

UNCLASSIFIED

NEOUS™ SECURE CONTROL ROOM

Interact securely with multiple domains across multiple classification levels using standards-based certified data protection

HLT35071 Rev 1.1

SECURE COMMAND AND CONTROL CENTER – THE CHALLENGE

- Control Rooms are a cross point for information arriving from many sources
- Users must view and interact with the information quickly and freely

THE CHALLENGE:

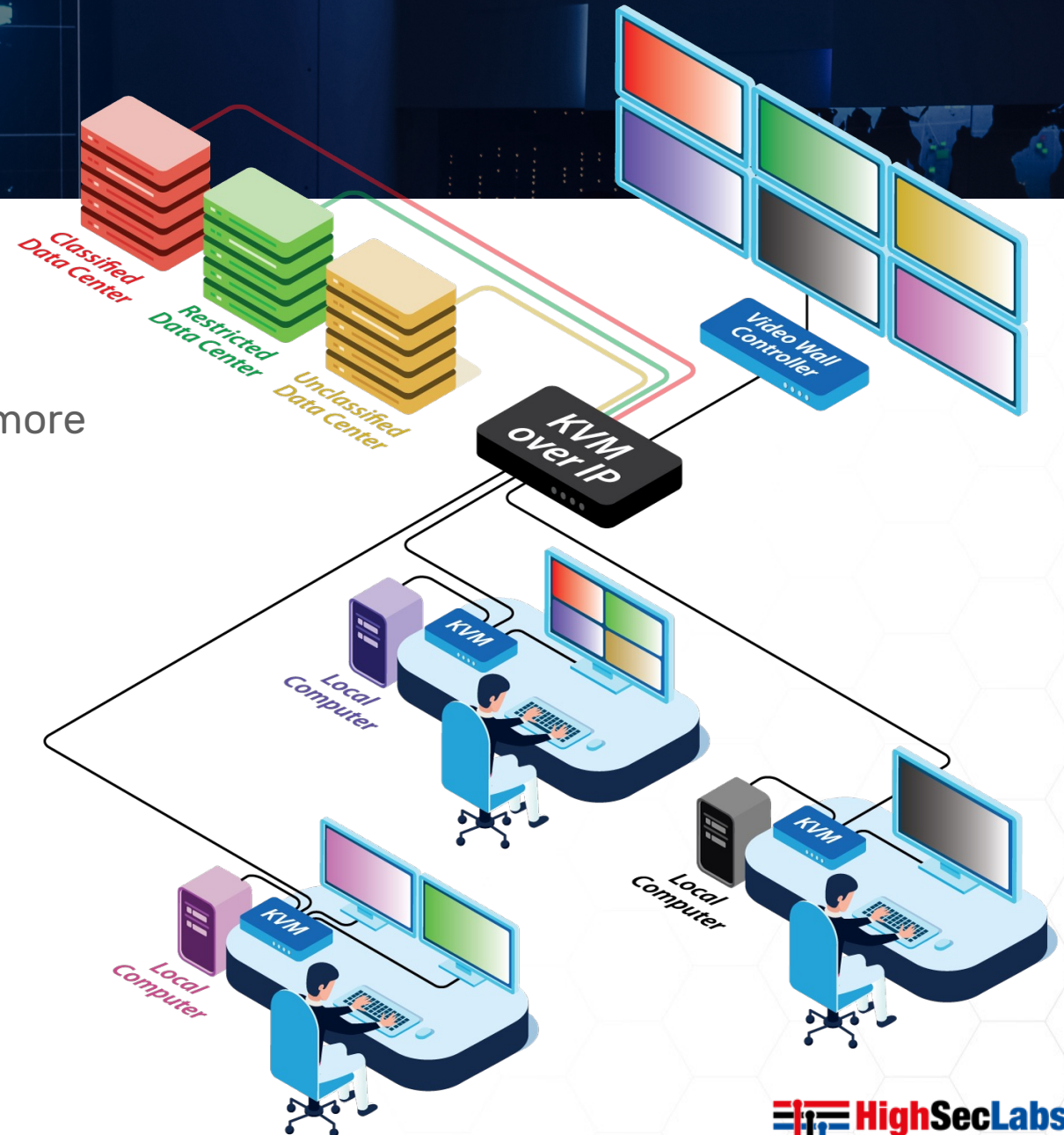
In a multi-domain, multi-classification network environment:

- Provide an efficient and effective work environment
- Prevent data leaks and unauthorized access



CONTROL ROOM KEY COMPONENTS

- **Video wall combines inputs from:**
 - Remote sources (data centers & servers)
 - Local sources: computers, TV feeds and more
 - Aggregated using video wall controller
- **User workstation interacts with different sources:**
 - Remote hosts in protected & secured areas
 - Local computers at the workstation
 - Utilizes a local KVM switching device
- **KVM over IP system:**
 - User access to computer hosts in remote & protected areas



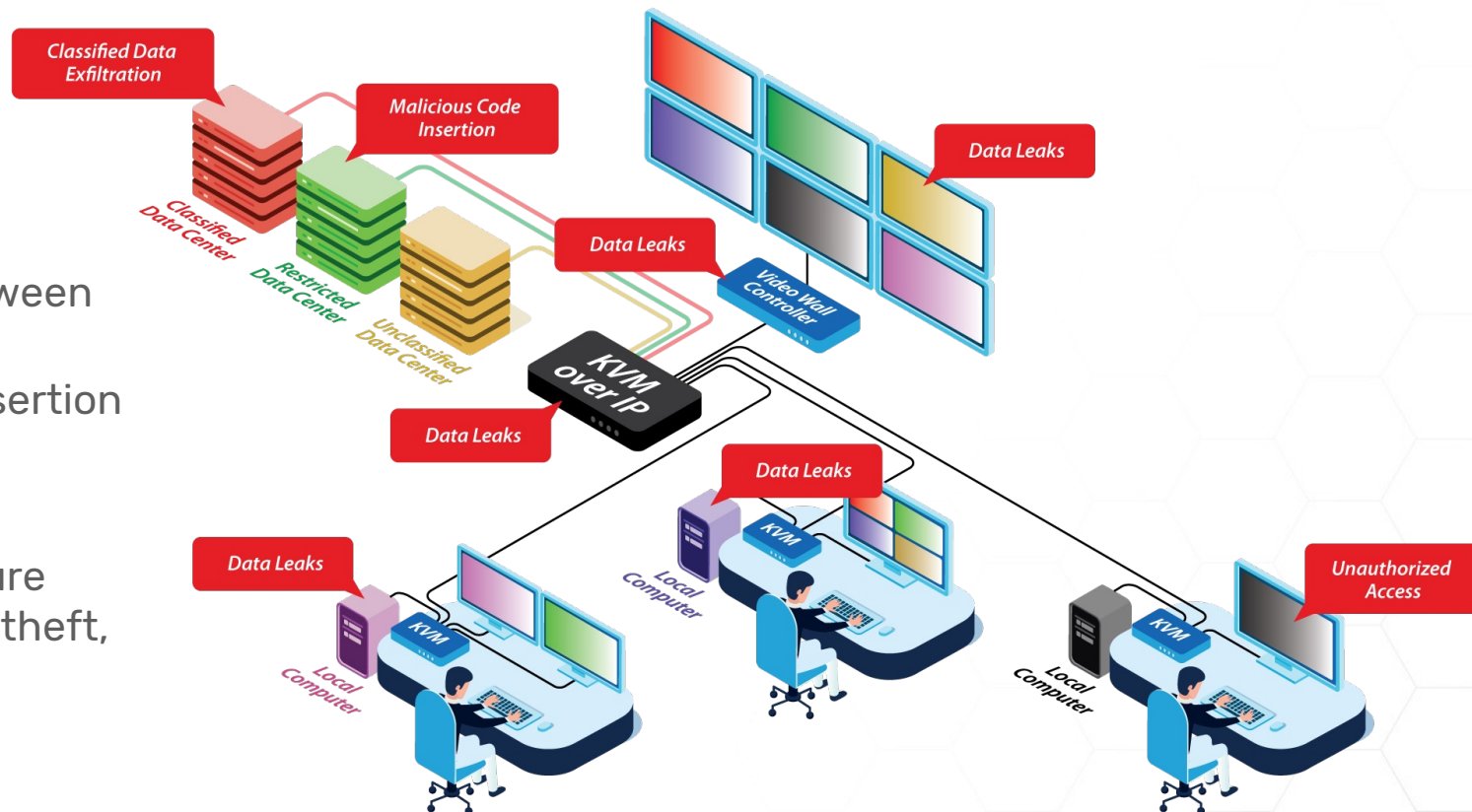
SECURITY THREATS

- **Data Leaks**

- Unsecure KVM & matrix switches
- Exploitation of peripherals
 - Display memory & command channels for data transfer between networks
 - HID for data transfer / code insertion
- Leakage can be to:
 - Exfiltrate sensitive data
 - Insert malicious code into secure networks for subsequent data theft, obstruction or attack trigger

- **Unauthorized Access:**

- Man-in-the-middle to hijack data
- Foreign device network access
- Unauthorized user



SECURING THE CONTROL ROOM

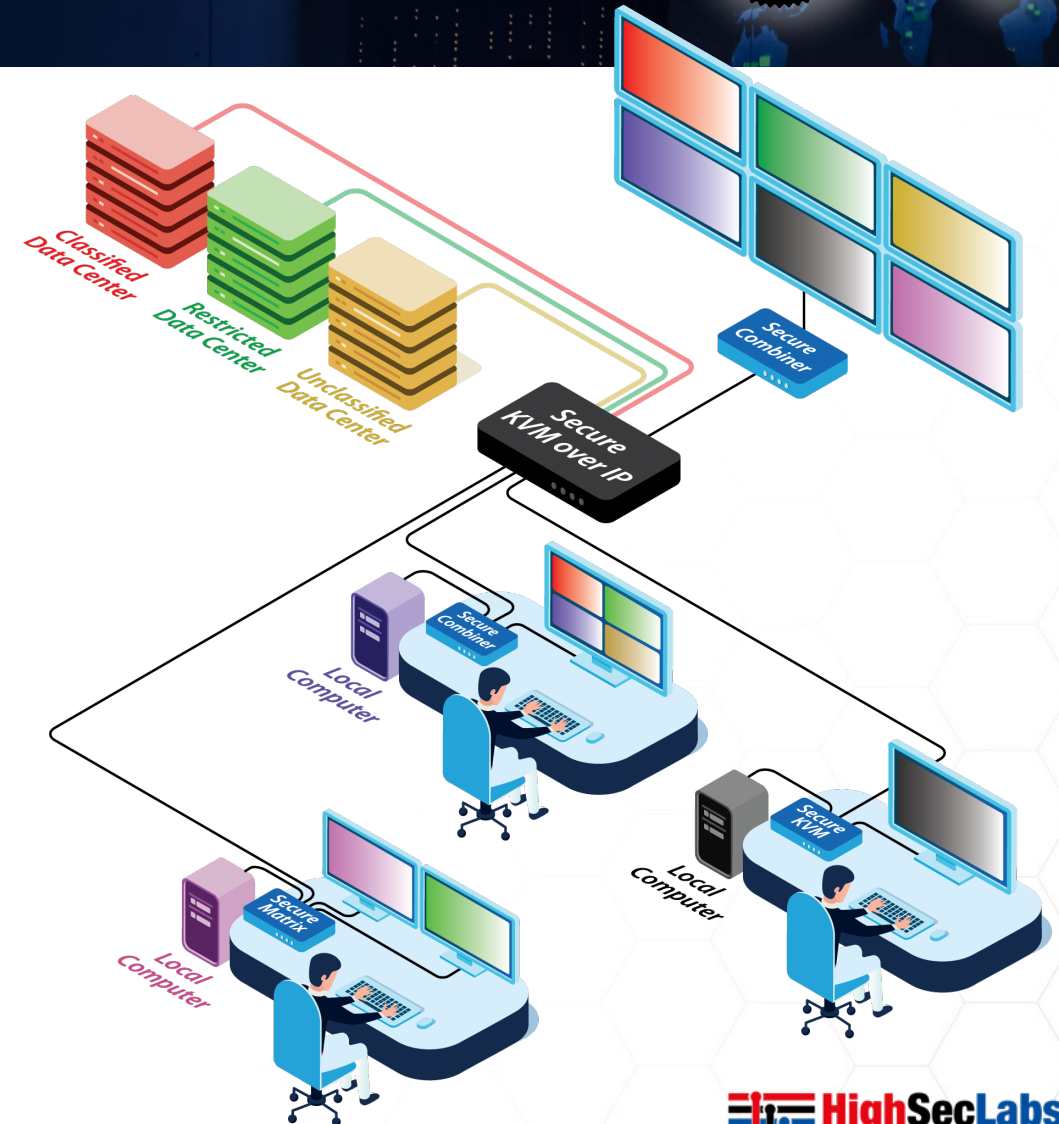
Neous™: The world's most secure standards-based control room solution for cross-domain interaction

SECURE CONTROL ROOM CONCEPT



Secure solution integrates:

- Secure **local** KVM switches
 - Advanced viewing capabilities of local and remote sources
- Secure KVM **Matrix**
 - Flexible access to remote sources
- Secure **video wall** KVM Combiner switch
 - Aggregates multiple sources and prepares the image to be displayed across the video wall





SECURE Video Wall

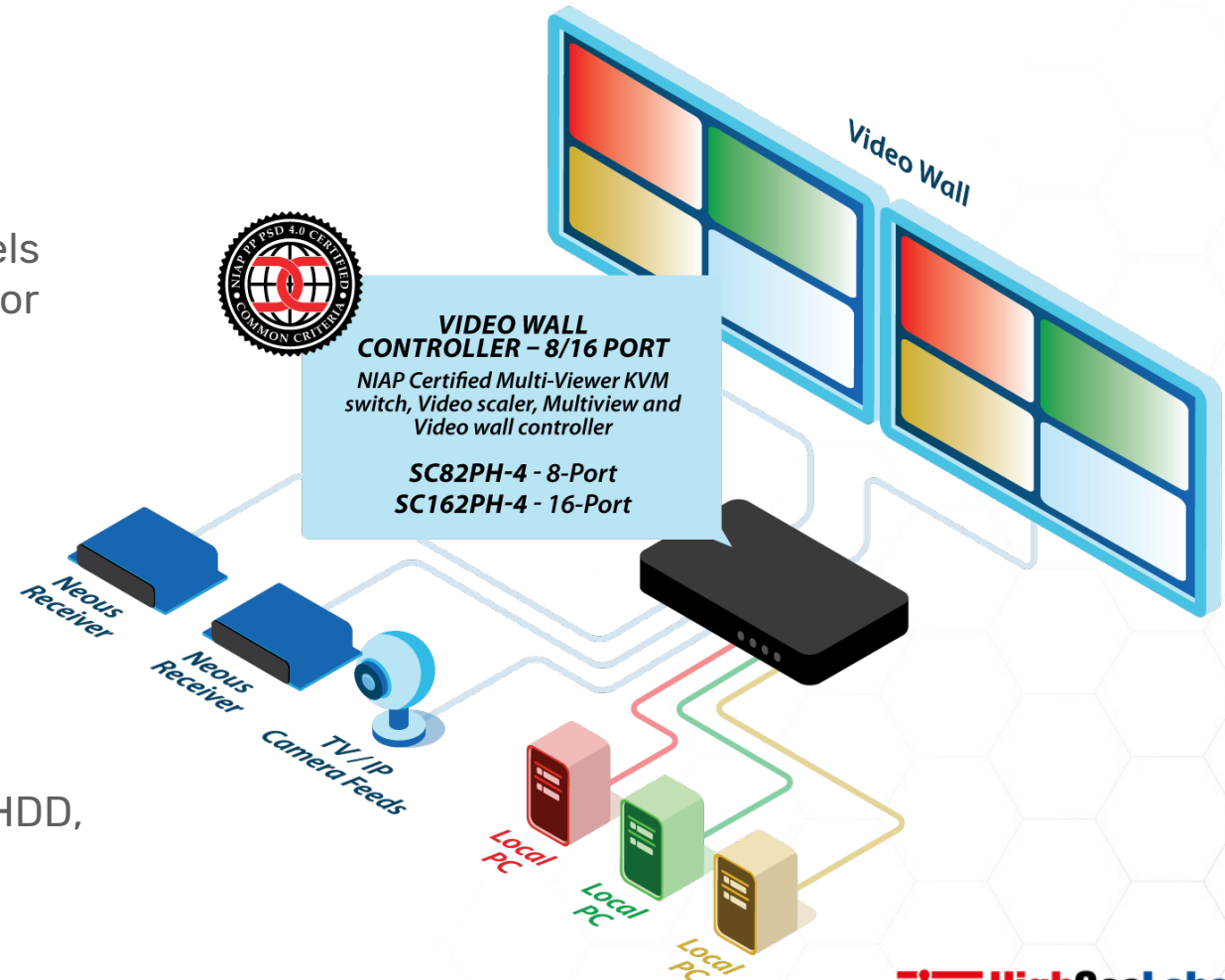
A NIAP-certified solution for displaying multiple domains with multiple classification levels on a video wall.

COMMAND AND CONTROL CENTER – THE ONLY NIAP-CERTIFIED VIDEO WALL SOLUTION



Secure video wall controller features

- **Security:** Networks of different classification levels are displayed simultaneously on the same screen or video wall. Certified to **NIAP PP4** standard
- **Full API** for control via RS-232
- **High performance video:** PIP, full dynamic scaling, zero latency, cross bezel layout
- **Flexibility:** DP/HDMI combo connections (input/output)
- **FPGA-based machine:** No external FW updates, HDD, or 3rd party OS (WIN/Linux)





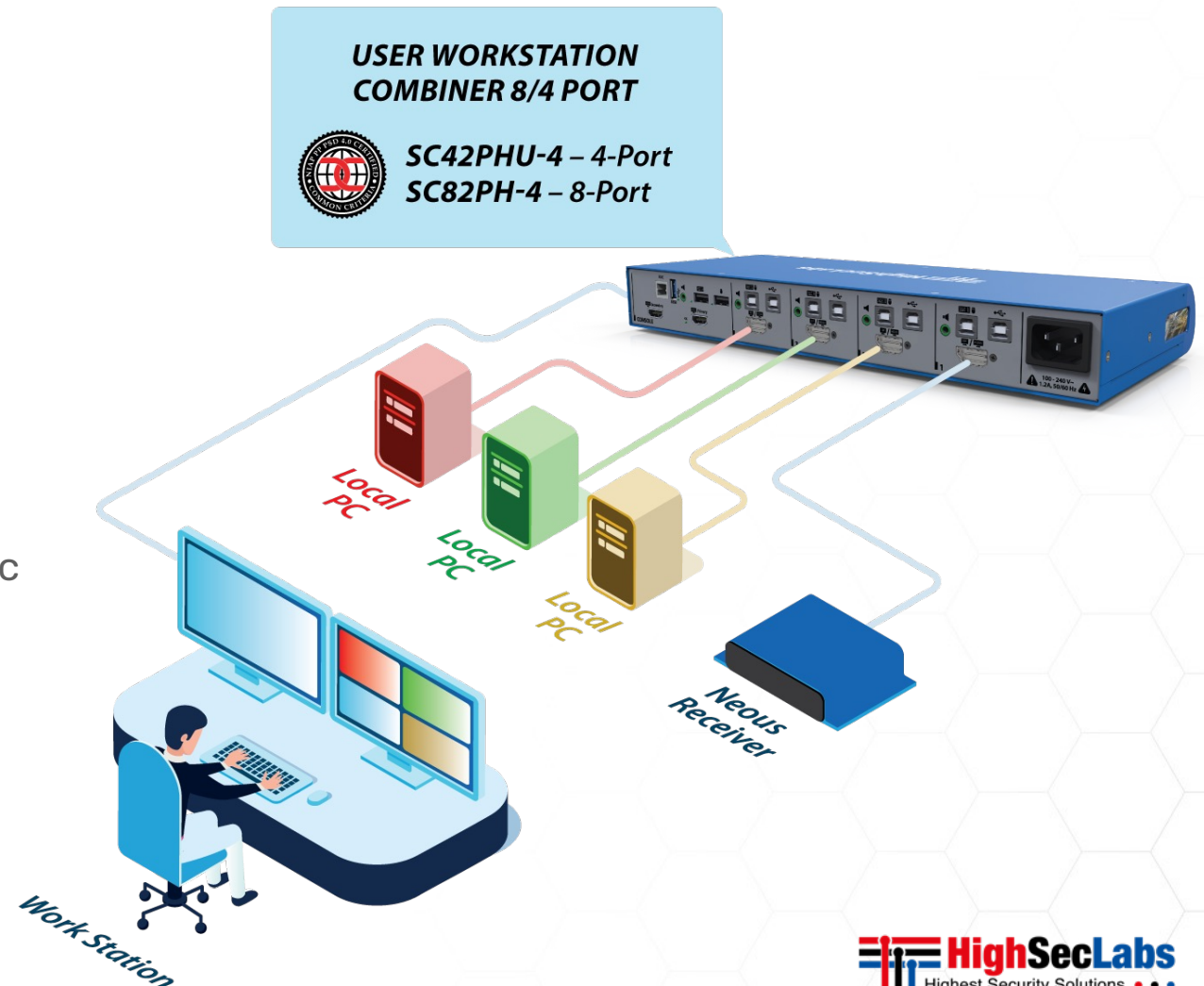
SECURE LOCAL KVM SWITCHES

A portfolio of NIAP certified products for interacting with both local and remote sources, securely

COMMAND AND CONTROL CENTER – WORKSTATION COMBINER



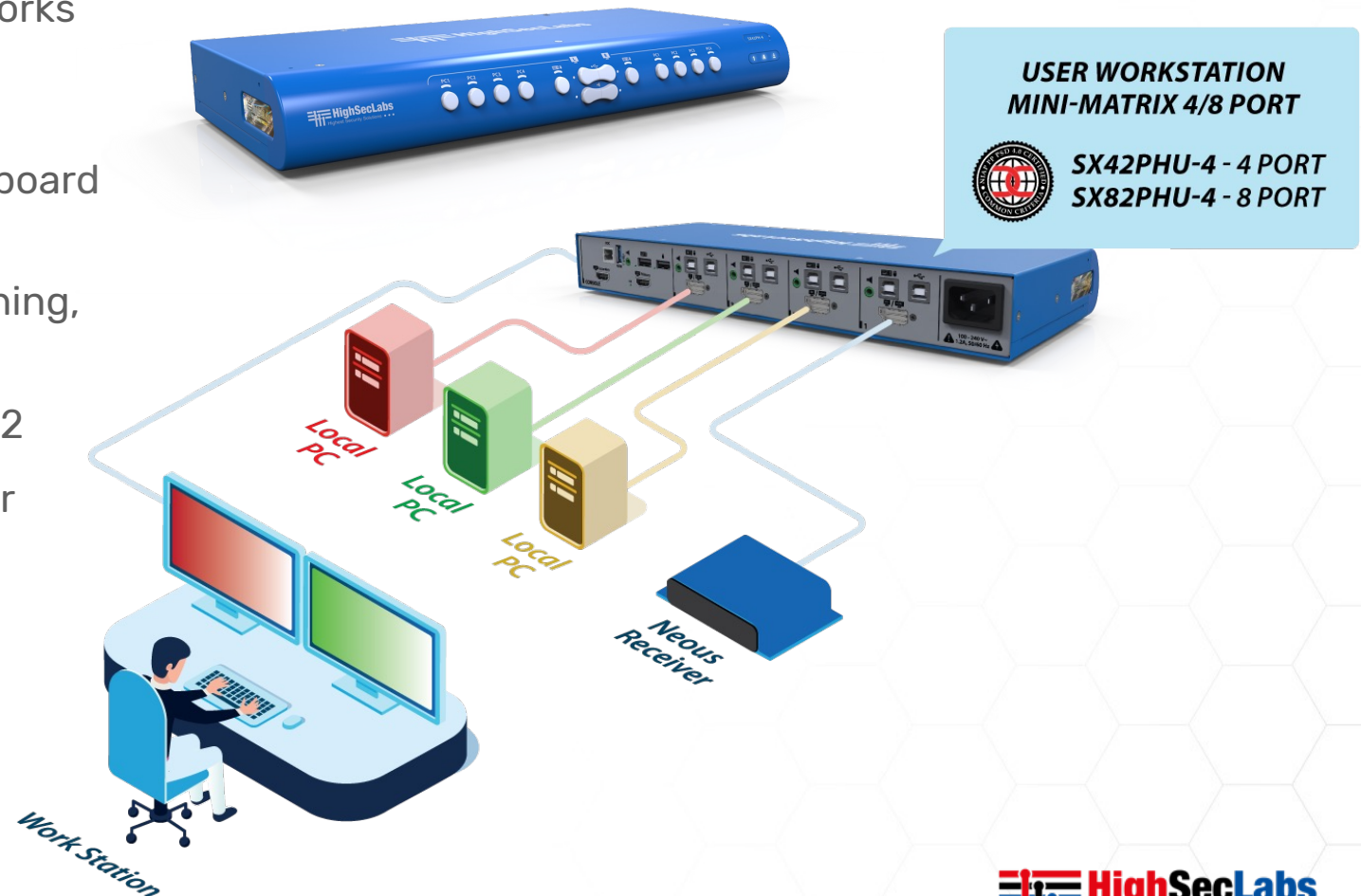
- **Security** – Classified & unclassified networks displayed together on the same screen or wall. Certified to **NIAP PP4** standard
- **All in one solution** – Video & USB for keyboard and mouse, no integration needed
- **Fast & easy installation**– No special training, tools, or applications
- **Full API** for a third-party control via RS232
- **High-end video performance** – PIP, full dynamic scaling, zero latency, cross bezel layout
- **Flexibility:** DP/HDMI combo connections (input/output)
- **FPGA-based machine** – No external FW update, HDD, or third-party OS (WIN/Linux)



COMMAND AND CONTROL CENTER – WORKSTATION MATRIX



- **Security** – Classified & unclassified networks displayed on adjacent screens. Certified to **NIAP PP4** standard
- **All in one solution** – Video & USB for keyboard and mouse, no integration needed
- **Fast & easy installation**– No special training, tools, or applications
- **Full API** for a third-party control via RS232
- **Different layout options**– Side by side or stacked
- **Flexibility:** DP/HDMI combo connections (input/output)
- **Flexible display setups**

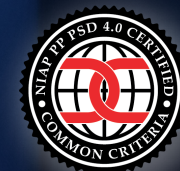


NEOUSTM SECURE MULTI- DOMAIN MATRIX

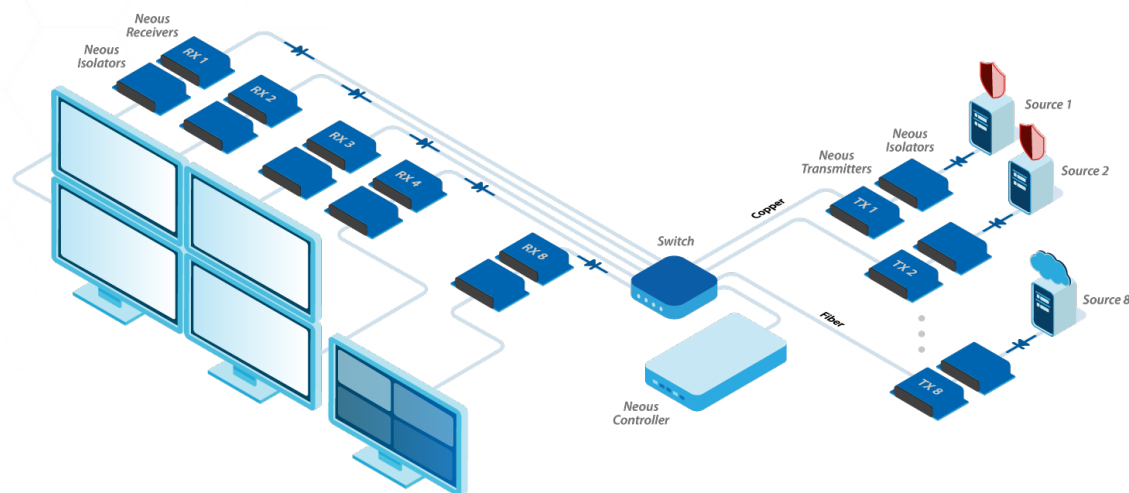
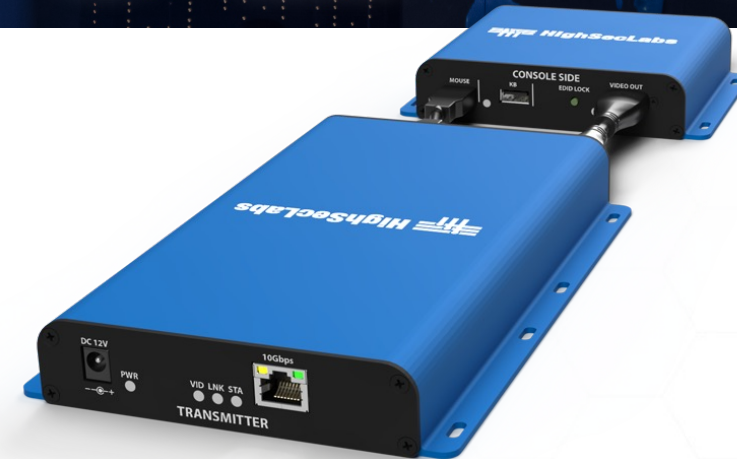
The world's first KVM matrix system specifically designed for securing the multi-domain control room environment using standards-based certifications



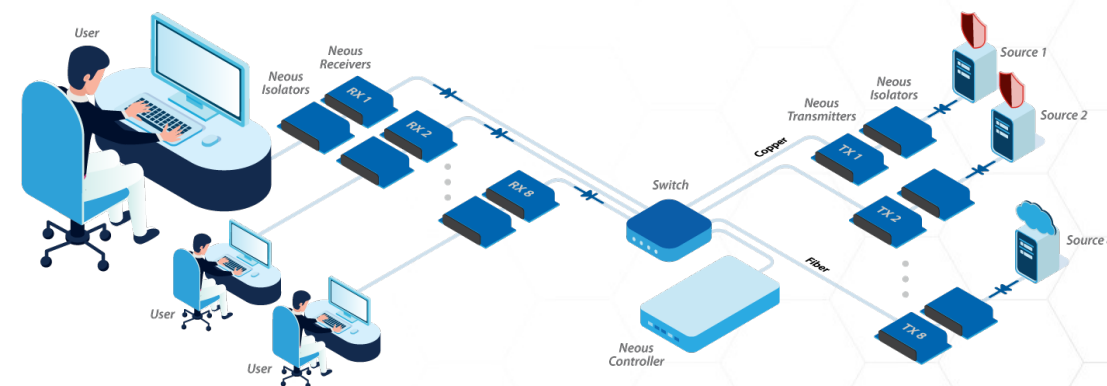
COMMAND AND CONTROL CENTER – NEOUS SECURE KVM/VIDEO MATRIX



- Designed from the ground up to be **Secure**
- Flexible, scalable, many-to-many, one-to-many and many-to-one solution
- Zero latency
- Perfect for accessing remote sources
- Each port is made of two isolated components: an extender port and a NIAP-certified isolator.



Video Matrix



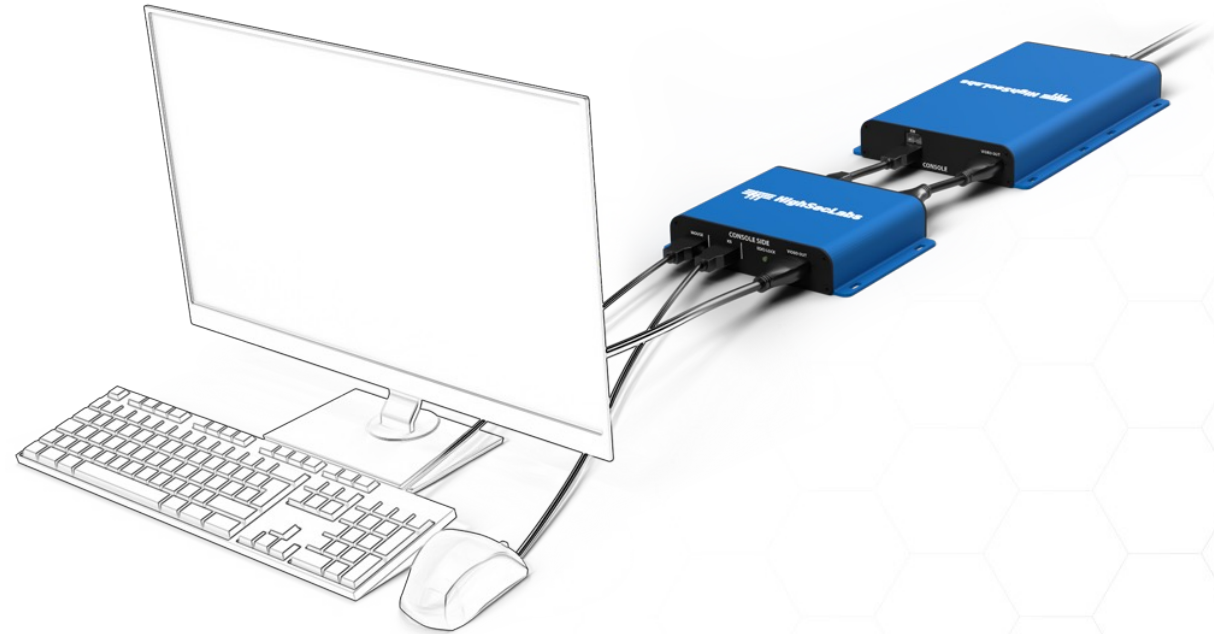
KVM Matrix

COMMAND AND CONTROL CENTER – NEOUS KEY FEATURES



Transmitter & Receiver Main Features

- DP/HDMI 4K30Hz 4,4,4
- USB HID Type B/A (TX/RX)
- 10Gb Ethernet for video/audio
- SFP+ port for fiber
- Encrypted USB HID: AES 256 CBC
- NAC, 802.1X, SSL

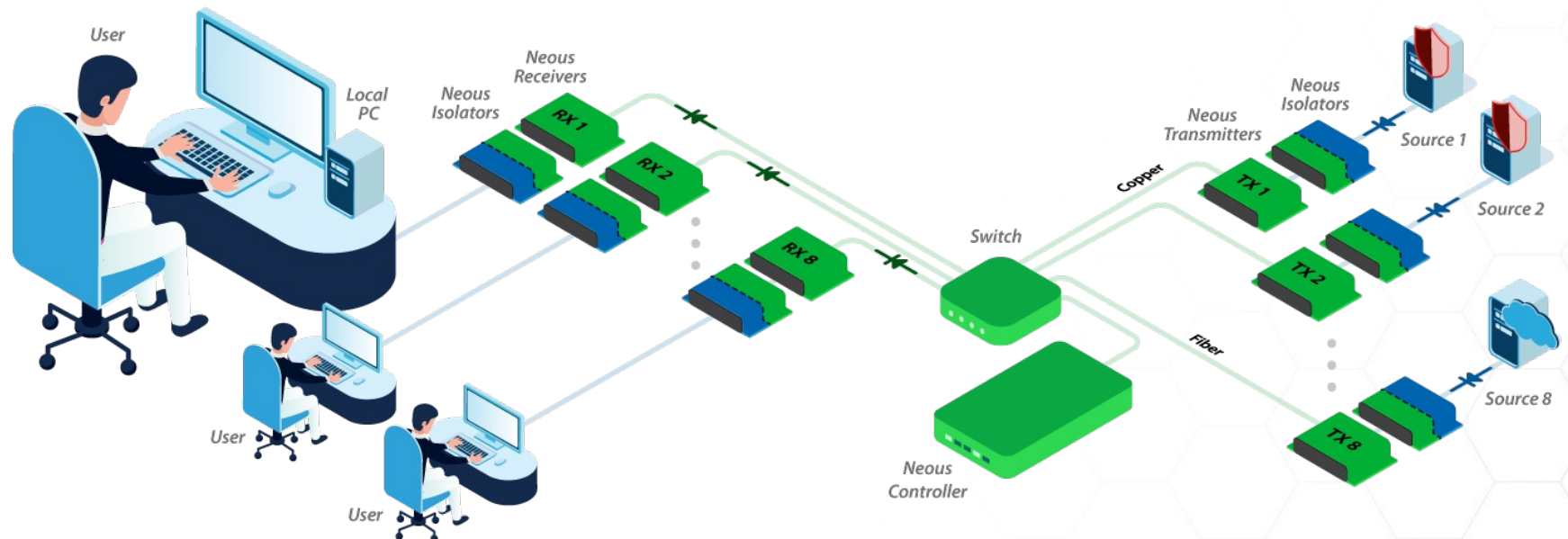


COMMAND AND CONTROL CENTER – NEOUS SECURE KVM MATRIX



- **NIAP, FIPS 140-3** and **Common Criteria** certified components
- **BAA** and **TAA** compliant
- Dedicated controller establishes authorized connections
- **802.1x, HTTPS & TLS**

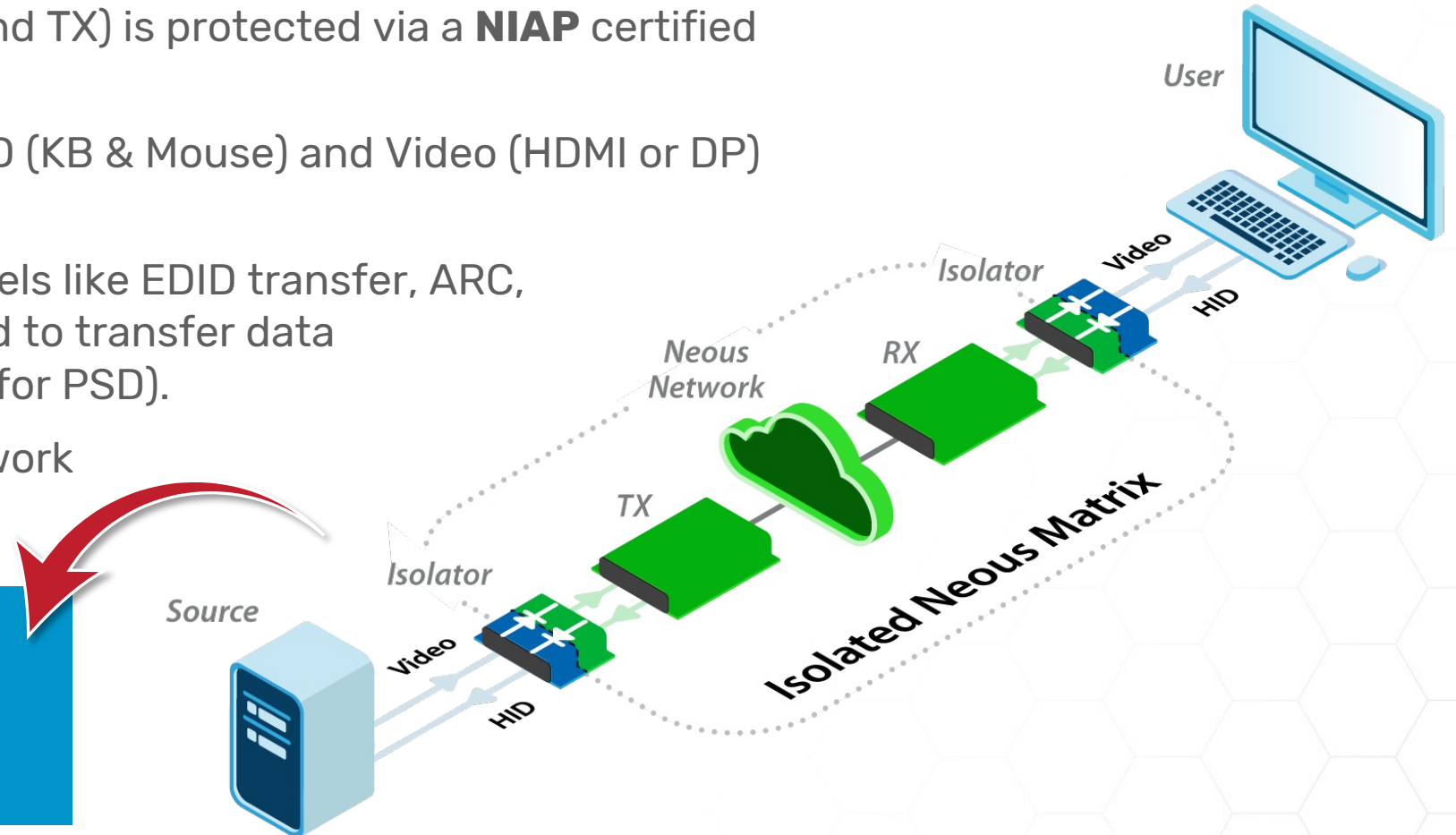
The **NEOUS** matrix is completely isolated from the outside world through the integrated NIAP-certified Isolators



COMMAND AND CONTROL CENTER – NEOUS SECURITY LAYER – ISOLATION

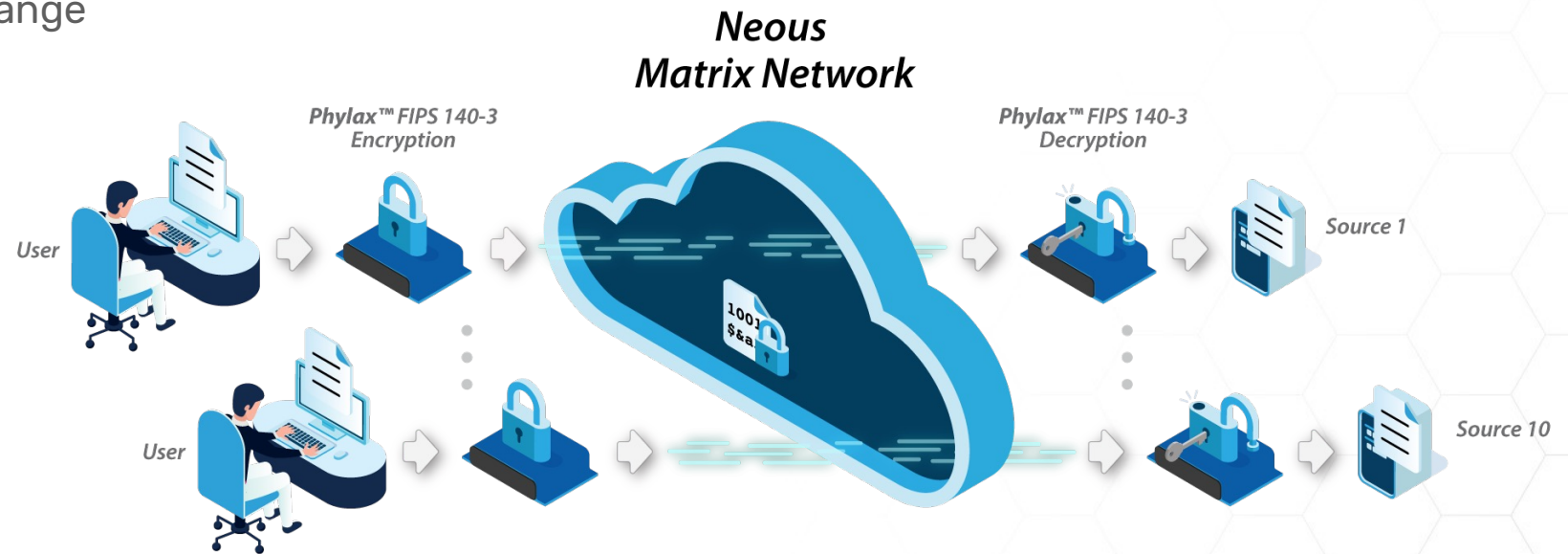
- Each Neous port (both RX and TX) is protected via a **NIAP** certified Isolator (FI11PH-M).
- The Isolators assure only HID (KB & Mouse) and Video (HDMI or DP) flow through Neous.
- The Isolators prevent channels like EDID transfer, ARC, and DP AUX from being used to transfer data (as certified by NIAP PP 4.0 for PSD).
- The Neous RX/TX cease to work if the Isolator is detached.

**THE NEOUS MATRIX IS
COMPLETELY ISOLATED
FROM USERS AND SOURCES**



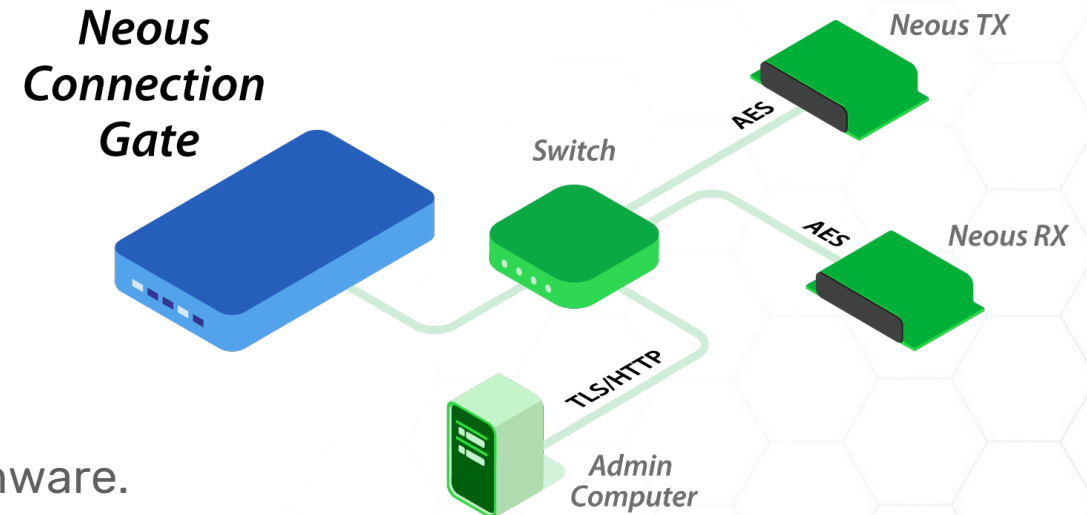
COMMAND AND CONTROL CENTER – NEOUS SECURITY LAYER – PHYLAX™ ENCRYPTION

- End to end FIPS 140-3 compliant encryption
- Ensures that message sent from RX to TX will not be changed or “hijacked” by an attacker
- AES 256 CBC encryption
- SHA 256 for message integrity with DSA
- ECDH for symmetric keys exchange
- Internal (NIST certified) TRNG
- Resistance to side channel attacks (DPA)
- Secure Boot
- Certified TrustZone
 - Support for pre-shared and generated keys



COMMAND AND CONTROL CENTER – NEOUS SECURITY LAYER – NEOUS CONTROLLER

- A **connection gatekeeper** to the Neous matrix
Manages permissions and access control
- Connection requests flow through the Neous controller before routing to the Neous appliances.
- Controller / Neous appliance communication is AES encrypted.
- All control interfaces and roles are locked with a secure boot mechanism and a key storage trust zone.
- Controller/ User communication is HTTPS and TLS encrypted.
- Secure Deployment – the Neous Controller locks appliances with a shared secret preventing unauthorized management devices from communicating with them.
- BAA compliant with proprietary and controlled firmware.



COMMAND AND CONTROL CENTER – NEOUS SECURITY LAYER – NETWORK SECURITY

- The Neous controller and appliances are certified to the 802.1x connection protocol.
- It actively scans for new devices & alerts upon device disconnect.
- Built-in NAC prevents unintended connections.
- Neous matrix configuration is **locked**, preventing unauthorized device or controller connections

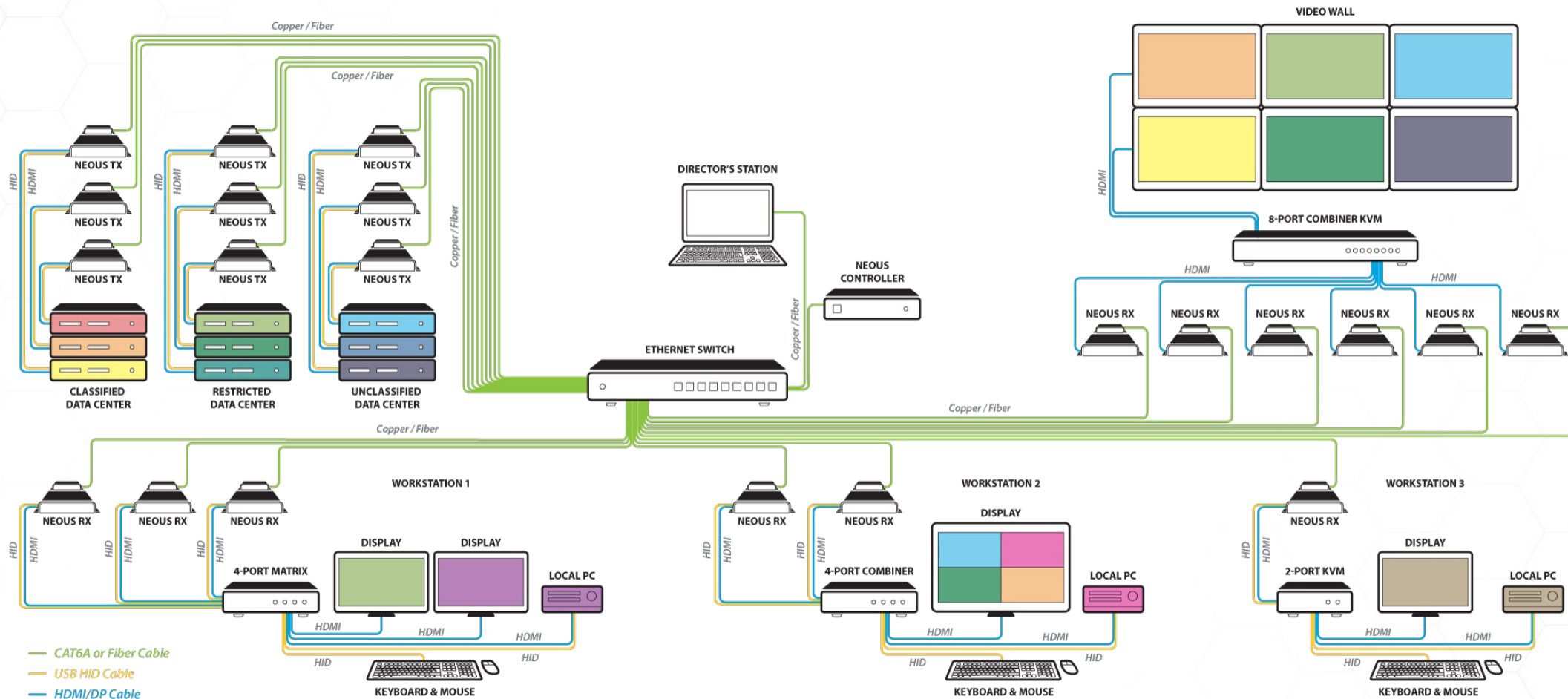


COMMAND AND CONTROL CENTER – SUMMARY

- The world's only standards-based secure matrix solution
- Components compliant with:
 - FIPS 140-3
 - NIAP
 - 802.1x
- Flexible architecture leveraging:
 - Local KVM switches with image processing
 - KVM Matrix for accessing remote sources
 - Video wall support with advanced image processing capabilities
- Powerful, intuitive workflows



SECURE CONTROL ROOM SETUP



NIAP CERTIFIED KVM PRODUCTS

Type	Model	Description
KM	SM20N-4	Secure 2-Port KM Switch PP4.0
	SM40N-4	Secure 4-Port KM Switch, PP4.0
	SM80N-4	Secure 8-Port KM Switch, PP4.0
KVM	SK21PH-4	Secure 2-Ports DP/HDMI 4K 60HZ Video KVM Switch, PP 4.0
	SK41PH-4	Secure 4-Port DP/HDMI 4K 60Hz Video KVM Switch, PP 4.0
	SK41PHU-4	Secure 4-Port DP/HDMI 4K 60Hz Video KVM Switch w/fUSB, PP 4.0
	SK81PH-4	Secure 8-Port DP/HDMI 4K 60HZ Video KVM Switch 4K60Hz
	DK22PH-4	Secure 2-Port DP/HDMI 4K 60Hz Video DH KVM Switch, PP 4.0
	DK42PH-4	Secure 4-Ports DP/HDMI 4K 60Hz Video DH KVM Switch, PP 4.0
	DK42PHU-4	Secure 4-Port DP/HDMI 4K 60HZ video DH KVM Switch w/fUSB, PP 4.0
	DK82PH-4	Secure 8-Port DP/HDMI 4K 60HZ Video DH KVM Switch, PP 4.0

Type	Model	Description
Mini-Matrix	SX42PH-4	Secure 4-Port to 2-Port DP/HDMI 4K 60HZ Video Mini-Matrix KVM, PP4.0
	SX42PHU-4	Secure 4-Port to 2-Port DP/HDMI 4K 60HZ Video Mini-Matrix KVM w/fUSB, PP4.0
	SX82PHU-4	Secure 8-Port to 2-Port DP/HDMI 4K 60HZ Video Mini-Matrix KVM w/fUSB, PP4.0
	SX82PH-4	Secure 8-Port to 2-Port DP/HDMI 4K 60HZ Video Mini-Matrix KVM, PP4.0
Ultra Mini-Matrix	SX42PHU-4X	Secure seamless 4-Ports KVM Matrix DP/HDMI 4K30, PP4.0
	SX82PHU-4X	Secure seamless 8-Ports KVM Matrix DP/HDMI 4K30, PP4.0
Combiner	SC21H-4	Secure 2-Port HDMI Video, KVM Combiner, PP4.0
	SC42PHU-4	Secure 4-Port DP/HDMI to 2-Port HDMI Video KVM Combiner w/fUSB and Analog Audio, PP4.0
	SC42DHU-4	Secure 4-Port DVI-D to 2-Port HDMI video KVM Combiner w/fUSB, PP4.0
	SC82PH-4	Secure 8-Port DP/HDMI Video KVM Combiner, PP4.0
	SC162PH-4	Secure 16-Port DP/HDMI Video KVM Combiner, PP4.0
	SC44PHU6-4	Secure 4-Port Combiner KVM 4 HDMI/DP to 4 HDMI/DP 4K60Hz w/fUSB PP4

NEOUS PRODUCTS

Model	Decsription	Features
SVFX10PHT-M	Neous Fiber Video Matrix TX with Linked Isolator	Video 4K30Hz; Enforced operation with Isolator; 10Gbps SFP+; DP/HDMI Combo source port; NIAP certified Isolator.
SVFX01PHR-M	Neous Fiber Video Matrix RX with Linked Isolator	Video 4K30Hz; Enforced operation with Isolator; 10Gbps SFP+; DP/HDMI Combo console port; Multiview support; NIAP certified Isolator
SVCX10PHT-M	Neous Copper Video Matrix TX with Linked Isolator	Video 4K30Hz; Enforced operation with Isolator; 10Gbps RJ45; DP/HDMI Combo source port; NIAP certified Isolator
SVCX01PHR-M	Neous Copper Video Matrix RX with Linked Isolator	Video 4K30Hz; Enforced operation with Isolator; 10Gbps RJ45; DP/HDMI Combo console port; Multiview support; NIAP certified Isolator
SKFX10PHT-M	Neous Fiber KVM Matrix TX with Linked Isolator	Video 4K30Hz; Enforced operation with Isolator; 10Gbps SFP+; DP/HDMI Combo source port; USB-B HID port; FIPS 140-3 compliant AES 256 CBC HID decryption; NIAP certified Isolator
SKFX01PHR-M	Neous Fiber KVM Matrix RX with Linked Isolator	Video 4K30Hz; Enforced operation with Isolator; 10Gbps SFP+; DP/HDMI Combo console port; 2x USB-A HID console port; FIPS 140-3 compliant AES 256 CBC HID encryption; NIAP certified Isolator
SKCX10PHT-M	Neous Copper KVM Matrix TX with Linked Isolator	Video 4K30Hz; Enforced operation with Isolator; 10Gbps RJ45; DP/HDMI Combo source port; USB-B HID port; FIPS 140-3 compliant AES 256 CBC HID decryption; NIAP certified Isolator
SKCX01PHR-M	Neous Copper KVM Matrix RX with Linked Isolator	Video 4K30Hz; Enforced operation with Isolator; 10Gbps RJ45; DP/HDMI Combo console port; 2x USB-A HID console port; FIPS 140-3 compliant AES 256 CBC HID encryption; NIAP certified Isolator
MCK11EC-M	Neous KVM Matrix Controller	Up to 100 end points



Thank You

For more info:



www.highseclabs.com | info@highseclabs.com

