The future just got simpler

Operators today must cope with a growing number of challenges in their networks. A good example is the deployment of LTE alongside existing GSM and HSPA layers, which is adding complexity in radio access networks. Not only is a new radio technology involved, along with a raft of new frequency bands, but the new IP-based backhaul transport needed for LTE must be added on top of the existing ATM and TDM backhaul transport networks. Such complexity threatens to raise costs for operators, as well as increase carbon dioxide (CO₂) emissions, which can add further costs and damage the operator’s brand image.

What are operators to do? The answer is the Nokia Single RAN Advanced solution.

Single RAN cuts through growing network complexity by running different technologies on a single hardware platform. This is achieved by sharing multi-purpose hardware, with functionality determined by shared software.

Modularity is a key enabler, allowing capacity to be scaled up in line with demand, new and existing spectrum to be used more effectively, operational efficiency to be improved, and energy efficiency to be raised.

In its most developed form, Single RAN will comprise one radio installation with common transport and operational and management system.

Single RAN technologies will continue to evolve to help operators meet market demands. Smart devices are driving an estimated 1000-fold traffic increase (Nokia Networks Technology Vision 2020) which sets new requirements for radio networks. Other trends that operators need to take into account include the connection of 50 billion Internet of Things (IoT) devices, the accelerating development of 5G technologies, and the adoption of the Telco Cloud. Major developments are likely to include advanced re-farming for more efficient use of shared spectrum; common network management incorporating self-organizing functions; improved resource sharing and pooling; improved security and higher resiliency.

There is growing pressure on operators to be more environmentally responsible, a trend driven by international and local authorities, as well as interest groups. To help meet the challenge, many operators are looking for ways to limit and reduce the rising amount of CO₂ emitted by mobile broadband networks. The solution is to decouple emissions from traffic growth.

Ultimately, the aim of Single RAN is to simplify the growing complexity of macro radio networks. The steady evolution of Single RAN capabilities will continue this simplification and ensure that all hardware deployed will remain usable in the future to protect operator investments. Moreover, by evolving their networks towards zero CO₂ emissions, enabled by new functions such as Zero Traffic, Zero Energy technology, operators can further improve their balance sheets and brand value.
Power through efficiency

Our vision is explained in the Nokia Networks Single RAN Evolution White Paper, covering topics like:

- Solving the capacity challenge
- LTE and HSPA re-farming
- RF sharing
- System Module (baseband) sharing and pooling
- Transport sharing
- Network sharing (MOCN and MORAN)
- Base Station and Multicontroller evolution
- Energy efficiency
- Single RAN O&M and iSON
- Zero Emissions 2.0

True control over complex networks

Today, Single RAN supports multiple sharing options like RF sharing, transport sharing, network sharing and spectrum sharing with end-to-end security embedded into the solution. In the future, Single RAN networks will be even simpler as hardware and software developments progress to enable completely new ways to share hardware more dynamically and in the cloud, such as baseband sharing and pooling.

We can expect Single RAN networks to become even easier to install and maintain, and offer seamless and affordable evolution to zero CO₂ emissions. They will also have greater capacity, more security, simpler operations and higher energy efficiency. All of which will reduce costs further compared to traditional solutions, and enable smooth evolution to new technologies like HSPA+ and LTE-A that can provide greater opportunities for operator growth and true business control.