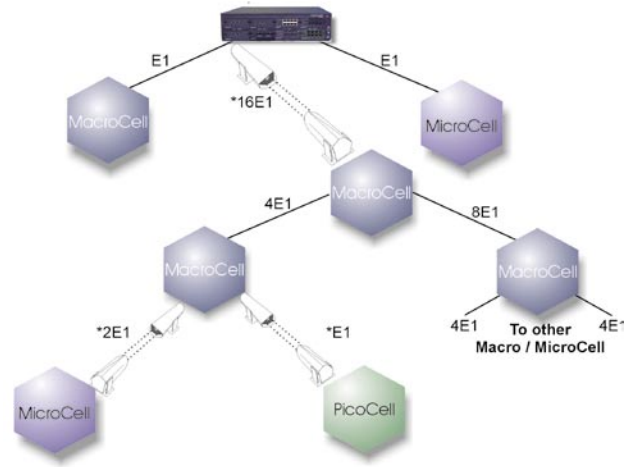
Advantages of TereScope links for cellular operators

MRV's Free Space Optical links guarantee Best Effort base station and switch connectivity to
2.G, 2.5 G (GPRS) and 3.G cellular operators.
Free Space Optics (FSO) communication links are the most cost effective means to connecting base stations (BTS) and switches in Cellular Operations Network, especially where Base Station deployments are dense. With link speeds from E1/T1 to 1,250 Mbps, FSO technology provides highly reliable and secure connections causing no cross talk and interference with other communication links, without the need for frequency licenses.
In dense urban areas throughout the world, the FSO reliability of 99.98 % offers superior performance and has the best price for performance ratio in the wireless technology industry.



* Wireless Connectivity Via InfraRed

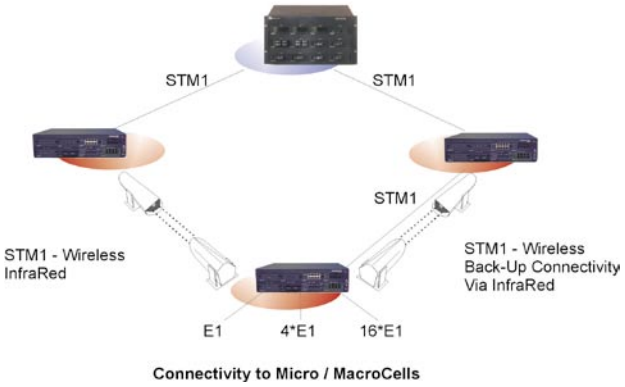
Base Station Density:

1. Crowded Subscriber Areas

In many urban environments, cellular networks have to service increasing numbers of subscribers; as a result, BTSs must be deployed close to each other to support the ensuing smaller frequency cells. In these cases of microcells or picocells, connecting a BTS to the network over leased lines causes very high cost for a rather limited unit of coverage area, while microwave point-to-point links become increasingly unreliable because of cross talk, interference and background noise. In addition, the increased use of microwave can lead to community protest, due to fear of exposure.
Optical wireless short distance links offer cost effective, highly reliable links, delivering the best possible (99.98%) availability. The technology is license-free, therefore not incurring any additional periodic costs.

2. GPRS (2.5G) and 3.G cellular networks

Converging high-speed data with voice traffic will result in higher bit rates, which in turn will result in the deployment of networks with smaller cells. The network topology connecting the BTS to the network will be dense rings or stars.
In such cases, FSO technology is the best solution, enabling high-speed connections (155 Mbps, or 622 to 1,250 Mbps), without cross talk and interference and without the need for frequency licenses.
MRV offers a wide range of optical wireless products that are especially designed for the cellular operator market, including E1/T1 connectivity, nxE1/T1, E3/T3, E1 + Ethernet, STM1, STM4,



Connectivity to Micro / MacroCells

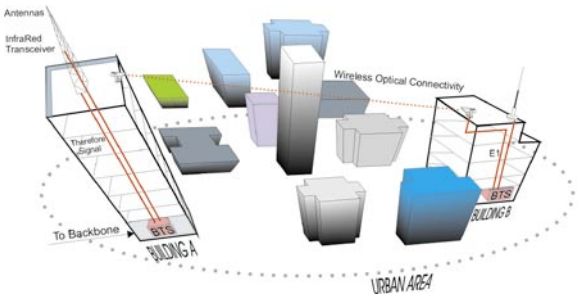
Fast Ethernet and Gigabit Ethernet.

3. Straightforward planning

Because FSO links are immune to electromagnetic transmission and do not interfere with other transmission means, using this technology avoids the need for frequency planning. During the planning phase, the physical aspects of the link deployment (line of sight, mounting issues, etc) are the only subjects taken into account.

4. Fast and easy deployment

Installation time for a wireless optical link requires no more than 3 hours.
The use of optical wireless communication technology avoids the need to dig up and revise existing infrastructures, obtain rights-of-way, radio spectrum licensing, or other permits.
Therefore, the technology enables fast roll out of the network and independency of third parties such as leased lines service providers, frequency licensing bodies, and municipalities.



Comparison: Free Space optics vs. unlicensed Microwave wireless technology

	Optical Wireless	Microwave
Line of Sight	**Yes**	**Yes**
Frequency licenses	**No**	**No**
Cross talk	**No**	**Yes**
Background noise	**No**	**Yes**
Protocols	**E1/T1, nxE1/T1, E3/T3 E1 + Ethernet, Fast Ethernet, STM-1, STM-4, Gigabit Ethernet**	**E1/ T1, nx64 Kbps**

About TereScope™ - Free Space Wireless Optics products

The challenge is to supply the timely telephony and data services needed by customers while minimizing rollout costs. TereScope™ systems can be deployed on a rooftop or indoors (behind a window) on an as-needed basis, without right-of-way or government licensing, providing communication links in hours instead of weeks or months. With data rates of 1.5 Mbps to 1,250 Mbps (1.25 Gbps), the TereScope solutions supply ample bandwidth at low cost.

The TereScope family's unique free space, state-of-the-art optical technology is superior due to its use of unique technical features such as the use of multiple transmission lobes, highly sensitive receivers, wide area lens systems, and video alignment. Together with special weatherproof housing, built-in heating and optional motorized alignment systems, these features guarantee non-stop reliability and all-weather operation.

Key features

- License free operation
- High link availability
- Rapid and easy installation
- SNMP management
- Immune to RFI/EMI
- BER better than 10E-9
- MTBF better than 8 years
- Cost effective
- No cross talk
- Easily upgradeable
- Secure data transmission
- Indoor/Outdoor installation
- Video alignment
- Zero distance eye safety

About MRV Communications:

MRV is a leading provider of Broadband Access Networks based on Optical Wireless Technology. We design and supply optical wireless and IP switching and routing solutions that facilitate a fundamental shift in access network design. The building blocks of the MRV solution include the TereScope™, for optical wireless links, and the OptiSwitch™, for switching, routing, provisioning and mesh-enabling, and MegaVision, for advanced network management.

Why MRV communications:

- Leader in the market
- More than 4500 links installed
- Integrated Network Management
- Broadest range of Free Space Optics products
- More than 10 years of experience in optical communications
- Experienced project management and carrier net work planning
- Compliant with all standards
- Products are 100% eye safe

for more information: international@mrv.com **www.mrv.com**