



MACH7-AN

“The next-generation Network Access Node”

Overview

MACH7-AN, is the Network **A**ccess **N**ode for telecom Applications providing, concentrated access point to the core while aggregating signaling traffic with intelligent routing, address translation and security.

The MACH7-AN product, built on the carrier-proven MACH7 High Available framework, is equipped with all the functional features of a next-generation Signaling Gateway and Transfer solution. It seamlessly bridges SS7 and IP networks, enabling efficient signaling routing with dynamic load-distribution while filtering out fraudulent traffic, managing overload and congestion control.

The MACH7 Access Node platform offers innovative, reliable and scalable signaling infrastructure to network equipment manufacturers and service providers, allowing them the most cost-efficient path to successful network optimization, evolution and growth, with uncompromising flexibility of any-to-any (TDM, IP, ATM) connectivity and routing.

Key features

- **SERVER FARM SUPPORT**

Facilitates server farm deployment architecture for telecom services (i.e. Prepaid Platforms, SCP, HLR, SMSC, LBS Node etc.) to provide reliable services by distributing workload across multiple application platforms networked together via MACH7-AN.

It supports efficient and dynamically adaptive load-balancing across the farm based on server capability, congestion levels and operation-modes (primary / backup) using network address translation and intelligent application routing.

- **ADVANCED ADDRESS TRANSLATION & ROUTING**

In addition to standard SS7 Point Codes, SSN, and SIGTRAN Routing key-based routing, it provides flexible Global Title Translation based on user-defined selectors on any address information (called and calling).

It also allows customized routing rules based on generic message parameters, like TCAP Transaction-Ids, ISUP CICs etc.

- **INTELLIGENT APPLICATION LEVEL ROUTING**

The MACH7-AN provides a cost-effective solution to intelligently route signaling messages based on an application or service to which they are destined by using specialized routing as below:

- **Context based Routing**

Confirms transaction stickiness by routing based on transaction contexts like TCAP primitives (TC_BEGIN, TC_CONTINUE etc.), GPRS correlation id etc.

- **Message Content based Routing**

Performs routing based on the contents of messages for multiple signaling application layers simultaneously, which includes INAP, MAP, CAP, SINAP, Ericsson INAP, Nokia INAP, AIN, IS-41 etc.

- **Subscriber data based Routing**

Routes messages to application servers based on subscriber address information (e.g. Called/Calling Digits, MSISDN, IMSI, SMS A-number, SMS B-number etc.) provisioned on the hosted database.

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- **ANY-TO-ANY CONNECTIVITY**

The MACH7-AN provides capability to connect networks using industry standards signaling interfaces like SS7 (TDM / ATM), SIGTRAN (M3UA, M2PA, SUA) and routing traffic between any-to-any interfaces with efficient network management and control.

It also allows simultaneous connectivity to any network element using a combination of network interfaces with controlled routing policies.

- **MULTI-NETWORK REACH & INTER-CONNECT**

Provides capability to interface multiple independent networks simultaneously, using multiple OPCs and Network Appearances, which can spread across multiple variants.

The MACH7-AN also allows protocol conversion and inter-working between two networks using provisioned screening and routing rules.

- **CARRIER GRADE RELIABILITY & SCALABILITY**

The platform ensures carrier-grade high-availability for telecom core network services, using redundant hardware and software components, guaranteeing no Single-Point-of-Failure.

With unprecedented throughput performance for each of its computing elements (CEs), the MACH7-AN allows in-service upgrades of signaling capacity and throughput needs by adding new CE(s) and interfaces, for manageable and cost-effective growth.

- **OPEN ARCHITECTURE**

Operating on carrier class operating systems, including Linux and Solaris, the MACH7-AN incorporates industry-standard telecom interfaces to allow ease in interoperability and operations to its users.

Supported on a wide range of open computing systems from leading vendors, the MACH7-AN offers a long list of network variants to meet global deployment needs, at an exceptionally low price performance ratio.

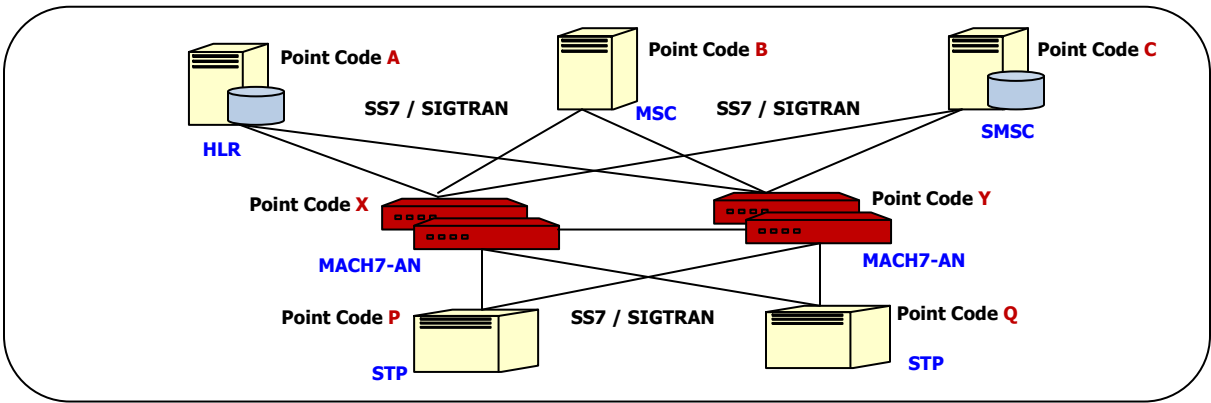
Solution Architectures

The MACH7-AN can operate both as a Signaling End Point (SEP) or as a Signaling Transfer Point (STP) in the SS7 and IP SIGTRAN networks. For open-systems architecture the MACH7-AN can also be co-hosted on the same hardware platform along with the Applications.

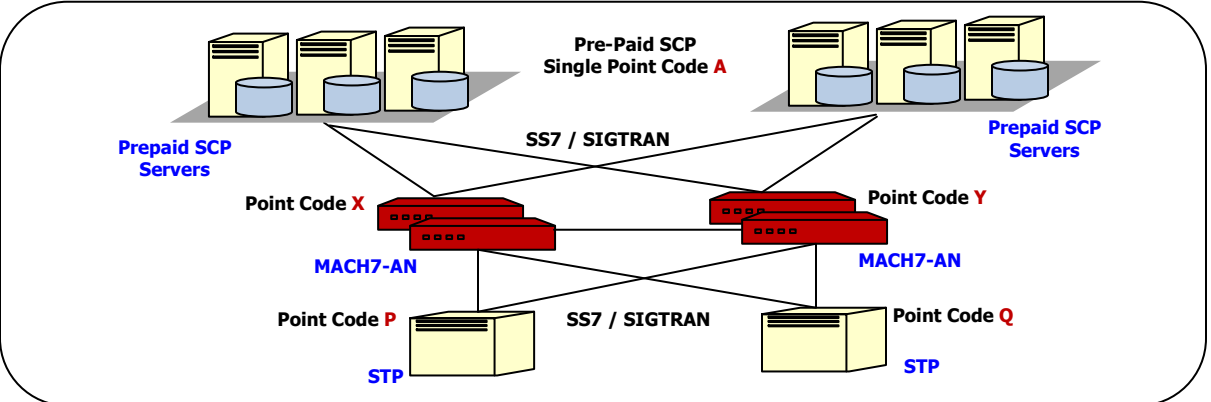
The MACH7-AN has been deployed globally and enables Application Platforms (such as HLR's or SCP's) to seamlessly communicate with other network elements (such as Message Switching Centers (MSCs), and Service Switching Points (SSPs), etc.) over IP Networks.



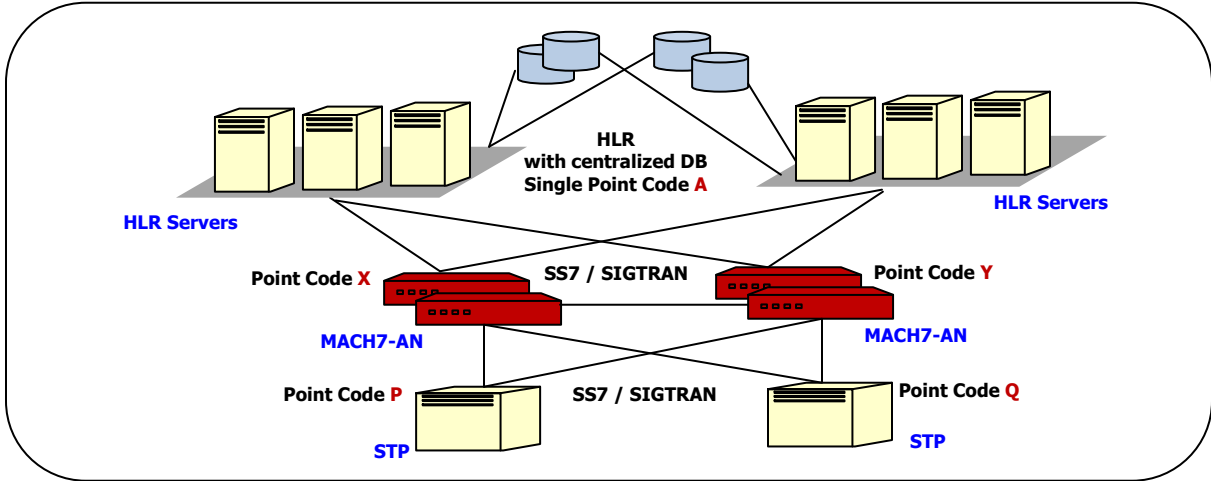
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The MACH7-AN, using an intelligent routing engine, can transparently route signaling traffic to multiple application platforms with independent local databases but for the same service. It provides a centralized Single Node view to the rest of the Network elements (such as MSC's), eliminating the need for network addresses (Point Codes) for each Application node, and complex routing modifications across other network elements.



The MACH7-AN, using an intelligent routing engine, can route signaling traffic to application nodes with a centralized database maintaining transaction stickiness to the application platforms (primary / backup) while eliminating the need for network addresses (Point Codes) for each Application node. It also mitigates the need for complex routing procedures across other network elements.



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Business Benefits

- **INVESTMENT CONTROL**

The MACH7-AN reduces network access investment with centralized CORE network access for multiple service platforms.

- **INVESTMENT PROTECTION**

Provides protection to existing investments by making available all advanced features of the MACH7-AN to existing Network Elements.

- **NETWORK INTEROPERABILITY**

By supporting multiple network variants and interfaces, the MACH7-AN allows seamless interoperability between existing and next-generation Network Elements across Wire line, Wireless and IP networks globally.

- **NETWORK OPTIMIZATION**

The MACH7-AN has the capability to optimize valuable network resources using advanced features, catering to complex deployment requirements, which includes,

- Preservation of precious and limited SS7 Point Codes by representing multiple application nodes for HLRs, SMSCs etc. with a single Point code.
- Can act an SS7 Link concentrator for Application Nodes.
- Cost-effective replacement for expensive and under-utilized long haul SS7 links.
- Geographical redundancy for network core services.

- **NETWORK EVOLUTION**

The MACH7-AN allows simultaneous SS7 and SIGTRAN connectivity to core network access for existing and evolving services, facilitating network migration from traditional TDM to IP networks.

- **SECURED SERVICE ENVIRONMENT**

Using a flexible Gateway Screening capability at different protocol layers, the MACH7-AN protects critical services against fraudulent traffic and message flooding.

- **SEAMLESS SERVICE MIGRATION, EXPANSION & UPGRADE**

Utilizing Subscriber-data based routing, the MACH7-AN enables subscriber data migration from one database to another on networked application servers (AS), without any modifications to other CORE network elements.

As a secured gateway to Application Servers (AS) for network services like HLR, SMSC, Prepaid etc., the MACH7-AN allows seamless expansion and upgrade of AS nodes without impacting the network, thus reducing service deployments and support complexities.

Product Features & Specifications

- **ARCHITECTURE & CONNECTIVITY**

- Distributed Architecture with multiple computing elements (CE) operating as a single logical unit for performance and bandwidth scalability.
- Five Nines (99.999%) Availability.
- T1/E1/J1 Interfaces for SS7 LSL and HSL.
- Support for ATM (SSCOP/SSCF/AAL5) based HSL.
- Standard 10/100 or GigE interface for IP connections.

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- **STANDARDS CONFORMANCE**

- Conforms to ITU-T, ETSI, ANSI, China, Japan (TTC & NTT) standards.
- Supports SCTP/M2PA/M3UA/SUA SIGTRAN connectivity as per latest IETF standards.
- Conformance with GR-82 Standards based Core features for Signaling Transfer Point (STP).

- **ROUTING**

- MTP routing.
- SIGTRAN routing.
- SCCP routing with enhanced Global Title Translation (GTT).
- Protocol variant conversion at SCCP and MTP level.
- Cross network (e.g. National and International) interworking support.
- Operates in both SGP and ASP mode at M3UA interface.
- Message content (MAP, INAP, TCAP and ISUP) based intelligent routing.

- **ADVANCED FEATURES**

- Multiple OPC support.
- Multiple fully independent Network Appearances.
- Simultaneous connectivity with SIGTRAN (M2PA, M3UA) and traditional MTP to any network element.
- Gateway Screening at MTP and SCCP level.
- Message Re-direction.
- Mated pair configuration support.

- **INSTALLATION, OPERATIONS & MAINTENANCE**

- Live-upgrade support without service disruption.
- Tiered Access control levels for the users.
- Statistics, Events, Alarms and user-session(s) logging capabilities.
- Data and log Backup/Restore capabilities.
- Integrated troubleshooting / maintenance interfaces.
- State-of-the art OAM&P interface using,
 - Web-browser based GUI.
 - Command Line Interface (CLI).
 - SNMP interface for Alarms and Error reporting.

- **CAPACITY SPECIFICATION**

- 1240 SS7 Low Speed Links (LSLs).
- 40 High Speed Links (HSLs).
- 128 M2PA Links.
- 512 M3UA Associations.
- 256 SUA Associations.
- 500,000 GT Table Entries.
- 2048 Destination Point Codes.
- 5120 Routing Keys.
- 125,000 MSUs per second with distributed architecture.

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- **HARDWARE SPECIFICATION**

- Carrier-grade off-the-shelf platforms, from industry leading vendors which includes,
 - Rack Servers
 - Blade Servers, and
 - ATCA Blades
- Support for multi-threaded and multi-core processing environment.
- Support for PCIe, PMC and AMC boards for SS7 interface.
- Support for Linux and Solaris (SPARC and x86) operating environment.

teleSys Software, Inc.

teleSys is the premier provider of advanced Telecommunications solutions for the next generation LTE Signaling Networks, providing open systems hardware and software.