TacEdge Trusted Router

Trusted communication for the Tactical Edge

TacEdge Trusted Router by Saab connects and secures the digital battlefield.

Collaboration between international forces to defend and safeguard society has never been more important. NATO multi-national multi domain operations enable formerly separate defense organizations to collaborate and share data for enhanced situational awareness and joint tactical operation. In this new operational context, securing classified information from one operating unit to another becomes a challenge.

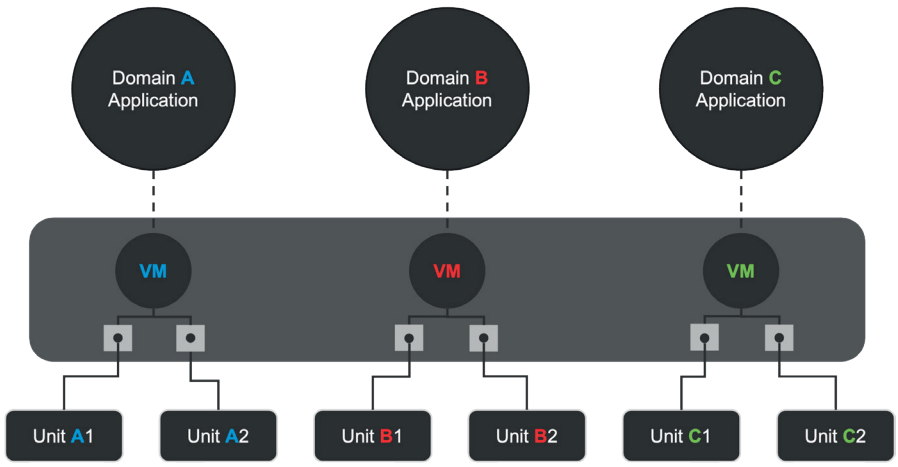
In parallel, digitalization of the battlefield for enhanced surveillance and utilizing data-as-an-asset calls for a shift in how defence networking and data processing systems are designed. The future of the digital battlefield requires a data centric approach for NATO Federated Mission Networking with Zero-trust and a Cloud-first networking capabilities. The objective is to simplify in-troduction of new capabilities, drive innovation and support autonomous opera-tions, while keeping information domains securely separated.

TacEdge Trusted Router (T-Router) by Saab is designed to address these challenges.

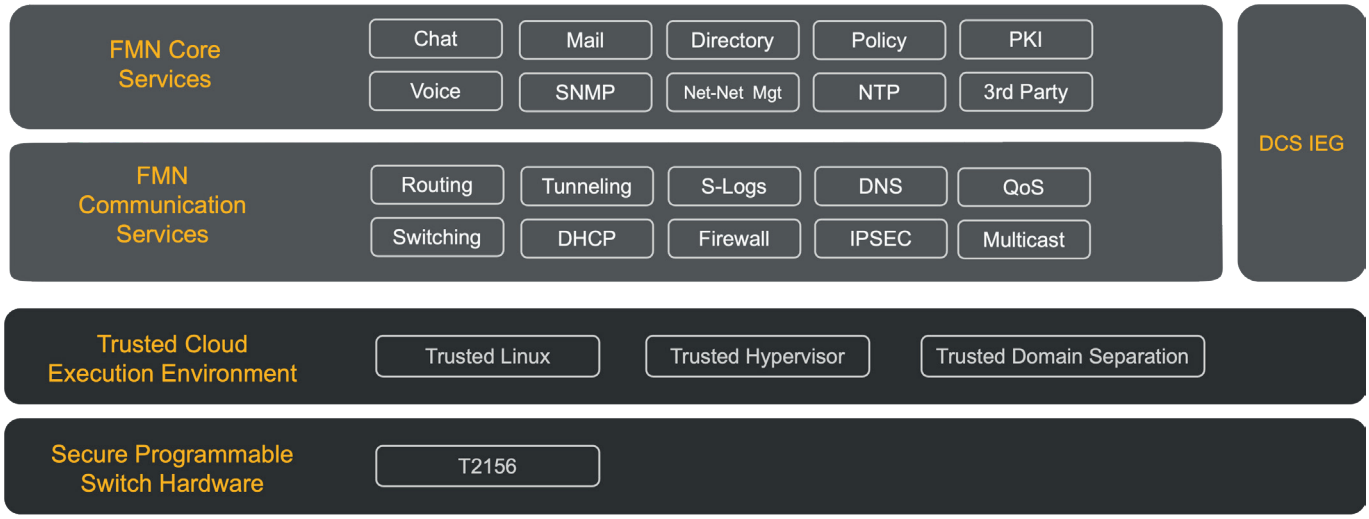
It provides Trusted Domain Separation (TDS) which enables distributed cloud processing of different information classes on a shared compute and switching platform, the T-Router. TDS strictly separates port groups and isola-tion virtual machines.

Virtual machines are isolated by forcing all control traffic via the data plane.

T-Router is designed for the highest protection against cyber-attacks with minimal attack surface.



Trusted Domain Separation. A, B and C domains have dedicated virtual machines strictly connected to separated port groups.



High Assurance

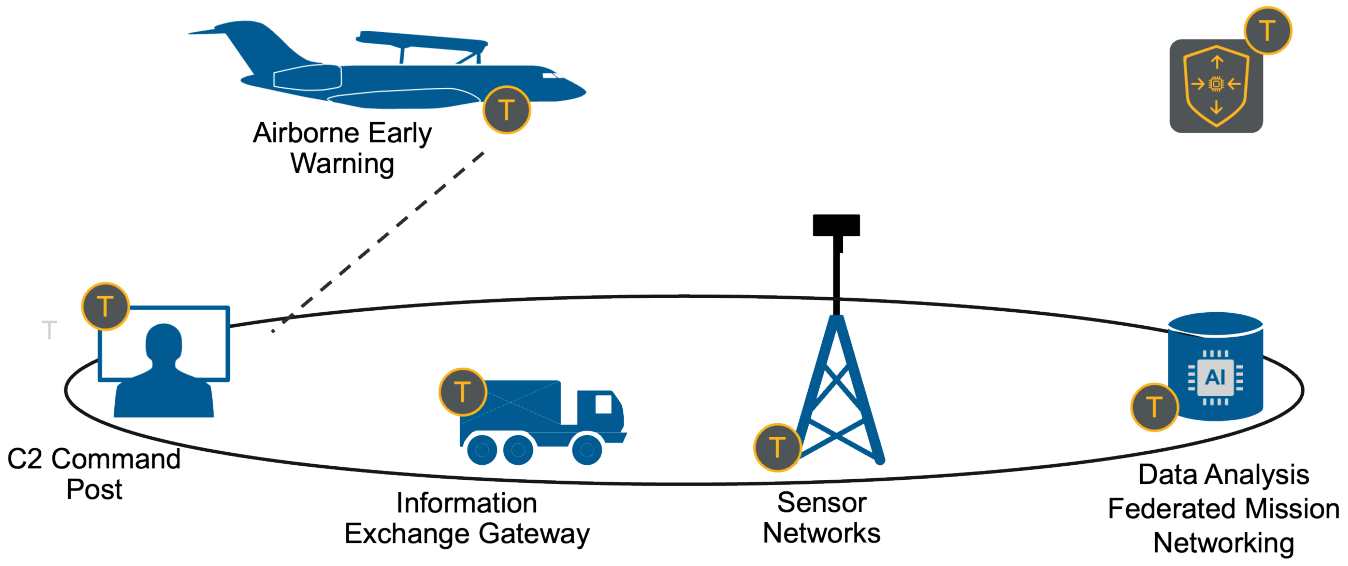
T-Router has been designed for high assurance. This is obtained by using secure qualified hardware, curated open source software with a secure process for software development. Integration and testing is performed by register controlled personnel at Saab. The build process also allow secure hardening of configuration options to limit the attack surface.

Data plane isolation can be formally mathematical verified. Customer or government authorities may also review code and information security design as part of a certification process.

Applications

T-Router is used in solutions where you need to separate two (or more) security do-mains either in central solutions between operational and strategic level or at the tactcial level in various domains such as air, naval, land, space or combina-tions in multi-domain use cases.

Applications include Data Analysis for Federated Mission Networking, Airborne Early Warning sensor data networks and Information Exchange Gateways.



Key benefits

- **Trusted Domain Separation (TDS)**
  - Multiple domains consolidated onto shared hardware
  - Formal mathematical proven data plane
  - Robust protection against cyber attacks
  - Bi-directional protection against malware
- **Cloud-ready architecture**
- **Information security class up to NATO Secret or equivalent national security class (Svensk Hemlig)**
- **Designed for NATO and Swedish MoD requirements**
- **Hosting of data processing and collaborative services**
  - Voice, Chat and Network Data Services
  - FMN Core and communications services 'in-a-box'
- **High capacity and low latency switching**
  - Suitable for deployment at the strategic, operational and tactical levels
- **High Assurance System Design**
  - Software developed by register-controlled personnel
  - Embedded Trusted Linux and Trusted Hypervisor

Key features

- **Federated Mission Networking (FMN) compliant (up to SP5)**
  - FMN Core services
  - FMN Communication services
- **Hosting of FMN Core services**
  - Chat and instant messaging
  - Email
  - SNMP
  - Active Directory
  - NTP
  - DHCP
  - DNS
  - PKI
  - Network of Network Management
  - Or Third party
- **Integrated FMN Communications services**
  - Switching (Layer 2)
    - Bridging, MAC learning
    - Mirroring
    - VLAN
    - ARP
    - RSTP
    - LACP
    - 802.11x
    - PTP/NTP
  - Routing (Layer 3)
    - OSPFv2/v3
    - IGMP, Multicast
    - Static Routing
    - RIP
  - Tunneling
    - VXLAN
    - GRE
  - QoS
  - Security
    - Stateful firewall
    - IPSec
  - Hosting of TacEdge IEG
    - Up to NATO Secret, Mission Secret and Svensk Hemlig
    - Up to Maturity Level 3
- **Management**
  - REST-API, Web Mgt
  - Diagnostic Logging
  - Error/Warning Monitoring
  - Configuration Export/Import
  - SNMPv2, MIBv3
  - Network Topology Management
- **System Security**
  - Certificate management
  - Encryption HTTPS/SSL
  - Role based login
  - Secure Syslog
- **Trusted Domain Separation (TDS)**
  - Data Plane Separation
    - Trusted LAN (T-LAN); strict port separation
  - VM isolation; all communication forced via data plane
  - Cloud Execution Environment
    - Trusted Linux
    - Trusted Hypervisor (KVM)
    - Hosting of Virtual Machines
  - IPSec encryption over untrusted/black networks
- **Assurance**
  - KSF (Sweden)
  - Nato Common Criteria EAL4+

Hardware specification

Model T2156	
Network Ports	48x SFP28 8x QSFP28
Max. 100Gb Ports	8
Max. 50Gb Ports	16
Max. 40Gb Ports	8
Max. 25Gb Ports	80
Max. 10Gb Ports	80
Management Port	1x 1Gb RJ45 (100/1000MB)
SDN Controller /	2x 1Gb SFP Ports
Control Plan Ports	1
Throughput	2.0 Tb/s
Switching latency	600 ns
Hot Swap PSU	2 (1+1 redundant)
Hot Swap Fans	6 (N+1 redundant)
Typical Power Draw	250W
Max. Power Draw	700W
Acoustics	TBD
MTBF	TBD

Other	
Mil	Tempest B
Secure Boot	Yes, TPM
EC	Yes

Physical	
Rack Units	1U
Dimensions (WxHxD)	46 x 4.3 x 48
Weight	Appr. 11kg
Rack Mount	Rack rail sliding solution
Hardware Warranty	3 year return to manufacturer

CPU	
Intel® XEON D-1713NT (quad-core)	32GB RAM
Storage	256GB SSD Optional SSD (1Tb)

Power	Options
Cooling Options	AC or DC
AC (Front to Back Cooling)	90Vac - 264Vac
AC F/B Inlet Socket	IEC 60320 C14
AC (Back to Front Cooling)	90Vac - 264Vac
AC B/F Inlet Socket	IEC 60320 C16
AC Input Frequency	47Hz - 63Hz
AC Efficiency	96%
DC (Front to Back cooling)	-72Vdc to -40Vdc
DC (Back to Front cooling)	-72Vdc to -40Vdc
DC (Front to Back cooling)	28Vdc
DC Efficiency	92%

Environment	
Operating Temperature	0°C - 40°C (55°C)
Non operating Temperature	-20°C - 70°C
Humidity	5% to 95% (non-condensing)
Altitude	0 – 2000m (0 – 6000ft)

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