

UNCLASSIFIED

# NEOUS™

SECURE MULTI-DOMAIN KVM &  
VIDEO MATRIX SOLUTIONS

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

HLT35071 Rev 1.4



# SECURE OPERATIONS CENTERS – 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:

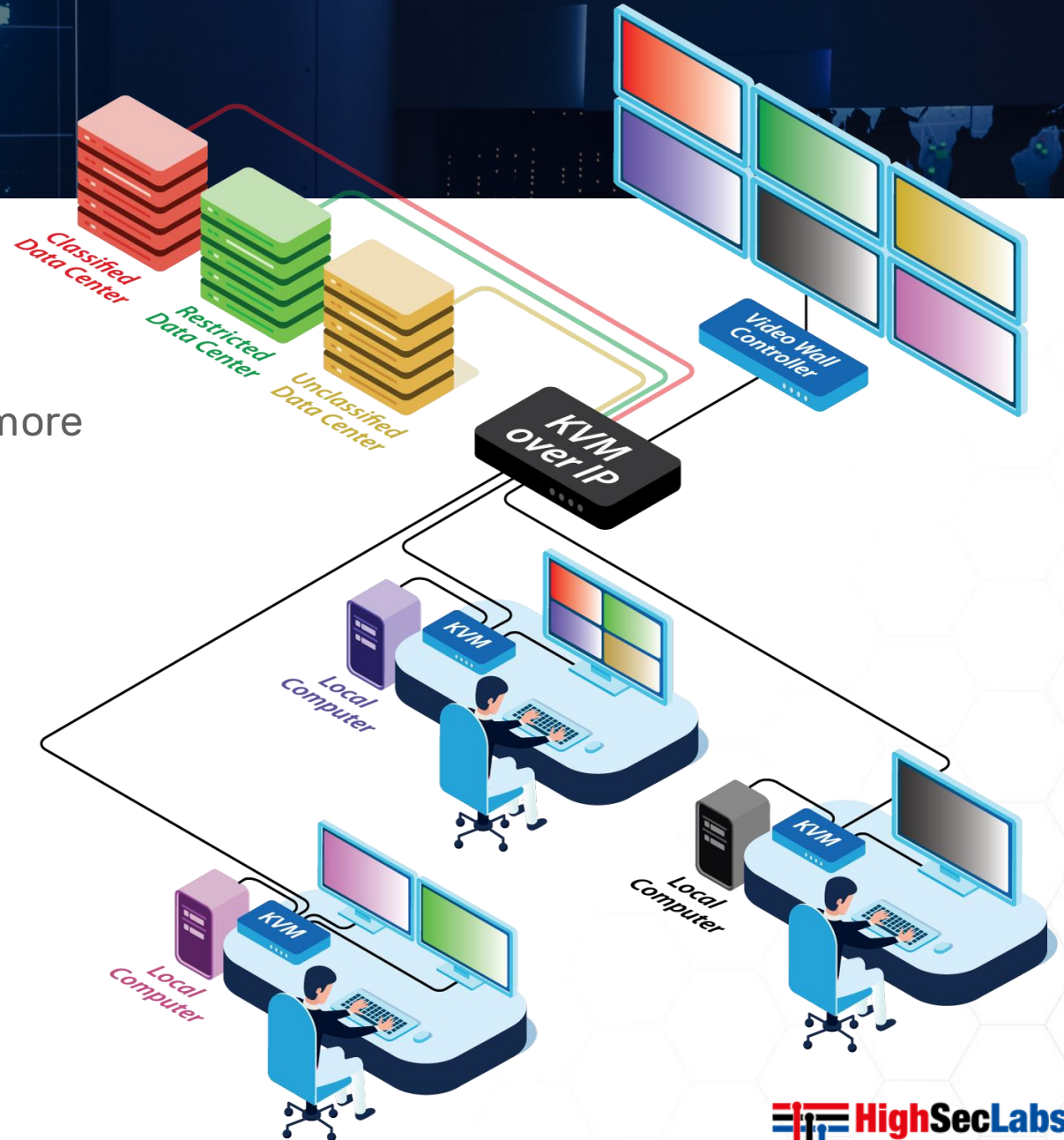
In a multi-domain, multi-classification network environment:

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

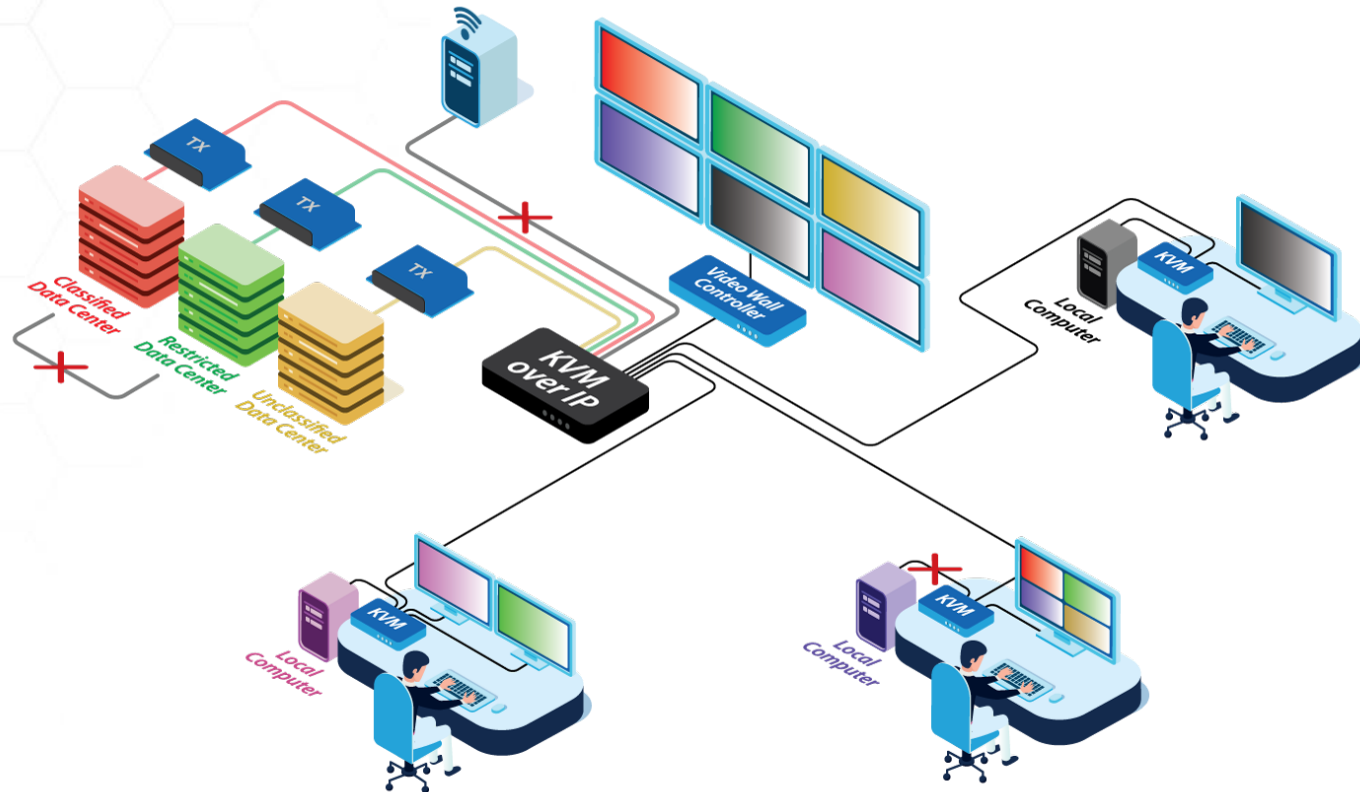


# OPERATIONS CENTER KEY COMPONENTS

- **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



# OPERATIONS CENTERS – NEOUS SECURE KVM/VIDEO MATRIX



KVM Matrix

- **Data Leaks**

- Leake information between computers connected to different Networks
  - In the data center
  - On the user's desktop
  - Between a local PC to KVM port

- **Unauthorized Access**

- Man-in-the-middle to hijack data and transmit it outside the network

- **Flexible and Scalable**

- Neous supports up to 300 endpoints (Tx + Rx) and can be scaled up/down after the initial deployment.

# SECURING THE OPERATIONS CENTER

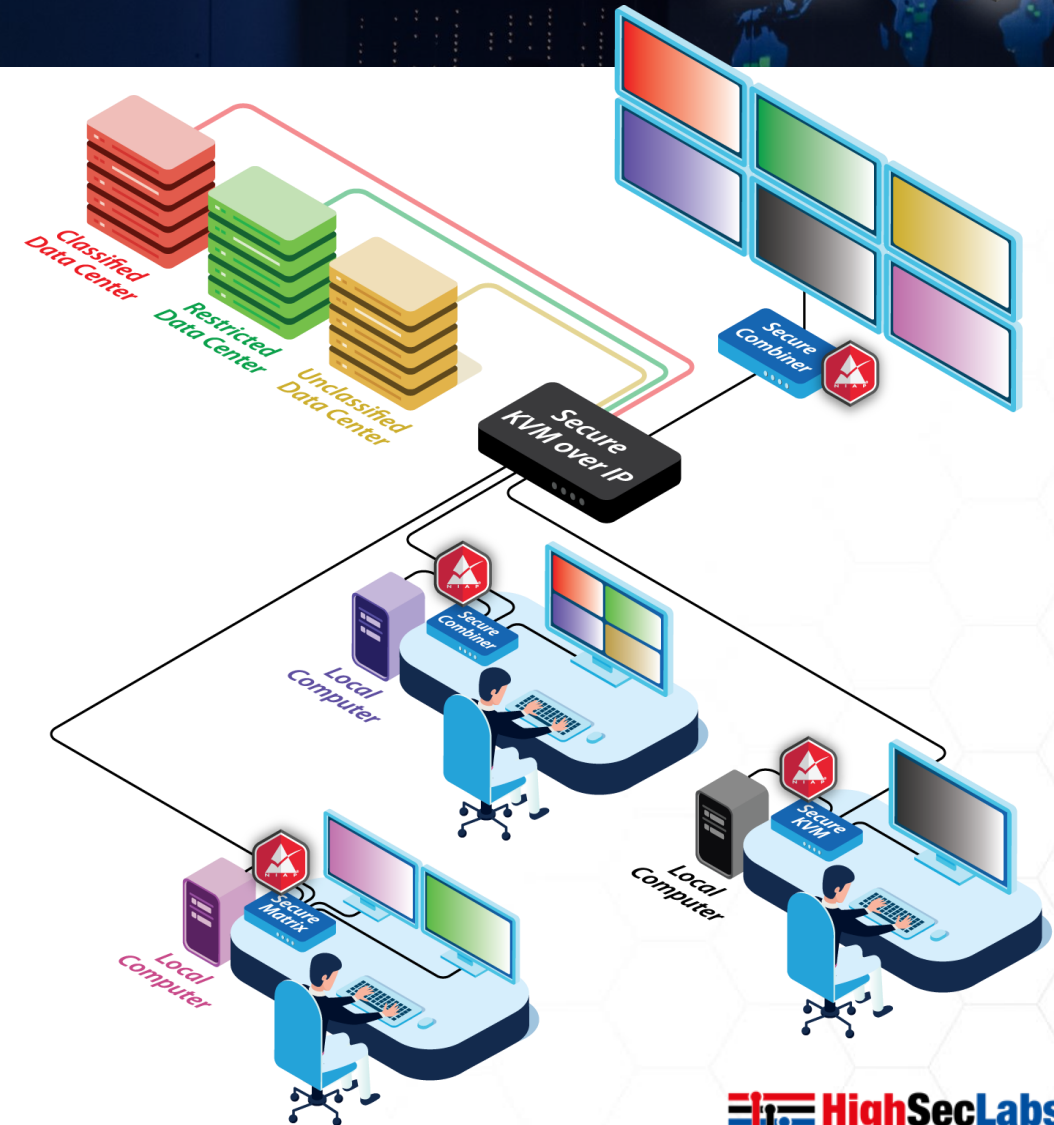
**Neous™**: The world's most secure standards-based operations centers solution for cross-domain interaction

# SECURE OPERATIONS CENTER CONCEPT



## A secure solution integrates:

- Secure **workstation** KVM switches
  - Advanced view & control capabilities of local and remote sources
- Secure **video wall** with multi-domain sources
  - Aggregates multiple sources and prepares the image to be displayed across the video wall
- Secure KVM **matrix**
  - Flexible access to remote sources on multiple air-gaped networks





# SECURE VIDEO WALL

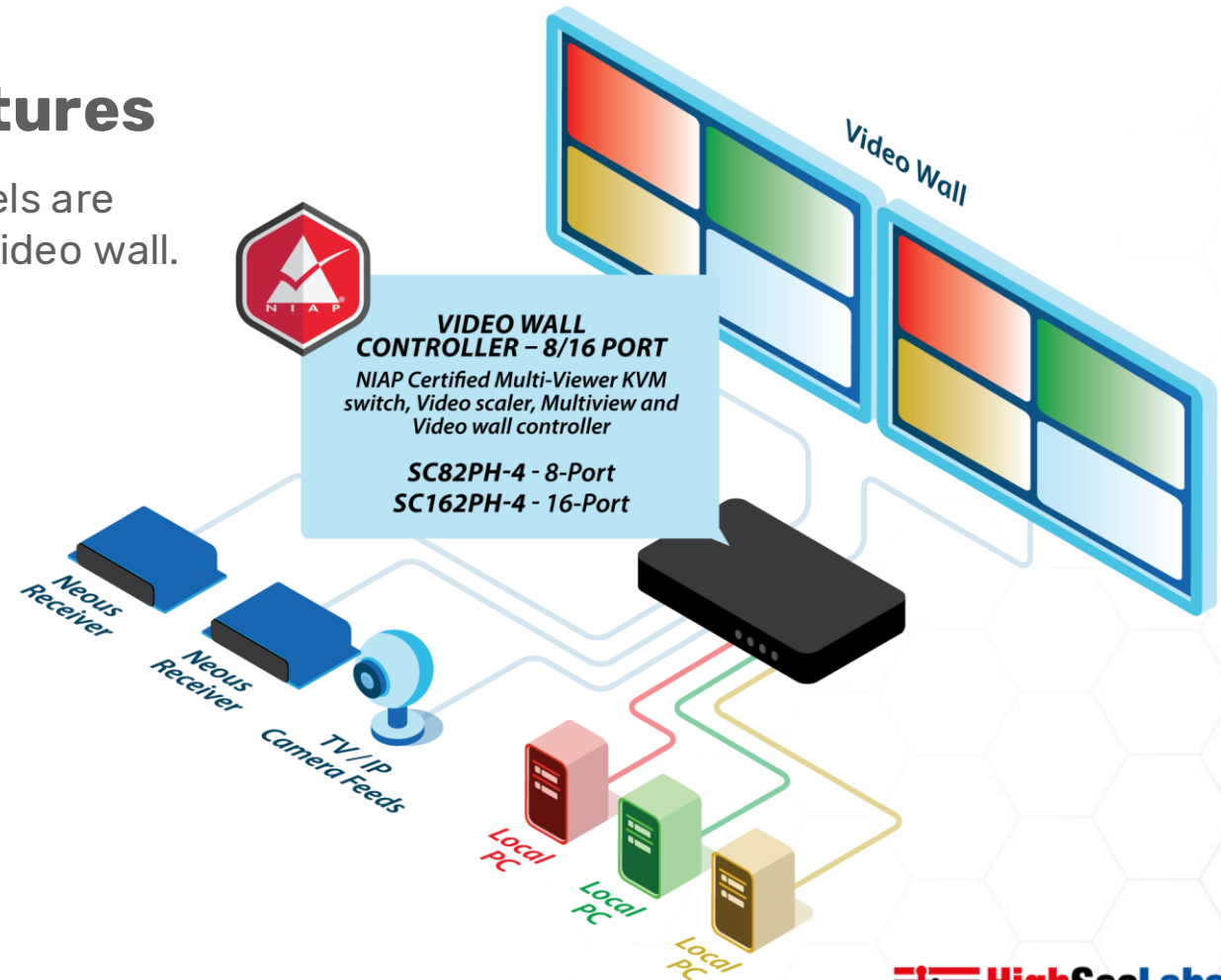
A NIAP-certified solution for displaying multiple domains with multiple classification levels on a video wall.

# OPERATIONS CENTERS – THE ONLY NIAP-CERTIFIED VIDEO WALL CONTROLLER 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 3<sup>rd</sup> party OS (WIN/Linux)

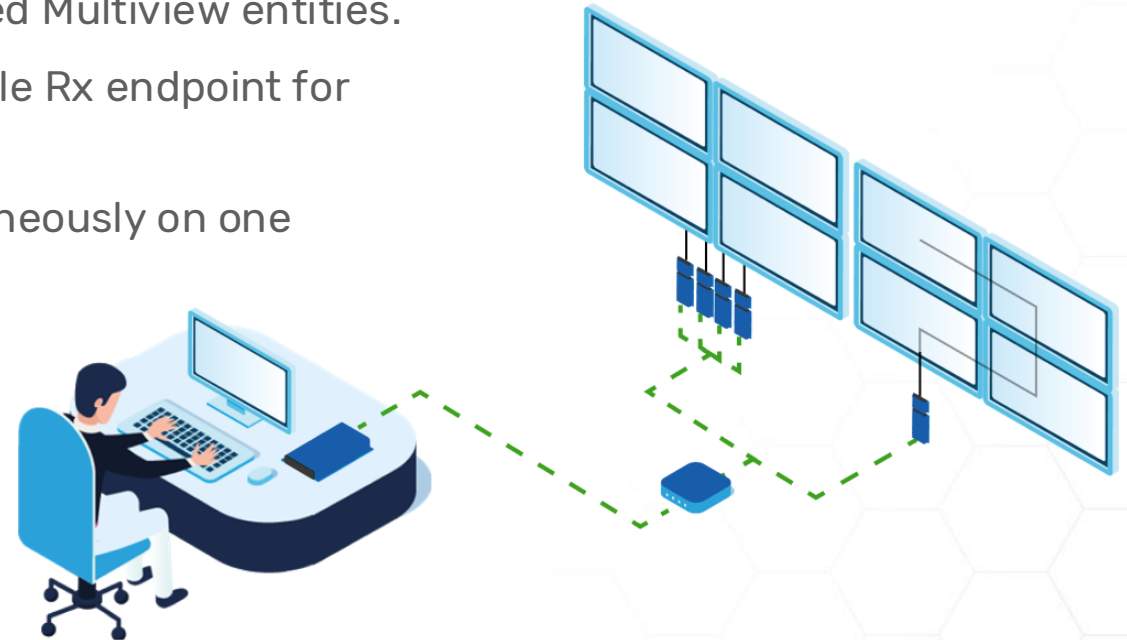


# OPERATIONS CENTERS – THE ONLY NIAP-CERTIFIED VIDEO WALL SOLUTION



## Secure video wall Matrix features

- **Endpoint Grouping:** Combine multiple Rx units into unified Multiview entities.
- **Chain-linked displays:** Connect up to 4 displays to a single Rx endpoint for large-scale, bezel-corrected walls.
- **Security:** Display multiple security classifications simultaneously on one screen or wall, fully certified to NIAP PP 4.0.
- **Full API** for control via RS-232.
- **High performance video:** Zero latency, PIP, dynamic scaling, and preset layouts.
- **Flexibility:** DP/HDMI combo connections (input/output)
- **Tamper-Resistant Design:** FPGA-based with no OS, no HDD, and no external firmware dependencies.





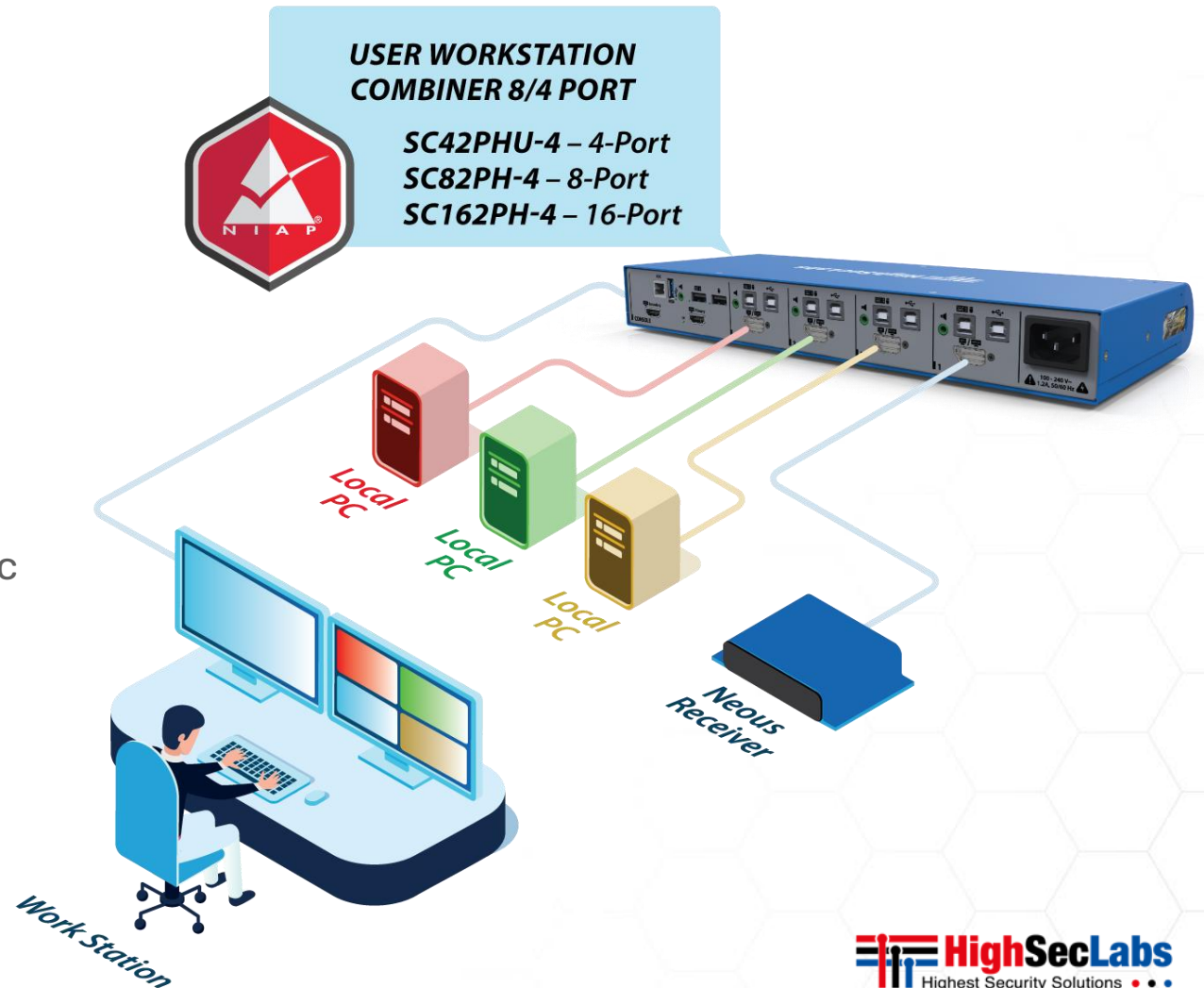
# SECURE LOCAL KVM SWITCHES

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

# OPERATIONS CENTERS – WORKSTATION COMBINER



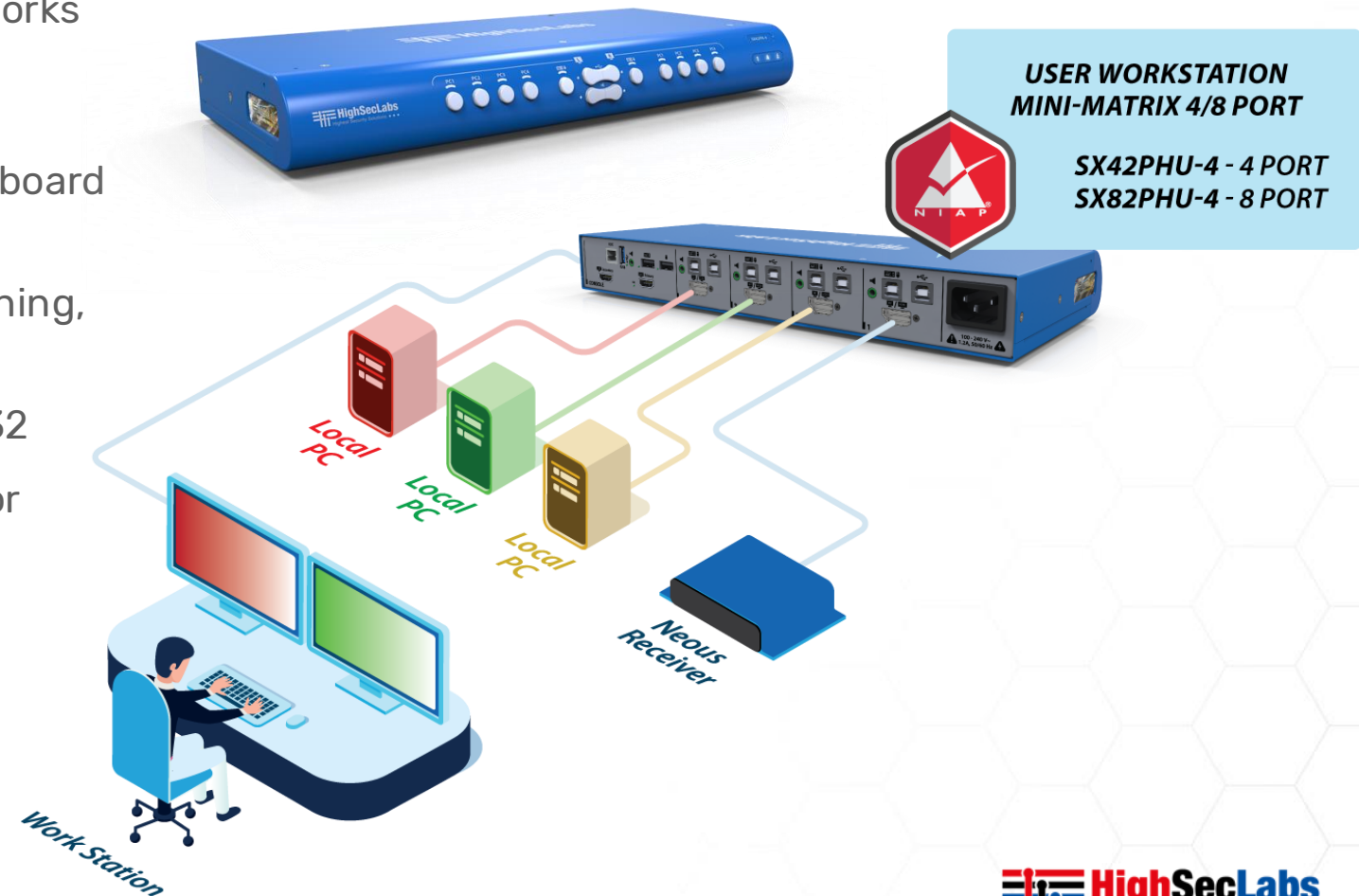
- **Security** – Classified & unclassified networks displayed together on the same screen or wall. Certified to **NIAP PP4** standard
- **All in one solution** – Video & USB for keyboard and mouse, no integration needed
- **Fast & easy installation**- No special training, tools, or applications
- **Full 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)



# OPERATIONS CENTERS – 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 Multiview display setups**



# NEOUSTM SECURE MULTI-DOMAIN KVM AND VIDEO OVER IP MATRIX

Introducing the world's first KVM matrix system designed from the ground up for secure multi-domain operations centers with standards-based certifications.

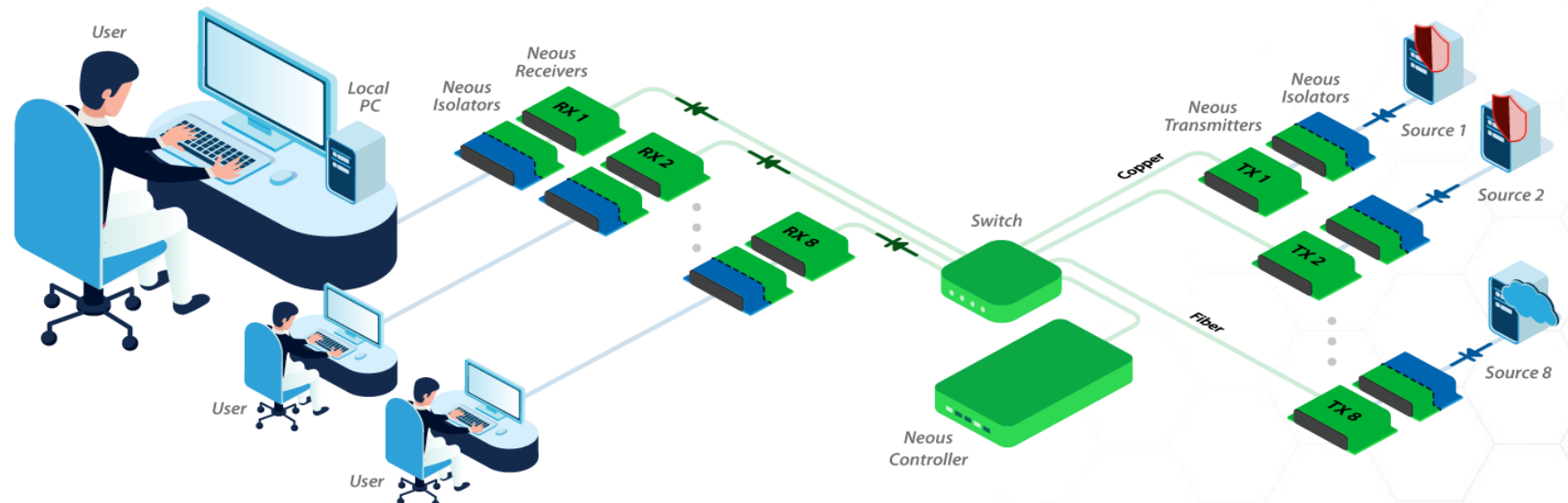


# OPERATIONS CENTERS – NEOUS SECURE KVM MATRIX



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

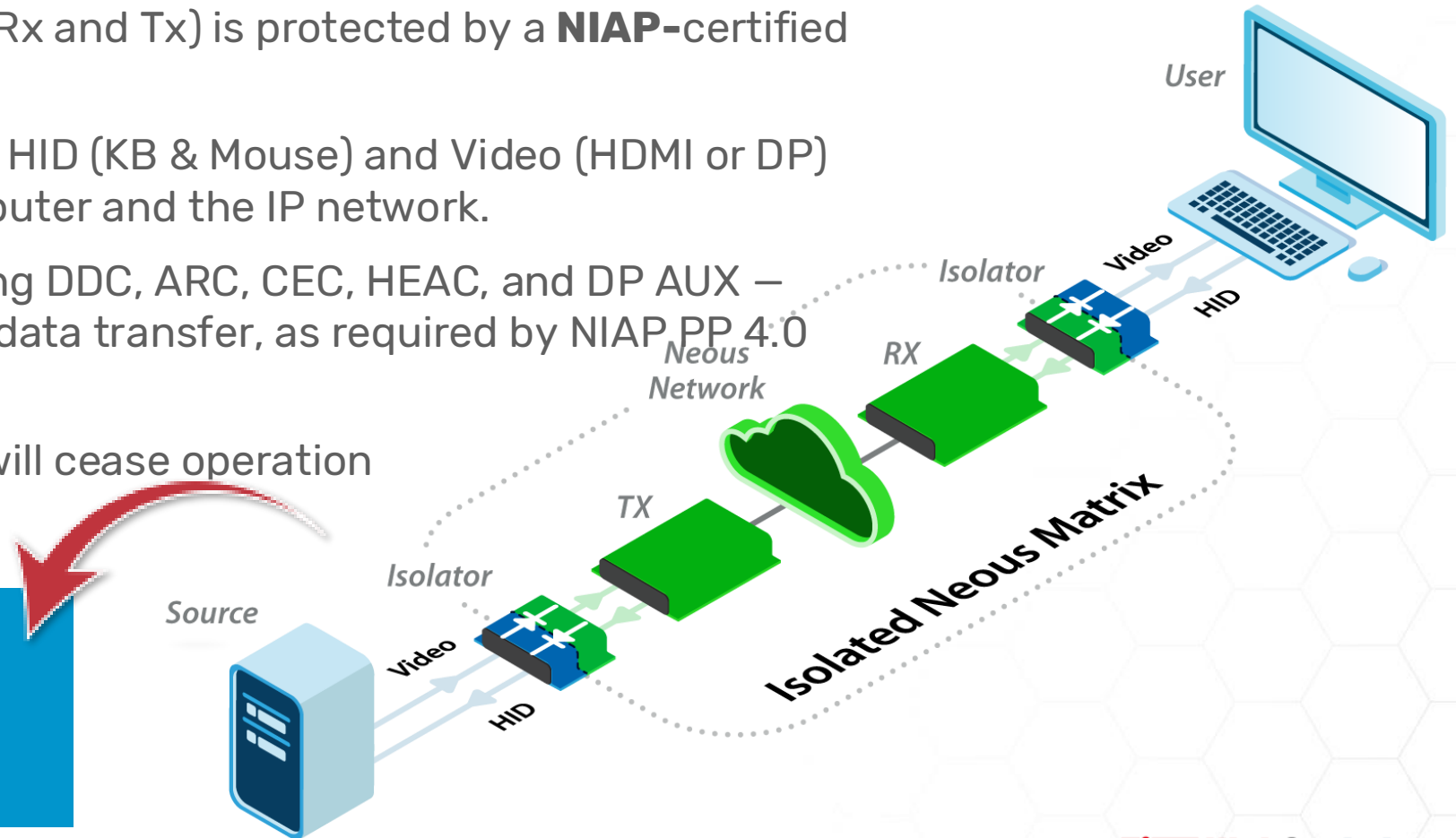
The **NEOUS** matrix completely isolates source computers from the outside world by integrating NIAP-certified Isolators.



# OPERATIONS CENTERS – NEOUS SECURITY LAYER – ISOLATION

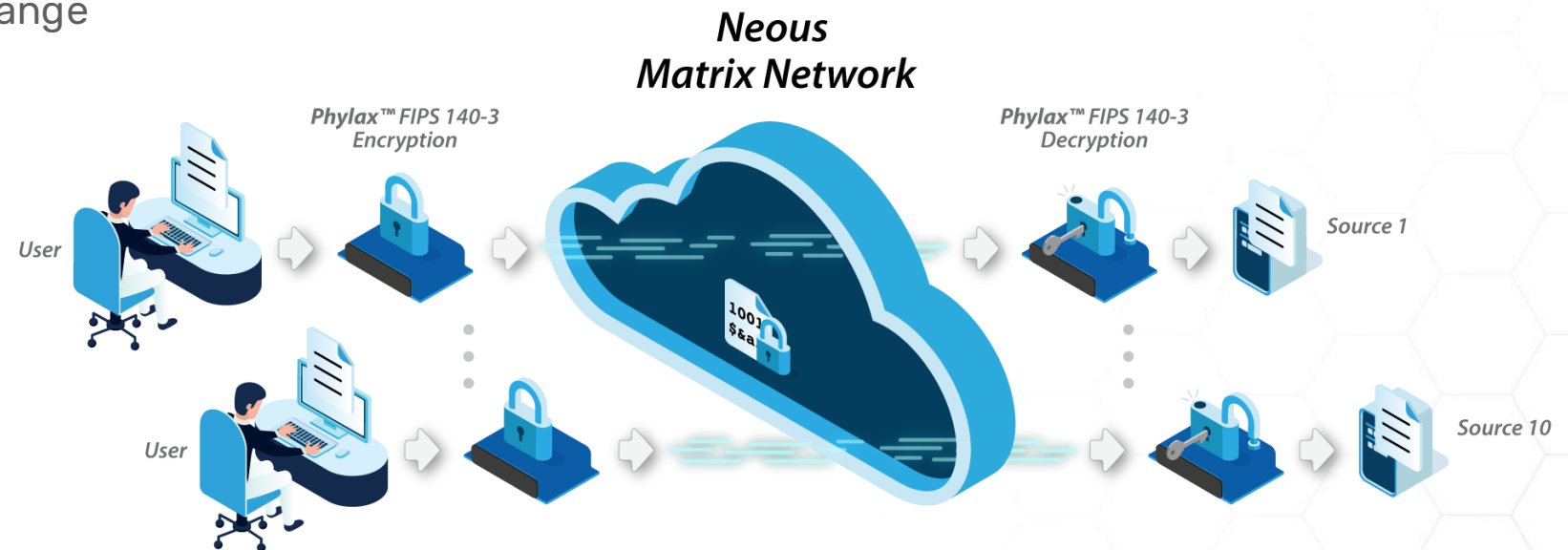
- Each Neous endpoint (both Rx and Tx) is protected by a **NIAP**-certified Isolator (FI11PH-M).
- Isolators strictly permit only HID (KB & Mouse) and Video (HDMI or DP) data flow between the computer and the IP network.
- All other channels – including DDC, ARC, CEC, HEAC, and DP AUX – are disabled to prevent any data transfer, as required by NIAP PP 4:0 for PSD certification.
- The Neous Rx and Tx units will cease operation if the Isolator is detached.

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



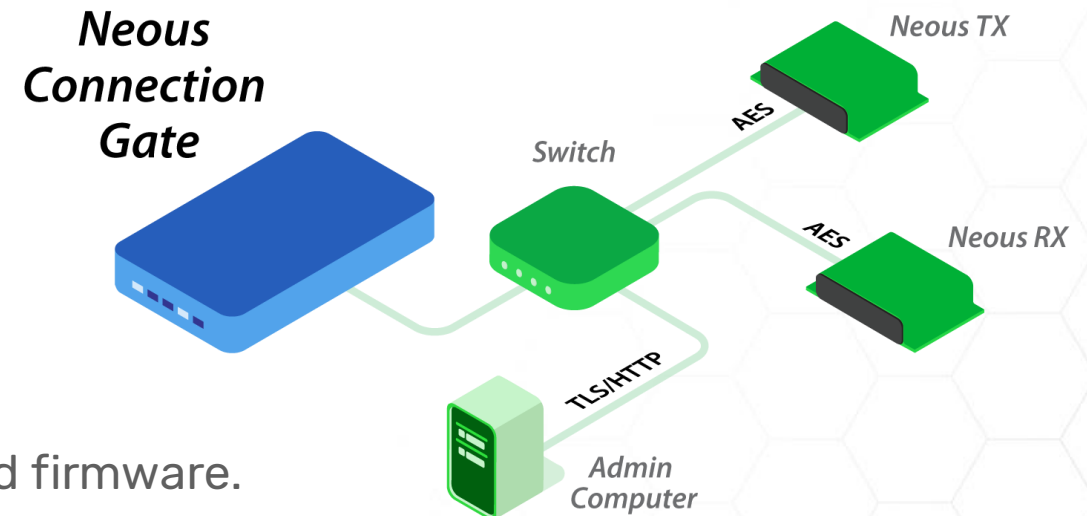
# OPERATIONS CENTERS – NEOUS SECURITY LAYER – PHYLAX™ ENCRYPTION

- 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 GCM 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



# OPERATIONS CENTERS – NEOUS SECURITY LAYER – NEOUS MANAGEMENT SYSTEM

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



# OPERATIONS CENTERS – 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

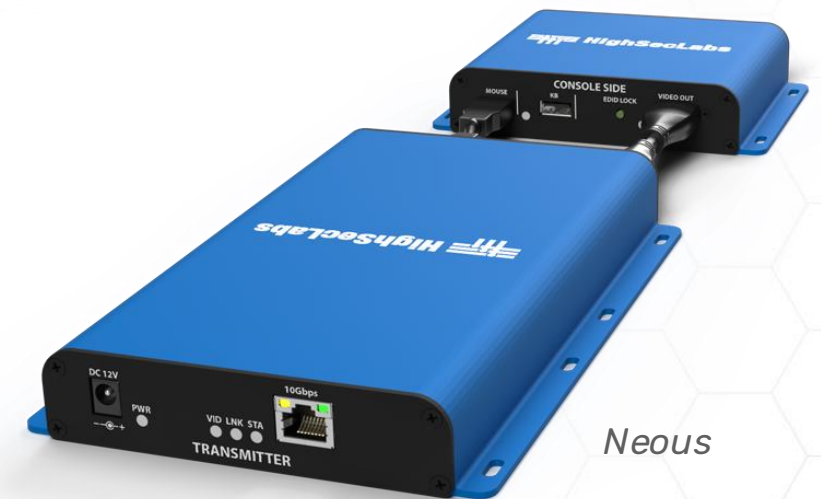


# OPERATIONS CENTERS – SUMMARY

- The world's only standards-based secure matrix solution
- Components compliant with:
  - FIPS 140-3
  - NIAP PP 4.0
  - 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
- Supports up to 300 endpoints and enables seamless post-deployment expansion.

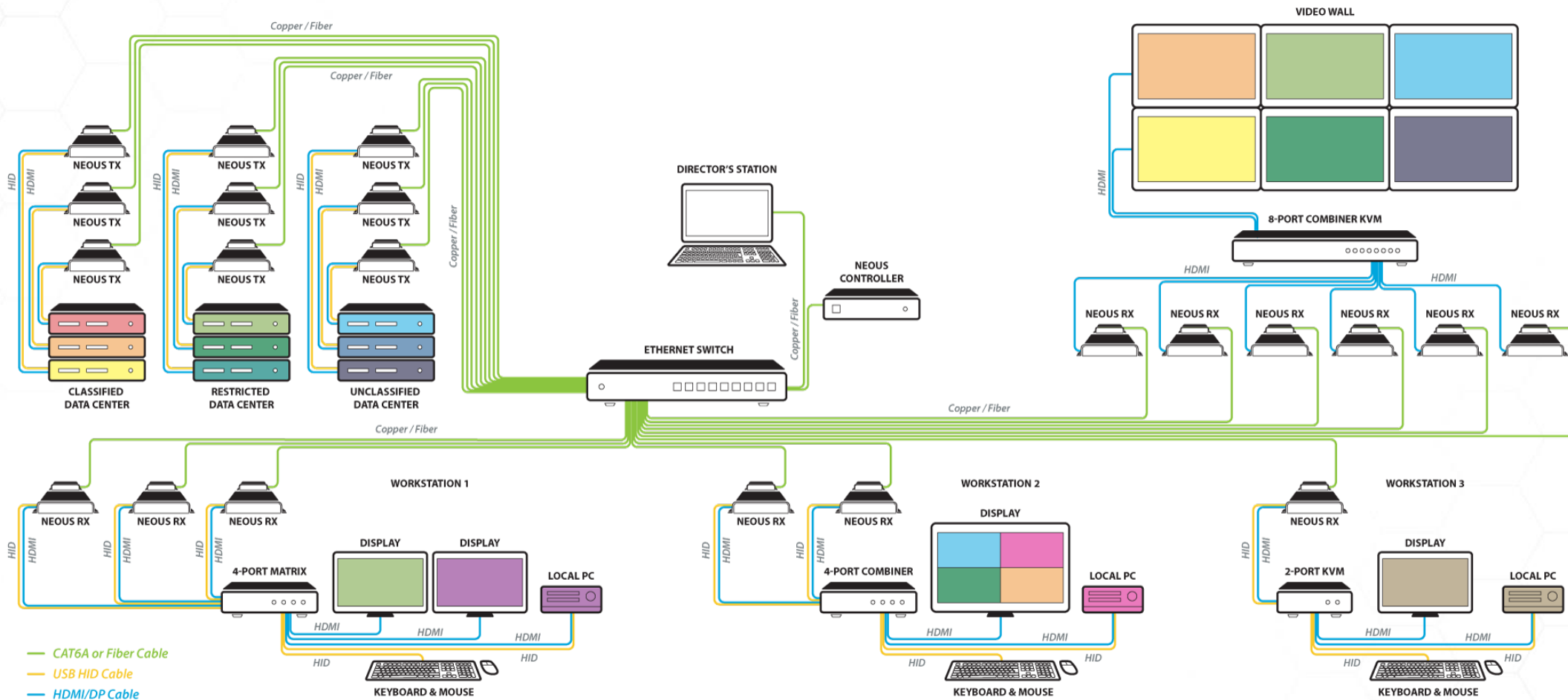


*Combiner*



*Neous*

# SECURE OPERATIONS CENTER SETUP



# NIAP CERTIFIED KVM PRODUCTS

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

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

# NEOUS PRODUCTS

Model	Type	Connection	Power Source
<b>SVFX10PHT-M</b>	Neous Fiber Video Matrix TX with Linked Isolator	Fiber	External
<b>SVFX01PHR-M</b>	Neous Fiber Video Matrix RX with Linked Isolator	Fiber	External
<b>SKFX10PHT-M</b>	Neous Fiber KVM Matrix TX with Linked Isolator	Fiber	External
<b>SKFX01PHR-M</b>	Neous Fiber KVM Matrix RX with Linked Isolator	Fiber	External
<b>SVCX10PHT-ME</b>	Neous Video Matrix TX with Linked Isolator	Copper	PoE or External
<b>SVCX01PHR-ME</b>	Neous Video Matrix RX with Linked Isolator	Copper	PoE or External
<b>SKCX10PHT-ME</b>	Neous KVM Matrix TX with Linked Isolator	Copper	PoE or External
<b>SKCX01PHR-ME</b>	Neous KVM Matrix RX with Linked Isolator	Copper	PoE or External
<b>SVCX10PHT-M</b>	Neous Video Matrix TX with Linked Isolator	Copper	External
<b>SVCX01PHR-M</b>	Neous Video Matrix RX with Linked Isolator	Copper	External
<b>SKCX10PHT-M</b>	Neous KVM Matrix TX with Linked Isolator	Copper	External
<b>SKCX01PHR-M</b>	Neous KVM Matrix RX with Linked Isolator	Copper	External
<b>MCK11EC-MD</b>	Neous KVM Matrix Controller - Up to 300 endpoints	Copper	External

# COMMERCIAL KVM & VIDEO IP MATRIX PRODUCTS

Model	Type	Connection	Power Source
<b>SVFX10PHT-N</b>	Commercial Fiber Video Matrix TX with Linked Isolator	Fiber	External
<b>SVFX01PHR-N</b>	Commercial Fiber Video Matrix RX with Linked Isolator	Fiber	External
<b>SKFX10PHT-N</b>	Commercial Fiber KVM Matrix TX with Linked Isolator	Fiber	External
<b>SKFX01PHR-N</b>	Commercial Fiber KVM Matrix RX with Linked Isolator	Fiber	External
<b>SVCX10PHT-NE</b>	Commercial Video Matrix TX with Linked Isolator	Copper	PoE or External
<b>SVCX01PHR-NE</b>	Commercial Video Matrix RX with Linked Isolator	Copper	PoE or External
<b>SKCX10PHT-NE</b>	Commercial KVM Matrix TX with Linked Isolator	Copper	PoE or External
<b>SKCX01PHR-NE</b>	Commercial KVM Matrix RX with Linked Isolator	Copper	PoE or External
<b>SVCX10PHT-N</b>	Commercial Video Matrix TX with Linked Isolator	Copper	External
<b>SVCX01PHR-N</b>	Commercial Video Matrix RX with Linked Isolator	Copper	External
<b>SKCX10PHT-N</b>	Commercial KVM Matrix TX with Linked Isolator	Copper	External
<b>SKCX01PHR-N</b>	Commercial KVM Matrix RX with Linked Isolator	Copper	External
<b>MCK11EC-MD</b>	Commercial KVM Matrix Controller - Up to 300 endpoints	Copper	External

# IP MATRIX MOUNTING SOLUTIONS

Model	Type
<b>RK-1U-NEOUS</b>	1U 3 Neous Secure Endpoint Rack Mount Kit
<b>RK-4U-HKS-10</b>	4U 10-slot rack mount kit



## 1U Neous Rack Mount Kit

Fits up to 3 Neous endpoints (including their linked Isolators) in a single 1U rack space using a convenient drawer mechanism.



## 4U Rack Mount Kit

Fits up to 10 Neous Isolators or endpoints (or 5 of each) in a single 4U rack mount kit.



# Thank You

For more info:



[www.highseclabs.com](http://www.highseclabs.com) | [info@highseclabs.com](mailto:info@highseclabs.com)

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