SECURE
CONTROL ROOM

Multiple domain interaction across multiple classification levels with unmatched data breach security.

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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
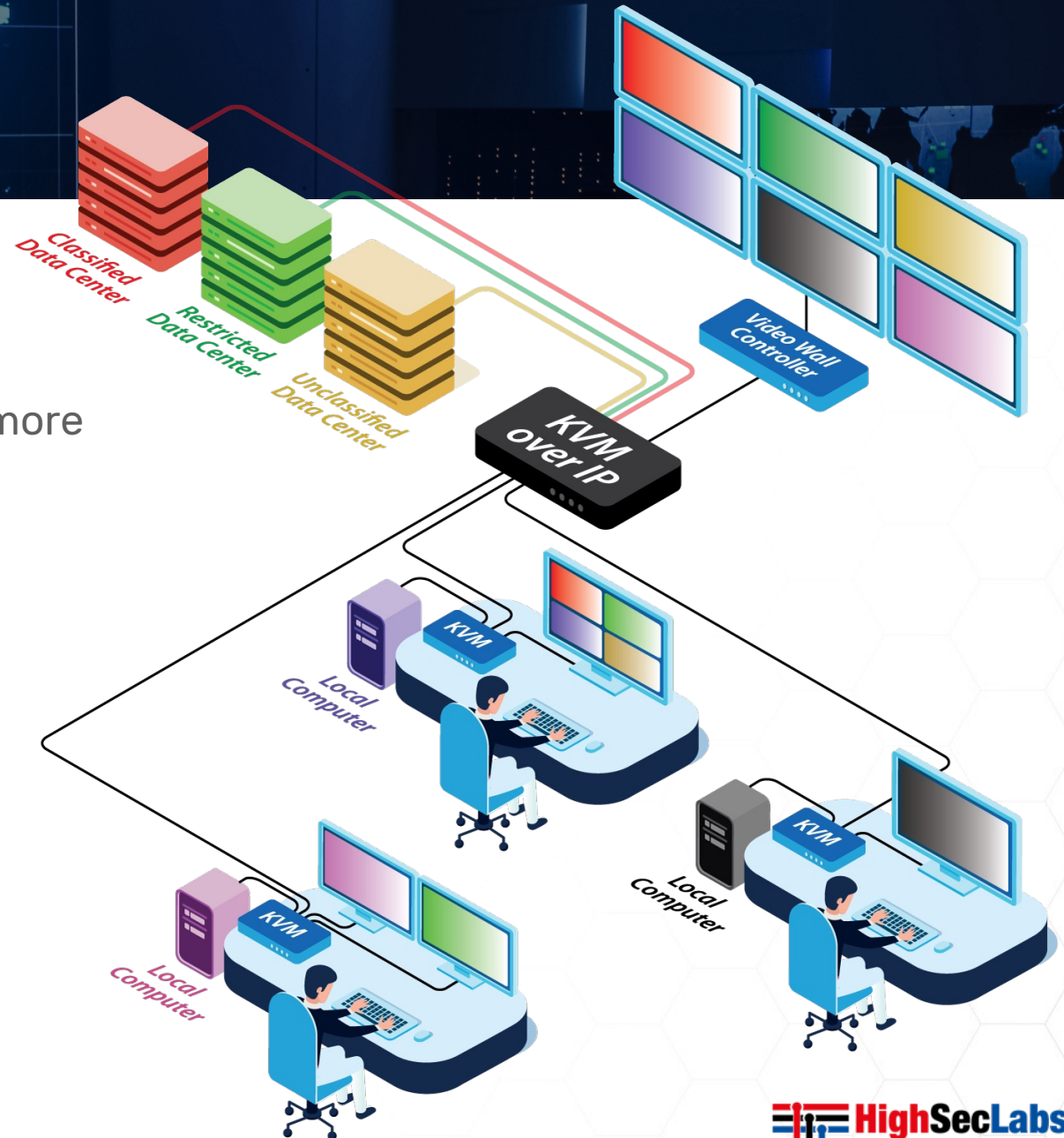
THE CHALLENGE:

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

Classified Data Center

Restricted Data Center

Unclassified Data Center

KVM over IP

Video Wall Controller

Local Computer

KVM

Local Computer

KVM

Local Computer

KVM

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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
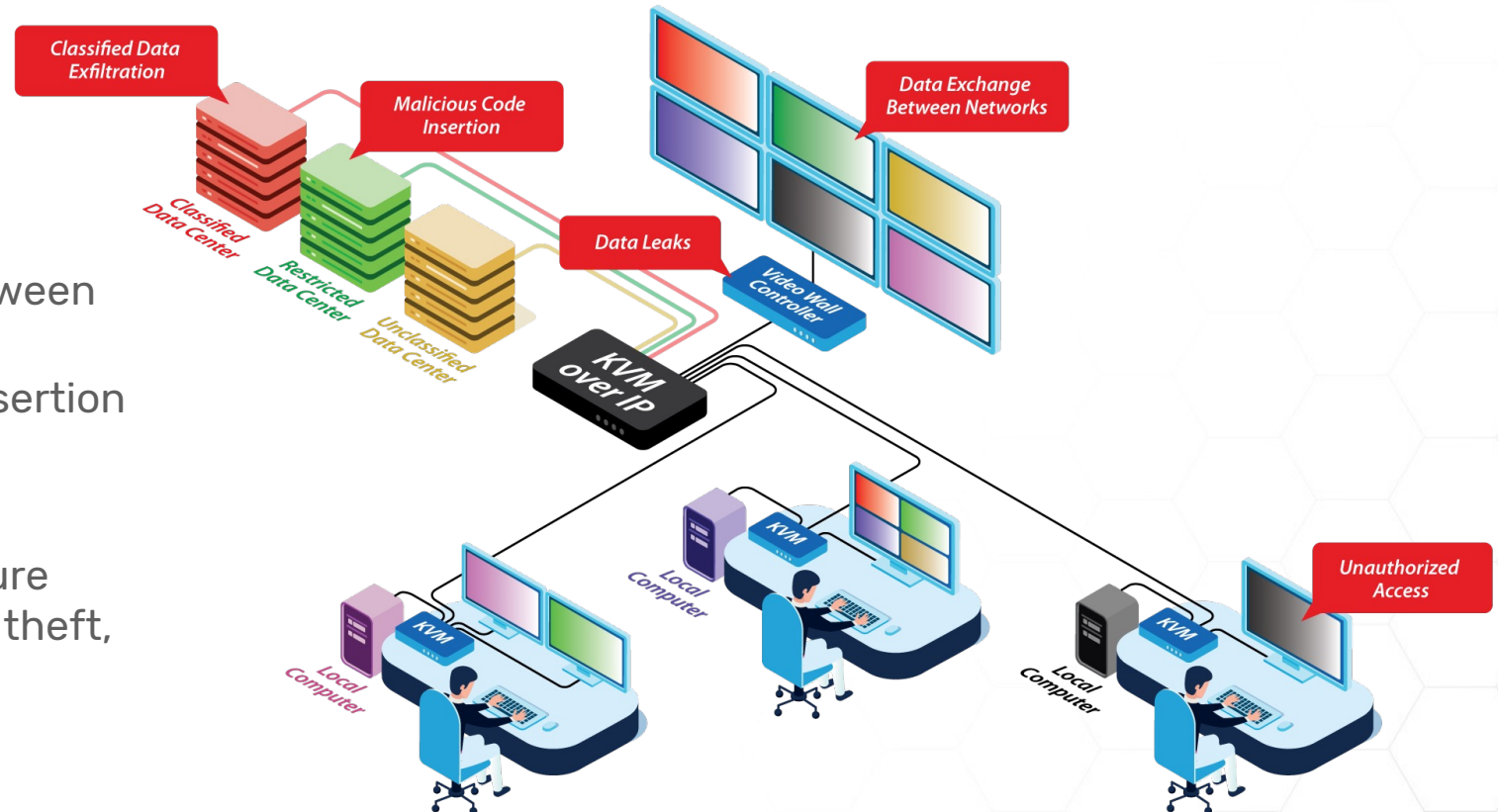
SECURING THE CONTROL ROOM

Introducing the world's most secure KVM control room solution for cross-domain interaction

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SECURE CONTROL ROOM CONCEPT

Secure solution integrates:

- Secure local KVM switches
  - Advanced viewing capabilities of local and remote sources

- Secure KVM over IP
  - 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

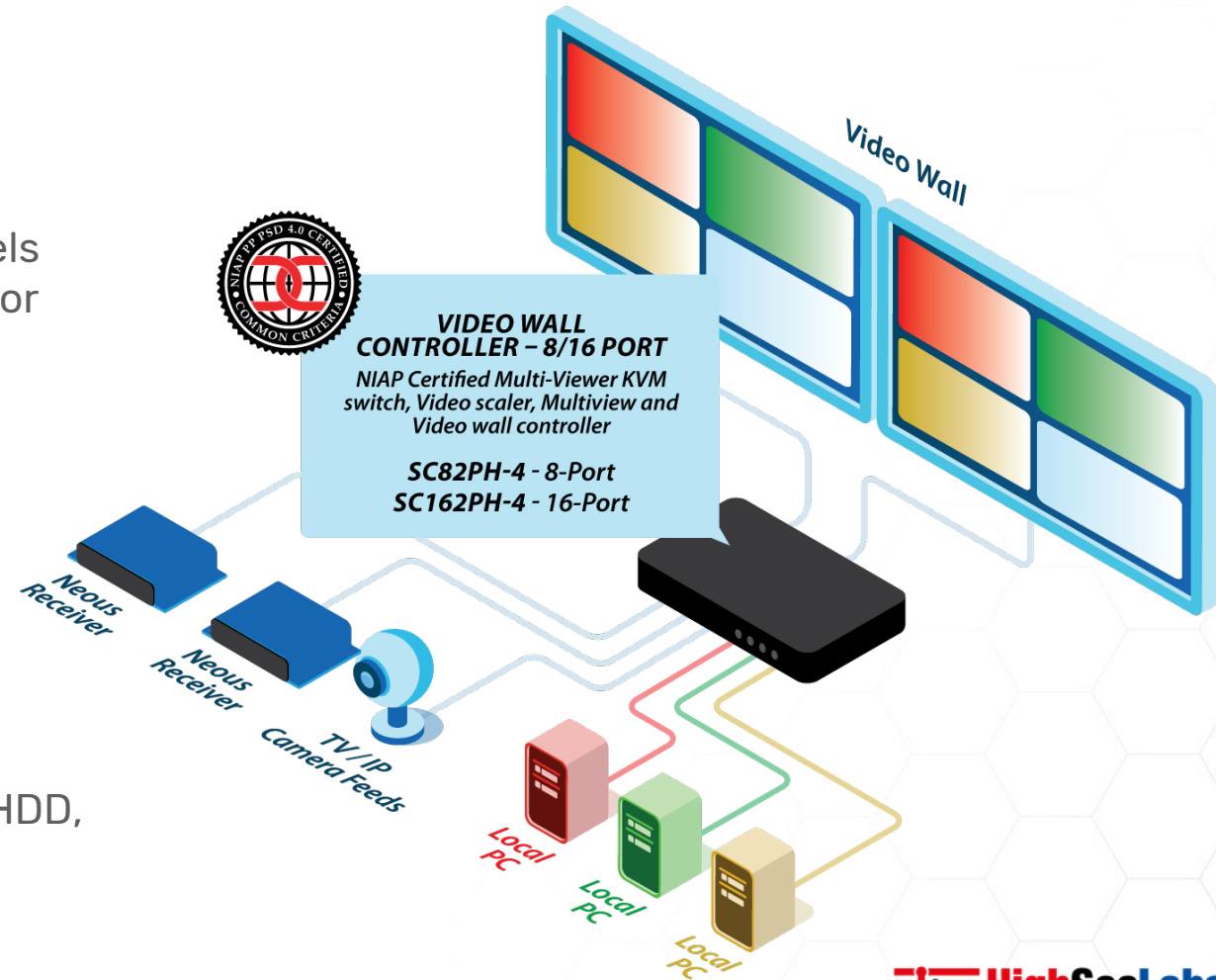**HighSecLabs**
Highest Security Solutions
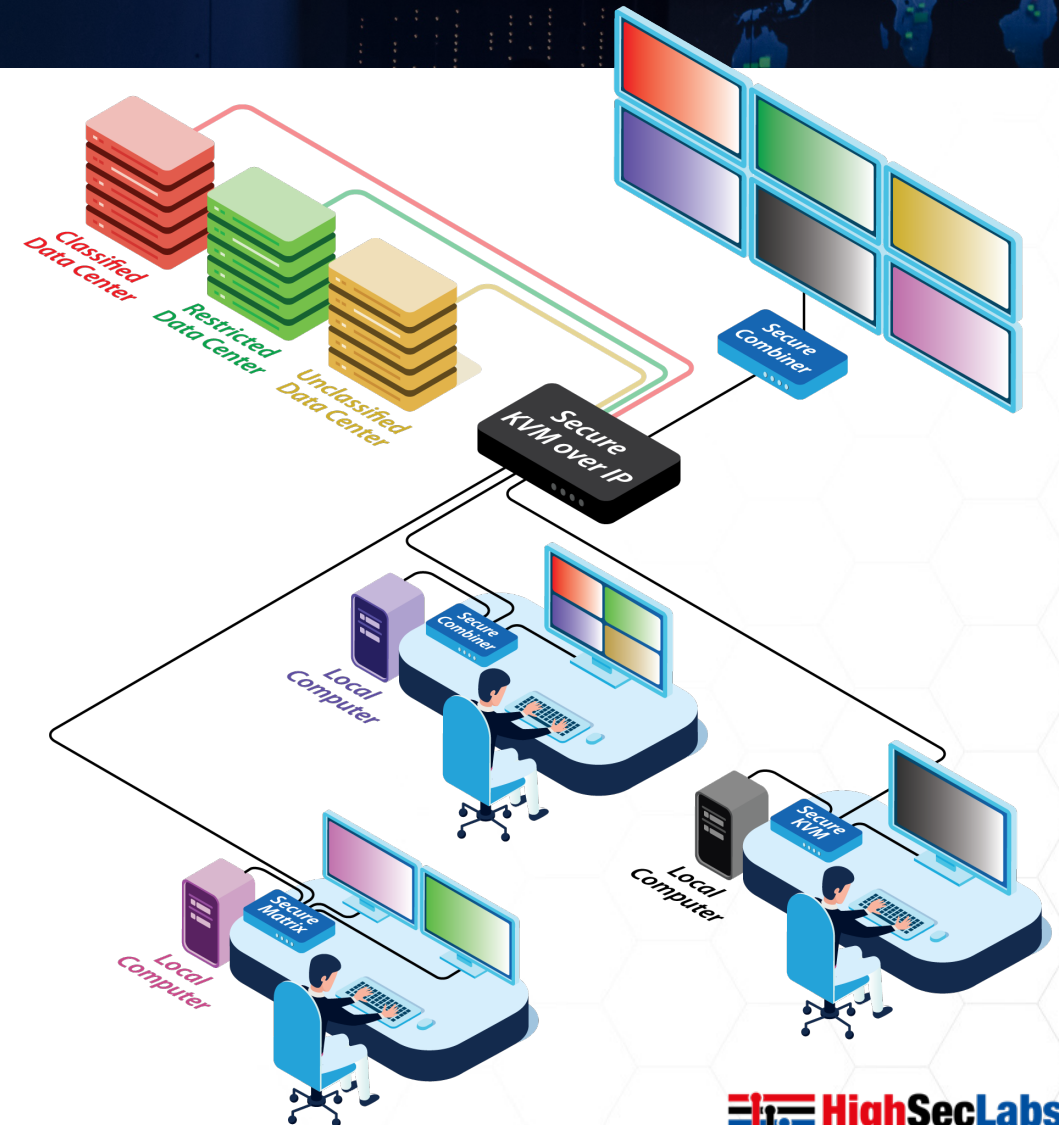
SECURE
LOCAL KVM SWITCHES

A portfolio of NIAP certified products for switching, scaling and multi-viewing multi-domain computer sources and driving video walls

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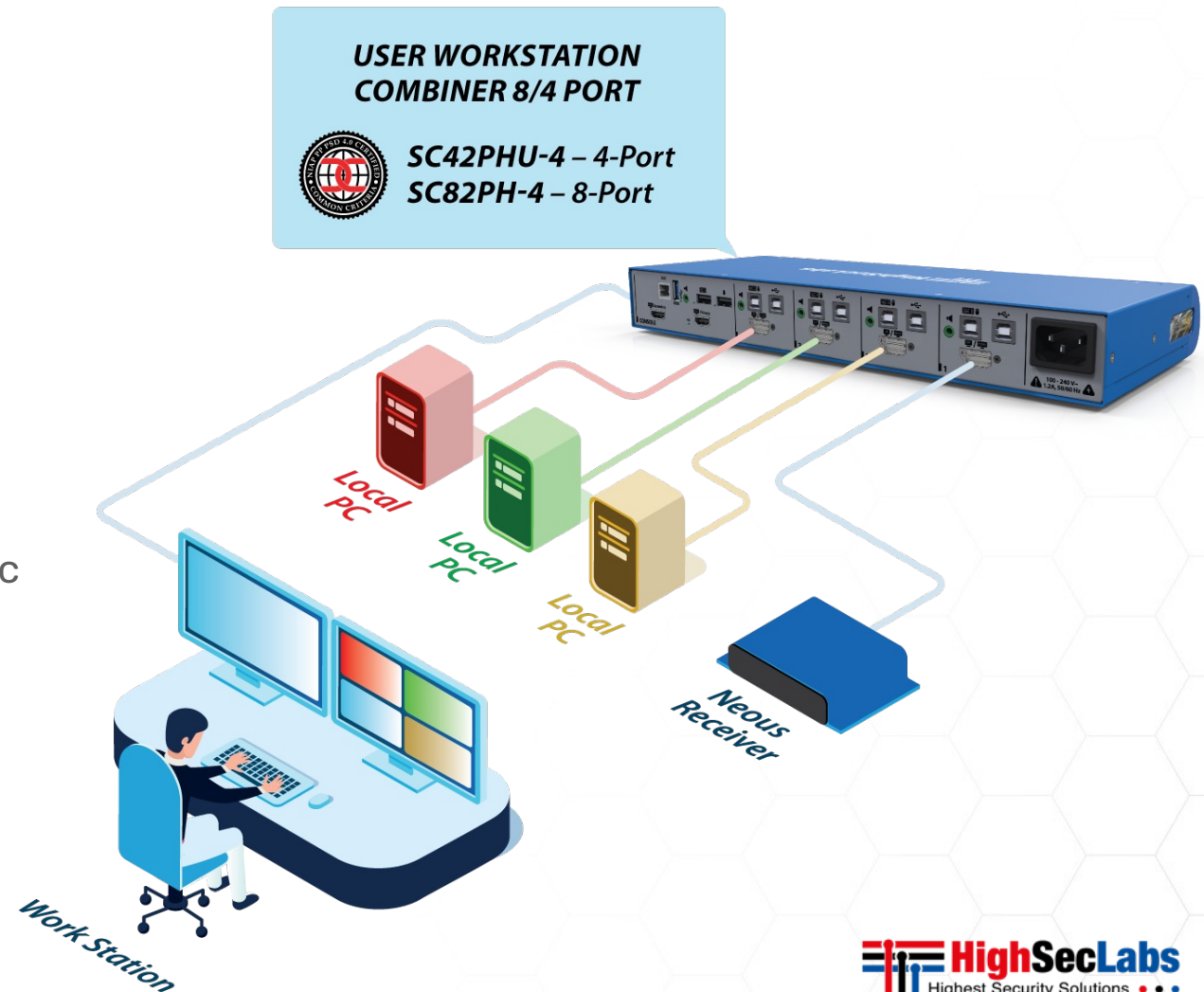
Secure video wall controller features

- **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)

Video Wall

VIDEO WALL CONTROLLER – 8/16 PORT
NIAP Certified Multi-Viewer KVM switch, Video scaler, Multiview and Video wall controller

SC82PH-4 - 8-Port
SC162PH-4 - 16-Port

Neous Receiver
Neous Receiver
TV / IP Camera Feeds
Local PC
Local PC
Local PC

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COMMAND AND CONTROL CENTER –
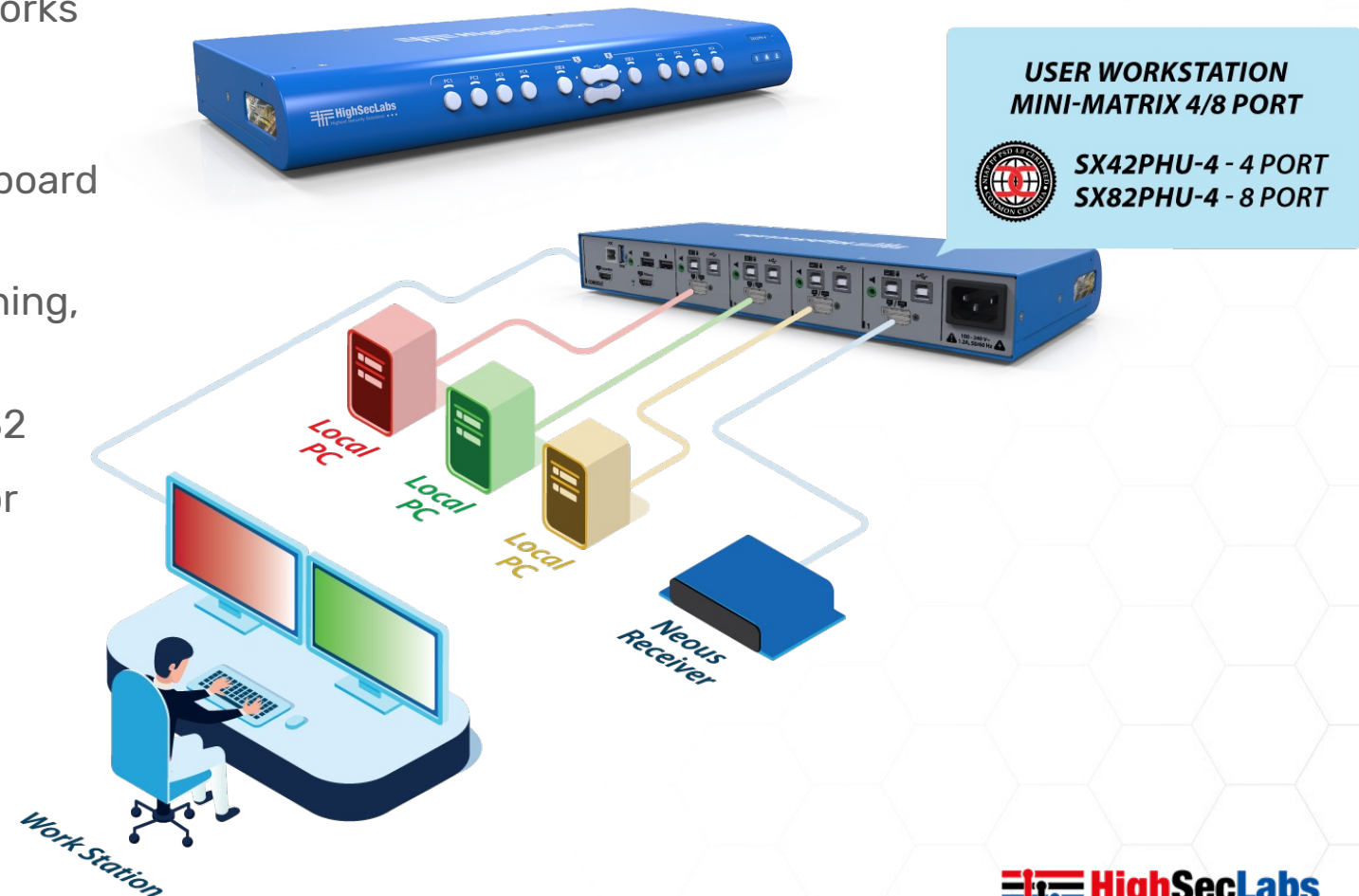# WORKSTATION COMBINER

- **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)

USER WORKSTATION COMBINER 8/4 PORT

SC42PHU-4 – 4-Port
SC82PH-4 – 8-Port

Local PC
Local PC
Local PC

Neous Receiver

Work Station

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- **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**

USER WORKSTATION
MINI-MATRIX 4/8 PORT

SX42PHU-4 - 4 PORT
SX82PHU-4 - 8 PORT

Local PC

Local PC

Local PC

Neous Receiver

Work Station

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NEOUS™
SECURE MULTI-DOMAIN MATRIX

The world's first KVM over IP system specifically designed for securing the multi-domain control room environment
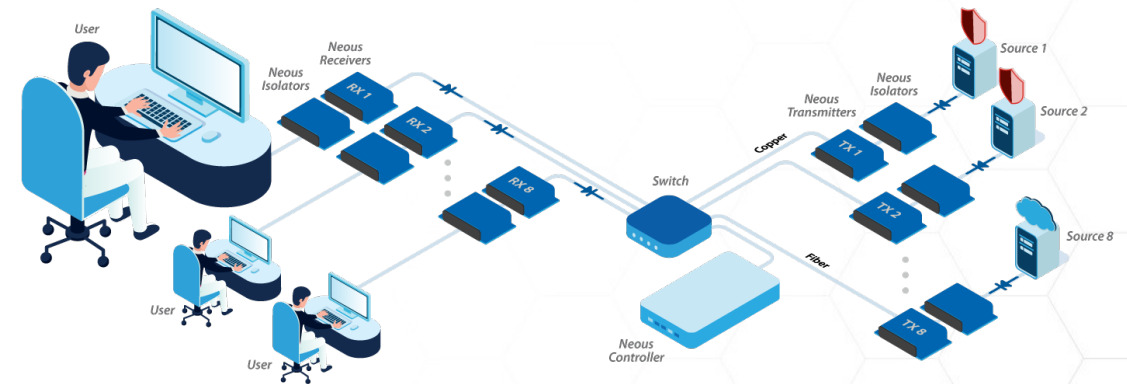
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- **Secure** distributed matrix solution
- Flexible, scalable, many-to-many, one-to-many and many-to-one solution
- Zero latency
- Perfect for accessing remote sources
- Each port is made of two isolated components: an extender port and a NIAP certified isolator.
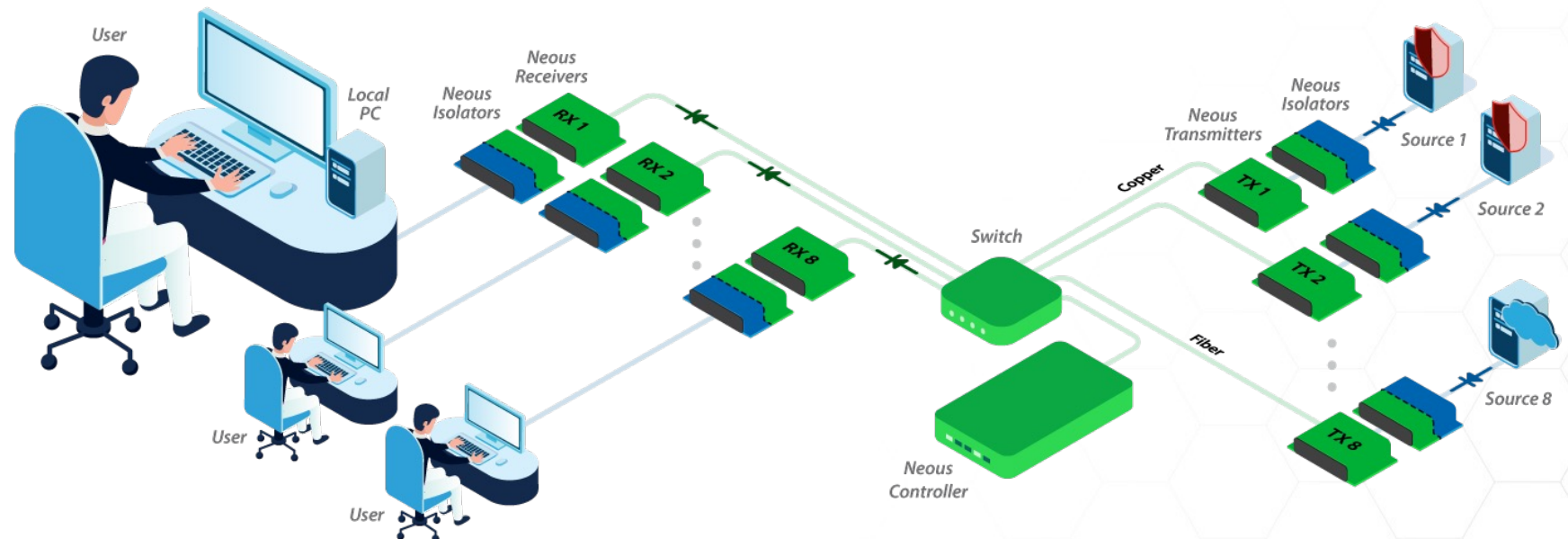
KVM Matrix

Video Matrix

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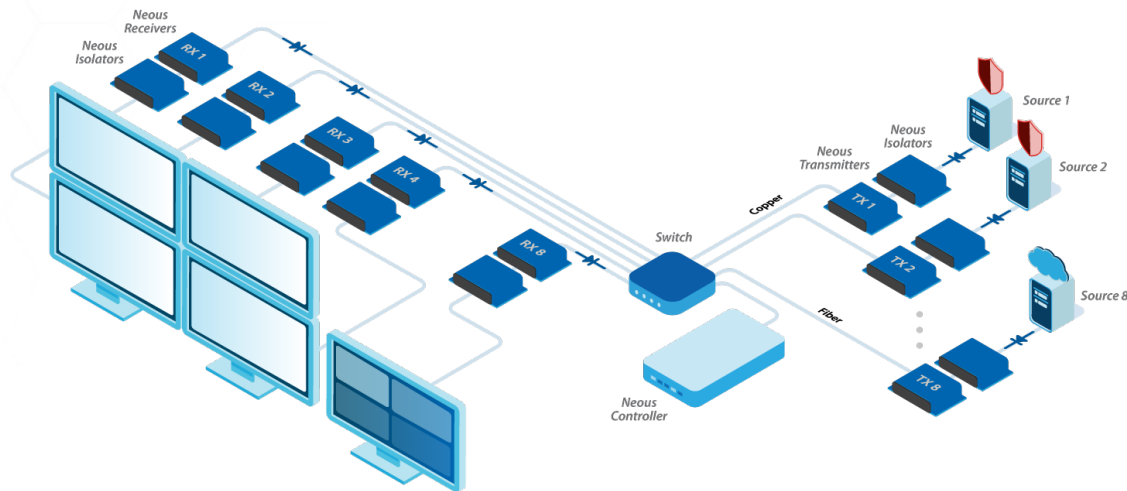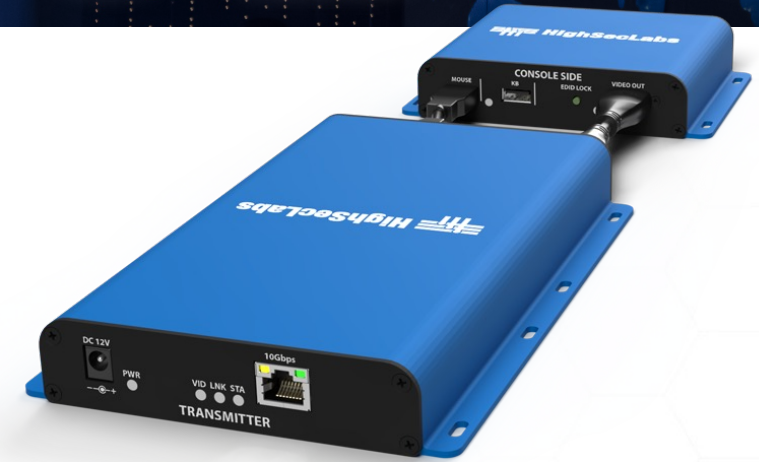
COMMAND AND CONTROL CENTER –
NEOUS SECURE KVM OVER IP MATRIX

- **NIAP**, **FIPS** 140-3 and **Common Criteria** certified components

- **BAA** and **TAA** compliant

- Dedicated controller establishes authorized connections
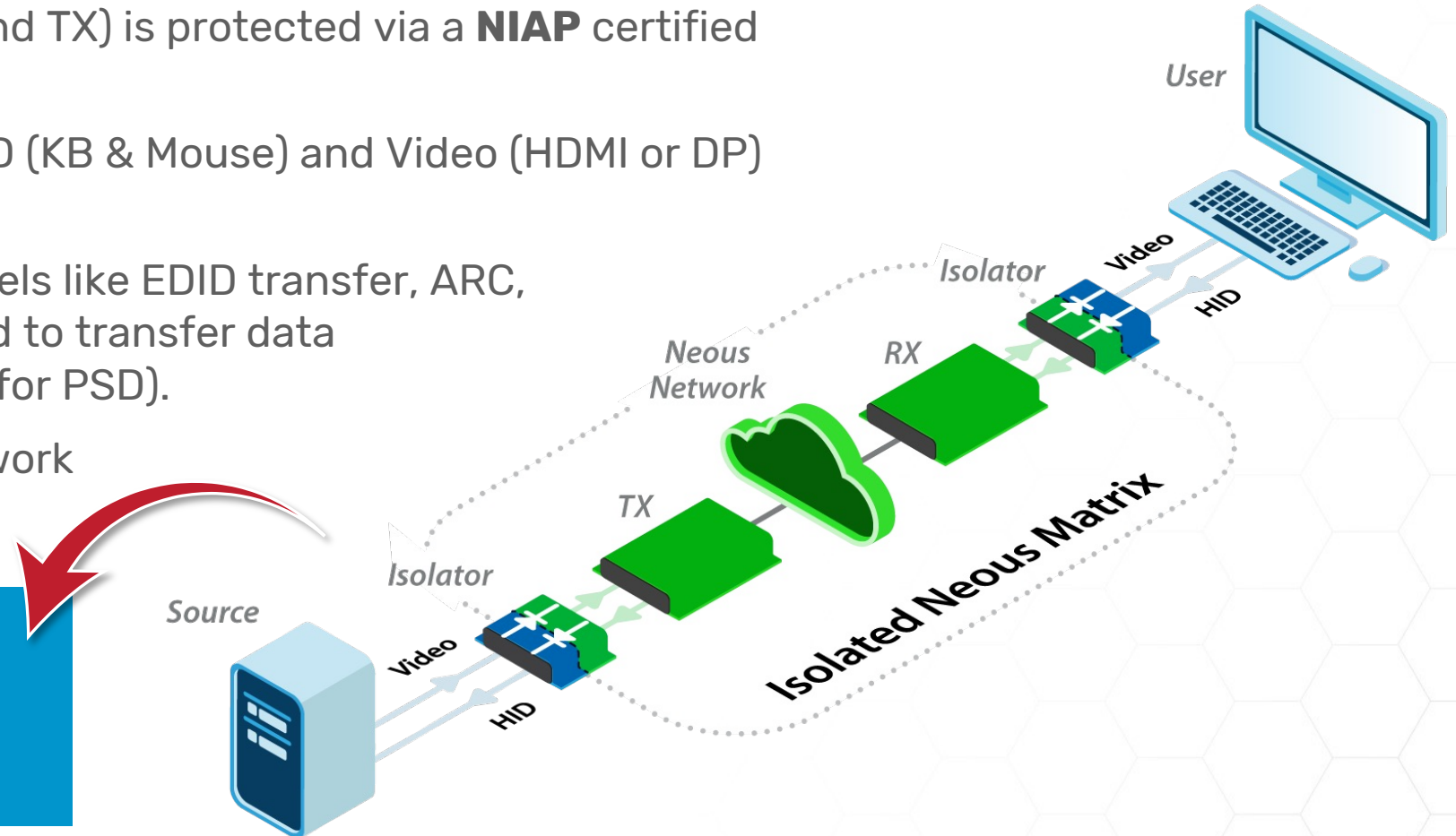
- **802.1x, HTTPS & TLS**

NEOUS matrix is completely isolated from the world through the integrated NIAP certified Isolators
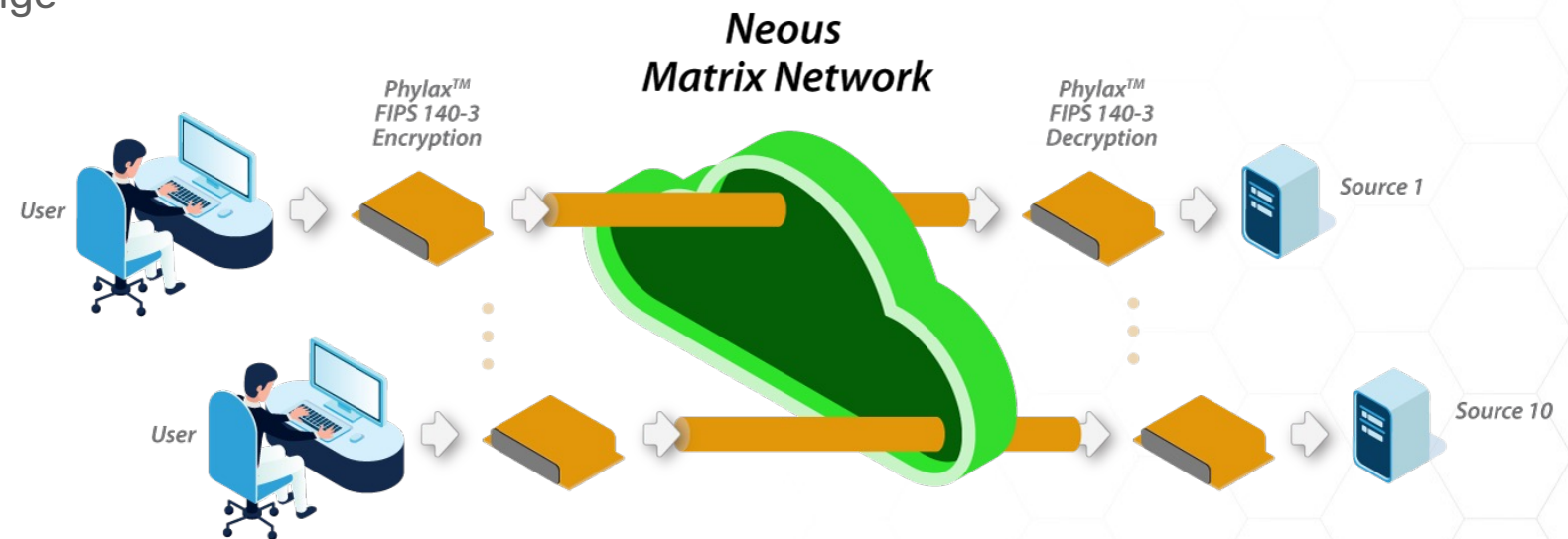
NEOUS SECURITY LAYER - ISOLATION

- 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

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- 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

NEOUS SECURITY LAYER – NEOUS CONTROLLER

- A **connection gate** to the Neous matrix

- Connection requests first flow through the Neous controller and then 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.

Neous Connection Gate

Switch

AES — Neous TX

AES — Neous RX

TLS/HTTP

Admin Computer

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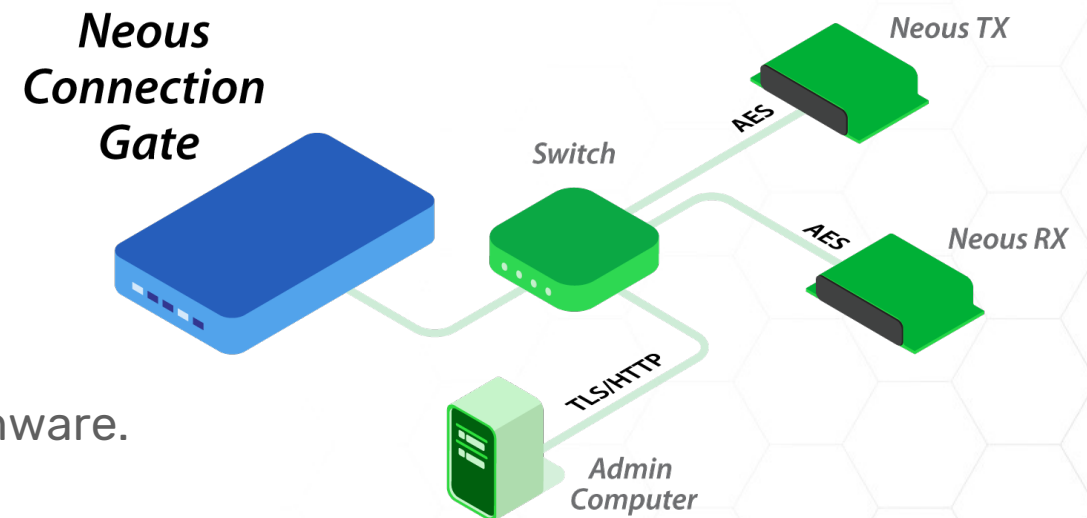
NEOUS SECURITY LAYER – NETWORK SECURITY

- 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 connections

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 over IP for accessing remote sources
  - Video wall support with advanced image processing capabilities

- Powerful, intuitive workflows

Combiner

Neous

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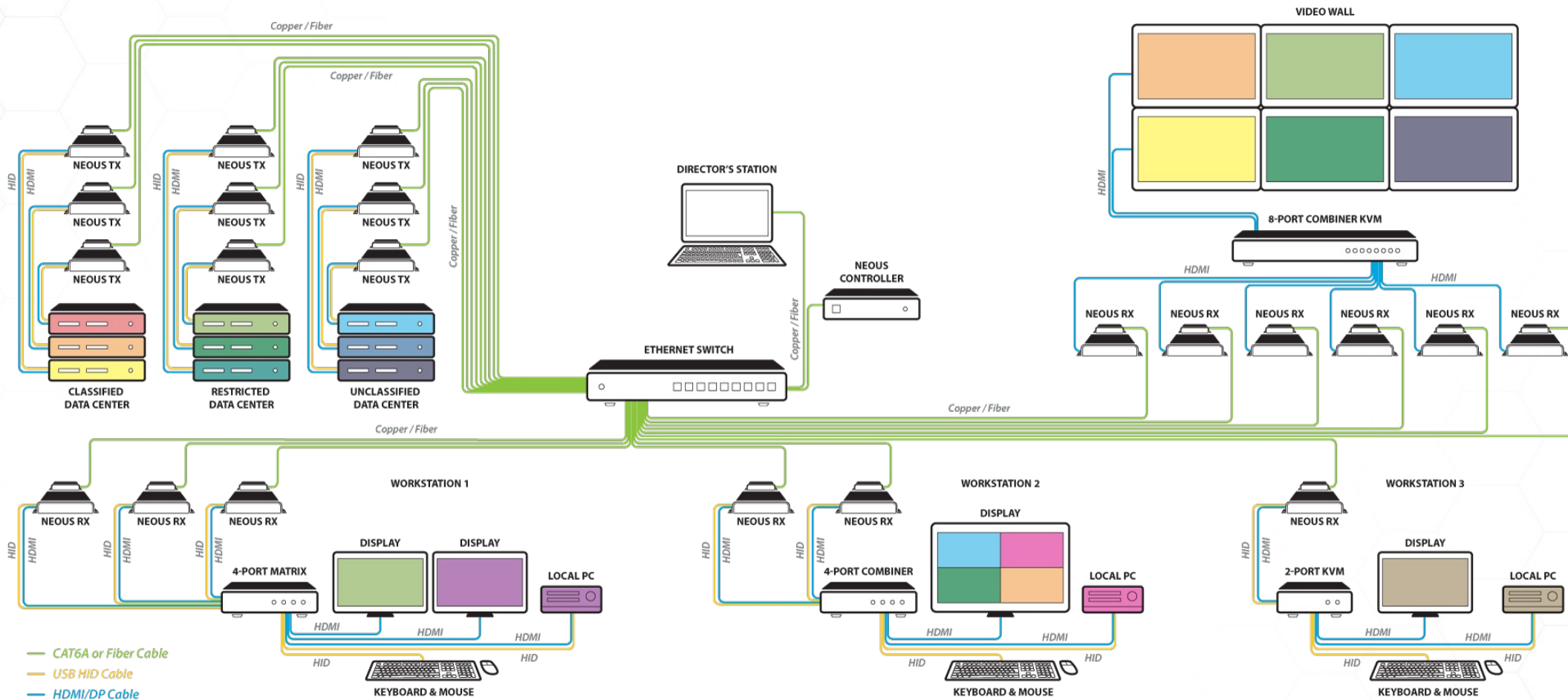
KVM PRODUCTS

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
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

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NEOUS PRODUCTS

Model	Descryption	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
MCV11EC-M	Neous Video Matrix Controller	Up to 50 end points
MCK11EC-M	Neous KVM Matrix Controller	Up to 50 end points

Thank You

For more info:

www.highseclabs.com | info@highseclabs.com

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