Flexent® Radio Network Controller for UMTS

The Flexent® Radio Network Controller (RNC) takes full advantage of our unmatched decade of experience in CDMA cellular networks, and forms a key part of our portfolio of UMTS infrastructure equipment.



Benefits

- Field proven, high performing design and algorithms
- Carrier-class performance and reliability
- Excellent investment protection from the use of open platforms
- Intelligent, cost-effective scalability up to market-leading capacity
- Small footprint, easy to deploy and maintain

Lucent Technologies
Bell Labs Innovations

In the rapidly evolving world of UMTS networks, traffic-critical components such as the RNC demand superior knowledge and experience in the industry. Lucent Technologies has fully utilized its unchallenged CDMA market leadership to further develop these assets into outstanding, reliable and scalable 3G radio access platforms.

Lucent heritage

Lucent Technologies delivers comprehensive, highly competitive UMTS networks, based on state-of-the-art Radio Access, Core and Network Management solutions, deployed by the largest global professional services organization (Lucent Worldwide Services). We have installed and optimized more CDMA base stations than any other vendor, and have an intimate understanding of the technology and its applications. Lucent's UTRAN (UMTS Terrestrial Radio Access Network) equipment comprises the Flexent® OneBTS™ base station family (Node B) and the Flexent® RNC Radio Network Controller, and also utilizes key elements from our market-leading PacketStar® portfolio of IP and ATM multi-service network equipment. And most importantly, our equipment fully leverages our unmatched 10+ years experience in designing and deploying high-performance CDMA cellular networks.

RNC functionality

The Flexent® RNC is responsible for managing the UMTS radio resources, including call set-up and tear-down, processing of voice and data traffic, and hard and soft handoff between cells. It has been specifically designed to provide reliable, competitive, flexible and highly scalable radio resource management for operation in 3G cellular networks. The Flexent® RNC makes full use of open architecture interfaces, proven through an extensive interoperability program, and is therefore fully capable of deployment in a multi-vendor UTRAN environment.

The Flexent® RNC

The Flexent® RNC is built around Lucent's innovative Flexent® Wireless Router platform, which is deployed as a key component in multiple applications across Lucent's fixed and wireless product range. It is based on next generation Sun Microsystems® cPCI (compact Peripheral Component Interconnect) computers, enhanced with Bell Labs software and specifically-designed Traffic Processing Units to achieve Lucent's exacting carrier grade standards. The Flexent® Wireless Router is central to future product evolution and as a result provides excellent investment protection to Lucent's customers. The Flexent® RNC also uses key techniques such as RCC (Reliable Clustered Computing). RCC employs software and hardware components that are added to standard commercial processors and operating systems to produce low-cost, high availability, fault resilient computing platforms for use within Lucent's products.

Highly scalable

The Flexent® RNC is designed to offer incremental growth up to industry-leading capacity and performance levels. The architecture allows signaling and traffic processing functions to be scaled independently and cost effectively, in-line with traffic growth patterns. As the number of subscribers increases and extra load is placed on the network, traffic processing and/or signaling capacity can be increased incrementally by adding the appropriate card modules.

High capacity

Lucent offers one of the highest capacity RNCs with the smallest footprint in the UMTS market today, giving high traffic density per square meter. A single cabinet will support up to 180 Node Bs, 310 Mbps of user data throughput or up to 4,000 Erlangs of voice traffic. As traffic volume grows, this can be expanded into a multi-cabinet system, supporting up to 540 Node Bs, 930 Mbps of data throughput or up to 12,000 Erlangs of voice traffic.

Low cost of ownership

The Flexent® RNC is designed to be easily installed and maintained, reducing operational costs. The use of a common Flexent® Wireless Router platform, based on leading industry standard hardware across Lucent's product range, ensures the ready availability of competitively priced components. For the operator this can also lead to significant cost savings as a result of reduced staff training and spares holding. Its small footprint and full front access assists in easy installation and reduces site costs considerably.

Maximized flexibility and cost-effectiveness

Inherent flexibility has been designed into the Flexent® RNC so it can be installed and configured cost-effectively. It can also function efficiently in different network topologies, so, for instance, a centralized approach can be used with a large system deployment for urban areas. On the other hand, a decentralized approach, with smaller system operation and less leased line utilization, can be used for suburban and rural areas. New features can also be downloaded and programmed into the Flexent® RNC. The platform supports IP and, through software-only upgrades, can be enabled for migration to the all-IP network of 3GPP's R4 and R5 standards.

High reliability

Lucent is committed to delivering better than 99.999 per cent availability with this traffic-critical network element. Such carrier class reliability is achieved through the use of built-in redundancy, and application of strict and professional design techniques – made possible by our unmatched practical experience of CDMA systems. We also use hot swappable components in critical areas and Lucent's patented Reliable Clustered Computing (RCC) architecture to guarantee processor reliability.

Reducing the risks in UMTS deployment

Lucent's 3G solutions are built on platforms that have been developed using our extensive CDMA expertise, and feature a high degree of commonality between CDMA and UMTS variants. This extends beyond critically proven hardware and software to the use of advanced algorithms for crucial functions such as call handoff and fast power control. These proven platforms and techniques bring essential stability and superb performance to the demanding UMTS deployment environment.

Fast time to revenue

Lucent is dedicated to reducing operator's time to revenue through a combination of highly efficient network planning, pre-configuration of all key elements, and rapid trouble-free installation. Networks are configured with an advanced set of optimization tools based closely on our proven CDMA deployment tools, and the Flexent® RNC is tested and configured prior to delivery. In addition, Lucent is exceptionally well placed to deliver early adopter advantage in the exciting corporate sector through our Secure Mobile Data Solutions for enterprises, turning our technology lead into your early revenue stream.

Lowering network costs

From our wealth of experience in CDMA networks, Lucent has been able to drive down the lifetime cost of ownership of UMTS networks. Firstly, our UTRAN equipment is built to be efficiently scalable, so there is no need to pay for capacity you do not need. As your requirements grow, Lucent's equipment costs are far lower than industry throughput/cost benchmarks. Secondly, our strategy for utilizing open computing platforms and common developments across a range of UMTS network elements, further reduces the cost of equipment, and also substantially reduces staff training costs and inventory holding costs. And thirdly, we provide a clear evolution path towards the significant cost reductions associated with the use of all-IP networks, with software-only upgrades. Finally, the combination of Lucent's high performance Flexent® OneBTS base station family, with its advanced support for intelligent antennas, and our unique cell optimization tools and experience, means fewer cell sites are required for the same coverage, thus delivering substantial cost savings.

Lucent's decade of unmatched experience in designing, planning and optimizing CDMA-based networks is a clear and vital advantage in UMTS, providing you with the unique expertise and field-proven tools required to build out networks rapidly, cost-effectively, and in a highly optimized state.

Lucent's UMTS offer is fully aligned with the next generation requirements of mobile network operators

Key product features

- Built around extensively field-proven designs, including key control algorithms
- Excellent reliability, and intelligent, cost-effective scalability
- A single cabinet supports up to 144,000 BHCA (Busy Hour Call Attempts), 180 Node Bs, 310 Mbps of data throughput or 4,000 Erlangs of voice traffic
- Expansion cabinets extend this up to 360,000 BHCA, 540 Node Bs, 930 Mbps of data throughput or up to 12,000 Erlangs of voice traffic
- Capacity can be expanded without service outages
- Support for all-IP networks with software-only upgrade
- Supports packet switched data calls (up to 384 kbps, rising to 2 Mbps with later releases)
- Supports the four Quality of Service classes (Streaming, Conversational, Interactive, Background), in accordance with 3GPP standards
- Based on industry-standard computing platforms
- Transport connectivity is provided by units from Lucent's market-leading PacketStar® portfolio of multi-service switches, such as the PSAX 2300, which provides physical termination for the standard Iu, Iur and Iub interfaces. A variety of interface terminations are available from T1/E1/E3/T3 to multiple STM-1/STS-3. The PSAX module can also integrate traffic from a GSM network, thereby enabling the use of a shared and cost effective transmission network.

Physical attributes

- Cabinet dimensions: (h x w x d) 2000 x 600 x 600 mm (78.8 x 23.6 x 23.6 in); 2,200 mm (86.7 in) high with ETSI-compliant top panel
- Typical weight: 290kg (639lb); 350kg (772lb) fully loaded four server cabinet
- Power requirements: -40.5V DC to –57.0V DC (ETS 300 132-2)
- Max power consumption: 2.5kW at –48 VDC nominal (fully configured, per cabinet)
- Operating Temperature: –5°C to +45°C (23°F to 113°F); +25°C (77°F) recommended
- Environmental: Class 3.1E of ETS 300 019-1-3, 5% to 95% RH
- Emissions: EMC emissions to Class B, EN55022, CE marked

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Lucent is a world-class supplier of mobility solutions. Innovation is at the heart of our business. Our Centers of Excellence and the global facilities of Bell Labs, are shaping the way our world communicates. We offer unchallenged market leadership in CDMA radio access, the underlying technology for UMTS, ATM backbone networking technology, circuit and packet switching as well as the expertise to integrate and deploy complex networks.

Call Lucent for complete end-to-end mobility solutions.

Visit our web site at www.lucent.com

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