



CROSS DOMAIN SOLUTIONS

X-Arc

TSF 401 – Trusted Security Filter

X-Arc TSF 401 is a cross domain solution that facilitates secure information exchange between networks with different security levels.

TSF 401 ensures stringent control over ingoing and outgoing traffic, allowing required information exchange while protecting confidential data and critical systems.

The TSF 401 packet inspection filter configurations are customized to meet the specific requirements of each installation and application.

TSF 401 is designed for data centre environments, providing continuous 24/7 operation.

KEY FEATURES

- High capacity and low latency
- Supports structured data formats, over IP/TCP/UDP (unicast and multicast)
- Network Address Translation (NAT)
- Filtering of both incoming and outgoing traffic
- Configurable interface redundancy or additional incoming diode for aggregate throughput up to 20 Gb/s
- Centralized management and log collection
- Common Criteria EAL5+ and SDIP-27 Level A

TSF 401 – Trusted Security Filter

X-Arc Cross Domain Solutions

Connecting IP networks of different security domains

The primary function of the TSF 401 is to inspect and filter data addressed from one security domain to another, ensuring that only data meeting the filter specification is transferred. TSF 401 performs inspection of IP datagrams (headers and payload), including support for both TCP, UDP and other protocols.

TSF 401 is capable of inspecting fixed field data formats at line speed and also supports inspection of structured data and protocols such as XML, JSON, MQTT and Protobuf.

Filter configurations can be easily created using the separate FilterMaker tool, specifying which packets are to be allowed through the filter. Alternatively, configurations can be provided by Thales upon request. TSF 401 can be managed standalone locally or through X-Arc centralized management.



Figure 1: Front view of the TSF 401



Figure 2: Rear view of the TSF 401

Security Characteristics

- **Certifications:** Common Criteria EAL5+
- **Protected configuration:** Cryptographically signed software, filter configuration files and Trust Anchors
- **Packet inspection:** Inspection of IP traffic containing structured data and protocols (including TCP and UDP)
- **Software upgradeable:** Yes
- **TEMPEST:** SDIP-27 Level A
- **Operational security:**
 - Removable Crypto Ignition Key
 - User authentication based on role and password
 - Tamper protection
 - Crypto destruct mechanism
 - Emergency erase switch
 - Built-in self-test
 - Audit log
 - Interface redundancy

Interfaces and protocols

- **Red (high side) and Black (low side) network interfaces:**
 - 4 x Ethernet 10 (optionally 1) Gb/s (SFP+ connectors) (2 x Red interfaces and 2 x Black interfaces)
 - IPv4 (RFC 791)
 - IPv6 (RFC 8200)
 - Jumbo frames (9000 bytes)
- **Management interfaces:**
 - USB for uploading filter configuration files, software updates and Trust Anchors
 - 1 Gb/s Ethernet interface (IPv4 or IPv6).
 - Local HMI with keypad, display, traffic indicators and alarm LEDs

Physical Characteristics

- **Temperature:** Operating: 0°C to +40°C
Storage: -20°C to +70°C
- **External power supply:** 100-264 VAC 47-63 Hz
- **Nominal/max power consumption:** 50/60 Watt

- **Backup battery:** Lithium 3,6 V, 60 months lifetime
- **Installation:** Stand-alone, 19" rack mounting (detachable rack mounting kit)
- **Dimensions:** Width: 444 mm
Height: 88 mm (2 U)
Depth: 406 mm
- **Weight:** 11,5 kg
- **EMC:** MIL-STD-461G, EN 55032 Class B, EN 55035
- **Reliability:** MTTF > 100 000 h (calculated Mil HDBK 217 F) (Target to be confirmed)
- **Environment:** According to IEC 60721, Fanless

Conformance

- **Safety:** 2014/35/EU
- **REACH:** 1907/2006/EU
- **ROHS:** 2011/65/EU
- **WEEE:** 2012/19/EU
- **Battery:** 2006/66/EC
- **EMC:** 2014/30/EU

Performance

- Up to 10 Gb/s (full-duplex)
- 2.000.000 packets/s
- Latency time: ~50 µs
- **Additional diode channel from Black to Red (configurable instead of interface redundancy):**
 - 10 Gb/s
 - Latency time: ~20 µs
- **Various other functions:**
 - NAT enabled
 - Remote management support
 - Multicast proxy
 - NTP
 - Configurable SNMP support
 - Remote monitoring (Syslog and HTTP)
 - Optional dual power supply