



DESIGNED & ENGINEERED IN TÜRKİYE

NETWORK OPERATING SYSTEM

SMGOS

The Simgenet carrier-grade
IP/MPLS routing operating system.

IP / MPLS

Segment Routing

EVPN-VXLAN

IPsec & VPN

IEEE 1588 PTP

Integrated VoIP



SMG818V5 Industrial IP/MPLS Router · powered by SMGOS

Software Release 10.3.1

Product Brochure · SMG-UB-SMGOS-EN · Rev. 3

Simgenet Mühendislik

Enerji San. ve Tic. Ltd. Şti.



01

COMPANY

A Sovereign Network Platform from Türkiye

Simgenet Mühendislik is a Turkish engineering company delivering industrial networking and critical-infrastructure communication systems. SMGOS is our in-house developed routing operating system — fully owned, maintained and supported in Türkiye.

2000

FOUNDED

500+

PROJECTS DELIVERED

30+

COUNTRIES SERVED

100+

PRODUCTS

■ Who we are

Operating since 2000 in industrial networking and critical-infrastructure communications for the **energy, transportation/railway, defense, public-sector and telecom/ISP** markets — quality-certified to **ISO 9001, ISO 14001, CE and TSE**.

■ Why a domestic OS matters

- **Technological sovereignty** — no foreign-vendor roadmap dependency
- **Custom features on request** — tailored to national & project-specific needs
- **Local engineering & support** in your language and time zone
- **Long-term sustainability** for 15–20 year infrastructure lifecycles

Run on purpose-built industrial hardware. SMGOS powers the Simgenet **SMG411, SMG104, SMG818V5** and **SMG1000** IP/MPLS router families — industrial-grade platforms certified to **TS/EN 61000-4 Level 3 (heavy-industrial EMC)** with extended operating temperature, for substations, energy plants, railway stations and field cabinets.

Mission

To deliver innovative, reliable and sustainable technology for industrial networks and critical-infrastructure communications, safeguarding our customers' business continuity.

Vision

To become Türkiye's most trusted and innovative network-infrastructure technology partner, recognized as a global brand.



02

PLATFORM

What is SMGOS?

SMGOS (SMG Operating System) is a carrier-grade IP/MPLS network operating system with a familiar, industry-standard command-line interface. One software image, one consistent protocol set — from the access edge to the service-provider core.

■ Familiar CLI

Industry-familiar command line — operators are productive on day one, with privileged and configuration modes.

■ In-house developed

Built and owned by Simgenet — no third-party routing-stack dependency and full control over the lifecycle.

■ Full protocol suite

Complete IGP/BGP, MPLS, Segment Routing, EVPN, VPN, multicast, QoS and timing in one integrated image.

A single, complete feature set

- Routing: BGP, OSPF, IS-IS, EIGRP, RIP, OpenFabric
- MPLS (LDP), Segment Routing & SR-TE with PCEP
- EVPN-VXLAN with multihoming, L2VPN & pseudowire
- IPsec & OpenVPN, DMVPN/NHRP, MPLS L3VPN/VRF
- VRRP v2/v3, BFD & Seamless-BFD, TI-LFA fast reroute
- IEEE 1588 PTP & NTP precision timing
- QoS, NetFlow export, hardware offload
- Integrated SIP IP-PBX (VoIP), DHCP, NAT, PPPoE

Industry-standard operator experience

Configuration looks and feels like the platforms your engineers already know — shortening training and migration. A representative SMGOS session:

```
! SMG Operating System 10.3.1 – sample configuration
R1> enable
R1# configure terminal
R1(config)# hostname CORE-IST-01
R1(config)# interface eth0
R1(config-if)# ip address 10.100.1.1/16
R1(config-if)# vrrp 10 priority 200
R1(config)# router bgp 65000
R1(config)# mpls ldp
R1(config)# segment-routing / traffic-eng
```

SMGOS · console



03

CAPABILITIES

Routing & Forwarding

A complete unicast routing toolkit for enterprise, industrial and service-provider networks — with the scalability and resiliency controls operators expect from a tier-1 platform.

■ Interior Gateway Protocols

- **OSPFv2** — stub/NSSA areas, opaque LSA, virtual-links, MD5 & key-chain auth
- **IS-IS** — multi-level, SPF delay tuning
- **EIGRP & RIP** with key-chain authentication
- **OpenFabric** for massively scalable fabrics

TI-LFA

LFA Fast-Reroute

Graceful Restart

■ BGP — carrier scale

- Peer-groups, communities (standard / extended / **large**)
- **ECMP** (maximum-paths) & advanced best-path selection
- **Confederations**, route dampening, AIGP
- Graceful Restart & SNMP BGP-MIB traps

L3VPN / VPNv4

FlowSpec

EVPN

■ Policy & control

- Named access-lists & prefix-lists (ge/le)
- Route-maps with rich match/set (incl. DSCP, communities)
- Policy-Based Routing (PBR) & nexthop-groups
- Redistribution & per-protocol administrative distance

■ BGP FlowSpec — in-line DDoS mitigation

Distribute traffic-filtering rules dynamically across the network to drop or rate-limit attack traffic at the edge — no separate scrubbing appliance required.

Drop

Rate-limit

Local-install

Multicast built-in. Full **PIM**, **IGMP** and **MSDP** with RPF and static mroute support — ready for IPTV, market-data and teleprotection-style one-to-many distribution.



04

CAPABILITIES

MPLS, Segment Routing & EVPN

Service-provider transport and data-center fabric technologies in one image — build scalable L2 and L3 services with modern, controller-ready traffic engineering.

■ MPLS transport

- **LDP** with discovery, dual-stack, ordered-control & IGP-sync
- **MPLS L3VPN / VPNv4** with per-VRF route-targets
- Static **pseudowires** for L2 circuit emulation
- FEC & label table visibility

■ Segment Routing & SR-TE

- **SR-MPLS** with IGP (OSPF / IS-IS) integration
- **SR-TE policies** — segment-lists & candidate-paths
- **PCEP** for external PCE / controller steering
- Affinity / SR-TE color steering with TI-LFA protection

EVPN-VXLAN — data-center & metro fabric

■ Service types & control plane

- EVPN **Type 1–5** routes (MAC/IP, IMET, ES, prefix)
- **Symmetric IRB** (advertise default-gw / SVI-IP)
- Auto or manual route-targets, advertise-all-VNI

■ Resiliency

- **EVPN multihoming** — Ethernet Segments (ESI), EAD-ES
- VXLAN / VNI overlay with remote-VTEP discovery
- Anycast gateway & PIP advertisement

One platform, many services. Deliver L3VPN, L2VPN pseudowires and EVPN-VXLAN overlays side-by-side — collapsing access, aggregation and core roles onto a single SMGOS image.



05

CAPABILITIES

Security, VPN & High Availability

Integrated VPN & encryption

■ IPsec site-to-site

- ESP: **AES-128/192/256 & AES-GCM**, 3DES
- IKE DH groups incl. **ECP-521 & Curve25519**
- SHA-1/256/384/512 integrity, PSK, auto-start

■ OpenVPN server & overlays

- Certificate profiles (2048/4096-bit, SHA-256/512)
- Local or **RADIUS**-authenticated remote access
- **DMVPN / NHRP** dynamic hub-and-spoke

Hardening, AAA & access control

■ AAA

- **TACACS+ & RADIUS**
- Source-IP & timeout control

■ Role-based users

- read-only / operator / admin
- **Per-command** permit/deny

■ Control-plane

- Key-chains: **HMAC-SHA-512**
- SSH, encrypted passwords

High availability & sub-second convergence

■ Redundancy

- **VRRP v2 & v3** — priority, preempt, timers, autoconfigure
- ECMP load-sharing & nexthop-groups
- BGP / IGP Graceful Restart

■ Fast failure detection

- **BFD** with profiles & **Seamless-BFD (S-BFD)**
- **TI-LFA / LFA** fast-reroute (OSPF & IS-IS)
- BFD-triggered protocol failover



06

CAPABILITIES

Timing, QoS, Telemetry & Voice

■ Precision timing — IEEE 1588 PTP

Essential for energy substations (IEC 61850), mobile backhaul and industrial automation:

- **Hardware timestamping**, E2E / P2P delay mechanisms
- **ITU-T G.8275.1** telecom profile (Layer 2, E2E) and **Boundary Clock (T-BC)** role
- Configurable clockClass / clockAccuracy / priority & PTP domains
- Per-interface ingress/egress latency compensation
- **NTP** server/client with NTP ↔ PTP sync source

■ Quality of Service

- Per-interface bandwidth rules (min-bw / max-bw)
- Classify by source/dest IP, protocol, port or **DSCP**
- **8-level priority** queuing (0–7)
- DSCP marking in route-maps; BGP session DSCP

■ Telemetry & performance

- **NetFlow export** v1 / v5 / **v9** with sampling & caching
- **Hardware offload**: TSO, GSO, GRO, LRO, RSS (RPS/XPS)
- **SNMP v1 / v2c / v3** (SHA auth, AES privacy)
- **LLDP** discovery (+CDP compatibility), syslog

■ Integrated VoIP / IP-PBX

A capability typically requiring a separate appliance — built directly into SMGOS:

- **SIP extensions** & **SIP trunks**
- Inbound / outbound **dial-plan** patterns
- VoIP-aware NAT (media & signaling)

IP services included. DHCP server (pools, lease, exclusions), source-NAT & destination port-forwarding, PPPoE, and DNS — converging branch/edge functions into the router itself.



07

VALUE

One Platform, Many Capabilities

In a typical network, the functions below are delivered by several separate appliances and add-on licenses. SMGOS unifies them in a **single software image** — simplifying operations, reducing the number of devices to manage, and lowering total cost of ownership.

Routing & Transport

Carrier routing — BGP, OSPF, IS-IS, EIGRP **Included**MPLS transport & L3VPN / VRF **Included**Segment Routing & SR-TE (PCEP) **Included**EVPN-VXLAN fabric & multihoming **Included**L2VPN & pseudowire services **Included**Multicast — PIM / IGMP / MSDP **Included**TI-LFA, BFD & S-BFD resiliency **Included**

Services usually sold separately

IPsec site-to-site VPN **Included**OpenVPN remote-access server **Included**SIP IP-PBX / VoIP system **Included**IEEE 1588 PTP & NTP timing **Included**BGP FlowSpec DDoS mitigation **Included**NetFlow telemetry & HW offload **Included**DHCP, NAT & PPPoE edge services **Included**QoS, TACACS+/RADIUS AAA & RBAC **Included**

One image

every role — edge, aggregation & core
— runs the same SMGOS software

One skill set

a single, consistent CLI to learn, operate
and automate

Fewer devices

functions consolidated onto one platform
— less to buy, power & maintain

More capability in one box — engineered, owned and supported in Türkiye.



08

DEPLOYMENT

Use Cases & Platforms

■ Energy & substations

IEC 61850-aligned PTP timing, heavy-industrial EMC hardware, MPLS transport and multicast for teleprotection and SCADA backhaul.

■ Railway & transportation

Extended-temperature platforms, deterministic QoS and sub-second TI-LFA/BFD convergence for GSM-R / FRMCS / ETCS transport.

■ Telecom & ISP

BGP at scale, L3VPN/EVPN services, Segment Routing with PCEP and FlowSpec DDoS mitigation for the provider edge and core.

■ Public sector & defense

A sovereign, customizable platform with integrated IPsec/OpenVPN, strong AAA and role-based access for sensitive infrastructure.

Purpose-built hardware running SMGOS



SMG411 — Edge Router

- 1U rackmount; fixed configuration
- Up to 10G uplink; branch and access edge
- 220 VAC 250 W · -20 °C to +60 °C



SMG104 — Aggregation Router

- 1U rackmount; 4× PCIe Gen3 ×8 modular slots
- Up to 100G uplink; 32×1G / 8×10G / 4×25G
- Same SMGOS image & protocol set across the family



SMG818V5 — Industrial IP/MPLS Router

- 2U rackmount; 8× PCIe Gen5 ×8 modular slots
- Intel Xeon 5418Y · up to 256 GB DDR5 ECC
- 1G–100G interfaces; up to 100G uplink



SMG1000 — Industrial Core Router

- 4U rackmount; modular PCIe Gen4 slot architecture
- Up to 200G uplink; 24×10G / 8×100G
- Xeon ICX 4309Y · 2× 220 VAC 250 W redundant

One OS, one skill set, every role. Because every platform runs the same SMGOS image, engineers configure the access edge, aggregation and core with identical commands — reducing training, sparing and operational risk.



09

SPECIFICATIONS

SMG818V5 — Technical Specifications

A modular industrial IP/MPLS platform running SMGOS, engineered for energy, railway, telecom and ISP backbones with long-term, uninterrupted field operation.

SPECIFICATION	SMG818V5 INDUSTRIAL IP/MPLS ROUTER
Operating system	SMGOS 10.3.1 (in-house developed)
Form factor	2U 19" rackmount, industrial
Dimensions	440 × 592 × 88 mm
Platform / chipset	Intel® C741
Processor	Intel® Xeon® 5418Y (multi-core)
Memory	Up to 256 GB DDR5 ECC (16× DIMM, 4400/4800)
Expansion slots	8× PCIe Gen5 ×8 (modular line cards)
Interface options	1G / 10G / 25G / 40G / 100G Ethernet (fiber)
Max Ethernet ports	64× 1G · 16× 10G · 8× 25G · 4× 100G
Max uplink	100G
Time synchronization	IEEE 1588v2 PTP · NTP / SNTP
Console / management	RS-232, USB, RJ45 management
Power supply	2× 220 VAC, 250 W — redundant
Operating temperature	−20 °C to +60 °C
EMC / compliance	CE · RoHS · TS/EN 61000-4 Level 3

Tailored to your project. Specifications and port/line-card configurations shown are representative. Because SMGOS is developed and owned in-house in Türkiye, we can **add or tailor features and specifications on request**; the final configuration is confirmed per project — a flexibility foreign-vendor platforms cannot offer.



10

SPECIFICATIONS

SMGOS Router Family — Comparison

All models run the **same SMGOS software and the same protocol set**. Model selection is driven by port/uplink capacity, physical space and field requirements.

SPECIFICATION	SMG411 · EDGE	SMG104 · AGGREGATION	SMG818V5 · IND.	SMG1000 · IND.
HARDWARE PLATFORM				
Operating system	SMGOS	SMGOS	SMGOS	SMGOS
Chipset	Intel	Intel C236	Intel® C741	ICX 4309Y
Processor	Intel	Intel Xeon E3-1200 v5	Xeon 5418Y	Xeon ICX 4309Y
Memory	16 GB	Up to 64 GB DDR4	16× DDR5 ECC	16× DDR5 ECC
Form factor	1U rackmount	1U rackmount	2U rackmount	4U rackmount
Dimensions	—	430 × 550 × 44 mm	440 × 592 × 88 mm	—
Power supply	220 VAC 250 W	220 VAC 250 W	2× 220 VAC 250 W	2× 220 VAC 250 W
Temperature	−20 to +60 °C	−20 to +60 °C	−20 to +60 °C	−20 to +60 °C
EMC	CE · RoHS · Level 3	CE · RoHS · Level 3	TS/EN 61000-4 Level 3	TS/EN 61000-4 Level 3
EXPANSION & PORTS				
PCIe slots	PCIe-based	4× PCIe Gen3 ×8	8× PCIe Gen5 ×8	Modular PCIe Gen4
Max uplink	10G	100G	100G	200G
Max ports	Fixed configuration	32×1G / 8×10G / 4×25G	64×1G / 16×10G / 8×25G / 4×100G	24×10G / 8×100G
Console	RS-232, USB, RJ45	RS-232, USB, RJ45	RS-232, USB, RJ45	RS-232, USB, RJ45
ROUTING & MPLS				
OSPFv2/v3 · IS-IS · RIPv2	✓	✓	✓	✓
BGP · Add-Path	✓	✓	✓	✓
MPLS / LDP · L3VPN	✓	✓	✓	✓
L2VPN · VRF · VXLAN	✓	✓	✓	✓
Segment Routing	✓	✓	✓	✓
BFD · ECMP · convergence	✓	✓	✓	✓
SERVICES & SECURITY				
QoS · DHCP · NAT · PPPoE	✓	✓	✓	✓
IPsec VPN · OpenVPN	✓	✓	✓	✓
IEEE 1588 PTP · NTP	✓	✓	✓	✓
SNMP · RADIUS · Syslog	✓	✓	✓	✓

Which model should you choose? All models are EMC Level 3 compliant and deliver the same protocol set. Choose SMG411 for low port count and bandwidth; SMG104 for the aggregation layer; SMG818V5 for a modular field backbone and the highest total port density; SMG1000 for the highest uplink speed and 100G density.



Why SMGOS

Carrier-grade depth

BGP, MPLS, Segment Routing, EVPN-VXLAN and SR-TE in a single, consistent software image.

More in the box

Integrated IPsec, OpenVPN, IEEE 1588 PTP, QoS, NetFlow and a built-in SIP IP-PBX.

Built for harsh sites

Runs on industrial, EMC-certified, extended-temperature hardware for energy, rail and field deployments.

Sovereign & supported

Engineered, owned and supported in Türkiye — features added on request, with no foreign-vendor lock-in.

GET IN TOUCH

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