information Officer (CIO) and Joint Staff policy and subscriber mission requirements determine which type of switch can be used at a particular location. The DoDIN architecture, therefore, consists of several categories of switches. Figure 2-1 depicts the Notional DoDIN Architecture in which that the SUT may be used.

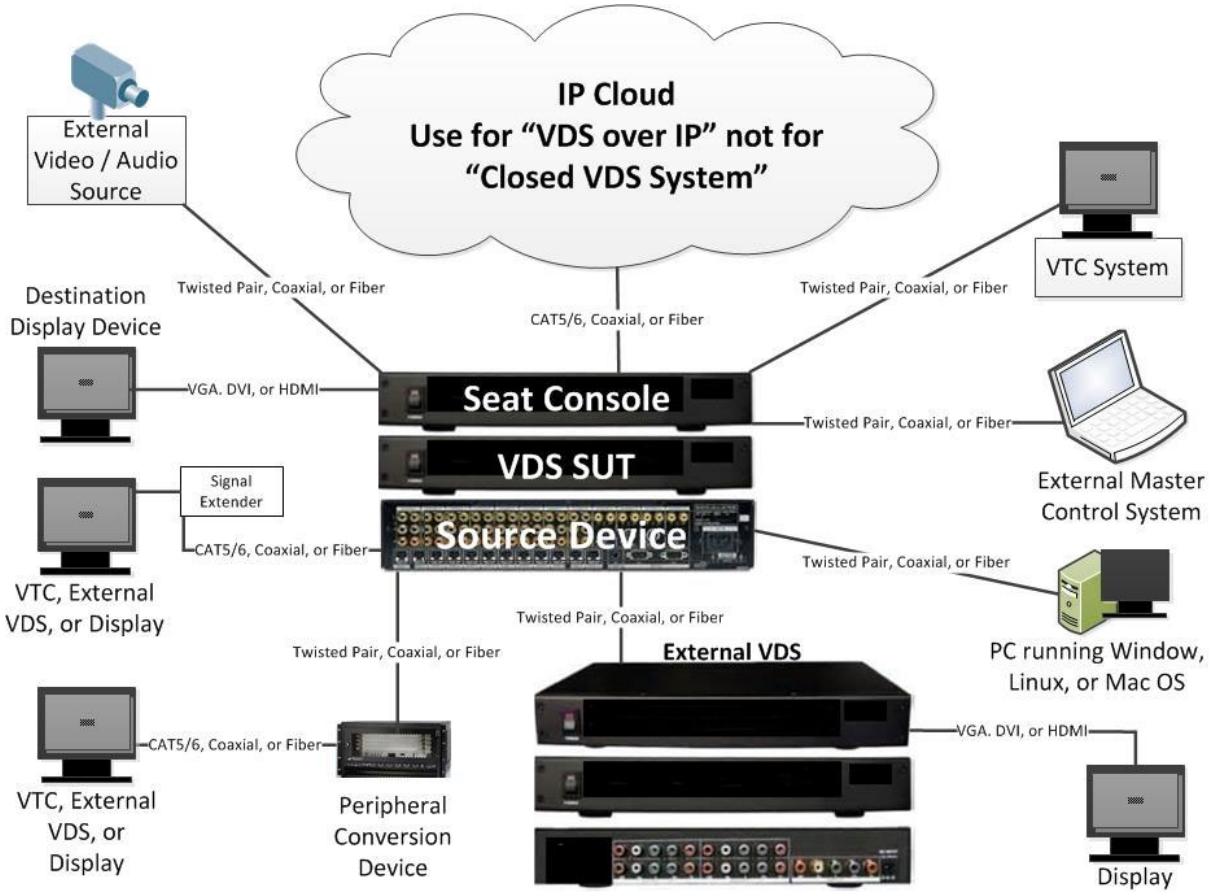
**4. TEST CONFIGURATION.** The Naval Information Warfare Center test team tested the SUT at Norfolk, Virginia in a manner and configuration similar to that of the Notional DoDIN Architecture depicted in Figure 2-1. The test team verified the SUT's required functions and features using the notional test configuration depicted in Figure 2-2. The test team conducted interoperability testing of the VDS-IP components by testing the SUT with various Vendor DoDIN APL certified products as illustrated in Figure 2-3. Testing of the system's required functions and features was conducted using the test configurations depicted in Figure 2-2 and Figure 2-3. The test configuratioin used for Cybersecurity testing is documented in a separate report, Reference (d).




**LEGEND:**

| | | | |
|---|---|---|---|
| DCO | Defense Connection Online | NETOPS | Network Operations |
| DISA | Defense Information Systems Agency | PKI | Public Key Infrastructure |
| DISN | Defense Information Systems Network | PSTN | Public Switched Telephone Network |
| DoDIN | Department of Defense Information Network | QoS | Quality of Service |
| EI | End Instrument | SBC | Session Border Controller |
| IAP | Internet Access Point | SC | Session Controller |
| IM | Instant Messaging | SS | Soft-switch |
| IP | Internet Protocol | STEP | Standardized Tactical Entry Point |
| ISP | Internet Service Provider | UC | Unified Capabilities |
| LAN | Local Area Network | VVoIP | Voice and Video over IP |
| MCEP | Multi Carrier Entry Point | XMPP | Extensible Messaging and Presence Protocol |

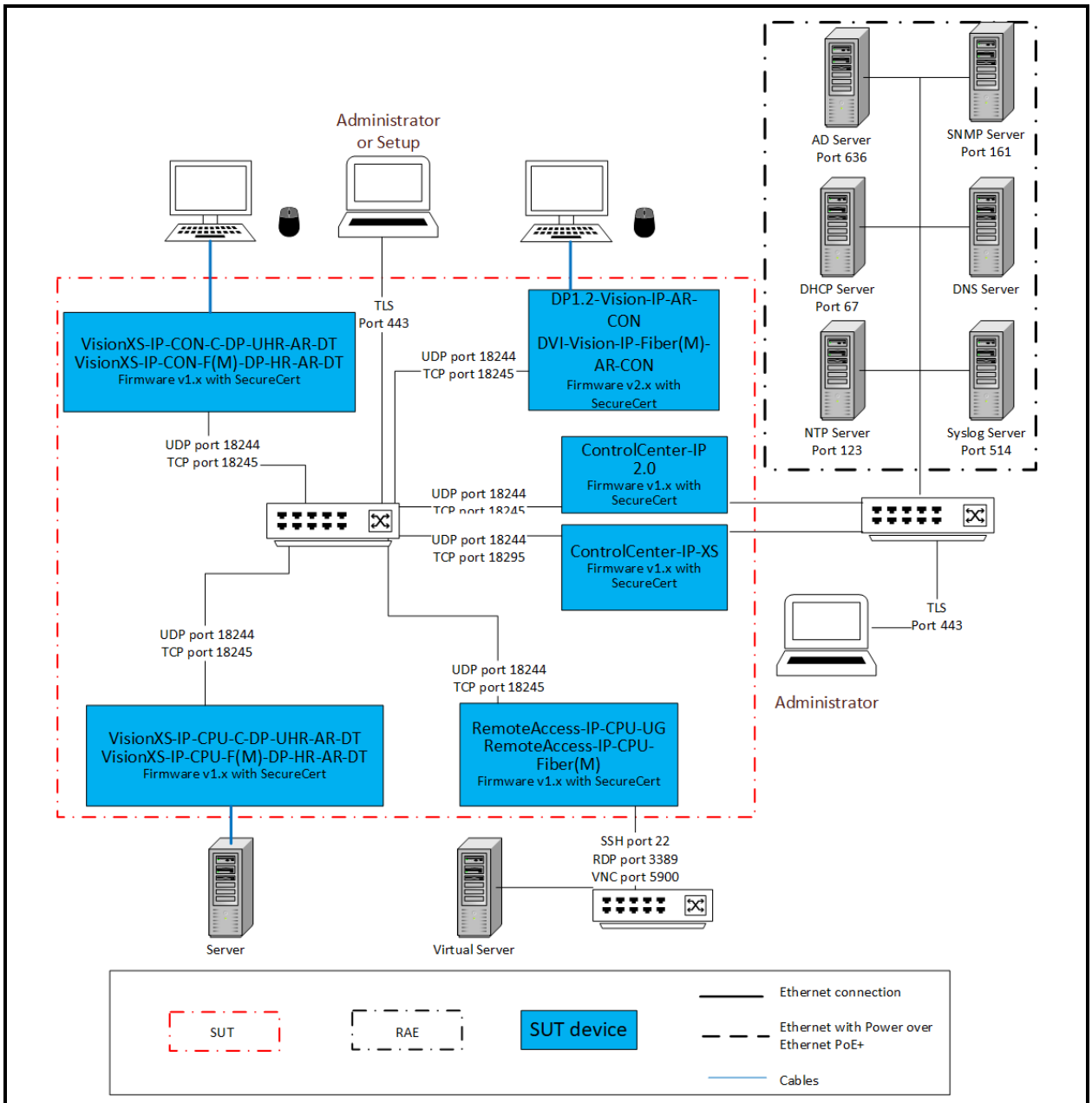
**Figure 2-1. Notional DoDIN Architecture**




**LEGEND:**

| | | | |
|---|---|---|---|
| CAT5 | Category 5 | PC | Personal Computer |
| DVI | Digital Video Interface | SUT | System Under Test |
| HDMI | High-Definition Multimedia Interface | VDS | Video Distribution System |
| IP | Internet Protocol | VGA | Video Graphics Array |
| OS | Operating System | VTC | Video Teleconferencing |

**Figure 2-2. Notional Test Architecture for VDS System**




**LEGEND:**

| | | | |
|---|---|---|---|
| AD | Active Directory | RDP | Remote Desktop Protocol |
| CPU | Computer Processing Unit | SNMP | Simple Network Management Protocol |
| CON | Connector | SSH | Secure Shell |
| DHCP | Dynamic Host Configuration Protocol | SUT | System Under Test |
| DNS | Domain Name Service | Syslog | System Logging Protoco; |
| DP-UHR | Dual Point Video - Ultra-High Resolution | TCP | Transmission Control Protocol |
| IP | Internet Protocol | TLS | Transport Layer Security |
| DVI | Digital Video Interface | UDP | User Datagram Protocol |
| NTP | Network Time Protocol | UG | Power supply included |
| PoE | Power over Ethernet | VNC | Virtual Network Computer |
| RAE | Required Ancillary Equipment | | |

**Figure 2-3. SUT Interoperability Test Configuration**

**5. METHODOLOGY.** NIWC conducted testing of the VDS-IP System components using LAN requirements derived from the UCR 2013, Change 2, Reference (b), and the VDS test procedures, Reference (c). In addition to testing, an analysis of the Vendor's Letter of Compliance (LoC) verified that letter "R" requirements have been met. Test Discrepancy Reports (TDRs) document any noted discrepancies. The Vendor submitted Plan of Action and Milestones (POA&M) as required. DISA adjudicated the TDRs as minor. DISA will evaluate any new discrepancy noted in the operational environment for impact on the existing certification. DISA will adjudicate these discrepancies via a Vendor POA&M, which must address all new critical TDRs within 120 days of identification.

**6. INTEROPERABILITY REQUIREMENTS, RESULTS, AND ANALYSIS.** The interface, Capability Requirements (CR) and Functional Requirements (FR), and other requirements for a DoDIN VDS are established by UCR 2013, Change 2, Section 9. Table 3-1 provides the SUT interface interoperability status, and Table 3-2 provides the Capability Requirements and Functional Requirements status. Testing details and results are provided in the following sub-paragraphs.

**a. The UCR 2013, Change 2, Section 9 includes the Video Distribution Service (VDS) Product Requirements**.

1) **Section 9.1, General VDS System.** General VDS configuration requirements apply to all VDS devices in both the Closed VDS system configuration as described in Section 9.2, Closed VDS System, and VDS over Internet Protocol (IP) configurations as described in Section 9.3, VDS over IP (VDS-IP). The VDS results for all tested components are listed in Enclosure 3, Table 3-2.

a) The VDS system shall fall into one of two categories:

- Closed VDS System. These VDS systems are inaccessible from Department of Defense (DoD) IP-routed networks. Closed VDS systems shall follow the requirement as specified in Section 9.2, Closed VDS System. The SUT is a VDS over IP system.

- VDS over IP (VDS-IP) System. These are VDS systems that are accessible and interface with DoD IP-routed networks. VDS-IP systems shall follow the requirements as specified in Section 9.3, VDS over IP (VDS-IP). The SUT partially met the VDS-IP requirements with testing and the Vendor's LoC. Per the Vendor's LoC, the SUT does not support IPv6. The DoD Chief Information Officer (CIO) granted the Vendor a one-year IPv6 waiver for this SUT, Reference (e). Table 1 outlines applicable TDR's for the requirements that were not met. The results for all tested SUT components are listed in Table 3-2 in Enclosure 3.

NOTE: This section leverages the DoD Architecture Framework (DoDAF) baseline for a Closed System; therefore, the VDS shall be Closed if the system is inaccessible from external networks such as Non-Secure Internet Protocol Router (NIPR) or Secure Internet Protocol Router (SIPR).

b) If the Closed VDS system requires IP-routed control of its Matrix Switch, then the system shall utilize Out-of-Band Management (OBM) in accordance with the Security Technical

Implementation Guidelines (STIGs). A NIWC-led CS test team conducted Security testing for the SUT and published the results in a separate report, Reference (d).

c) The VDS system shall have the ability to be controlled from an external master control system. The SUT met these requirements with testing.

d) The VDS system shall provide at least one sub-control position with System Administrator permission access control. The SUT met these requirements with testing.

1. **Section 9.1.1, IP Requirements for VDS Systems**

a. If the VDS system is inaccessible from DoD IP-routed networks, then the VDS system is considered a Closed VDS system and support of the IPv4 profile as defined in UCR 2013, Section 7.2.1.5, Protocols, and of the IPv6 profile as described in the UCR 2013, Section 5, IPv6, is optional. Otherwise, if the VDS systems connect to IP-routed networks, then the VDS system is considered a VDS over IP system, and support of the IPv4 profile as defined in the UCR 2013, Section 5, IPv6, and of the IPv6 profile as described in the UCR 2013, Section 5, IPv6, is required. NOTE: Per DoD CIO DTM 21-004, all VDS are required to comply with Section 5, IPv6. The SUT met IPv4 requirements, but per the Vendor's LoC, the SUT does not support IPv6 requirements. The DoD CIO granted the Vendor a one-year IPv6 Waiver for the SUT, Reference (e). See Table 1 for additional information regarding IPv6 waiver and applicable TDR's.

2. **Section 9.1.2, VDS System Signal**

a. The VDS system shall provide the ability to transfer audio and video signals in a variety of configurations, including, but not limited to, seat console to seat console, seat console to destination display device, seat console to video conversion device, seat console to VTC, and source devices to seat console. The SUT met these requirements with testing and the Vendor's LoC.

b. The VDS system shall be scalable for distributing incoming signal feeds from multiple video sources and shall route to multiple video display receivers as needed by operational requirements. The SUT met these requirements with testing and the Vendor's LoC.

c. The VDS system shall be dynamic, transparent, and capable of understanding the capabilities of the display based on the input source, to provide the necessary equipment resolutions and information required by the peripheral equipment connected. The SUT met these requirements with testing and the Vendor's LoC.

d. The VDS system shall support both analog and digital input signals. This provides the flexibility to support both legacy analog sources and digital displays. The SUT met these requirements with testing and the Vendor's LoC.

e. The VDS system shall provide the ability to display signals from any source device to any compatible destination device, including intermediate display aggregators

(e.g., Wall Controllers, Multi-View display processors). The SUT met these requirements with testing and the Vendor's LoC.

f. The VDS system shall maintain native audio and video signals from input interface to output interface without signal degradation, loss of data compression, color sub-sampling, frame rate conversion, auxiliary data loss or signal resolution formatting. The SUT met these requirements with testing and the Vendor's LoC.

g. Any type of signal processing to modify the original audio or video signal information shall be documented and verified by maintenance and/or operator inquiry. The SUT met these requirements with testing and the Vendor's LoC.

h. The VDS system shall be capable of processing and maintaining a minimum of 4:2:2 chroma subsampling in color space, preserving single pixel detail through the encoding, streaming, and decoding processes. The SUT met these requirements with testing and the Vendor's LoC.

i. The VDS system shall support internal scaling to allow the end user to specify different input or output resolutions as required, matching the configuration of installed equipment. The SUT met these requirements with testing and the Vendor's LoC.

j. The VDS system shall utilize VDS Peripheral Connector Conversion (VPCC) devices (Section 9.1.3, VDS System Peripheral) to modify audio and video signals to a single common interface standard for use in the VDS system. The SUT partially met these requirement with testing and the Vendor's LoC. Per the Vendor's LoC, scaling is not supported on CON/CPU devices but the refresh rate can be modified. Refer to Table 1 for more information (TDR GAD-1835-002).

NOTE: Possible applications of this method would convedrt hig-resolution computer graphics DVI interfaces to production television HD-SDI interface formats for switching and distribution. These HD-SDI signaling interface formats are then typically converted back to DVI or HDMI interfaces for use with common display devices.

k. The VDS system shall provide methods to modify or customize EDID information reported to source devices in order to allow proper configuration of video source devices to match the overall capabilities of the VDS core switching, VDS destination devices, and display devices connected to the VDS system. The SUT met these requirement with testing and the Vendor's LoC.

l. The VDS system shall provide EDID signaling standard in accordance with the Video Electronics Standards Association (VESA) Enhanced Extended Display Identification, Version 1.3. The SUT met these requirement with testing and the Vendor's LoC.

3. **Section 9.1.3, VDS System Peripheral**

The SUT does not support the optional VDS System Peripheral requirements.

a. The VDS Peripherals shall fall into one of two categories:

- Source Devices. Signal generators that output video, audio and other waveforms which are used in the communication and synchronization of VDS subcomponents, using a signal type that is processed by the VDS Switch system. Examples include computer workstations, laptop computers, VTC codecs, video playback devices (DVD, Blu-ray, and media players), cable television tuners, and live video camera feeds.

- Destination Devices. Signal receivers that accept the signal from the VDS Switching system; process the video, audio, and other waveforms; and provide the necessary feedback that enables VDS. Examples include Desktop monitors, television monitors, video projectors, video signal processors, video recording devices, and video wall signal processor systems. The SUT does not support optional Destination Devices requirements.

NOTE: Some devices such as VTC codecs and recording devices may serve as a source and/or destination device.

b. Destination devices shall support scan rates between 23.95 and 85Hz.

c. Destination devices shall support video input resolutions of: 480i, 525i, 625i, 1080i, 480p, 720p, and 1080p for 50Hz and 60Hz progressive and interlaced scan formats.

d. Section 9.1.3 states that the Destination devices shall support video and picture graphics in their native resolution (without any visual artifacts), without additional processing and decoding, to maintain the original native resolution without use of image processing to resize or scale the original signal feed.

4. **Section 9.1.4, VDS Signal Extenders**

The SUT does not support the optional VDS Signal Extenders requirements.

a. VDS Signal Extenders shall condition, amplify, and provide physical media conversion (i.e., copper to fiber optic or coaxial video to video over twisted pair) for audio and video signals to extend the maximum cabling distances from source devices to destination device.

b. Section 9.1.4 states that the VDS Signal Extenders shall support, at a minimum, one of the following interconnects: coaxial, twisted pair, or fiber optical.

5. **Section 9.1.5, VDS System Peripheral Connectors**

a. VDS Subcomponents interface with one another using peripheral connectors, which are simply modular components that provide different options for interfacing audio and audio interface formats and VDS components. Table 9.1-1, Summary of Connector Types, lists the various connector types. Summary of Connector Types, lists the various connector types. Summary of connector types include: BNC, DVI, VGA, HDMI, RCA, Fiber (LC, SC, etc.), Modular Connectors (RJ11, RJ45, 8P8C, etc.). If the VDS system supports analog VGA and DVI computer connectors, then the following formats shall be supported:

- High Resolution [up to 1920x1200 pixels Wide Ultra eXtended Graphics Array (WUXGA)] computer video resolutions operating at up to 60Hz vertical refresh rate, or up to165 MHz total un-compressed pixel clock bandwidth.
- Analog VGA connectors with RGBHV, RGBS, or RGsB coaxial high definition video formats through use of RGBHV to VGA cabling adaptors.
- DVI connectors compatible with the Digital Display Working Group (DDWG) DVI 1.0 Specification, April 2, 1999.

The SUT met all requirements above with testing and the Vendor's LoC.

b. If the VDS system supports Multi-Rate SDI connectors, then the following Society of Motion Picture and Television Engineers (SMPTE) formats shall be supported:

- SMPTE 259M: Standard Definition SDI (SD-SDI)
- SMPTE 344M: Enhanced Definition SDI (ED-SDI)
- SMPTE 292M: High Definition SDI (HD-SDI)
- SMPTE 424M: 3-Gbps SDI (3G-SDI)
- SMPTE 291M: Ancillary Data Packet and Space Formatting

The SUT does not support these conditional requirements.

c. If the VDS system supports HDMI video connectors and provides support for digital video sources with and without High-Bandwidth Digital Content Protection (HDCP) copy protection, then the following HDMI features shall be supported:

- High-resolution (up to 1920x1200 pixels WUXGA) computer video resolutions operating at up to 60Hz vertical refresh rate, or up to165MHz total un-compressed pixel clock bandwidth.
- 24-bit color pixel depth and RGB and YCbCr color space.

- Embedded 2 CH Stereo Uncompressed Pulse Code Modulation (PCM) audio signaling over HDMI interface connections.

The SUT does not support these conditional requirements.

d. The VDS system shall support Extended Display Identification Data (EDID) for VGA, DVI, and HDMI connectors. EDID support shall be provided by a VDS connector to describe the capabilities of the VDS system interface to a connected video source device. EDID interface signaling provided by the VDS to the source video device shall include the following:

- VDS Manufacture ID
- VDS Product Identification
- Digital or analog capability of VDS Interface
- Supported video resolution and video timing modes of the VDS system
- Preferred video resolution and video timing mode of the VDS system

The SUT met these requirements with testing and the Vendor's LoC.

6. **Section 9.1.6, VDS Peripheral Connectors Conversion Devices**

a. VPCC devices are system appliances that operate and provide gateway like capabilities and allow for different types of VDS subcomponents to interoperate by coupling like peripherals. VPCCs shall accept, couple, and convert from input to output for connector peripherals as described in Table 9.1-1, Summary of Connector Types. The SUT met this requirement with testing and the Vendor's LoC.

b. VPCCs shall accept high-resolution, up to 1920x1200 pixels WUXGA computer video resolutions, operating at up to 60Hz vertical refresh rate, or up to165MHz total un-compressed pixel clock bandwidth. The SUT met this requirement with testing and the Vendor's LoC.

c. VPCCs shall support upwards and downwards video resolution and frame rate signal processing. The SUT does not support this conditional VPCCs requirement.

d. VPCCs shall use video scaling or signal processing to convert between different connector peripherals as described in Table 9.1-1, Summary of Connector Types. The SUT met this requirement with testing and the Vendor's LoC.

e. VPCCs shall allow for dynamic conversion or for user defined conversions to support display resolution formats with varying aspect ratios (4:3, 16:9, and 16:10). The SUT does not support this conditional VPCCs requirement.

f. If the VPCCs require local monitoring, then VPCCs shall support local HD-SDI/VGA/DVI/HDMI loop-through outputs (as needed for the video source format) for local monitoring. The SUT does not support this conditional VPCCs requirement.

g. VPCCs shall auto-detect the type of peripheral present and provide video peripheral conversion and processing as needed to match the selected video peripheral of the attached video display or VDS subcomponent. The SUT met this requirement with testing and the Vendor's LoC.

h. VPCCs shall support Ethernet management interfaces for diagnostic information and control, including the following:

- Complete information about the device
- Physical identification of hardware and system error log

The SUT met this requirement with testing and the Vendor's LoC.

7. **Section 9.1.7, VDS Master Control Switch**

a. The VDS Master Control switch shall allow the end user to select and verify the processing of any signal displayed. The SUT met this requirement with testing and the Vendor's LoC.

b. The VDS Master Control switch shall be able to perform the following functions on the VDS Matrix Switch:

- Switch Single Input to Single Output
- Switch Single Input to Multiple Outputs
- Allow the user to "record" and "recall" presets of crosspoint routings over both the entire switch matrix and selected groupings of inputs and outputs.

The SUT met this requirement with testing and the Vendor's LoC.

c. The VDS Master Control shall be able to perform the following functions on the VDS Matrix Switch:

- Switch Single Input to Single Output
- Switch Single Input to Multiple Outputs
- Enquire the status of any current configuration, by individual output, resulting in the current routed input information; by individual input, resulting in a listing of all current outputs; a master listing of all input names (if stored within the device); and a master listing of all current output assignments.

- Clear the switching or crosspoint (route "0") based on input, where any output with the selected input will be automatically cleared, or based on output, where only the selected output crosspoints are cleared. Clearing must result in NO INPUT selected rather than using a "blank" or "un-assigned" input.

The SUT met this requirement with testing and the Vendor's LoC.

8. **Section 9.1.8, VDS Matrix Switch**

a. VDS Systems connect via a VDS Matrix Switch, which is a device capable of accepting multiple inputs from source devices and selectively distributing any one of these inputs to one or many destination devices. The VDS Matrix Switch shall accept original audio and video signals, as defined in Section 9.1.2, VDS System Signal, and shall accept multiple connectors as defined in Section 9.1.4, VDS Signal Extenders, to interface to other VDS Matrix Switching Devices, VDS Distribution Devices, VDS Switching Devices, VDS Conversion Devices, and other VDS subcomponents. The SUT met this requirement with testing and the Vendor's LoC.

b. The VDS Matrix Switch shall support hot-swappable expansion modules. The SUT met this requirement with testing and the Vendor's LoC.

c. The VDS Matrix Switch shall support local and remote control management and control. The SUT met this requirement with testing and the Vendor's LoC.

d. The VDS Matrix Switch shall include a local primary control mode that supports a secondary external control mode as needed for redundancy. NOTE: Best practices indicate a need for backup distributed control systems (dual processors) in any large scale VDS installation. The SUT met this requirement through testing and the Vendor's LoC.

e. If the VDS Matrix Switch is slated for specialized missions, the VDS Matrix Switch shall use custom rack mounts (e.g., Ship board operations). Otherwise, the VDS Matrix Switch shall support the industry standard 19-inch wide equipment racks. The SUT does not support this optional requirement.

f. If the VDS Matrix Switch is slated for mission-critical C2 operations, then the VDS Matrix Switch shall include two or more hot-swappable power supplies with two independent power cords for redundancy. The SUT met this requirement with the Vendor's LoC.

g. The VDS Matrix Switch shall provide at least one sub-control position with System Administrator permission access control. The SUT met this requirement with testing and the Vendor's LoC.

9. **Section 9.1.9, VDS Cybersecurity**

a. All VDS components shall adhere to the appropriate STIGs. A NIWC-led CS test team conducted Security testing and documented the results in a separate report, Reference (d).

b. All VDS components shall meet all appropriate Ports, Protocols, and Services Management (PPSM) guidelines and vulnerability and risk assessments to achieve compliance for all information systems, applications, and services connected to the Global Information Grid (GIG). A NIWC-led CS test team conducted Security testing and documented the results in a separate report, Reference (d).

c. The VDS shall comply with appropriate National Institute of Standards and Technology (NIST)/National Information Assurance Partnership (NIAP) standards. A NIWC-led CS test team conducted Security testing and documented the results in a separate report, Reference (d).

10. **Section 9.1.10, VDS Availability**

a. Section 9.1.10 states that the number of UI events shall be no more than 4.38 events per year. Note: UI events are critical service affecting events impairing critical components (i.e., a Matrix Switch as opposed to a Peripheral Device). A UI is any condition identified by a user making the system not operational. Table 9.1-2, Unscheduled Interruption Event Counts, depicts the number of events per system uptime. The SUT met this requirement with the Vendor's LoC.

b. Section 9.1.10 states that the duration of unscheduled interruption (DUI) events shall be no more than 2 hours per event. Table 9.1-3, Duration of Unscheduled Interruption Events, depicts the number of hours per event per year. Note: An entire system integrity check must be performed for outages lasting longer than 2 hours. The SUT met this requirement with the Vendor's LoC.

c. Section 9.1.10 states that the duration of scheduled outages shall be no longer than 0.5 hours per month and 6 hours per year. Table 9.1-4, Scheduled Maintenance Event Durations, depicts the allowable hourly/yearly durations for scheduled outages. Note 1: Scheduled maintenance is the duration of performing planned maintenance operations in which the system is not available to the user. Note 2: An entire system integrity check must be performed for outages lasting longer than 0.5 hours. The SUT met this requirement with the Vendor's LoC.

d. Section 9.1.10 states that all outages or service disruptions to the system shall be correctable within 2 hours using normal maintenance procedures. The SUT met this requirement with the Vvendor's LoC.

11. **Section 9.1.11, VDS Diagnostics**

a. Section 9.1.11 states that the VDS Matrix Switch, VPCCs, and VDS signal Extenders shall provide system diagnostics to verify and validate proper system operation and status. The SUT met this requirement with testing and the Vendor's LoC.

b. Section 9.1.11 states that the VDS Matrix Switch shall provide complete information about the device, including all software and firmware revisions; type of device; model number; IP address; serial number; MAC address; input signal resolution; original signal resolution; physical location of the unit (based on customer input at time of installation); internal temperatures of the unit; fan speed and status of each fan associated with the unit; and an error log pertaining to the unit. The SUT met this requirement with testing and the Vendor's LoC.

c. Section 9.1.11 states that the VPCCs and VDS signal Extenders shall be able to output an internally generated video signal in place of the input signal and an audio tone in place of the incoming audio. The SUT does not support this optional requirement.

d. Section 9.1.11 states that the VDS Matrix Switch, VPCCs, and VDS signal Extenders shall provide an interface capability to be monitored from a centralized monitoring and diagnostic VDS control location. The SUT met this requirement with testing and the Vendor's LoC.

e. Section 9.1.11 states that the VDS Matrix Switch, VPCCs, and VDS signal Extenders shall support local and remote control monitoring. The SUT met this requirement with testing and the Vendor's LoC.

2) **Section 9.2, Closed VDS System**

The SUT is a VDS-IP; therefore, these requirements are not applicable to the SUT.

a) Closed VDS Systems shall comply with the General VDS System Requirements as outlined in Section 9.1, General VDS System.

b) Closed VDS Systems shall support the IPv4 profile as defined in Section 7.2.1.5, Protocols, and the IPv6 profile as described in Section 5, IPv6.

c) Closed VDS Systems shall interface with a VDS Matrix Switch controller.

d) Closed VDS Systems shall support serial RS-232, RS-422, or RS-485 interfaces as required by the system.

e) Closed VDS Systems shall support USB and Ethernet interfaces.

f) Closed VDS Systems shall support a web-based configuration and control.

3) **Section 9.3, VDS Over IP (VDS-IP)**

a) VDS-IP Systems shall comply with the General VDS System Requirements as outlined in Section 9.1, General VDS System. Note: See LoC for UCR Section 9.1. The SUT partially met these requirements with testing and the Vendor's LoC.

b) VDS-IP Systems shall support the IPv4 profile as defined in Section 7.2.1.5, Protocols, and the IPv6 profile as described in Section 5, IPv6. The SUT supports IPv4 requirements but does not support IPv6. The DoD CIO granted a one-year IPv6 waiver and DISA adjudicated this discrepancy as having minor operational impact with IPv6 waiver and Vendor POA&M, as noted in Table 1.

c) If the VDS-IP system uses standards-based video or picture conversion, compression, and encoding methods, then the VDS system shall be categorized as an Open Distribution VDS System. Otherwise, the system is a Proprietary Distribution VDS System. The SUT did not meet this requirement. Per the Vendor's LoC, the SUT is a VDS-IP system with an Open Distribution, not a proprietary distribution. DISA adjudicated this discrepancy as a UCR Change Requirement, as noted in Table 1 (TDR GAD-1835-004).

d) Open Distribution VDS-IP systems shall comply with all Unified Capabilities (UC) Audio and Video Conference System Requirements as defined in Section 3.4, UC Audio and Video Conference System. A NIWC-led Cybersecurity test team conducted Security testing and published the results in a separate report, Reference (d).

e) Proprietary Distribution VDS-IP system shall use STIG and PPSM-approved IP transport mechanisms, but is not required to use standards based video or picture conversion, compression and encoding methods. A NIWC-led Cybersecurity test team conducted Security testing and published the results in a separate report, Reference (d).

f) VDS-IP Systems shall comply with the following PCA formats:

- JPEG, JPEG2000, VC-1, Dirac, VP8 or other compression codecs based on Discrete Cosine Transform (DCT) or Discrete Wavelet Transform (DWT).
- PNG

The SUT did not meet this requirement. Per the Vendor's LoC, the SUT uses a proprietary compression method, but this is only internal to the system. Video is available through standard video interfaces (DP, DVI) and is not compressed on this output. DISA adjudicated this discrepancy as a UCR Change Requirement, as noted in Table 1 (TDR GAD-1835-005).

g) VDS-IP subcomponents shall support serial RS-232, USB, or Ethernet. The SUT met this requirements with testing and the Vendor's LoC.

h) VDS-IP systems shall support a web-based configuration and control. The SUT met this requirement with testing and the Vendor's LoC.

i) VDS-IP systems shall interface with a VDS Matrix Switch controller. The SUT met this requirement with testing and the Vendor's LoC.

1. **Section 9.3.1, VDS–IP Codec**

a. VDS-IP shall fall into one of two categories: VDS-IP Hardware Codec or VDS-IP Software Codec. The SUT met this requirement with testing and the Vendor's LoC.

b. VDS-IP Hardware Codecs shall accept computer graphic input resolutions to include VGA, SVGA, XGA, SXGA, SXGA+, UXGA, WUXGA, 1920x1080, and custom computer graphic resolutions and input modes. The SUT met this requirement with testing and the Vendor's LoC.

c. The VDS-IP Hardware Codecs shall provide reliable decoding during live configuration changes or selection of new active audio and video data streams (e.g., decoding device does not require restart, resync, or reboot to acquire newly selected data stream). The SUT met this requirement with testing and the Vendor's LoC.

4) **Section 9.4, VDS Recording**

a) VDS Recording Devices shall fall into one of two categories:

- Video Tape Recorder (VTR). A device that captures and archives video and/or audio material on a magnetic tape (e.g.,video tape, compact cassette).
- Digital Video Recorder (DVR). A device or application software that captures and archives video and/or audio in a digital format to a disk drive, USB flash drive, Standard Definition (SD) memory card, or other local or networked mass storage device.

The SUT does not support conditional VDS Recording Devices.

b) VTR Recording Devices shall adhere to the requirements specified in Section 9.4.1, VDS Video Tape Recording (VTR). The SUT does not support conditional VDS Recording Devices.

c) DVR Recording Devices shall adhere to the requirements specified in Section 9.4.2, VDS Digital Video Recording (DVR). The SUT does not support conditional VDS Recording Devices.

1. **Section 9.4.1, VDS Video Tape Recording (VTR)**

a. VTR devices shall accept standard and high-definition video using the following SMPTE formats:

- SMPTE 259M: SD-SDI
- SMPTE 344M: ED-SDI

- SMPTE 292M: HD-SDI
- SMPTE 424M: 3G-SDI
- SMPTE 291M: Ancillary Data Packet and Space Formatting

The SUT does not support conditional VTR devices.

b. VTR devices shall accept standard and high-definition video using the following SMPTE formats:

- SMPTE 372M: Dual-Link (DL) HD-SDI
- Digital Picture Exchange
- NOTE: the SMPTE defines the standard for many video tape recording (VTR) protocols.

The SUT does not support conditional VTR devices.

2. **Section 9.4.2, VDS Digital Video Recording (DVR)**

a. DVR devices shall be capable of recording and replaying video and audio using MPCA and Audio Compression Algorithms (ACAs) as defined in Section 3.4, UC Audio and Video Conference System, and shall be able to capture Picture Compression Algorithms (JPEG and PNG). The SUT does not support conditional DVR devices.

b. DVR devices shall be capable of recording and replaying video using MPEG-4 Part 2, MPEG-2 .mpg, MPEG-2 .TS, VOB, and International Organization for Standardization (ISO) video. The SUT does not support conditional DVR devices.

c. DVR devices shall be capable of recording and replaying audio using MP3, AC3, and Ogg. The SUT does not support conditional DVR devices.

d. DVR devices shall integrate with the monitor and/or TV set. The SUT does not support conditional DVR devices.

e. DVR devices shall be VESA compatible. The SUT does not support conditional DVR devices.

f. DVR devices shall be able to interface with PC-based compatible devices running Microsoft Windows, Linux, or Mac OS. The SUT does support conditional DVR devices.

**7. HARDWARE/SOFTWARE/FIRMWARE VERSION IDENTIFICATION.** Table 3-3 provides the SUT components' tested hardware, software, and firmware. NIWC tested the SUT in an operationally realistic environment to determine its interoperability capability with associated network devices and network traffic. Table 3-4 provides the hardware, software, and firmware of the components used in the test infrastructure.

**8. TESTING LIMITATIONS.** None.

**9. CONCLUSION(S).** The SUT meets the critical interoperability requirements for a DoDIN VDS-IP System in accordance with the UCR and is certified for joint use with other DoDIN Products listed on the Approved Products List (APL).

# DATA TABLES

## Table 3-1. Interface Status

| Interface | Applicability | Status | Remarks |
|---|---|---|---|
| **Closed VDS System** (See note 1.) | | | |
| RS-232 | C (See note 2.) | Not Tested | See note 1. |
| RS-422 | C (See note 2.) | Not Tested | See note 1. |
| RS-485 | C (See note 2.) | Not Tested | See note 1. |
| USB | O | Not Tested | See note 1. |
| Ethernet – IEEE 802.3i (10BaseT UTP) | O (See note 3.) | Not Tested | See note 1. |
| Ethernet - IEEE 802.3u (100BaseT UTP) | O (See note 3.) | Not Tested | See note 1. |
| Ethernet - IEEE 802.3u (100BaseFX) | O (See note 3.) | Not Tested | See note 1. |
| Ethernet - IEEE 802.3ab (1000BaseT UTP) | O (See note 3.) | Not Tested | See note 1. |
| Ethernet - IEEE 802.3z (1000BaseX Fiber) | O (See note 3.) | Not Tested | See note 1. |
| Ethernet - IEEE 802.3ae (10GBaseX) | O (See note 3.) | Not Tested | See note 1. |
| **VDS Over IP System** (See notes 1 and 4.) | | | |
| RS-232 | C | Not Tested | See note 5. |
| USB | C | Met | |
| Ethernet – IEEE 802.3i (10BaseT UTP) | C (See note 6.) | Met | |
| Ethernet - IEEE 802.3u (100BaseFX) | C (See note 6.) | Met | |
| Ethernet - IEEE 802.3ab (1000BaseT UTP) | C (See note 6.) | Met | |
| Ethernet - IEEE 802.3z (1000BaseX Fiber) | C (See note 6.) | Met | |
| Ethernet - IEEE 802.3ae (10GBaseX) | O (See note 6.) | Met | |
| VDS Matrix Controller | R | Met | |
| **Network Management Interfaces for VDS Products** (See note 7.) | | | |
| IEEE 802.3i (10BaseT UTP) | C | Met | |
| IEEE 802.3u (100BaseT UTP) | C | Met | |
| IEEE 802.3ab (1000BaseT UTP) | C | Met | |
| IEEE 802.3z (1000BaseX Fiber) | C | Met | |
| **VDS System Subcomponents** (See note 8.) | | | |
| **VDS Signal Extenders** (See note 9.) | | | |
| Coaxial | C | Not Tested | See note 10. |
| Twisted Pair | C | Met | |
| Fiber Optical | C | Met | |
| **VDS System Peripheral Connectors** (See note 11.) | | | |
| BNC | C | Not Tested | See note 10. |
| DVI | C | Met | |
| VGA | C | Not Tested | See note 10. |
| HDMI | C | Not Tested | See note 10. |
| RCA | C | Not Tested | See note 10. |
| Fiber | C | Met | |
| Modular Connectors | C | Not Tested | See note 10. |
| **VDS Peripheral Connector Conversion Devices** (See note 12.) | | | |
| BNC | C | Not Tested | See note 5 and 13. |
| DVI | C | Met | See note 13. |
| VGA | C | Not Tested | See note 5 and 13. |
| HDMI | C | Met | See note 13. |
| RCA | C | Not Tested | See note 5 and 13. |
| Fiber | C | Met | |
| Modular Connectors | C | Not Tested | See note 5 and 13. |

(Table continues next page)

## Table 3-1. Interface Status (Continued)

**NOTE(S):**
1. The UCR defines two VDS products – a Closed VDS System and a VDS-IP System. The SUT is a VDS-IP System.
2. The UCR requires Closed VDS Systems support RS-232, RS-422, or RS-485.
3. The UCR specifies a Closed VDS Systems may support an Ethernet interface but does not specify media or data rate. The SUT may support one or more of the specified interfaces.
4. The UCR specifies that VDS-IP subcomponents shall support serial RS-232, USB, or Ethernet.
5. The SUT supports this conditional requirement, however due to test lab limitations, this requirement was not tested.
6. The UCR specifies a VDS-IP System support an Ethernet interface but does not specify media or data rate. The SUT must support at least one of the specified interfaces.
7. The UCR specifies all network appliances must be managed via an Ethernet interface but does not specify media or data rate. The SUT must support at least one of the specified interfaces.
8. Closed VDS Systems and VDS-IP Systems may support VDS Signal Extenders, Peripheral Connectors, or Peripheral Connector Conversion devices. If supported, these subcomponents must meet the applicable UCR requirements specified in Section 9.
9. If the SUT supports VDS Signal Extenders it must provide one of the specified interfaces.
10. The SUT does not support this conditional requirement.
11. If the SUT supports peripheral connectors it must support at least one of the specified interfaces.
12. If the SUT supports VDS Peripheral Connector Conversion devices it must support at least one of the specified interfaces.
13. The SUT requires a third party converter to support this conditional requirement..

**LEGEND:**

| | | | |
|---|---|---|---|
| BaseFX | Megabit Ethernet over fiber | O | Optional |
| BaseT | Megabit (Baseband Operation, Twisted Pair) Ethernet | R | Required |
| BaseX | Megabit Ethernet over Fiber or Copper | RCA | Radio Corporation of America |
| BNC | Bayonet Neill-Concelman | RS | Recommended Standard |
| C | Conditional | SUT | System Under Test |
| DVI | Digital Visual Interface | UCR | Unified Capabilities Requirements |
| GBaseX | Gigabit Ethernet over Fiber or Copper | USB | Universal Serial Board |
| HDMI | High-Definition Multimedia Interface | UTP | Unshielded Twisted Pair |
| ID | Identification | VDS | Video Distribution System |
| IEEE | Institute of Electrical and Electronics Engineers | VGA | Video Graphics Array |
| IP | Internet Protocol | | |

## Table 3-2. Capability and Functional Requirements and Status

| CR/FR ID | Capability/Function | Applicability (See note 1.) | UCR 2013 Change 2 Reference | Status |
|---|---|---|---|---|
| **1** | **Cybersecurity Requirements** | Required | See note 2. | Met (See note 2.) |
| **2** | **General VDS System** | | | |
| | IP Requirements for VDS Systems | Optional | 9.1.1 | Partially Met (See note 3.) |
| | VDS System Signal | Required | 9.1.2 | Partially Met (See note 4.) |
| | VDS System Peripheral | Optional | 9.1.3 | Not Tested (See note 5.) |
| | VDS Signal Extenders | Conditional | 9.1.4 | Not Tested (See note 5.) |
| | VDS System Peripheral Connectors | Conditional | 9.1.5 | Met |
| | VDS Peripheral Connector Conversion Devices | Required | 9.1.6 | Met |
| | VDS Master Control Switch | Required | 9.1.7 | Met |
| | VDS Matrix Switch | Required | 9.1.8 | Met |
| | VDS Cybersecurity | Required | 9.1.9 | Met (See note 2.) |
| | VDS Availability | Required | 9.1.10 | Met |
| | VDS Diagnostics | Required | 9.1.11 | Met |
| **3** | **Closed VDS System** | Conditional | 9.2 | Not Tested (The SUT is a VDS-IP) |
| **4** | **VDS over IP (VDS-IP)** | Required | 9.3 | Partially Met (See notes 6 and 7.) |
| | VDS-IP Codec | Conditional | 9.3.1 | Met |

(Table continues next page)

## Table 3-2. Capability and Functional Requirements and Status (continued)

| CR/FR ID | Capability/Function | Applicability (See note 1.) | UCR 2013 Change 2 Reference | Status |
|---|---|---|---|---|
| 5 | **VDS Recording** | | | |
| | VDS Video Tape Recording (VTR) | Conditional | 9.4.1 | Not Tested (See note 5.) |
| | VDS Digital Video Recording (DVR) | Conditional | 9.4.2 | Not Tested (See note 5.) |
| 6 | **Internet Protocol version 6 (IPv6)** | Required | Section 5, Table 5.2-1 | Not Met (See note 3.) |

**NOTE(S):**
1. The annotation of 'required' refers to a high-level requirement category. The applicability of each sub-requirement is provided in Enclosure 2. The SUT is a VDS-IP.
2. A NIWC-led Cybersecurity test team tested Security and published the results in a separate report, Reference (d).
3. Per the Vendor's LoC, the SUT does not support IPv6. The DoD CIO granted a one-year IPv6 waiver for this SUT. See Conditions in Table 1 for additional information. (TDRs GAD-1835-001, -002, and -006 through -063).
4. Per the Vendor's LoC, scaling is not supported on CON/CPU devices but the refresh rate can be modified. See Conditions in Table 1 for additional information (TDR GAD-1835-002).
5. The SUT does not support this optional/conditional requirement.
6. Per the Vendor's LoC, the SUT is a VDS-IP system with an Open Distribution, not a proprietary distribution. DISA adjudicated this discrepancy as a UCR Change Requirement, as noted in Table 1 (TDR GAD-1835-004).
7. The SUT did not meet PCA formats. DISA adjudicated this discrepancy as a UCR Change Requirement, as noted in Table 1 (TDR GAD-1835-005).

**LEGEND:**

| | | | |
|---|---|---|---|
| CR | Capability Requirement | NIWC | Naval Information Warfare Center |
| DISA | Defense Information Systems Agency | SUT | System Under Test |
| DVR | Digital Video Recording | UCR | Unified Capabilities Requirements |
| FR | Functional Requirement | v | Version |
| ID | Identification | VDS | Video Distribution System |
| IP | Internet Protocol | VTR | Video Tape Recording |

## Table 3-3. Test Infrastructure Hardware/Software/Firmware Version Identification

| **Product Identification** | | | |
|---|---|---|---|
| Product Name | G&D North America, Inc KVM-over-IP | | |
| Software Release | 1.x | | |
| UCR Product Type(s) | Video Distribution System | | |
| Product Description | G&D's KVM-over-IP solution provides, video, audio, USB, and serial switching over an IP network. Either a ControlCenter-IP or ControlCenter-IP-XS (referred to as ControlCenter-IP(-XS) throughout this document), along with a layer 2 managed switch, provides matrix switching functionality for the system. | | |
| **DoDIN Certified Function** | **Component/Sub-component** (See notes 1, 2, and 3.) | **Tested Version** | **Remarks** |
| Video Distribution System (VDS) | **Matrix Switches** | | |
| | **ControlCenter-IP 2.0**<br>**ControlCenter-IP-XS** | 1.x with SecureCert | Matrix switch component. Main management interface Smaller form factor, reduced functionality on the XS. |
| | **Digital Video Interfaces** | | |
| | **DP1.2-Vision-IP-AR-CON**<br>DL-DVI-Vision-IP-AR-CON<br>DL-DVI-Vision-IP-Fiber(M)-AR-CON<br>DL-DVI-Vision-IP-Fiber(S)-AR-CON<br>DP1.2-Vision-IP-Fiber(M)-AR-CON<br>DP1.2-Vision-IP-Fiber(S)-AR-CON<br>DP-Vision-IP-AR-CON<br>DP-Vision-IP-Fiber(M)-AR-CON<br>DP-Vision-IP-Fiber(S)-AR-CON<br>DVI-Vision-IP-AR-CON | 2.x with SecureCert | Display port 1.2 console module that provides video, keyboard, and mouse switching for ethernet and fiber transmission. |

(Table continues next page.)

## Table 3-3. Test Infrastructure Hardware/Software/Firmware Version Identification
(continued)

| DoDIN Certified Function | Component/Sub-component (See notes 1, 2, and 3.) | Tested Version | Remarks |
|---|---|---|---|
| Video Distribution System (VDS) | **Digital Video Interfaces** (continued) | | |
| | **DVI-Vision-IP-Fiber(M)-AR-CON**<br>DVI-Vision-IP-Fiber(S)-AR-CON<br>DP1.2-Vision-IP-Fiber(M)-AR-CON<br>DP1.2-Vision-IP-AR-CPU<br>DP1.2-Vision-IP-Fiber(M)-AR-CPU<br>DP1.2-Vision-IP-Fiber(S)-AR-CPU<br>DP-Vision-IP-AR-CPU<br>DP-Vision-IP-Fiber(M)-AR-CPU<br>DP-Vision-IP-Fiber(S)-AR-CPU<br>DVI-Vision-IP-AR-CPU<br>DVI-Vision-IP-Fiber(M)-AR-CPU<br>DVI-Vision-IP-Fiber(S)-AR-CPU | 2.x with SecureCert | Display port 1.2 console module that provides video, keyboard, and mouse switching for ethernet and fiber transmission. |
| | **Console Modules** | | |
| | **VisionXS-IP-CON-C-DP-UHR-AR-DT**<br>**VisionXS-IP-CON-F(M)-DP-UHR-AR-DT**<br>VisionXS-IP-CON-C-DP-HR<br>VisionXS-IP-CON-C-DP-HR-AR-DT<br>VisionXS-IP-CON-C-DP-HR-AR-DT-PoE<br>VisionXS-IP-CON-C-DP-HR-DH<br>VisionXS-IP-CON-C-DP-HR-DH-AR-DT<br>VisionXS-IP-CON-C-DP-HR-DH-AR-DT-PoE<br>VisionXS-IP-CON-C-DP-HR-DH-DT<br>VisionXS-IP-CON-C-DP-HR-DH-DT-PoE<br>VisionXS-IP-CON-C-DP-HR-DH-PoE<br>VisionXS-IP-CON-C-DP-HR-DT<br>VisionXS-IP-CON-C-DP-HR-DT-PoE<br>VisionXS-IP-CON-C-DP-HR-PoE<br>VisionXS-IP-CON-F(M)-DP-HR<br>VisionXS-IP-CON-F(M)-DP-HR-AR-DT<br>VisionXS-IP-CON-F(M)-DP-HR-DH<br>VisionXS-IP-CON-F(M)-DP-HR-DH-AR-DT<br>VisionXS-IP-CON-F(M)-DP-HR-DH-DT<br>VisionXS-IP-CON-F(M)-DP-HR-DT<br>VisionXS-IP-CON-F(S)-DP-HR<br>VisionXS-IP-CON-F(S)-DP-HR-AR-DT<br>VisionXS-IP-CON-F(S)-DP-HR-DH<br>VisionXS-IP-CON-F(S)-DP-HR-DH-AR-DT<br>VisionXS-IP-CON-F(S)-DP-HR-DH-DT<br>VisionXS-IP-CON-F(S)-DP-HR-DT<br>VisionXS-IP-CON-C-DP-UHR<br>VisionXS-IP-CON-C-DP-UHR-AR-DT-PoE<br>VisionXS-IP-CON-C-DP-UHR-DT<br>VisionXS-IP-CON-C-DP-UHR-DT-PoE<br>VisionXS-IP-CON-C-DP-UHR-PoE<br>VisionXS-IP-CON-F(M)-DP-UHR<br>VisionXS-IP-CON-F(M)-DP-UHR-DT<br>VisionXS-IP-CON-F(S)-DP-UHR<br>VisionXS-IP-CON-F(S)-DP-UHR-AR-DT<br>VisionXS-IP-CON-F(S)-DP-UHR-DT<br>VisionXS-IP-CON-C-DVI-I<br>VisionXS-IP-CON-C-DVI-I-AR-DT<br>VisionXS-IP-CON-C-DVI-I-AR-DT-PoE<br>VisionXS-IP-CON-C-DVI-I-DT<br>VisionXS-IP-CON-C-DVI-I-DT-PoE<br>VisionXS-IP-CON-C-DVI-I-PoE | 1.x with SecureCert | Small form factor console module that provides video, keyboard, and mouse switching for ethernet and fiber transmission |

(Table continues next page.)

## Table 3-3. Test Infrastructure Hardware/Software/Firmware Version Identification
(continued)

| DoDIN Certified Function | Component/Sub-component (See notes 1, 2, and 3.) | Tested Version | Remarks |
|---|---|---|---|
| Video Distribution System (VDS) | **Console Modules** (Continued) | | |
| | VisionXS-IP-CON-F(M)-DVI-I<br>VisionXS-IP-CON-F(M)-DVI-I-AR-DT<br>VisionXS-IP-CON-F(M)-DVI-I-DT<br>VisionXS-IP-CON-F(S)-DVI-I<br>VisionXS-IP-CON-F(S)-DVI-I-AR-DT<br>VisionXS-IP-CON-F(S)-DVI-I-DT<br>VisionXS-IP-CON-C-HDM-HR<br>VisionXS-IP-CON-C-HDM-HR-AR-DT<br>VisionXS-IP-CON-C-HDM-HR-AR-DT-PoE<br>VisionXS-IP-CON-C-HDM-HR-DH<br>VisionXS-IP-CON-C-HDM-HR-DH-AR-DT<br>VisionXS-IP-CON-C-HDM-HR-DH-AR-DT-PoE<br>VisionXS-IP-CON-C-HDM-HR-DH-DT<br>VisionXS-IP-CON-C-HDM-HR-DH-DT-PoE<br>VisionXS-IP-CON-C-HDM-HR-DH-PoE<br>VisionXS-IP-CON-C-HDM-HR-DT<br>VisionXS-IP-CON-C-HDM-HR-DT-PoE<br>VisionXS-IP-CON-C-HDM-HR-PoE<br>VisionXS-IP-CON-C-HDM-UHR<br>VisionXS-IP-CON-C-HDM-UHR-AR-DT<br>VisionXS-IP-CON-C-HDM-UHR-AR-DT-PoE<br>VisionXS-IP-CON-C-HDM-UHR-DT<br>VisionXS-IP-CON-C-HDM-UHR-DT-PoE<br>VisionXS-IP-CON-C-HDM-UHR-PoE<br>VisionXS-IP-CON-F(M)-HDM-HR<br>VisionXS-IP-CON-F(M)-HDM-HR-AR-DT<br>VisionXS-IP-CON-F(M)-HDM-HR-DH<br>VisionXS-IP-CON-F(M)-HDM-HR-DH-AR-DT<br>VisionXS-IP-CON-F(M)-HDM-HR-DH-DT<br>VisionXS-IP-CON-F(M)-HDM-HR-DT<br>VisionXS-IP-CON-F(M)-HDM-UHR<br>VisionXS-IP-CON-F(M)-HDM-UHR-AR-DT<br>VisionXS-IP-CON-F(M)-HDM-UHR-DT<br>VisionXS-IP-CON-F(S)-HDM-HR<br>VisionXS-IP-CON-F(S)-HDM-HR-AR-DT<br>VisionXS-IP-CON-F(S)-HDM-HR-DH<br>VisionXS-IP-CON-F(S)-HDM-HR-DH-AR-DT<br>VisionXS-IP-CON-F(S)-HDM-HR-DH-DT<br>VisionXS-IP-CON-F(S)-HDM-HR-DT<br>VisionXS-IP-CON-F(S)-HDM-UHR<br>VisionXS-IP-CON-F(S)-HDM-UHR-AR-DT<br>VisionXS-IP-CON-F(S)-HDM-UHR-DT<br>VisionXS-IP-CON-C-TypeC-UHR<br>VisionXS-IP-CON-C-TypeC-UHR-AR-DT<br>VisionXS-IP-CON-C-TypeC-UHR-AR-DT-PoE<br>VisionXS-IP-CON-C-TypeC-UHR-DT<br>VisionXS-IP-CON-C-TypeC-UHR-DT-PoE<br>VisionXS-IP-CON-C-TypeC-UHR-PoE<br>VisionXS-IP-CON-F(M)-TypeC-UHR<br>VisionXS-IP-CON-F(M)-TypeC-UHR-AR-DT<br>VisionXS-IP-CON-F(M)-TypeC-UHR-DT<br>VisionXS-IP-CON-F(S)-TypeC-UHR<br>VisionXS-IP-CON-F(S)-TypeC-UHR-AR-DT<br>VisionXS-IP-CON-F(S)-TypeC-UHR-DT | 1.x with SecureCert | Small form factor console module that provides video, keyboard, and mouse switching for ethernet and fiber transmission |

(Table continues next page.)

## Table 3-3. Test Infrastructure Hardware/Software/Firmware Version Identification
(continued)

| DoDIN Certified Function | Component/Sub-component (See notes 1, 2, and 3.) | Tested Version | Remarks |
|---|---|---|---|
| Video Distribution System (VDS) | **Computer Modules** | | |
| | **VisionXS-IP-CPU-F(M)-DP-HR-AR-UG-DT**<br>**VisionXS-IP-CPU-C-DP-UHR-AR-UG-DT**<br>VisionXS-IP-CPU-C-DP-HR<br>VisionXS-IP-CPU-C-DP-HR-A<br>VisionXS-IP-CPU-C-DP-HR-A-PoE<br>VisionXS-IP-CPU-C-DP-HR-AR-DT<br>VisionXS-IP-CPU-C-DP-HR-AR-DT-PoE<br>VisionXS-IP-CPU-C-DP-HR-AR-UG-DT<br>VisionXS-IP-CPU-C-DP-HR-AR-UG-DT-PoE<br>VisionXS-IP-CPU-C-DP-HR-A-UG<br>VisionXS-IP-CPU-C-DP-HR-A-UG-PoE<br>VisionXS-IP-CPU-C-DP-HR-DH<br>VisionXS-IP-CPU-C-DP-HR-DH-A<br>VisionXS-IP-CPU-C-DP-HR-DH-A-PoE<br>VisionXS-IP-CPU-C-DP-HR-DH-AR-DT<br>VisionXS-IP-CPU-C-DP-HR-DH-AR-DT-PoE<br>VisionXS-IP-CPU-C-DP-HR-DH-AR-UG-DT<br>VisionXS-IP-CPU-C-DP-HR-DH-AR-UG-DT-PoE<br>VisionXS-IP-CPU-C-DP-HR-DH-A-UG<br>VisionXS-IP-CPU-C-DP-HR-DH-A-UG-PoE<br>VisionXS-IP-CPU-C-DP-HR-DH-DT<br>VisionXS-IP-CPU-C-DP-HR-DH-DT-PoE<br>VisionXS-IP-CPU-C-DP-HR-DH-PoE<br>VisionXS-IP-CPU-C-DP-HR-DH-UG<br>VisionXS-IP-CPU-C-DP-HR-DH-UG-DT<br>VisionXS-IP-CPU-C-DP-HR-DH-UG-DT-PoE<br>VisionXS-IP-CPU-C-DP-HR-DH-UG-PoE<br>VisionXS-IP-CPU-C-DP-HR-DT<br>VisionXS-IP-CPU-C-DP-HR-DT-PoE<br>VisionXS-IP-CPU-C-DP-HR-PoE<br>VisionXS-IP-CPU-C-DP-HR-UG<br>VisionXS-IP-CPU-C-DP-HR-UG-DT<br>VisionXS-IP-CPU-C-DP-HR-UG-DT-PoE<br>VisionXS-IP-CPU-C-DP-HR-UG-PoE<br>VisionXS-IP-CPU-F(M)-DP-HR<br>VisionXS-IP-CPU-F(M)-DP-HR-A<br>VisionXS-IP-CPU-F(M)-DP-HR-AR-DT<br>VisionXS-IP-CPU-F(M)-DP-HR-A-UG<br>VisionXS-IP-CPU-F(M)-DP-HR-DH<br>VisionXS-IP-CPU-F(M)-DP-HR-DH-A<br>VisionXS-IP-CPU-F(M)-DP-HR-DH-AR-DT<br>VisionXS-IP-CPU-F(M)-DP-HR-DH-AR-UG-DT<br>VisionXS-IP-CPU-F(M)-DP-HR-DH-A-UG<br>VisionXS-IP-CPU-F(M)-DP-HR-DH-DT<br>VisionXS-IP-CPU-F(M)-DP-HR-DH-UG<br>VisionXS-IP-CPU-F(M)-DP-HR-DH-UG-DT<br>VisionXS-IP-CPU-F(M)-DP-HR-DT<br>VisionXS-IP-CPU-F(M)-DP-HR-UG<br>VisionXS-IP-CPU-F(M)-DP-HR-UG-DT<br>VisionXS-IP-CPU-F(S)-DP-HR<br>VisionXS-IP-CPU-F(S)-DP-HR-A<br>VisionXS-IP-CPU-F(S)-DP-HR-AR-DT<br>VisionXS-IP-CPU-F(S)-DP-HR-AR-UG-DT<br>VisionXS-IP-CPU-F(S)-DP-HR-A-UG<br>VisionXS-IP-CPU-F(S)-DP-HR-DH<br>VisionXS-IP-CPU-F(S)-DP-HR-DH-A<br>VisionXS-IP-CPU-F(S)-DP-HR-DH-AR-DT<br>VisionXS-IP-CPU-F(S)-DP-HR-DH-AR-UG-DT<br>VisionXS-IP-CPU-F(S)-DP-HR-DH-A-UG<br>VisionXS-IP-CPU-F(S)-DP-HR-DH-DT | 1.x with SecureCert | Small form factor computer modules for ethernet and fiber transmission medium |

(Table continues next page.)

## Table 3-3. Test Infrastructure Hardware/Software/Firmware Version Identification (continued)

| DoDIN Certified Function | Component/Sub-component (See notes 1, 2, and 3.) | Tested Version | Remarks |
|---|---|---|---|
| Video Distribution System (VDS) | **Computer Modules** (continued) | | |
| | VisionXS-IP-CPU-F(S)-DP-HR-DH-UG<br>VisionXS-IP-CPU-F(S)-DP-HR-DH-UG-DT<br>VisionXS-IP-CPU-F(S)-DP-HR-DT<br>VisionXS-IP-CPU-F(S)-DP-HR-UG<br>VisionXS-IP-CPU-F(S)-DP-HR-UG-DT<br>VisionXS-IP-CPU-C-DP-UHR<br>VisionXS-IP-CPU-C-DP-UHR-A<br>VisionXS-IP-CPU-C-DP-UHR-A-PoE<br>VisionXS-IP-CPU-C-DP-UHR-AR-DT<br>VisionXS-IP-CPU-C-DP-UHR-AR-DT-PoE<br>VisionXS-IP-CPU-C-DP-UHR-AR-UG-DT-PoE<br>VisionXS-IP-CPU-C-DP-UHR-A-UG<br>VisionXS-IP-CPU-C-DP-UHR-A-UG-PoE<br>VisionXS-IP-CPU-C-DP-UHR-DT<br>VisionXS-IP-CPU-C-DP-UHR-DT-PoE<br>VisionXS-IP-CPU-C-DP-UHR-PoE<br>VisionXS-IP-CPU-C-DP-UHR-UG<br>VisionXS-IP-CPU-C-DP-UHR-UG-DT<br>VisionXS-IP-CPU-C-DP-UHR-UG-DT-PoE<br>VisionXS-IP-CPU-C-DP-UHR-UG-PoE<br>VisionXS-IP-CPU-F(M)-DP-UHR<br>VisionXS-IP-CPU-F(M)-DP-UHR-A<br>VisionXS-IP-CPU-F(M)-DP-UHR-AR-DT<br>VisionXS-IP-CPU-F(M)-DP-UHR-AR-UG-DT<br>VisionXS-IP-CPU-F(M)-DP-UHR-A-UG<br>VisionXS-IP-CPU-F(M)-DP-UHR-DT<br>VisionXS-IP-CPU-F(M)-DP-UHR-UG<br>VisionXS-IP-CPU-F(M)-DP-UHR-UG-DT<br>VisionXS-IP-CPU-F(S)-DP-UHR<br>VisionXS-IP-CPU-F(S)-DP-UHR-A<br>VisionXS-IP-CPU-F(S)-DP-UHR-AR-DT<br>VisionXS-IP-CPU-F(S)-DP-UHR-AR-UG-DT<br>VisionXS-IP-CPU-F(S)-DP-UHR-A-UG<br>VisionXS-IP-CPU-F(S)-DP-UHR-DT<br>VisionXS-IP-CPU-F(S)-DP-UHR-UG<br>VisionXS-IP-CPU-F(S)-DP-UHR-UG-DT<br>VisionXS-IP-CPU-C-DVI-I<br>VisionXS-IP-CPU-C-DVI-I-A<br>VisionXS-IP-CPU-C-DVI-I-A-PoE<br>VisionXS-IP-CPU-C-DVI-I-AR-DT<br>VisionXS-IP-CPU-C-DVI-I-AR-DT-PoE<br>VisionXS-IP-CPU-C-DVI-I-AR-UG-DT<br>VisionXS-IP-CPU-C-DVI-I-AR-UG-DT-PoE<br>VisionXS-IP-CPU-C-DVI-I-A-UG<br>VisionXS-IP-CPU-C-DVI-I-A-UG-PoE<br>VisionXS-IP-CPU-C-DVI-I-DT<br>VisionXS-IP-CPU-C-DVI-I-DT-PoE<br>VisionXS-IP-CPU-C-DVI-I-PoE<br>VisionXS-IP-CPU-F(S)-HDM-UHR-UG<br>VisionXS-IP-CPU-F(S)-HDM-UHR-UG-DT<br>VisionXS-IP-CPU-C-TypeC-UHR<br>VisionXS-IP-CPU-C-TypeC-UHR-A<br>VisionXS-IP-CPU-C-TypeC-UHR-A-PoE<br>VisionXS-IP-CPU-C-HDM-HR-PoE<br>VisionXS-IP-CPU-C-HDM-HR-UG<br>VisionXS-IP-CPU-C-HDM-HR-UG-DT<br>VisionXS-IP-CPU-C-HDM-HR-UG-DT-PoE<br>VisionXS-IP-CPU-C-HDM-UHR-AR-DT-PoE<br>VisionXS-IP-CPU-C-HDM-UHR-AR-UG-DT<br>VisionXS-IP-CPU-C-HDM-UHR-AR-UG-DT-PoE | 1.x with SecureCert | Small form factor computer modules for ethernet and fiber transmission medium |

(Table continues next page.)

## Table 3-3. Test Infrastructure Hardware/Software/Firmware Version Identification
(continued)

| DoDIN Certified Function | Component/Sub-component (See notes 1, 2, and 3.) | Tested Version | Remarks |
|---|---|---|---|
| Video Distribution System (VDS) | **Computer Modules** (continued) | | |
| | VisionXS-IP-CPU-C-HDM-UHR-A-UG<br>VisionXS-IP-CPU-C-HDM-UHR-A-UG-PoE<br>VisionXS-IP-CPU-C-HDM-UHR-DT<br>VisionXS-IP-CPU-C-HDM-UHR-DT-PoE<br>VisionXS-IP-CPU-C-HDM-UHR-PoE<br>VisionXS-IP-CPU-C-HDM-UHR-UG<br>VisionXS-IP-CPU-C-HDM-UHR-UG-DT<br>VisionXS-IP-CPU-C-HDM-UHR-UG-DT-PoE<br>VisionXS-IP-CPU-C-HDM-UHR-UG-PoE<br>VisionXS-IP-CPU-F(M)-HDM-UHR<br>VisionXS-IP-CPU-C-TypeC-UHR-A-UG<br>VisionXS-IP-CPU-C-TypeC-UHR-A-UG-PoE<br>VisionXS-IP-CPU-C-TypeC-UHR-DT<br>VisionXS-IP-CPU-C-TypeC-UHR-DT-PoE<br>VisionXS-IP-CPU-C-TypeC-UHR-PoE<br>VisionXS-IP-CPU-C-TypeC-UHR-UG<br>VisionXS-IP-CPU-C-TypeC-UHR-UG-DT<br>VisionXS-IP-CPU-C-TypeC-UHR-UG-DT-PoE<br>VisionXS-IP-CPU-C-TypeC-UHR-UG-PoE<br>VisionXS-IP-CPU-F(M)-HDM-HR<br>VisionXS-IP-CPU-F(M)-HDM-HR-A<br>VisionXS-IP-CPU-F(M)-HDM-HR-AR-DT<br>VisionXS-IP-CPU-F(M)-HDM-HR-AR-UG-DT<br>VisionXS-IP-CPU-F(M)-HDM-HR-A-UG<br>VisionXS-IP-CPU-F(M)-HDM-HR-DH<br>VisionXS-IP-CPU-F(M)-HDM-HR-DH-A<br>VisionXS-IP-CPU-F(M)-HDM-HR-DH-AR-DT<br>VisionXS-IP-CPU-F(M)-HDM-HR-DH-AR-UG-DT<br>VisionXS-IP-CPU-F(M)-HDM-HR-DH-A-UG<br>VisionXS-IP-CPU-F(M)-HDM-HR-DH-DT<br>VisionXS-IP-CPU-F(M)-HDM-HR-DH-UG<br>VisionXS-IP-CPU-F(M)-HDM-HR-DH-UG-DT<br>VisionXS-IP-CPU-F(S)-HDM-HR-DH-UG<br>VisionXS-IP-CPU-F(S)-HDM-HR-DH-UG-DT<br>VisionXS-IP-CPU-F(S)-HDM-HR-DT<br>VisionXS-IP-CPU-F(S)-HDM-HR-UG<br>VisionXS-IP-CPU-F(S)-HDM-HR-UG-DT<br>VisionXS-IP-CPU-F(S)-TypeC-UHR<br>VisionXS-IP-CPU-F(S)-TypeC-UHR-A<br>VisionXS-IP-CPU-F(S)-TypeC-UHR-AR-DT<br>VisionXS-IP-CPU-F(S)-TypeC-UHR-AR-UG-DT<br>VisionXS-IP-CPU-F(S)-TypeC-UHR-A-UG<br>VisionXS-IP-CPU-F(S)-TypeC-UHR-DT<br>VisionXS-IP-CPU-F(S)-TypeC-UHR-UG<br>VisionXS-IP-CPU-F(S)-TypeC-UHR-UG-DT | 1.x with SecureCert | Small form factor computer modules for ethernet and fiber transmission medium |
| | **Virtual Machine Access Components** | | |
| | **RemoteAccess-IP-CPU-Fiber(M) Basic**<br>**RemoteAccess-IP-CPU-UG Basic**<br>RemoteAccess-IP-CON<br>RemoteAccess-IP-CON-Fiber(M)<br>RemoteAccess-IP-CON-Fiber(S)<br>RemoteAccess-IP-CPU Basic<br>RemoteAccess-IP-CPU incl. PowerPack<br>RemoteAccess-IP-CPU-Fiber(M) incl. PowerPack<br>RemoteAccess-IP-CPU-Fiber(M)-UG Basic<br>RemoteAccess-IP-CPU-Fiber(M)-UG incl. PowerPack<br>RemoteAccess-IP-CPU-Fiber(S) Basic<br>RemoteAccess-IP-CPU-Fiber(S) incl. PowerPack | 1.x with SecureCert | Virtual machine control and access for ethernet and fiber transmission medium |

(Table continues next page.)

## Table 3-3. Test Infrastructure Hardware/Software/Firmware Version Identification (continued)

| DoDIN Certified Function | Component/Sub-component (See notes 1, 2, and 3.) | Tested Version | Remarks |
|---|---|---|---|
| Video Distribution System (VDS) | **Virtual Machine Access Components** (continued) | | |
| | RemoteAccess-IP-CPU-Fiber(S)-UG Basic<br>RemoteAccess-IP-CPU-Fiber(S)-UG incl. PowerPack<br>RemoteAccess-IP-CPU-UG incl. PowerPack | 1.x with SecureCert | Virtual machine control and access for ethernet and fiber transmission medium |
| Client Workstation (Site-provided) | Windows | Windows 10 Enterprsie | Workstation to access management interface |
| | Axway Desktop Validator | 5.2.31494 | |
| | ActivClient | 7.1.0.153 | |

**NOTE(S):**
1. Components bolded and underlined were tested by NIWC. The other components in the family series were not tested; however, JITC certified the other components for joint use because they utilize the same software and have similar hardware as compared to the tested components and JITC analysis determined they were functionally identical for interoperability certification purposes.
2. Enclosure 3 provides a detailed component and subcomponent list.
3. Any perceived acronym not defined in the LEGEND below is part of the product or component name.

**LEGEND:**

| | | | |
|---|---|---|---|
| APL | Approved Products List | JITC | Joint Interoperability Test Command |
| CON | Console | KVM | Keyboard-Video-Mouse |
| CPU | Central Processing Unit | M | Multimode |
| DoDIN | Department of Defense Information Networks | NA | Not Applicable |
| DP | Display Port | NIWC | Naval Information Warfare Center |
| DVI | Digital Video Interface | PoE | Power Over Ethernet |
| F | Fiber | S | Single Mode |
| HD | High Definition | USB | Universal Serial Bus |
| HDM | High Definition Module | VDS | Video Distribution System |
| IP | Internet Protoc | XS | Extra Small |

## Table 3-4. Test Infrastructure Hardware/Software/Firmware Version Identification

| System Name | Software Release | Function |
|---|---|---|
| **Required Ancillary Equipment (Site-Provided)** | | |
| UCS C220 M7 | Windows Server 2016 | AD, DNS, SNMP, DHCP |
| Windows Server 2022 | SolarWinds 9.8 | SysLog |
| Microsemi SyncServer S650 | 5.1.2 | NTPv3 |
| UCS C220 M7 | 7.0.3 19193900 | ESXi |
| **Test Network Components** | | |
| Workstation Intel NUC (Site-Provided) | Windows 10 | Administrator |
| Lenovo ThinkPad | Windows 10 | Administrator |

**LEGEND:**

| | | | |
|---|---|---|---|
| AD | Active Directory | NUC | Next Unit of Computing |
| DHCP | Dynamic Host Configuration Protocol | SNMP | Simple Network Management Protocol |
| DNS | Domain Name Services | SysLog | System Log |
| ESXi | Elastic Sky X Integrated | UCS | Unified Computing System |
| NTP | Network Time Protocol | v | Version |