



FUTURE
CONNECTIONS

Future Connections NIX PCI RSI Optimiser rApp

Solution brief

Available on Ericsson Intelligent Automation Platform

Future Connections Nix PCI RSI Optimiser rApp

The Future Connections Nix PCI RSI Optimiser rApp automatically detects PCI and RSI conflicts in 4G and 5G networks, identifies them and proposes alternative solutions. The rApp can also provide plans to reallocate PCIs and RSIs for a selected range of cells.

Network operators regularly face challenges such as rapid subscriber growth and network congestion. This results in the need for more, smaller cells and spectrum reservations for new network elements.

In 4G and 5G networks, the Physical Cell Identifier (PCI) helps mobile devices to distinguish between different cells. With much lower PCI values than number of cells in commercial networks, PCI reuse is required, leading to potential conflicts and collisions. PCI conflicts occur when two neighbouring cells share the same PCI at the same frequency, while PCI collisions occur when a cell has a neighbour with the same PCI. Such issues can degrade service quality, causing connection problems or calls to drop. This, in turn, increases the complexity and cost of manual planning. Despite the use of PCI planning tools, the dynamic and dense nature of networks still causes conflicts.

The network is a constantly changing environment, influenced by various factors that affect its behaviour. In this situation, identifying and understanding faulty or unusual network behaviour is more challenging than ever. In addition,

intelligent parameters setting is also required to ensure different features operate smoothly together.

The Future Connections Nix PCI RSI Optimiser rApp automates the tedious tasks of planning PCIs and implementing necessary changes whenever an anomaly is detected. This automated process reduces the time spent to plan new PCI allocations needed for the deployment of new network elements, allowing engineers to concentrate on more value-added activities.

Benefits

- The Future Connections Nix PCI RSI Optimiser rApp detects immediately faulty configurations
- The rApp reconfigures seamlessly based on the best solution
- The time spent by the engineering team to identify and rectify PCI and RSI conflicts is significantly reduced, positively impacting the operating costs
- End users benefit from improved quality of service thanks to an enhanced user experience

The Ericsson Intelligent Automation Platform (EIAP) provides Service Management and Orchestration (SMO) for Open RAN and further enhances openness, network management, and automation by supporting multi-vendor and multi-technology RAN environments. EIAP is supported by open interfaces and the industry's leading Software Development Kit (SDK) to enable an ecosystem of developers with all the capabilities needed to innovate, build, validate, share and operate rApps.



Our solution

Automated, self-configuring mechanisms, particularly for Physical Cell Identifiers (PCIs), are essential to reduce manual efforts and avoid PCI assignment conflicts. The Future Connections Nix PCI RSI Optimiser rApp provides an effective solution to address the issue in an automated manner, operating either in open loop or closed loop mode.



Detection of faulty configuration

The Future Connections Nix PCI RSI Optimiser rApp detects the worst conflicts in PCI and RSI assignments and proposes a better solution in real time and in closed loop

Identification of the best solution for each network element

The complex algorithms of the rApp also take into account nearby assignments to offer the most appropriate solution for each network element

Parameterisation of the rApp

The Future Connections Nix PCI RSI Optimiser rApp can be parameterised to detect conflicts up to a certain distance, a certain level or a certain frequency. Periodic plans for large areas in the network can be put in place

Planning of large areas of the network

The Future Connections Nix PCI RSI Optimiser rApp can plan for large areas of the network with boundary restrictions due to country borders or other additional cluster considerations

Adjustment of network allocations

The periodic frequency plans adjust the PCI RSI network allocations to reflect the integration of new network elements, providing an adjusted overall plan

Key benefits

The Future Connections Nix PCI RSI Optimiser rApp enables CSPs to:

- **Increase network automation.** The time to perform consistency checks and find faults is reduced, allowing engineers more time for non-routine tasks
- **Improve operational efficiency.** The need for manual interventions is reduced by automating complex processes. This minimises human error, accelerates service delivery and reduces operational costs
- **Speed up rollouts of RAN releases and features** thanks to the automation of the consistency tasks
- **Improve end user experience**

Future Connections is an independent telco solutions provider and software developer with in-depth experience in network performance assurance, RAN optimisation and automation and in telco managed services.

The company delivers service management and orchestration solutions that are flexible, modular, scalable and multi-technology. They are customised to work on a variety of platforms to address a wide range of well-defined use cases, delivering operating expenses' reductions and improved efficiencies.

The company utilises big data analytics and AI/ML techniques to drive workflow automation and orchestration, and leverages cloud-native software stacks and DevOps methodologies to accelerate time-to-market and rapidly respond to operator needs.