

HCLTech 5G Core Policy Control Function



Policy management plays an increasingly important role as operators are about to launch and monetize an expanded range of differentiated 5G services, enabling new business models. With the cloud-native HCLTech 5G Core Policy Control Function (HCLTech 5G Core PCF), operators and enterprises have on-demand control of 5G network resources and deliver new services over hybrid public or private networks.

Overview

Policy control in the mobile network is a technology that manages access to network resources, governs network behavior and enables dynamic control of the service quality. It allows matching the allotted network bandwidth and latency to the detailed needs of the applications and services, such as the streaming of cloud-based games and augmented reality applications. Policy control can also adjust the connection speed of subscribers' devices in alignment with mobile plan terms, for example, for the enforcement of a fair use policy. To cope with the ever-increasing range of services sought after by consumers, enterprises and Internet of Things (IoT) devices, communication service providers (CSPs) need to operate an intelligent, dynamically scalable and future-proof policy platform as a key element to their success in 5G. With a focus on applications for enterprise and industry verticals, CSPs with 5G deployments will rely on policy control to manage use case-specific wireless connectivity requirements: Enhanced Mobile Broadband (eMBB) with higher upload/download speeds, Massive Machine Type Communications (mMTC) with reliable but low-bandwidth connections, and Ultra-Reliable Low-Latency Communications (URLLC) for ultrareliable, critical applications.

Key benefits

- Agile and fast time to deployment
- Low operational cost with dual-mode policy
- Small hardware footprint for private 5G deployment
- Flexible, code-free customization

Product description

HCLTech 5G Core PCF is a 5G network function providing policy control through Npcf SBI towards Access and Mobility Management Functions (AMF) and Session Management Functions (SMF) and interacting with other network functions such as UDR, CHF, AF and NRF. Our microservices-based and standards-compliant solution serves as a centralized policy decision point, governing traffic and managing the user experience across different services for CSPs and enterprises.

The following figure shows the high-level functional architecture of the solution including interfaces with main 5G network components (AMF, SMF, AF, UDR, CHF), central policy engine and internal database system to manage real-time session information, policy engine configuration and general PCF system configuration. It also includes a component to manage registration and update of network functions to NRF (NRF Client, NRFC) as well as common API layer to handle provisioning and monitoring of the platform.

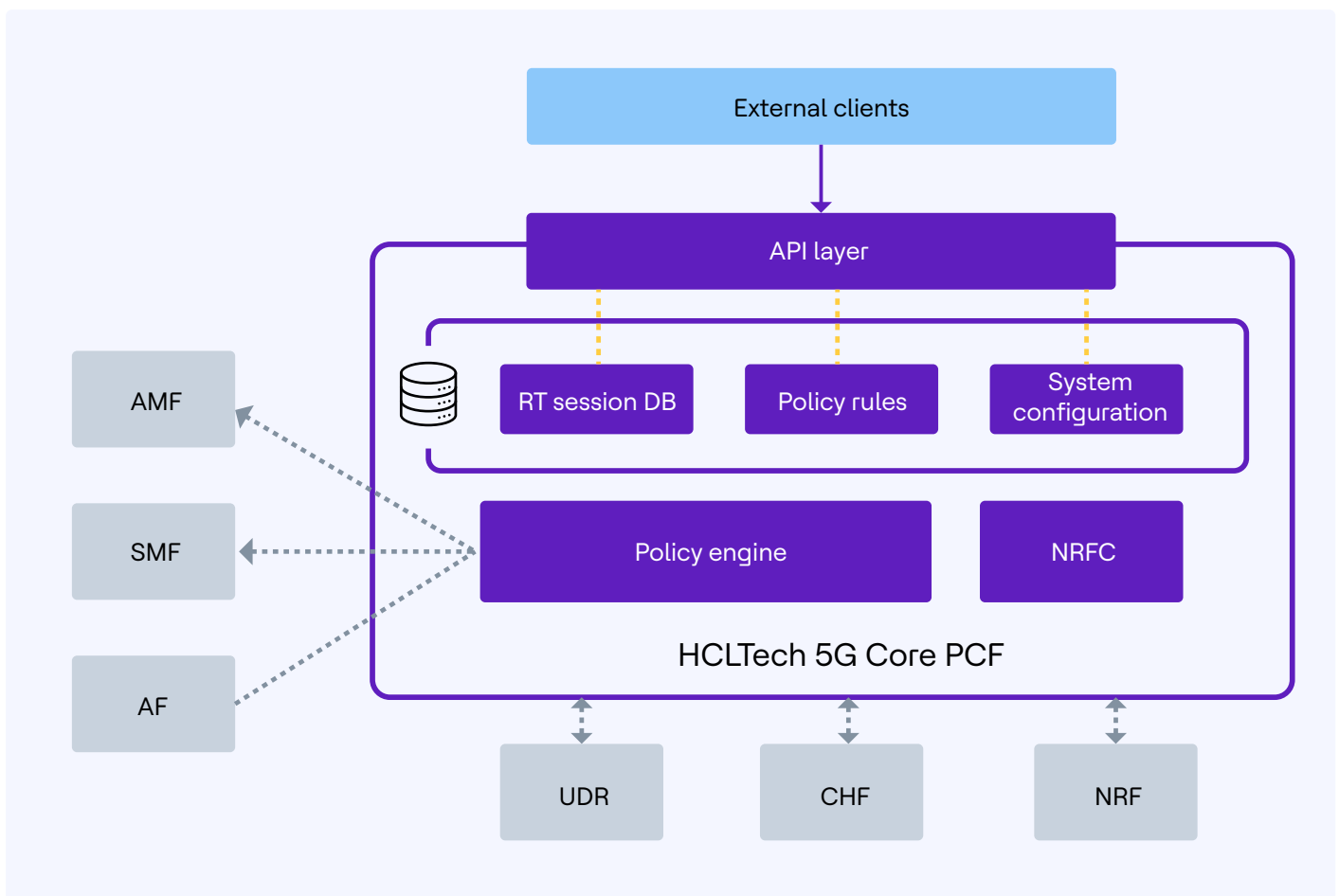


Figure 1. HCLTech 5G Core PCF architecture

HCLTech 5G Core PCF feature highlights

- Supports quality of service (QoS) policy and charging control functions for the 5G SA network and the related 5G signaling interfaces
- Supports Rx for Voice over LTE (VoLTE), Rx/N5 for Voice over New Radio (VoNR)
- Supports Rx/N5 Application Function (AF) based use cases, for example, Mission-Critical Push-To-Talk (MCPTT), Mission-Critical video
- Supports UE Route Selection Policy (URSP) to enable dynamic slice selection on device
- Enables multiple PCF deployments through Embedded Binding Support Function (BSF)
- Integrates with external Unified Data Repository (UDR) to query subscriber profiles for 5G SA
- Provides intuitive policy design studio with out-of-box templates for rapid policy use case deployments
- Integrates with industry-standard Platform-as-a-Service (PaaS) observability tools on the cloud-native PaaS platform for operational aspects such as logging, metrics and tracing

- Supports Continuous Integration and Continuous Delivery (CI/CD) and integrates with DevOps workflows
- Provides a high level of resiliency and redundancy through high availability and geo redundancy support
- Compliant with 3GPP Release 16 specifications

HCLTech 5G Core PCF follows a widely accepted 3-layer architecture and groups the microservices logically (Figure 2). This separates the business processing logic from data concerns.

- **Connectivity layer:** Components interfacing with external network functions or entities. These components are stateless.
- **Business layer:** The business processing layer performs the business logic mainly including Session Management (SM) policy service, Access Mobility (AM) policy service, AF (Rx) policy service and policy engine that can be enabled based on deployment needs. It is a stateless set of components.
- **Data layer:** The data layer is responsible for persisting various types of data including configuration, session state and subscriber profile.

HCLTech 5G Core PCF can plug in internal or external back-end data layers. It is a stateful set of components.

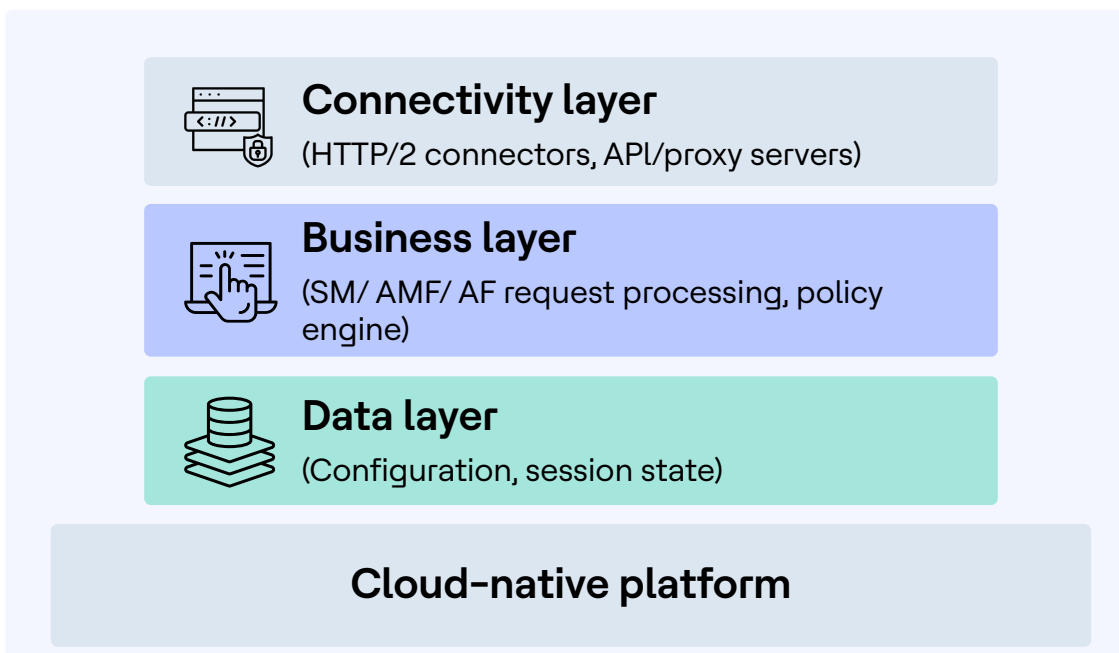


Figure 2. HCLTech 5G Core PCF system architecture

HCLTech 5G Core PCF is a container-based software that can be deployed on Kubernetes clusters aligned with the Cloud Native Computing Foundation (CNCF) guidelines. It has specifically been certified on the commonly used Red Hat® OpenShift Container Platform (RHOCP) but can also be deployed with minimal changes to other CaaS/PaaS platforms.

Summary

The advent of 5G networks and the need to become even more agile to support new business propositions is prompting mobile operators to upgrade their network policy control systems.

With decades of telco experience and advanced cloud technologies, HCLTech 5G Core PCF supports operators and allows them to monetize the full range of consumer, enterprise and B2B2X use cases. The flexible and fast-deployable HCLTech 5G Core PCF also offers insightful policy management to enterprise private networks to facilitate a successful digital transformation of their industry.

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