Nokia Policy and Slicing delivers slicing to the end device

With the User Equipment Route Selection Policy (URSP) feature

Use case

5G network operators have an unparalleled opportunity to innovate new services for consumers and tailor valuable connectivity solutions for their enterprise customers. 5G network slicing together with policy control function offers an exciting capability for service differentiation and monetization. The Nokia Policy and Slicing solution provides an industry-leading feature: the User Equipment Route Selection Policy (URSP). It's an innovative way to deliver differentiated services to the end user and extend policy decisions all the way to the end device.

Operationalizing value-added services on the device

The flexibility of 5G networks enables a full range of new applications and use cases, all supported by a single network for mobile and fixed applications. 5G offers nearly endless opportunities for communications service providers (CSP) to innovate new services for consumers and even custom services for enterprise customers. Different bespoke services can even be delivered to the same user equipment or end device. For instance, the next generation of smartphones using Android 12 will allow split profiles for personal and professional use and applications can be associated with those profiles.

Dynamic network slicing, which is a new capability within 5G, can provide differentiated services with deterministic Quality of Service (QoS) parameters, such as bandwidth, latency and reliability, or even characteristics such as data isolation and different security profiles. Operators are enthusiastic about leveraging the new capabilities of network slicing to deliver and monetize network services, especially to enterprise customers. The challenge is how to dynamically select the relevant slice quickly and flexibly on the user's device. This is a critical piece that will allow the operator to match the specific profile or application running on the end-user device to the appropriately configured network slice.

Matching slices to end user applications

The User Equipment Route Selection Policy (URSP) provides an innovative method of delivering differentiated services to the user by extending policy decisions all the way to the end device. Coupled with the advantages of network slicing and the Nokia Policy Control Function, URSP enables the user equipment (UE) to dynamically switch among different network slices, depending on which application is running on the device. In this way, applications, based on their specific requirements, can be routed to dedicated slices based on the needs of the application, thus resulting in an enhanced user experience. This level of differentiation makes for many added-value experiences that can be monetized by the operator.

URSP further benefits the operator because it optimizes the use of network resources and lowers operational costs by dynamically assigning specific policies using the Nokia Policy Controller. The operator can set the configuration policies in advance per application or end user persona (in next-generation systems such as Android 12) assigning them a specific slice or data network name (DNN) based on the use case: for example, the private profile for off-work entertainment and the professional profile for corporate applications or accessing specific network resources.

Streamlined management of policies by device

The actual management of policies is enabled by the Nokia Policy Controller. It offers a simple interface listing the full set of policies available on the network as well as policy profiles. NPC determines the required policies using its industry leading Agile Rule Technology.

Operationally, NPC selects the needed URSP policies during device registration and deploys them on the end device. A URSP capable device then evaluates these policies and make dynamic slice selections based on an application's needs. A URSP policy is composed of two parts. The traffic selection descriptor and the route selection descriptor. In the traffic descriptor, it is possible to associate an application to a policy or create a match-all URSP policy that operates as a default configuration for applications without specific requirements. The route selection descriptor specifies which network slice and DNN should be used with matching traffic.

In addition to the unmatched flexibility of the NPC rule engine, it also supports the configuration and selection of URSP policies ensuring that different groups or categories of end users receive the policies meeting the needs of both private or enterprise customers. NPC also allows operators to define policy decisions based on network events, subscriber entitlements and a plethora of attributes available for dynamic policies decisions. The introduction of URSP policies into the rich suite of capabilities provided by NPC makes the Nokia PCF a solution capable of delivering the policy decision of today and those of tomorrow.

Why Nokia?

The Nokia Policy Controller is a fully cloud-native solution based on a containerized, microservices architecture. Its extensive set of field-proven capabilities addresses a wide range of use cases and enables operators to deliver new services to the market quickly and maximize their return on investment. Its industry-leading rule engine capabilities dynamically control user interactions based on subscription plan, device, access method or location.

Nokia provides end-to-end network solutions to a wide range of customers and deploys complex and complete networks including multi-vendor environments. The Nokia Policy Controller builds upon a strong legacy of policy control in over 90 service provider networks worldwide. Today, the Nokia Policy Controller is used by telecom operators such as Vodafone Idea (India), T-Mobile (US) and Rakuten (Japan).