TITANIUM®

Product Data Sheet

5G Service Communications Proxy (SCP)

Business Benefits

- Central element of the 5G Core service-based signaling network providing secure message routing, load-balancing, overload protection & traffic visibility.
- Greatly reduces the complexity of managing large geo-distributed 5G Core signaling networks.
- Incorporates powerful award-winning Dissector-based Rules Engine enabling flexible customer programmability.
- Part of the TITAN.IUM InterGENerational™ Cloud-Native Framework interworking of HTTP2, Diameter, SS7 & SIP signaling.
- "Deploy anywhere" installation on premises or in the cloud via Containers, Virtual Machines or Bare Metal.

Overview

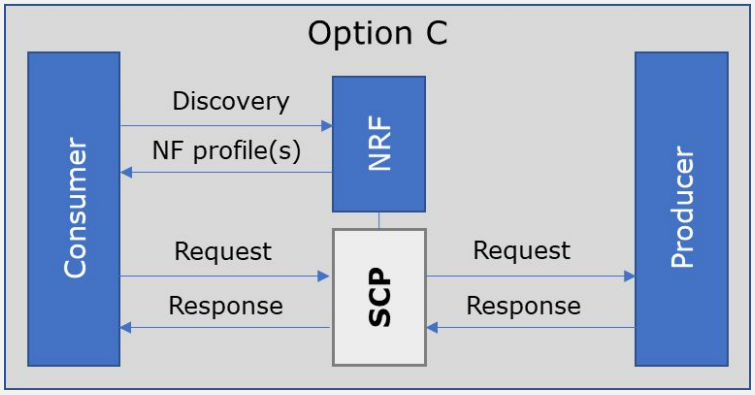
The Service Communication Proxy (SCP) is one of the most important elements of the 3GPP Service-Based Architecture (SBA) for 5G Core networks. The SCP is functionality similar to the Diameter Routing Agent (DRA) in 4G, functioning as a central control point in the signaling network core.

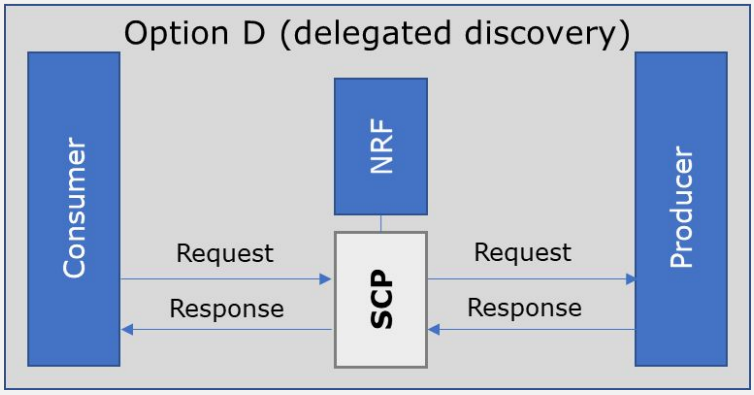
The SCP performs multiple key functions, simplifying core network routing topology & offloading the Network Repository Function (NRF) from service discovery, thus enabling greater 5G core network geo-distributed scalability. Key functions include

- Message routing, load balancing & distribution
- Traffic prioritization & overload handling
- 5G Service Delegated Discovery
- Optional message manipulation & transformation

Titan.ium's SCP solution is built on Titan.ium's all new TITAN.IUM Cloud-Native InterGENerational™ platform providing "deploy anywhere" flexibility & secure management.

5G-SCP Key Capabilities





Secure Indirect Communications
The SCP provides secure indirect communications between service NF-Consumers and NF-Producers, or between SCPs, with TLS mutual authentication, Server Name Indication (SNI) support, and TLSv1.2/TLSv1.3.

High Performance HTTP/2 Stack
The SCP relies on a high-performance HTTP stack with rich configuration options, including settings related to connections, buffers, traffic classes, and TLS.

HTTP Proxy
Message routing function that routes to the destination NF-Producer service directly, or via the next hop Proxy/SCP .

Delegated Discovery / Discovery Caching
"On the fly" NF-Producer service discovery & selection on behalf of the NF-Consumer. The SCP caches NRF NF-Profile information, subscribing to NRF status changes to ensure that cached NF-Profiles are kept up to date with latest service discovery information.

Consumer-Producer Binding
Caching of binding indication and relevant NF profiles for routing of subsequent requests based on routing binding indication. Cached binding indications and NF profiles are automatically removed after expiration of their configurable lifetime.

Multi-Service & Multi-Slice Support
Each service instance is associated with a combination of HTTP IP address + port and URI path prefix. This allows different service logic & routing decisions for different traffic profiles, e.g. different network slices.

Dissectors
The TITAN.IUM Dissector facility includes Predefined & User-defined HTTP2 dissectors allowing retrieval of any information contained in an HTTP2 message, which can then be used for routing or service logic.

Dissector-based Rules Engine
Routing & Service logic processing is supported by TITAN.IUM's powerful Rules Engine allowing programmable logical expressions (And/Or/Not) on different Dissector parameters as needed. Also provided are pre-defined functions that can be applied to optimize User programmable processing logic.

Configurable Actions
The programmable Rules Engine also allows the User to configure context-specific actions . For example, programmable logic may invoke an NRF discovery request, make an NF selection, generate an Event, etc.

Flexible Routing
Create rules as matching criteria for routing table entries, which means that any information contained in an HTTP request can be used for a routing decision. Static information like priority/weight, or dynamic information like load, latency and/or endpoint health may be referenced for a matched route entry that may be used to affect routing decisions.

Events and Tracing
Raise Event actions when defined situations occur or disappear, for example with the onset of a certain load level or when it abates. You can also enable tracing for a certain service instance for diagnostics purposes.

5G-SCP Key Capabilities (continued)

Overload Protection
SCP replicas & instances monitor their traffic load interacting with the Service Router to throttle traffic and/or auto-scale SCP services as needed to handle overload.

Statistics and Key Performance Indicators (KPI)
The SCP generates Statistics and KPIs so that external servers can retrieve them for performance & health tracking purposes (e.g. the number of inbound & outbound requests per unit time). SCP service logic also uses these statistics for congestion control and for routing decisions based on load/latency of route entries.

Transaction Detail Records (TDRs)
The SCP allows configurable generation of TDRs for inbound and/or outbound service transactions. The operator can select which Information Elements (IE) to include into different TDR data feeds (e.g. for Analytics or Forensics).

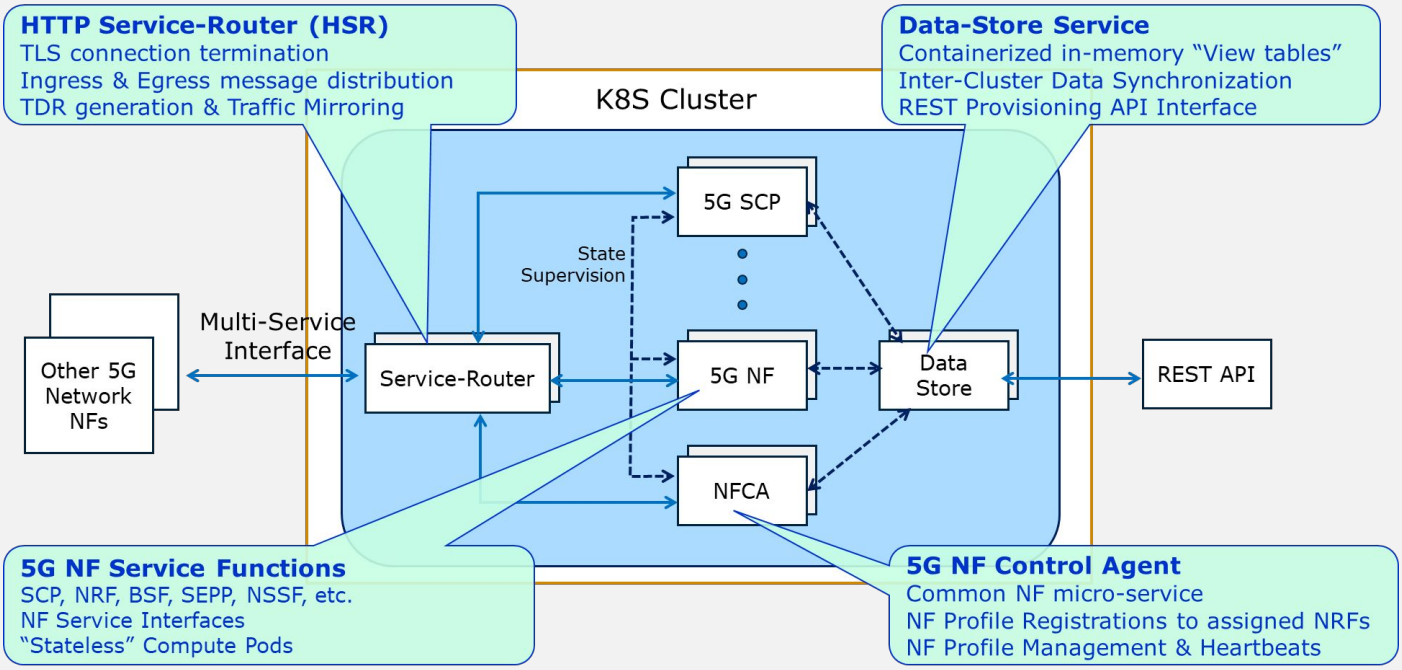
Optional Features

The following features may optionally be added to the SCP deployment as needed.

Message Modification (optional)
This feature enables the operator to invoke configurable message Dissectors and Rules-based Actions to transform message content as needed, for example to aid in 5G to 3G/4G interworking.

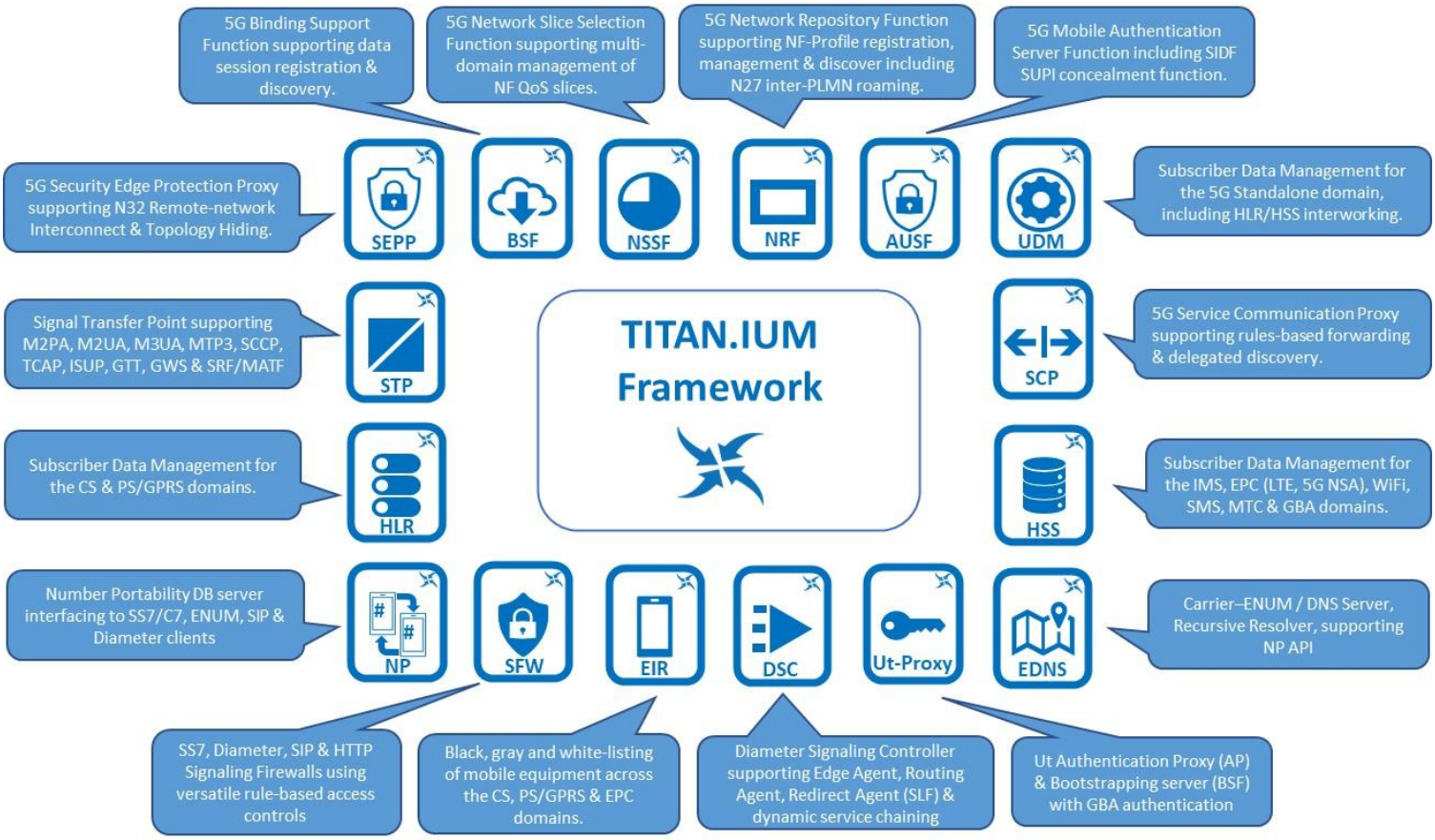
Additional Related Products (optional)
Titan.ium also offers an Element Management System (EMS) system which may be used for centralized configuration, performance and fault management of distributed SCPs as needed. Also available is Titan.ium's Analytics for advanced processing of Transaction records.

5G Container-Native Architecture



The SCP is implemented as a set of containerized micro-services, decomposed into a Service-Router function, SCP compute front-end functions, and back-end Datastore micro-service for persistent storage. All component micro-services may be replicated within a Kubernetes (K8S) Cluster for both resiliency & scalability purposes. In addition, two or more K8S Clusters may comprise a single TITAN.IUM system deployment to achieve multi-site system geo-redundancy, with cross-site Datastore replication to ensure a common view of SCP persistent data. The Service-Router provides HTTP1/2 routing services and securely exposes SBI interfaces to external IP networks. All Titan.ium, 5G NFs share a common "Network Function Control Agent" (NFCA) micro-service, responsible for common NF management, e.g. to handle Registration of NF-Profiles to their assigned NRF(s) and keep these NF-Profile registrations up to date via heart-beats and handle failover/failback.

TITAN.IUM Framework



TITAN.IUM is Titan.ium's all-new cloud-native InterGENerational™ core network solution designed to deliver high performance, flexible services while leveraging the capabilities, knowledge and experience gained from the widely deployed Titan.ium TITAN platform. The TITAN.IUM Framework brings forward Titan.ium's traditional 2G/3G/4G applications and combines them with cloud-native and 5G signaling core capabilities. TITAN.IUM provides fully automated lifecycle management, installation, provisioning, auto-scaling, in-service upgrades, analytics & CI/CD, while offering a "deploy anywhere" implementation on Container-Native, NFV or Bare-Metal infrastructure.

Contact Titan.ium Today

Please visit www.TitaniumPlatform.com for product or solution information. For configuration and pricing details, please contact your local account representative via Info@TitaniumPlatform.com.

About Titan.ium Platform, LLC

Titan.ium Platform, LLC brings more than two decades of experience delivering core network signaling control platforms that power global telecom and enterprise networks. Our industry leading TITAN Centralized Signaling and Routing Control (CSRC) platform has been deployed by operators across the globe to simplify core networks, delivering new services and reducing operating costs. TITAN.IUM, the latest evolution for Titan.ium, is an innovative, interGENerational Framework for 5G that bridges legacy 2G, 3G and 4G technology to the new cloud-native era.