TAILORED TO YOUR NEEDS

The Nera Evolution Series combined with Nera's long experience in the microwave radio field makes an unbeatable combination. Nera's unique competence on site selections, radio path engineering and field surveys, combined with other support services such as I&C, training and after sales support, ensures a trouble free implementation and operation of the microwave network. All targeted in optimising and ensuring secured revenues from the network, because we understand networks better.

UPGRADE TO 3G?

3G is here to stay, but then again for how long? The technology is now at a point where it's well proven and deployed commercially. The network versions are quickly evolving, but it's not necessary to sit and wait for the next breakthrough. By the expandable future proof design and selection of transmission technology, the Evolution Series makes sure that your infrastructure is ready for any mobile network generation.

PLANNING NEW INFRASTRUCTURE?

What is planning? It's the ability to prepare your network for all eventualities. But how do you do that? By choosing a system that is flexible and expandable enough to meet your market's evolving needs. With the new Evolution Series your infrastructure can easily adapt to future demands, and you only pay for what you need, when you need it – you pay as you grow.

THE END OF LEASED INFRASTRUCTURE?

Many mobile operators have chosen to lease transmission by wirelines. Increased traffic volume results directly in an increased burden on the operational cost. By investing in your own infrastructure new services can be introduced and traffic demands can be handled without any significant increase in cost. As your subscribers increase the network usage you can effortlessly expand your system by reconfiguring the capacity by software. The new Evolution Series makes it easier for you to deploy your own backhaul network and accelerates the return on investment.

UNLEASHING BROADBAND NETWORKS ?

3G, WiMAX or wired Broadband, Nera's backhaul solutions fit all. Backhaul of WiMAX and other proprietary PtMP systems can often be a headache. Likewise for wired Broadband (ADSL and xDSL), the existing infrastructure may not be dimensioned for the new services. In many cases it is not the cost of deploying the DSLAM or FWA networks, which makes a business case fly or crash, rather it is the cost of establishing backhaul infrastructure. With the Evolution Series you can pay as you grow, with easily increase of capacity as the traffic demand increases.

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NERA

EVOLUTION SERIES

Introducing **Nera Evolution Series**, the common platform microwave radio system that scales with your growing ambitions. Effortlessly.

EVOLUTION SERIES: STAYING ON THE CUTTING EDGE

Traditionally, microwave radios have been designed to operate at very specific capacities and frequencies, and the process of changing these two parameters has involved high switching costs requiring additional investment. With the deployment of next-generation networks such as 3G, UMTS and WiMax on the increase, it's imperative that these networks are based on equipment versatile enough to handle not only today's communication technology, but also equipment that is future-proof. Ready for what you need – when you need it. Can this be done without breaking the budget – today, and without major and expensive replacements in the future?

The answer is yes! By using Nera's new Evolution Series.

LOWER COSTS – NOW AND IN THE FUTURE

Significant saving in network deployment and operation are achieved by the use of one common hardware platform across the whole network. Furthermore, planning and installation activities are simplified due to mainstream mechanical design and configuration, and costs for inventory and maintenance are minimized.

Increased reliability - the total life-cycle cost for the Evolution series is minimised by use of high-level integration and a simplified architecture; as a result, high Mean Time Between Failure (MTBF) as well as reduction in potential revenue loss due to outages and lower OPEX can be achieved.

Increased flexibility - Transmission is scalable in multiple directions from a single radio node which allows the operator to explore various network topologies such as ring, chain/star and mesh - all with the same, universal type of equipment. User selectable modulation rates from QPSK to 128 state / multi-dimensional and provide the operator with a choice between system gain and lower licencing fees. Seamless integration between PDH and SDH enables site selectable configuration from 4E1/T1 to 3+1 STM-1/OC-3 – you pay as you grow.

FREEDOM – SOFTWARE DEFINED SCALABILITY

The new Evolution Series offers operators the freedom to change established backhaul bandwidth/capacity, quickly and easily under software control. No physical replacements are necessary. Upgrades can be done instantly, and remotely – you can redefine the configuration by simply upgrading the licence by means of software – you pay as you grow.

These features allow the operator to minimise licencing cost and the resources spent on ensuring mobile network performance. They also enable the operator to focus more on business issues such as attracting additional customers and revenue rather than operational barriers to growth.
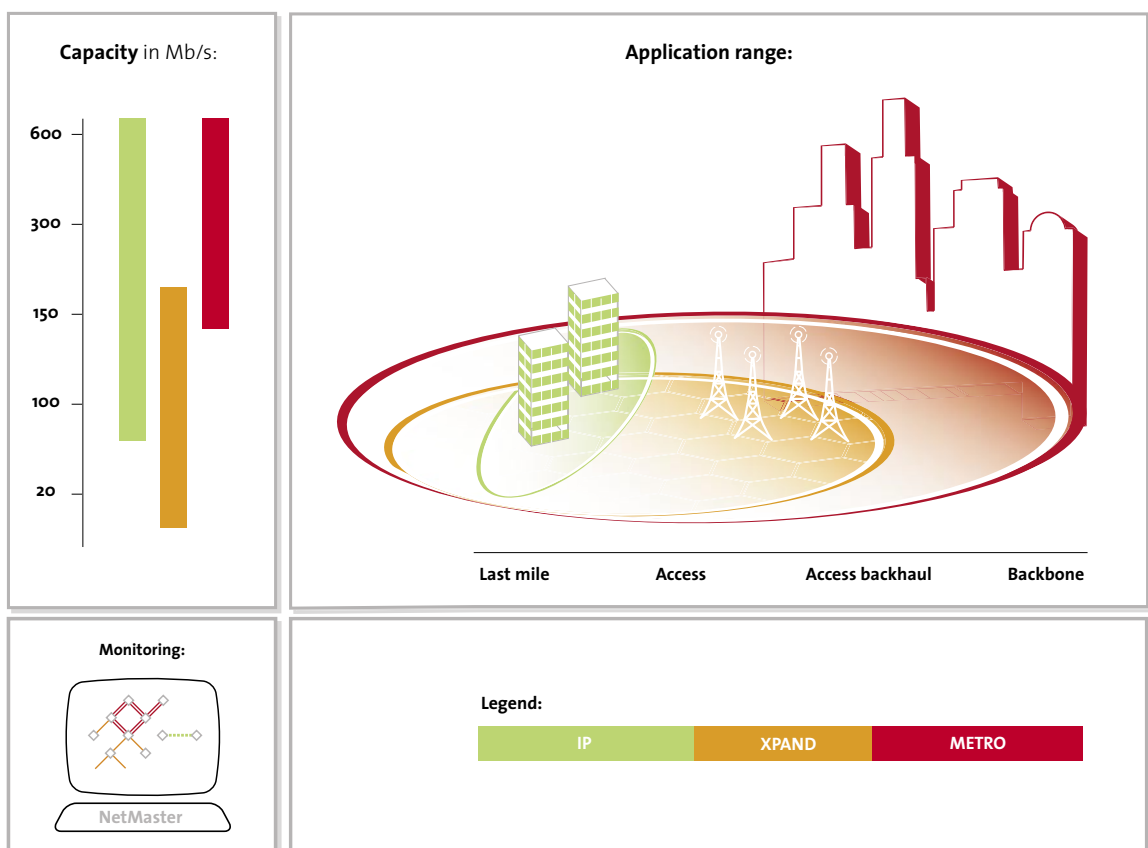
CONTROL – OPTIMUM MONITORING

Configure. Manage. Monitor. NetMaster is the network management system that keeps it all at your fingertips. This powerful multiplatform application features an intuitive and user friendly GUI. It provides automatic network discovery and configuration, fault management with alarm correlation, trouble ticketing and performance management; all by the same licence principle as the rest of the Evolution Series - you pay as you grow.

EVOLUTION SERIES AT A GLANCE

The impact of Nera Evolution Series is simply remarkable. It's a true revolution in radio systems – yet we're modest enough to name it Evolution. The biggest advantage of the new Evolution Series is its ability to effortlessly scale according to the user's needs. Either you choose the IP, XPAND or METRO configuration as your starting point, you can redefine their configuration by simply upgrading their licence by software as your network grows, and traffic increases. The Evolution Series also offers future proofing in terms of transmission solutions/protocols. It handles scalable PDH E1/T1, SDH/SONET and Ethernet all in the same platform. A change of network transmission protocols is merely a change of interface modules in the Evolution Series.

Capacity in Mb/s:

600

300

150

100

20

Application range:

Last mile | Access | Access backhaul | Backbone

Monitoring:

NetMaster

Legend:

| IP | XPAND | METRO |

IP

The private operators does not want the SDH technology as its known for high cost (in Cisco gear). PDH is similarly not wanted due to the association with E1/T1 and E3/DS3 physical interface ports. Most networks are all-IP, i.e. no need for TDM traffic. Operators are fibre oriented, due to bandwidth. Wireless are often associated with WLAN - Nera needs to show feasibility and advantages!

XPAND

The mobile operators wants to have flexible equipment and to be able to upgrade capacity without the need for replacing equipment. Mainly E1/T1 oriented but growing awareness of Ethernet. Large network deployments > 1000 links, leads to savings and simplifications by a common platform. Radio is a well known technology.

METRO

Metro is a well know term in transport networks, defining the area between the last mile access and the inner core area. Typically this is a ring structured SDH/Ethernet transport network in urban areas. Market dominated by fibre solutions, radio is in a challenger position.

EVOLUTION SERIES

Nera's long leading position in high capacity microwave systems has given the necessary technology and knowhow to implement innovative and reliable solutions. The new Nera Evolution Series Microwave radio sets new standards in innovative microwave radio development. The Evolution Series is built around a software defined core, enabling a wide range of radio applications being served based on one single product platform. The high level of flexibility, both in payload capacity and in system configurations allows operations to re-think their network deployment and operations. The New Evolution Series is based on an indoor interface unit (IFU) and an outdoor radio unit, (ODU).

INTERFACE UNIT (IFU)

The IFU is highly modular and all interfaces are plug-in from the front. The high degree of flexibility is enabled by the software defined core which can be configured for PDH, SDH/SONET or Packet based traffic. The interface modules are generic and can be used in all applicable system configurations. This way a truly seamless integration can be achieved in the network. The basic IFU is 1RU high (44 mm) and up to four IFUs can be stacked to enable multi direction traffic nodes or n+1 configurations enabling substantial savings in the network deployment cost.

ODU

The Evolution Series ODU is a compact low power consumption unit. The ODU has common form and fit for all frequencies, simplifying logistics for deployment and antenna installation. The ODU can be mounted integrated on the antenna or on the pole behind the antenna. The ODU has wide tuning range and all settings are performed from the management system. The ATPC function combined with RTPC enables fine tuning of the transmit power in dense networks reducing the interference levels and resulting in a more optimised microwave network. Nera unique high power versions in frequencies up to 11 GHz ensure sufficient output power to overcome difficult paths or enables saving by use of smaller antennas.

ETHERNET	DXC/ADM

INTERFACE UNIT (IFU)

E1	T1	E3/DS3	STM-1/OC-3	STM-4/OC-12
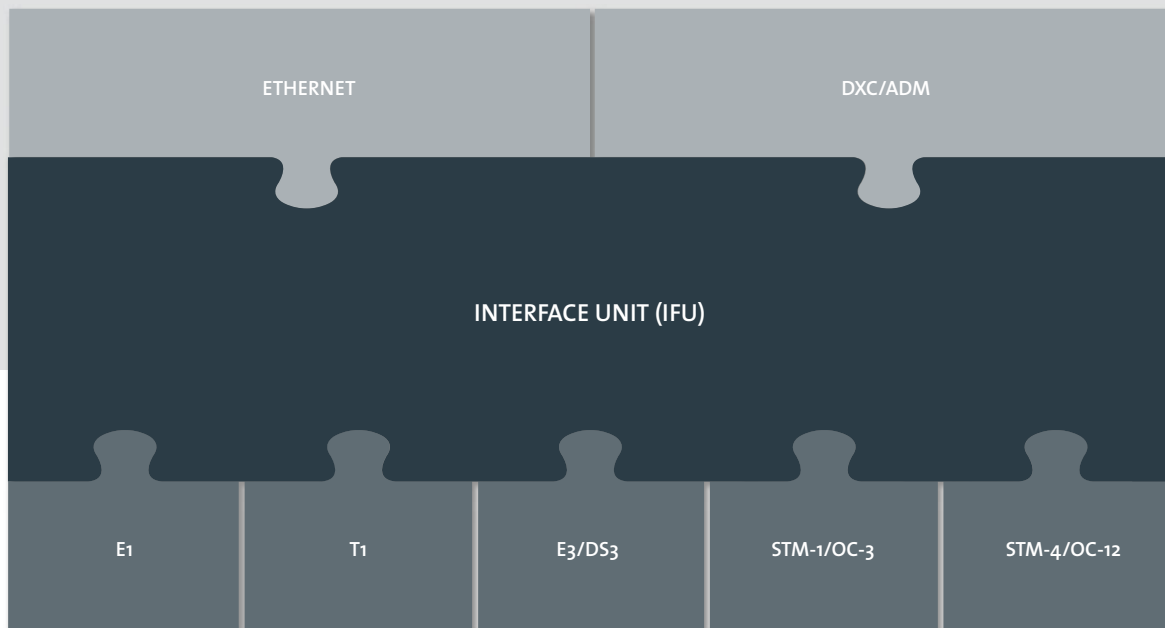
ETHERNET

The telecom networks are quickly converging towards all IP. Ethernet is a natural carrier for IP based services and the Nera Evolution Series is designed with this in mind. The Ethernet traffic can be carried over all system architectures and configurations such as PDH, SDH/SONET and Proprietary Ethernet only. The capacity can be scaled in steps of 2 Mb/s or 1.5 Mb/s to 600 Mb/s

The Ethernet services can be configured as Point to Point L1 with selectable MAC learning/filtering or L2 with switched VLAN multipoint to multipoint.

The strong QoS mode secures and priorities the revenue generating and mission critical data.

Virtual concatenation combined with Link Capacity Adjustment Scheme (LCAS) is used to enable dynamically scaling of Ethernet capacity, as well as soft protection resulting in an increased network utilisation.

DXC/ADM

The optional 4 way DXC unit enables significant savings in access networks. The traffic node concept results in less cabling, no need for external multiplexer/cross connect and increased reliability. In SDH/SONET networks the DXC enables any network topology such as ring, mesh, chain/star where the traffic (E1, T1, E3, DS3 and Ethernet) can be individually protected by SNCP. In PDH mode the DXC function is an embedded function in the IFU. The link capacities are scalable between 4E1 to 75E1 (4T1 to 64T1), and the DXC function enables aggregation of traffic without the cabling between the link directions.

MODEM

The modem in the Nera Evolution Series is an all digital implementation, combined with dual error coding ensuring reliable transmission of the traffic under any conditions. The use of direct@RF modulation, combined with significant simplification in architecture, results in a significant improvement in reliability.

The modem includes an integrated digital XPIC - enabling CCDP mode configuration in multi channel systems. Without need for synchronisation between the radio units simplifying the installation of the ODU part. The CCDP mode enables transmission of 311 Mb/s over 28/30/40 MHz channels, and 620 Mb/s over 55/56 MHz channels.

MANAGEMENT

The Nera Evolution Series has an embedded web server simplifying the management and operation of the system. The web based management enables a platform independent and LCT version independent management and configuration operation. This ensures that maintenance personnel always will have the right tools and software upgrades does not affect the local operation. The embedded web server provides powerful wizards guiding the user through the commissioning and configuration procedures.

The local alarm log provides access to historical events without the need for access to the NMS. Transmission performance is continuously monitored by the system and performance data is presented on the web interface. Operation security is ensured by user name and access level rights. All configuration data is stored in non-volatile memory which easily can be backed up on a PC, memory key or the NMS.