Introduction RBS 3000 series

Capturing Mobile Broadband Opportunities

Mobile broadband rollouts are picking up speed as the Internet generation grows and expects to have broadband access wherever they go. Estimates indicate that by 2010 there will be more than 600 million mobile broadband subscribers, increasing to 1.3 billion by 2012. The vast majority, 70%, will be served by HSPA networks.

To capture the major growth opportunity in mobile broadband, 3G networks must offer enriched services with greater mobility, while maintaining competitive pricing. Ericsson’s RBS 3000 series meets these challenges.

Ericsson’s superior radio performance, dynamic network configuration, low power consumption, simplified site operation and maintenance and a smooth evolution pathway are key factors in lowering capital expenditures (CAPEX) and operational expenditures (OPEX).

The RBS 3000 family of WCDMA base stations meets all mobile broadband needs, today and tomorrow.
In the initial phases of any new rollout, ensuring cost-effective coverage is the key. The RBS 3000 series addresses this need in several ways.

The RBS 3000 series offers superior radio performance allowing up to 30% fewer sites compared to traditional RBS solutions for the same coverage area. This means direct CAPEX and OPEX savings, significantly reducing the total cost of ownership.

Another major benefit of the RBS 3000 series is that it is compact and modular. Its carry-to-site solutions ensure a short time to market for WCDMA enabled services, reduce rollout costs and simplify site acquisition, civil works and logistics.

Moreover, major investments have been made in GSM networks and these investments can be successfully leveraged with Ericsson’s co-site solutions. Operators can add WCDMA capabilities to the existing GSM installed base, effectively reusing sites for optimized CAPEX and OPEX.

The RBS 3000 series forms the baseline of your network by providing the scalability, capacity and flexibility for your future needs.

Mobile Broadband everywhere
Cost effective coverage enabled by RBS 3000

WCDMA large cell configuration:

Network planning for this type of scenario typically entails maximizing coverage without sacrificing capacity. In most cases, this means providing the greatest possible coverage area with the fewest possible number of base stations. The RBS 3000 series includes optimized solutions suitable for a wide range of environments.

- 6 Sector configuration
- 4-Way RX diversity
- TX diversity
- Modular high-gain antenna
- Lower frequency bands (WCDMA 850/900)
- Extended range (200 km)
- Higher RBS output power
Mobile Broadband acceleration

Handling rapid growth with RBS 3000

Once coverage is in place, the number of users will quickly begin to grow and the amount of traffic they use will progressively increase. To handle this kind of growth, the radio network must provide high data rates, high capacity, low cost per bit, low latency, good quality of service (QoS) and good coverage. Also, while mobile broadband offers countless new possibilities, it demands a great deal more from the radio link than voice and text applications ever did.

On this front, Ericsson’s superior radio performance and dynamic network configuration are key factors. While other vendors often only talk about peak output power, mobile broadband is affected to a much greater extent by nominal output power and system latency. Ericsson has taken the 3GPP specification to another level with leading receiver sensitivity and features such as optimal power utilization, fast congestion control in the RBS and dynamic power allocation for R99/HSPA.

The true benefit of this in the capacity-intensive stage is the improved quality of the mobile broadband experience without degrading the R99 capacity.

The Ericsson implementation of R99 can offer twice the capacity of other vendors. For pure HSPA traffic the difference is even more pronounced. The RBS 3000 series forward looking design has made it possible to use only one carrier for both R99 and HSPA traffic with 100% RBS output power utilization and high admission thresholds. Solutions from other vendors require a second carrier because of a less efficient output power implementation with very low admission thresholds.

Broadband Capacity Potential in RBS 3000 (HSPA 64QAM)
The RBS 3000 series offers very flexible configuration alternatives to meet different needs. It supports up to 12 WCDMA cell-carriers per base station with up to 30 W nominal output power per cell-carrier and 1536 Channel Elements for radio planning. It also supports the next generation of high-speed data technology like 64QAM or MIMO which doubles peak data rates and increases the capacity per cell-carrier by up to 30% in the mobile networks.

Performance need not come at the expense of the environment. With the RBS 3000, Ericsson leads the competition in energy efficiency and has succeeded in cutting the power consumption of its RBS portfolio by 80% since 2001, while at the same time reducing operating expenses.

WCDMA capacity growth solutions:

Flat rate tariffs for end-users, especially together with data-intensive applications such as mobile broadband drive the need for cost-effective capacity growth solutions. The RBS 3000 series includes cost-effective capacity growth solutions:

- 3x4/6x2 sector-carrier configuration
- Dual band configuration
- Up to 60W per cell-carrier output power
- Radio Utilization
- 64QAM
- MIMO
Mobile Broadband enrichment

Ready for tomorrow’s technology – today

As users become accustomed to mobile broadband and the flora of applications grows, demand for higher speeds and greater quality in the data links will increase. High-speed packet access (HSPA) networks are the first step in this direction and are already in place in many locations.

Looking at how HSPA improves the end-user experience, one could simply say “it’s faster”. 3G networks with an R99 implementation support peak data rates of 384 Kbps for wide-area coverage. HSPA increases peak data rates to 14 Mbps in the downlink and 5.8 Mbps in the Uplink.

Compared to R99, HSPA also reduces latency, which is critical to the perception of speed, and increases system capacity in the downlink fivefold while doubling the uplink capacity. This means a far lower production cost per bit as higher data volumes can be sent over the same network.

HSPA requires functionality in both the network and the terminal (e.g. mobile phone or HSPA modem). Several user devices currently support both HSDPA and Enhanced Uplink (EUL) technology, and the number is growing.

Naturally, Ericsson’s RBS 3000 series is future-proof to secure your investments, providing an evolutionary path through HSPA, HSPA Evolution and LTE over time.

All RBS 3000 base stations are fully HSPA capable today. There is also an easy upgrade path to HSPA for Ericsson’s high-capacity GSM base stations.

HSPA and HSPA Evolution
Peak Data Rates

With the upcoming HSPA Evolution releases, bitrates will increase even further. Downlink peak rate improvements are the next step. Data rates of up to 21 Mbps can be achieved by introducing 64QAM and up to 28 Mbps can be achieved by introducing 2x2 MIMO (Multiple Input Multiple Output). By introducing 16QAM modulation in the uplink, peak data rates of 12 Mbps can be achieved.
Support for HSPA Evolution in the user terminals is expected at the beginning of 2009. The RBS 3000 series can already support HSPA Evolution without any hardware changes.

With standardization of LTE in place, Ericsson will provide Long-Term Evolution capabilities as the standard is rolled out. In concrete terms, LTE as a standard provides for peak data rates of up to 100 Mbps on downlinks and 50 Mbps on uplinks. Ericsson's RBS 3000 series offers a baseline for evolving to LTE.

Future proof: A design philosophy

![Diagram showing the evolution from GSM RBS 2x02 to GSM RBS 2x06 to WCDMA RBS 3202 to WCDMA RBS 3x06 to HSPA, HSPA Evolution, and finally LTE.]

1995 | 2001 | 2005
---|---|---
GSM RBS 2x02 | WCDMA RBS 3202 | WCDMA RBS 3x06
GSM RBS 2x06 | WCDMA RBS 3202 | WCDMA RBS 3x06
WCDMA RBS 3202 | WCDMA RBS 3x06 | HSPA
WCDMA RBS 3x06 | HSPA Evolution | LTE
HSPA Evolution | HSPA | EDGE
Unique network challenges

Broad RBS 3000 portfolio – an optimum solution for all needs

Today, operators face a number of challenges, all of which are unique to their current networks, their business models and even the physical and social composition of their coverage areas.

Although data services are exploding, GSM continues to be a growing market staple and will be around for a long time. Major investments have been made in GSM networks and these investments can be successfully leveraged with Ericsson’s RBS 3000 series.

Ericsson’s unique co-site solution allows operators to re-use their install-base. The RBS 3018 can be integrated into the existing RBS 2106 cabinet with standard WCDMA modules. The WCDMA RBS 3216 can be stacked with the GSM RBS 2216 for a shared footprint. Ericsson also supports traditional sites with a common housing for GSM and WCDMA and the same form factor allows shared site support and power systems.

This, along with its portability, fast time to service, high capacity and stability, means that RBS 3000 series can significantly reduce capital and operational expenditures.

The broad range of the RBS 3000 series also supports unique needs with regard to coverage, capacity and space constraints. The Main Remote RBS, in which the hardware is separated into small, lightweight units that can be carried to the site, is perfect for sites where any disturbance caused by installation work must be kept to a minimum or for locations where space or access is limited.

Another example of this is the Micro RBS 3308, a very cost-effective solution for fill-in coverage and capacity in hot spots where macro radio networks tend to be insufficient.

Whatever your unique needs are, Ericsson has a solution.
# RBS 3000 series

## Overview

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<th>RBS 3000</th>
<th>NETWORK PLANNING</th>
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<th>EVOLUTION</th>
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<td>RBS 3106/3206</td>
<td>Highly versatile to meet the demand for high bitrates, extensive capacity and extreme coverage in the entire macro network.</td>
<td>Can be installed with an initial rollout configuration and then expanded over time.</td>
<td>Highly reliable, with high mean time between failures.</td>
<td>Full HSPA support, 64QAM support, MIMO support. Highly flexible in terms of upgrades and expansion.</td>
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<td>RBS 3107</td>
<td>Offers a complete site in a slim, single outdoor cabinet with medium to large capacity.</td>
<td>Footprint-efficient deployment that can easily be visually integrated with its surroundings.</td>
<td>Silent operation, ideal for public areas. Low power consumption.</td>
<td>Full HSPA support. 64QAM support.</td>
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<td>RBS 3116/3216</td>
<td>Offers medium to large capacity in a compact design.</td>
<td>Carry-to-site solution with modular design. Suitable for hard-to-reach sites.</td>
<td>Highly reliable, with high mean time between failures. Lightweight design.</td>
<td>Full HSPA support. 64QAM support.</td>
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<td>RBS 3308</td>
<td>Ideal RBS for smaller coverage and capacity requirements, perfect for hot-spot and fill-in coverage.</td>
<td>Zero footprint, lightweight design and small size simplify site acquisition and installation.</td>
<td>Low power consumption. Silent operation. Suitable for public areas where discreet operation is crucial.</td>
<td>Full HSPA support. 64QAM support.</td>
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<td>RBS 3018</td>
<td>Offers medium to large WCDMA capacity in an existing GSM RBS 2106 cabinet.</td>
<td>No additional footprint as the solution uses an existing GSM cabinet. This results in simplified site acquisition and fast rollout.</td>
<td>Minimized capital and operational expenditure due to the large amount of re-used site equipment and limited site rental cost.</td>
<td>Full HSPA support. 64QAM support, MIMO support.</td>
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<td>RBS 3418</td>
<td>Versatile main-remote solution offering medium to high capacity and flexible coverage with a compact design.</td>
<td>Zero footprint, separate units with lightweight design and small size simplify site acquisition and installation.</td>
<td>Zero feeder loss enables the RBS to use the same high-performance network features at lower output power.</td>
<td>Full HSPA support. 64QAM support, MIMO support.</td>
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<tr>
<td>RBS 3518</td>
<td>Versatile main-remote solution offering medium to high capacity and flexible coverage with a compact design.</td>
<td>Zero footprint, separate units with lightweight design and small size simplify site acquisition and installation.</td>
<td>Zero feeder loss enables the RBS to use the same high-performance network features at lower output power.</td>
<td>Full HSPA support. 64QAM support, MIMO support.</td>
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