



DESIGNED & ENGINEERED IN TÜRKİYE

IP-PBX — CARRIER-GRADE PLATFORM

PBX Server

**Not an ordinary PBX.
A carrier-grade voice platform.**

An IP-PBX **scaling to 100,000 users** for energy, rail, public/defence, industry and telecom operators:
SIP/TLS/SRTP, WebRTC web phone, queues, conferencing, IVR matrix editor, SIP security gateway, lawful CDR retention, clustering and high availability — in one Simgenet software; installed with wizards, managed from one dashboard.

100K

USERS, UP TO

2000

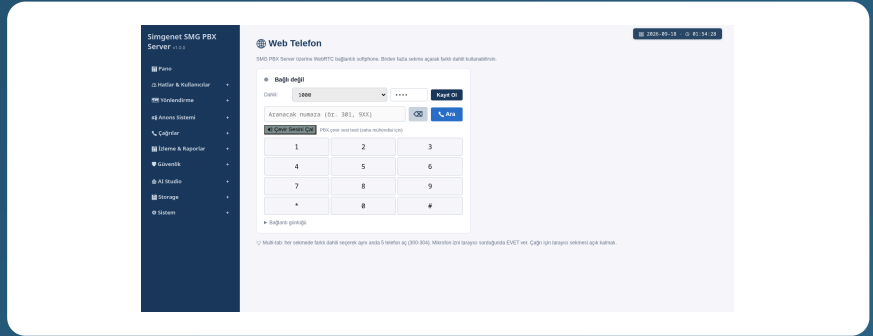
PARTICIPANT
CONFERENCE

< 5 s

HA FAILOVER

**SIP
Security
Gateway**

BUILT IN



Simgenet PBX Server · web phone from the browser — calls and tests without installing software



01

CORPORATE

The Company Behind the Voice Platform

Simgenet Mühendislik is a Turkish engineering company delivering industrial networking and critical-infrastructure communication systems. The PBX Server software is **entirely original**, developed in house at Simgenet; it is not an adaptation of an off-the-shelf package.

2000

FOUNDED

500+

PROJECTS DELIVERED

30+

COUNTRIES SERVED

100+

PRODUCTS

■ Why our own PBX

In the PBX and paging systems we have deployed for years the gap was always the same: compatibility with the operator trunk, resilience to outages in the field, up-front protection against toll fraud and SIP attacks, lawful recording retention — and a management interface that **can be used without extra training**. The PBX Server was born from that need; in one box with paging, recording/archive, SIP security gateway, AAA and monitoring.

■ Why our own software

- **Technological sovereignty** — no feature walls, no foreign license
- **Features to specification** — the route, report and integration the project asks for are added
- **Ecosystem** — Paging System, NAC (AAA), GNSS (time), Storage (recording archive), Edge edition on the SMGOS router
- **Long life** — support across a 15–20-year infrastructure life cycle

Our departments are separate. The software of Simgenet-branded products is developed in our own **manufacturing and R&D department**; transmission systems and field deployment are run by separate specialist teams. PBX installation, operator trunk commissioning and number porting are delivered under a single responsibility.

Our Mission

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

Our Vision

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



02

PLATFORM

What Is the Simgenet PBX Server?

An IP-PBX platform that supports the standards telecom operators use and scales **from 5 extensions to 100,000 users** with the same software. PBX, paging, call recording/archive, SIP security gateway, AAA and monitoring in one box; unlocked by license, with capacity growing linearly as servers are added.

■ Carrier grade

SIP/TLS/SRTP, operator SIP trunk compatibility, E1/PRI and analog gateways, T.38 fax, clustering with load balancer and media nodes, active-passive HA, geo-redundant site, multi-tenant, lawful CDR retention.

■ User friendly

One-screen setup wizard; the trunk wizard generates the configuration from operator details; "Automatic" profile when adding an extension; IVR matrix editor; bulk CSV; web phone from the browser; live events explained in plain language.

■ Protected up front

The Simgenet SIP Security Gateway sits in front of the PBX: TLS validation, rate limiting, geo allow-list, toll-fraud pattern filter, topology hiding, threat intelligence; Secure Mode rejects unencrypted registrations.

Key Capabilities

- SIP (UDP/TCP/TLS/WSS), SRTP, WebRTC web phone; Opus, G.711, G.722, G.729; T.38 fax
- DID/DDI, line groups, hunt/pickup, conditional and time-based routing, transfer, park, BLF, DND
- Voicemail (+e-mail), call recording, conference rooms (up to 2,000 participants), queues (6 strategies)
- IVR matrix editor (key × action × target, multi-level, time conditions, TR/EN)
- Trunk wizard and groups, outbound/inbound route matrix, operator SIP trunk (TLS+SRTP), E1/PRI/FXS/FXO gateways
- Bulk CSV import, user-group templates, phone auto-provisioning, multi-profile clients
- Clustering: SIP security gateway (HA) + load balancer + N media nodes; active-passive HA <5 s; geo-redundant site; federation
- Live calls, CDR (10-year partitioned retention, regulator format), endpoint events, call audit, audit trail
- SIP security gateway, toll-fraud protection, firewall, certificate inventory + automatic renewal, AAA (RADIUS/TACACS+/LDAP), RBAC
- Plug-and-play ISO, signed license and updates, backup/restore, SNMP + MIB + traps, syslog, REST API (JWT, webhooks), CRM integration

One box, many functions. PBX + paging + recording/archive + SIP security gateway + AAA + monitoring on the same platform; modules unlock by license. The Edge edition (5–100 extensions) runs as a module on the SMGOS router; the Server edition grows from a single server to a cluster for 100–100,000 users.



03

ARCHITECTURE

From a Single Server to a 100,000-User Cluster

The same software runs at three scales: **Edge** on the router, single-server **Server** and the load-balanced **cluster**. Capacity grows linearly as servers are added; users, extensions and routes are managed from one centre.

Edge

5–100 extensions · module on the SMGOS router · branch and field

Server

100–10,000 users · single server, license ceiling by hardware class · up to 5,000 concurrent calls, 1,000 trunks

Cluster

Up to 100,000 users · SIP security gateway (HA) + load balancer + N media nodes + redundant database + shared recording store

■ High availability

- Active-passive HA: virtual IP, failover **under 5 seconds**
- Dual SIP security gateway (HA); the load balancer distributes calls to media nodes by weight/hash
- 2–3,000 users per media node; add a node, capacity grows
- Primary/standby database; geo-redundant site; multi-site federation

■ Operator and gateway compatibility

- Operator SIP trunk (TLS + SRTP); domestic and international operators
- E1/PRI, FXS/FXO gateways and direct cards; T.38 fax
- Trunk wizard: type in the operator details, the configuration is generated and applied
- Outbound/inbound route matrix; DID/DDI; least-cost and backup routes

■ Multi-tenant and branches

- Multi-tenant: extension range, routes, recording policy and administrator per tenant
- Hosted PBX (operator/ISP) model
- Region/site definitions; branch–centre federation
- Recording storage targets SFTP/NFS/SMB/S3 + routing matrix (Simgenet Storage Server)

■ With the Simgenet ecosystem

- **Paging System** on the same platform: one-key zone/direction paging, "ready to speak" signal
- **NAC Server**: administrator AAA (RADIUS/TACACS+), device identity
- **GNSS Server**: time source — CDR and recording stamps on the correct clock
- **Storage Server**: WORM and RFC 3161-stamped recording archive · **SVP**: acceptance testing

Scale in plain terms. On a single server a license ceiling of 2,000 / 10,000 users by hardware class; in a cluster up to 100,000 users. 2,000 participants run stably on a single conference bridge.



04

TELEPHONY

Call Handling, Queues, Conferencing and IVR

■ Core and clients

- SIP over UDP/TCP/TLS/WSS; SRTP; **WebRTC web phone** (from the browser, nothing to install)
- Codecs: Opus, G.711, G.722, G.729; T.38 fax; G.168 echo cancellation
- Multi-profile clients: WebRTC / secure IP / classic IP — the PBX applies the profile itself when the device registers
- **Secure Mode:** unencrypted registrations rejected; phone auto-provisioning

■ Call features

- DID/DDI, extension and line groups, hunt/pickup groups, conditional and time-based routing
- Hold + music, blind/attended transfer, park, DND, BLF
- Caller ID and spoofing prevention; feature codes
- Voicemail (+e-mail), **call recording**, emergency calling, hot-line, priority calls

■ Queues and contact centre

- 6 distribution strategies; agent login/logout and breaks; position announcements
- Overflow → IVR / voicemail; wrap-up time
- Live calls and queue dashboard; contact-centre reports
- CRM/REST integration; webhooks

■ Conferencing and IVR

- Conference rooms — **up to 2,000 participants** on one bridge
- **IVR matrix editor:** key × action × target, multi-level, time conditions, TR/EN prompts
- Scheduled and conditional flows; holiday/office-hours calendar
- Trunk and route matrices with the same table logic

■ Recording and lawful retention

- CDR: 10-year partitioned retention, export; regulator CDR format; 5651 / KVKK
- Call recordings routed to SFTP/NFS/SMB/S3 targets via a routing matrix; Storage Server for WORM and timestamps
- Audit trail: who changed what, and when

■ Artificial intelligence add-on

An add-on running on a separate GPU server: text-to-speech announcement generation, knowledge-based voice greeting and routing, call summaries. Independent of the PBX core, optional.



05

SECURITY

SIP Security Gateway, Toll Fraud and Access

The price of a PBX attack shows up on the bill. The Simgenet PBX Server stops the attack before it reaches the PBX: the **SIP security gateway** in front, toll-fraud protection inside, AAA and audit trail everywhere.

■ Simgenet SIP Security Gateway

- TLS validation; User-Agent blacklist; rate limiting
- Geo allow-list; toll-fraud pattern filter; threat-intelligence feed
- Topology hiding — the PBX is invisible from outside
- Dual (HA) operation; front door of the cluster

■ Toll-fraud and intruder protection

- Toll-fraud protection screen: suspicious routes, out-of-hours calls, destination-country rules
- Firewall + intruder blocking; antivirus and rootkit scanning
- Certificate inventory and automatic renewal
- Secure Mode: unencrypted registrations rejected; SSH by certificate only

■ Identity and access (AAA)

- RADIUS + TACACS+ + LDAP/AD from one screen, with live test buttons
- RBAC; administrator audit trail
- Central administrator identity with the Simgenet NAC Server

■ Standards and compliance

- SIP / RTP / SRTP / TLS / DTLS (RFC 3261 / 3711 / 5246), WebRTC
- G.711 / G.722 / G.729, Opus, T.38, G.168, P.800
- OWASP Top 10; ISO/IEC 27001, 22301; NIST SP 800-53
- KVKK / GDPR, Law 5651, regulator CDR; RADIUS/TACACS+/LDAP (RFC 2865 / 8907)

Proven security. The SIP security gateway, toll-fraud rules and AAA behaviour are measured with Simgenet SVP using known-PASS/FAIL vectors; the result is delivered as a lockable report.



06

MANAGEMENT

Installed with Wizards, Managed from One Dashboard

No configuration files, no console: every task is a form, a wizard or a matrix. Setup completes on one screen at first boot; thousands of extensions arrive in one CSV file.

■ User friendly — concretely

- **Setup wizard:** network → license → administrator → first trunk/extension, one screen
- **Trunk wizard:** type in the operator details, the PBX generates and applies the configuration
- **"Automatic" extension profile:** the PBX picks encryption and transport when the device registers
- **IVR matrix editor** — like a spreadsheet; **bulk CSV** — preview + apply; user-group templates
- **Web phone from the browser** — tests and calls without installing software

■ One dashboard

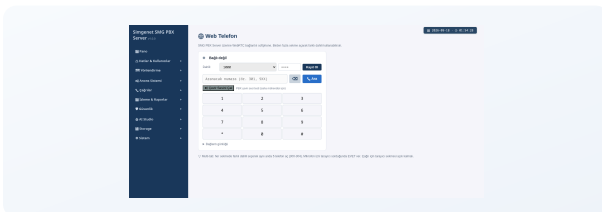
- License, health, services, modules and capacity on one screen
- Live calls and extension events **explained in plain language** — the "why it could not register" line
- Performance, system health, service status; paging console with one key
- AAA / SNMP / backup / security from one screen, with live Test buttons

■ Monitoring and integration

- SNMP (private MIB + traps); syslog (TLS); X.733 severity alarms; daily report
- REST API (JWT, webhooks); CRM integration
- Diagnostic collector: SIP capture + state; common Simgenet diagnostic bundle
- Audit trail (hundreds of thousands of records, search, export)

■ Platform and operations

- **Plug-and-play installation ISO:** encrypted disk + TPM, automatic first boot
- Signed, hardware-bound license; hardware-class (L1–L5) ceiling
- Backup/restore (scheduled, off-box target); signed updates
- Recording storage targets SFTP/NFS/SMB/S3; federation



Web phone

Calls, tests and extension verification from the browser — no client installation.



Paging operator console

Zone → direction → point cards, one-key "Start Announcement", "ready to speak" signal.



07

USE

Scenarios and Positioning

■ Power transmission / distribution

Substation operational telephony, hot-line and priority calls, zone paging, an Edge that keeps working locally during outages; CDR and recordings in a WORM archive; GNSS-timed stamps.

■ Rail systems

Station and line-side communication, paging integration, emergency calling, conferencing; branch–centre federation; operator connection protected by the SIP security gateway.

■ Public / defence / industrial facilities

High extension counts, queues and IVR, contact-centre reports, central administrator identity with AAA, 5651/KVKK retention; fast commissioning with the plug-and-play ISO.

■ Telecom operator / ISP

Hosted PBX: multi-tenant, load-balanced cluster, geo-redundant site, operator trunk compatibility, regulator CDR; linear scale up to 100,000 users.

Model Positioning

PBX Edge

5–100 extensions · module on the SMGOS router · SMG-PBX-E

PBX Server

100–10,000 users · single server · SMG-PBX-S

PBX Cluster

Up to 100,000 users · security gateway + load balancer + media nodes

Evidence-based delivery. At the end of installation, call capacity, HA failover, security-gateway and AAA behaviour are measured with Simgenet SVP; the customer receives a lockable acceptance report.



08

SPECIFICATIONS

Simgenet PBX Server

FEATURE	SIMGENET PBX SERVER
Product class	Carrier-grade IP-PBX platform; PBX + paging + recording/archive + SIP security gateway + AAA + monitoring; software entirely in house at Simgenet
Models	PBX Edge (SMG-PBX-E, 5–100 extensions, on the SMGOS router) · PBX Server (SMG-PBX-S, 100–10,000 users) · Cluster (up to 100,000 users)
Signalling / media	SIP (UDP/TCP/TLS/WSS) · SRTP · WebRTC · Opus, G.711, G.722, G.729 · T.38 · G.168
Call features	DID/DDI · extension/line groups · hunt/pickup · conditional/time-based routing · hold+music · transfer · park · DND · BLF · caller ID + anti-spoofing · voicemail (+e-mail) · call recording · feature codes · emergency · hot-line · priority
Queues / conferencing / IVR	Queues (6 strategies, agent login/logout/breaks, position announcements, overflow, wrap-up) · conference rooms (up to 2,000 participants on one bridge) · IVR matrix editor (key × action × target, multi-level, time conditions, TR/EN)
Trunks / gateways	Operator SIP trunk (TLS+SRTP) · trunk wizard and groups · outbound/inbound route matrix · E1/PRI · FXS/FXO gateways and direct cards · T.38 fax · phone auto-provisioning
Scale / HA	Single server 2,000 / 10,000 users (class L4/L5), 5,000 concurrent calls, 1,000 trunks · cluster: security gateway (HA) + load balancer + N media nodes (2–3K users/node) + redundant DB + shared recording store → 100,000 users · HA <5 s · geo-redundant site · multi-tenant · federation
Security	SIP Security Gateway (TLS validation, UA blacklist, rate limiting, geo allow-list, toll-fraud filter, topology hiding, threat intelligence) · toll-fraud screen · firewall + intruder blocking · antivirus/rootkit · certificate inventory + auto-renewal · Secure Mode · SSH by certificate
AAA	RADIUS + TACACS+ + LDAP/AD (live test) · RBAC · audit trail · central identity with the Simgenet NAC Server
Monitoring / records	Live calls · CDR (10-year partitioned, regulator format, export) · endpoint events (plain-language) · call audit · performance · system health · SNMP + private MIB + traps · TLS syslog · X.733 alarms · daily report · diagnostic collector / bundle
Management	HTTPS web panel (TR/EN) · setup wizard · "Automatic" profile · bulk CSV · group templates · web phone · REST API (JWT, webhooks) · CRM · backup/restore (scheduled, off-box) · signed updates · license (signed, hardware-bound, L1–L5)
Recording retention	Recording targets SFTP / NFS / SMB / S3 + routing matrix · 5651 / KVKK · Simgenet Storage Server for WORM and RFC 3161 stamps
Installation	Plug-and-play installation ISO (encrypted disk + TPM, automatic first boot) · server or virtual machine · Edge: on the SMGOS router
Add-on	Artificial intelligence (separate GPU server): TTS announcements, knowledge-based voice greeting/routing, call summaries



Why Simgenet PBX Server

Carrier grade, up to 100,000 users

Operator trunk compatibility, clustering, load balancing, HA <5 s, geo-redundant site, lawful CDR retention.

A PBX protected up front

Simgenet SIP Security Gateway, toll-fraud protection, Secure Mode, AAA and audit trail.

Installed with wizards, managed from one dashboard

Setup and trunk wizards, "Automatic" profile, IVR matrix, bulk CSV, web phone, plain-language live events.

One box, many functions

PBX + paging + recording/archive + security gateway + AAA + monitoring; software entirely in house at Simgenet; acceptance with an SVP report.

GET IN TOUCH

Address

Kartal / İstanbul, Türkiye

Phone

+90 555 600 4506

E-mail · Web

info@simgenet.net · simgenet.net

Simgenet Mühendislik Enerji San. ve Tic. Ltd. Şti.

Product Brochure · SMG-UB-PBX-EN · Rev. 2 · © 2026

Engineered in Türkiye