Network slicing, the idea of dividing available network capacity into slices that are designed and dimensioned to best serve specific users and applications, is seen as one of the greatest benefits of 5G because it allows the creation of dedicated networks for specific customers or customer groups. Mobile operators see this as one of their largest opportunities for growing their enterprise sales, among others, writes Helmut Schober who leads the 5G Services programme at Nokia.

From a conceptual point of view, slicing is clear and simple to understand. The operator has a pool of resources from which it takes what is required for the slice it wants to create. However, as the resource pool is not unlimited the operator has to ensure the network can deliver the resources and guarantee the key performance indicators (KPIs) that are needed for the network slice to perform as expected.

Operators want to get to the point where a customer can order a network slice on-demand and simply press a few buttons to automatically and across the network layers, set up the virtual network – or slice. This is a realistic long-term goal but operators will need help initially to set up the mechanism of automation and to create suitable templates. The absence of standardisation hampers efforts, although eventually 3GPP standards for slicing, which are being developed, will be published.

A pragmatic approach to network slicing, which takes into account the capabilities of the operator’s current network, is needed. Operational and network assurance help will be needed to ensure operators’ promises are kept because a key concept within network slicing is its link to KPIs – a slice is not a best effort proposition, it’s a defined service and performance level.

This is why slicing is a complex proposition. While a slice is implemented in the core network, it needs to be managed end-to-end across the entire network because a slice affects all network layers from the radio access network to network management. Even though setting up a slice is mostly an automated process, the complexity involved should not be underestimated and the network needs to be prepared to ensure the resource pool can support the number of slices being deployed.

For this reason, operators need to design and plan for network slicing from a resource point-of-view. Ultimately this will see the creation of slice templates that can be re-utilised for multiple slices, aiding efficiency. However, knowledge about slicing is limited and network slicing in IP networks will go far beyond early iterations seen on existing networks.

Network slicing is transformative for operators because they can truly offer defined classes of service for specific applications over their networks – and monetise those based on guaranteed performance offers. Network slicing has the potential to be among the killer apps of 5G for operators because of this. While initial 5G use cases such as mobile broadband offer obvious improvements on 4G in capacity terms, it’s concepts like slicing that provide operators with the business reasons for upgrading to 5G. Operators that are taking the opportunity to prepare carefully for network slicing are, in reality, preparing to monetise 5G effectively and transform their role in the digital value chain.

Why network slicing is a killer app for 5G

Operators want to get to the point where a customer can order a network slice on-demand and simply press a few buttons to automatically and across the network layers, set up the virtual network – or slice.