TITANIUM®

Product Data Sheet

TITAN.IUM Framework

Business Benefits

- Enables Service Provider Cloud-Native infrastructure evolution based on Helm & Kubernetes Container orchestration.
- Introduces new 5G Network Functions (NFs) instrumental in supporting evolution to the 5G Standalone Signaling Core.
- TITAN.IUM common framework services allow hosting a wide variety of highly scalable container-enabled applications yielding lower OPEX cost for Operators.
- TITAN.IUM Intergenerational system allows seamless interworking of HTTP2, Diameter, SS7 & SIP signaling allowing realization of a true Converged Signaling Core network.
- "Deploy anywhere" installation on premises or in the cloud via Containers, Virtual Machines or Bare Metal.

Overview

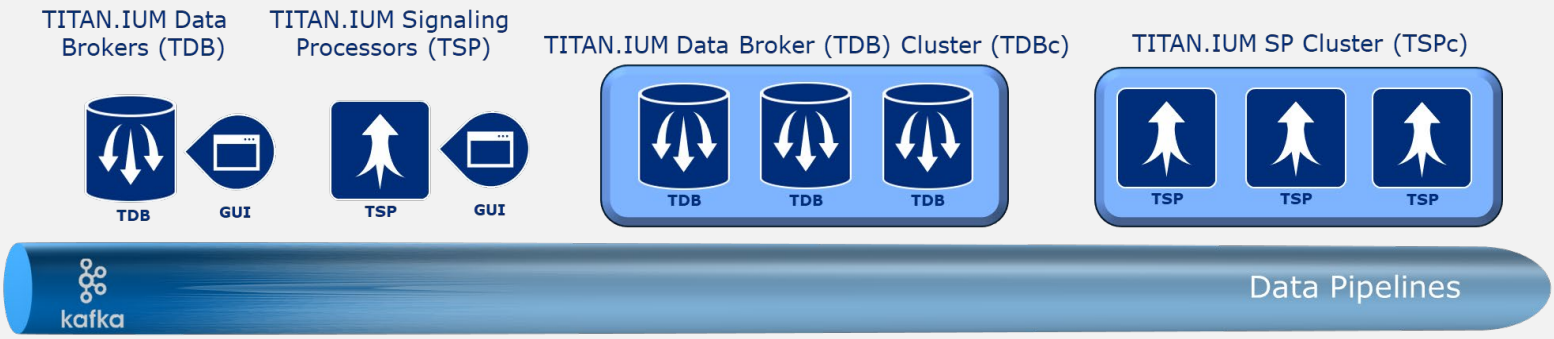
Service Provider networks are introducing new 5G Mobile services which will bring both high-bandwidth and ultra-low latency services to their customers. Supporting this rollout is a completely new 5G Signaling Core (5GC) network specified by 3GPP using new Cloud-Native technologies such as Containers, Kubernetes orchestration & Continuous Integration / Continuous Delivery (CI/CD).

These new technologies are crucial to support the massive scalability requirements demanded for 5G services, while still reducing operating costs through automation. The challenge for Service Providers is transitioning to these new technologies while simultaneously maintaining support for traditional 2G, 3G & 4G Mobile services for years to come.

The TITAN.IUM Framework addresses this problem by providing a single Cloud-Native application deployment environment allowing simultaneous hosting of both 5G and traditional network functions in a commonly managed highly distributed system.

TITAN.IUM Framework

TITAN.IUM Architecture



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.

TITAN.IUM Key Features

Data Pipelines

TITAN.IUM Data Pipeline technology based on Kafka underpins all hosted applications providing for high-bandwidth low-latency geographically distributed application state synchronization.

Low-Latency Distributed Data Stores

The TITAN.IUM DataStore provides ultra-low latency in-memory database lookups, as well as low latency database synchronization across multiple geographically distributed NFs comprising a TITAN.IUM multi-application deployment.

High Performance Signaling Stacks

The TITAN.IUM framework incorporates HTTP/1, HTTP/2, SS7, Diameter & SIP high-performance signaling stacks supporting multi-protocol applications which facilitate interworking between Signaling Core network functions.

REST API Configuration & Provisioning

TITAN.IUM provides standardized REST API access to all system configuration & provisioning data by default. SOAP APIs are also available for traditional OSS interfacing.

OAM User Agent

TITAN.IUM also provides GUI access to system functions via an Operations, Administration & Management (OAM) agent which interfaces native REST APIs for coverage.

OCI Compliant Containerization

All TITAN.IUM delivered software containers are fully compliant to Open Container Initiative (OCI) standards guaranteeing compatibility with industry standard container-native infrastructure.

Kubernetes & Helm Container Orchestration

TITAN.IUM container-native deployments are designed to be deployed into native Containers-as-a-Service (CaaS) infrastructure based on Kubernetes & Helm orchestration. In case of traditional NFV and/or Bare-Metal Server infrastructure, Titan.ium is also able to provide this CaaS infrastructure to customers as needed.

Security Features / AAA

TITAN.IUM offers multiple Security features to protect system integrity & confidentiality. System secrets are securely managed & guarded by industry-leading Keycloak. Signaling & Management interfaces are encrypted with mutually authenticated TLS. User access management is provided locally or optionally to customer AAA system. Sensitive User data is obscured & encrypted.

Telemetry (Events, Alarms & Performance)

TITAN.IUM standard methods for Event, Alarm & Performance data collection, observability & forwarding to aid Operators in managing the TITAN.IUM deployment.

TITAN.IUM Framework

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.

Dissector-based Programmable Rules Engine
TITAN.IUM stacks come with built-in & User-defined Dissectors supporting signaling data extraction & modification as needed. Dissector data is used by the TITAN User Programmable Rules Engine at the heart of all Titan.ium applications that enable customer-specific behaviors and interworking functions.

Transaction Detail Records (TDRs)
TITAN.IUM provides a uniform method for applications to generate User-configurable Transaction Detail Records (TDRs) which may be streamed to customer 3rd Party system processing as needed (e.g. for Analytics or Forensics).

Optional Functionality

The following features & functions may optionally be added to TITAN.IUM system deployments as needed.

TITAN.IUM Hardware
TITAN.IUM Server & Bridge turnkey COTS hardware may be optionally sourced from Titan.ium which are certified for compatibility with TITAN.IUM software infrastructure.

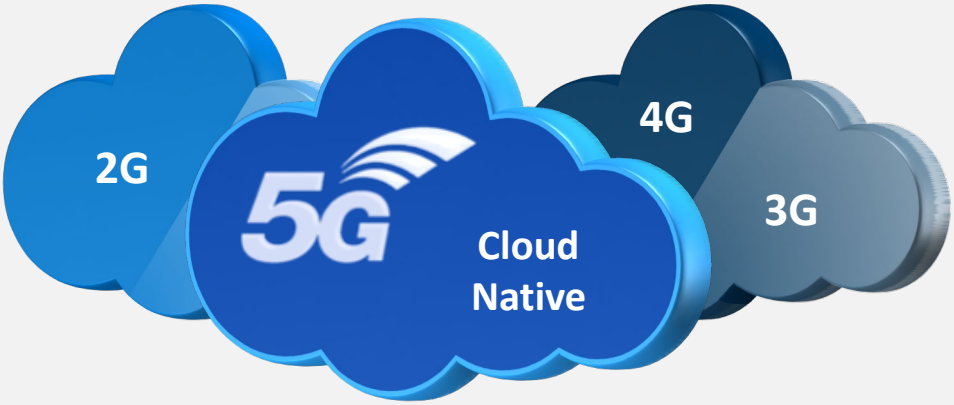
SS7 TDM Bridge
TITAN.IUM deployments may optionally be equipped with Time-Division Multiplexed (TDM) SS7 Bridge interfaces to traditional SS7 Links facilitating conversion of existing SS7 TDM Links to the Converged Signaling Core network.

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.

CI/CD Deployment Services
The TITAN.IUM Framework architecture is natively built around Continuous Integration / Continuous Deployment (CI/CD) principles. Titan.ium can optionally extend this functionality to customer's on-prem Staging & Production environments to provide for "continuous flow" software updates & upgrades reducing delivery cycle times. CI/CD also enables the automated testing functions necessary for in-service canary upgrades.

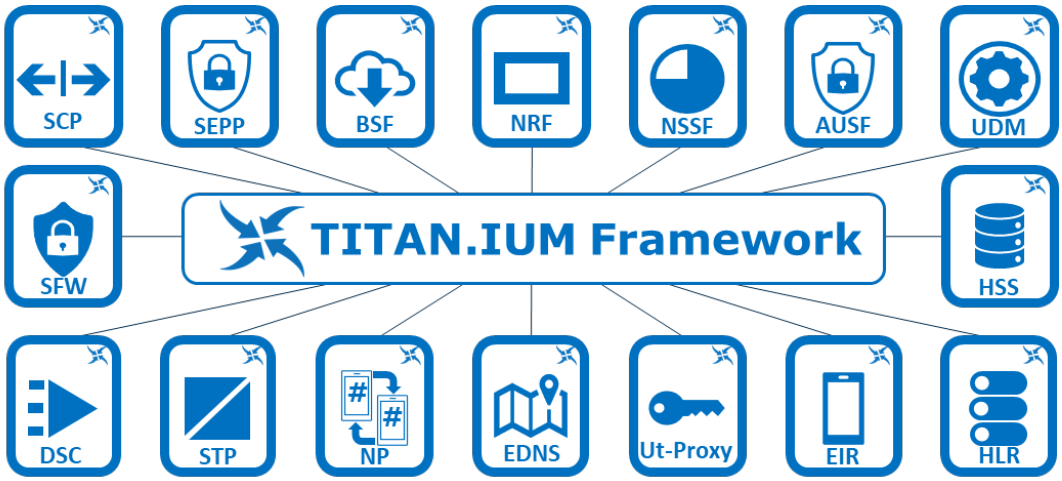
Additional Products (EMS & Analytics)
Titan.ium also offers an Element Management System (EMS) which may be used for centralized configuration, performance and fault management of TITAN distributed applications as needed. Also available is Titan.ium Analytics for advanced processing of Transaction records.

TITAN.IUM Converged Signaling Core



The TITAN.IUM InterGENerational™ Framework provides seamless interworking of HTTP1/2, Diameter, SS7 & SIP signaling applications in next-generation Cloud-Native containerized infrastructures. This seamless co-deployment & interworking of 2G, 3G, 4G & 5G Mobile network functions allows Service Providers to evolve to a true Converged Signaling Core network, thus providing for dramatically reduced operating costs while still providing a traditional mix of services in the coming years.

TITAN.IUM Products Family



5G Standalone Core (5GC) Network Products

- Service Control Proxy (SCP) Lorem supporting rules-based forwarding & delegated discovery.
- Signaling Edge Protection Proxy (SEPP) supporting N32 Remote-network Interconnect & Topology Hiding.
- Binding Support Function (BSF) providing data session registration & discovery.
- Network Repository Function (NRF) supporting NF-Profile registration, management & discover including N27 inter-PLMN roaming.
- Network Slice Selection Function (NSSF) supporting multi-domain management of NF QoS slices.
- User Data Management (UDM) for the 5G Standalone domain, including HLR/HSS interworking.
- Authentication Server Function (AuSF) including SIDF SUPI concealment function.

Traditional Products for the Converged Signaling Core

- Signaling Firewall (SFW) for SS7, Diameter, SIP using versatile rule-based access controls.
- Diameter Signaling Controller (DSC) Edge Agent, Routing Agent & Redirect Agent (SLF) with dyn service chaining.
- Signal Transfer Point (STP) supporting M2PA, M2UA, M3UA, MTP3, SCCP, TCAP, ISUP, GTT, GWS & SRF/MATF.
- Home Subscriber Server (HSS) for the IMS, EPC (LTE, 5G NSA), WiFi, SMS, MTC & GBA domains.
- Home Location Register (HLR) for CS & PS/GPRS domains.
- Carrier ENUM/DNS (EDNS) Server and Recursive Resolver, supporting NP data accuracy correction.
- Ut mobile equipment Authentication Proxy (AP) & Bootstrapping Server (BSF) with GBA authentication
- Number Portability (NP) database server interfacing to SS7/C7, ENUM, SIP & Diameter clients.

➔ For more information on any product listed above, please see associated Product Data Sheet for details.

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 sales@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 ecosystem for 5G that bridges legacy 2G, 3G and 4G technology to the new cloud-native era.

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