# Converged Policy Control Function (PCF+PCRF)

## Introduction

Alepo's Converged Policy Control Function comprises Policy Control Function (PCF) and Policy and Charging Rules Function (PCRF). The platform enables operators to have a common 4G/5G core to integrate with 4G and 5G networks and offer converged policy use cases swiftly and easily. The PCF+PCRF combo node includes a web-based policy management portal to configure and manage policies for data and voice services. It is 3GPP Release 16 compliant, supporting 4G, 5G-NSA (non-standalone), and 5G-SA (standalone) deployments.
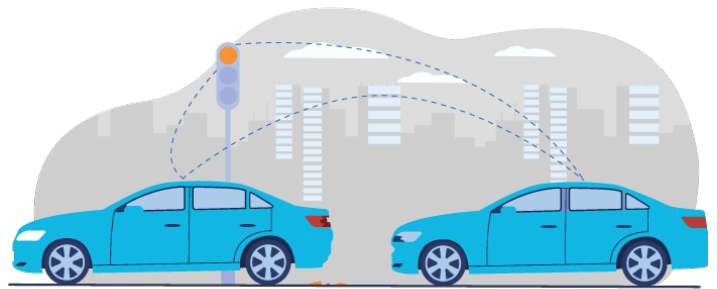


Figure 1:  Leverage Next-Gen Capabilities

The platform's low-footprint enables deployment at the edge as well as a centralized core. It is deployed as a part of Alepo's Compact Core Solution for mobile private networks and as a part of the consumer core for public networks.

## PCF+PCRF Benefits

| Easily configure policies | Support high-value use cases | Swiftly launch new services |
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## Easily configure policies

Alepo PCF+PCRF includes a flexible and robust web interface that lets users swiftly and effortlessly configure multiple static as well as dynamic policy rules and their evaluation criteria depending on their business requirements.

The policy framework provides features such as:

· A high-performance flexible rule engine for policy evaluation, configuration, and defining subscriber eligibility criteria

· A rich library of ready-to-use policy conditions based on time, location, devices, network, and many other parameters

· An easy-to-use GUI with drag-and-drop policy configuration

· Precise visualization, sorting, and prioritization logic for rulesets

· Custom time- and volume-based thresholds to collect subscriber usage metrics

· Role-based access for all operations in the PCF portal

## Support high-value use cases

The PCF+PCRF combo solution supports policy control requirements for 4G and 5G networks, facilitating the rollout of highly personalized and advanced use cases. Configure and manage policy decisions based on various network parameters, user subscriptions, and usage.

Supported policy use cases include:

- 4G, 5G-NSA, 5G-SA deployments
- Enhanced mobile broadband (eMBB), ultra-reliable low latency communication (uRLLC), user equipment (UE), and mobile Internet of Things (mIoT)
- Dynamic policy controls based on metrics collected in real-time, centered around network slicing, applications, roaming, and mobility management
- Easy creation and management of policy profiles for UE (URSP), AM, SM policy rulesets, with priority-based arrangement of subscriber categories to select, evaluate, and apply policies
- IMS integrations for VoLTE and VoNR
- Seamless session and service continuity to effortlessly handle inter-RAT handover when switching between 4G and 5G networks

## Swiftly launch services

Alepo's Converged Policy Control Function makes it simple and quick to define new policy use cases, helping operators to rapidly launch highly personalized and contextual services.

Key capabilities of the PCF+PCRF network function include:

- Simplifies deployment through CaaS agnostic cloud-native implementation
- Employs standard REST-based interface to work with Access Management Function (AMF) for AM policy, UE policy, and Session Management Function (SMF) for SM policy
- Interfaces with UDR to fetch policy subscription information and evaluates the policy rules based on various network parameters
- Interworks with the NRF and associated repository functions such as interface discovery, registration for renaming NRF, change type, and removal or addition of new API attributes
- Triggers real-time alarms to promptly address potential faults and monitor performance KPIs
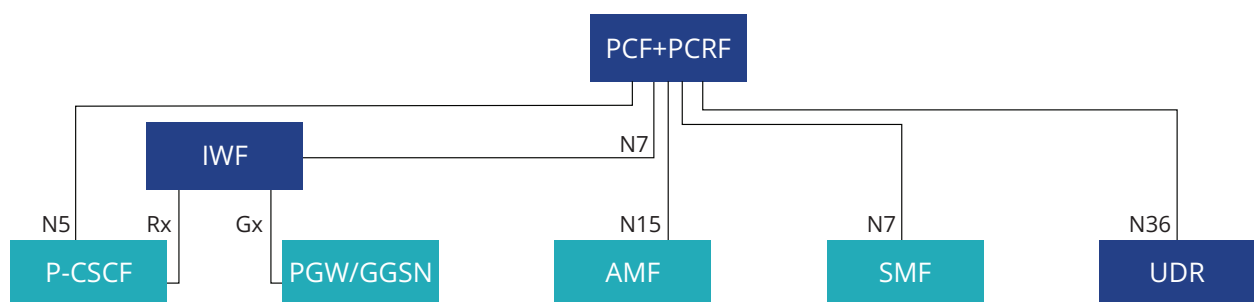- Supports 4G networks using the interworking function (IWF) for Gx and Rx interfaces (see Figure 2)

Figure 2: PCF+PCRF Network Function Architecture