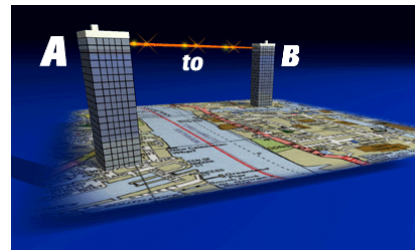


CableFree

Wireless Excellence

CableFree Solutions Limited
Holly House, St Clare Business Park,
Holly Road, Hampton Hill, Middlesex TW12 1QQ
T: +44 (020) 8941 7975 E : info@cablefreesolutions.com
F: +44 (020) 8941 2410 W: www.cablefreesolutions.com



Application Note: GSM and 3G Cellular Network Connectivity

Scenario

GSM and 3G operators are faced with exciting challenges - including extending networks to provide adequate connectivity in dense regions with a rapidly expanding user base. In rural areas the cells which comprise the network are relatively sparse - and frequently connected using microwave links. However, in urban areas the high density of GSM subscribers and radio propagation issues mean that "Microcells" are created - often to cover a small locality, building or an RF 'blind spot', connecting GSM Base Station Transceivers (BST) and Base Station Controllers (BSC), or 3G "NodeB" base stations.

Traditional connectivity solutions for Microcells use Nx2Mbps links using copper wires or microwave links - but there can be drawbacks. In some areas E1/G703 copper circuits are already available - but what if the proposed link is across a river, road or railway, or in a developing country where the existing telecommunications operator has limited or unreliable infrastructure?

Microwave solutions require licensing and often suffer from interference, multipath and signal reflections - and public health fears in urban areas that make them unpopular. CableFree solves the problem with high-capacity, highly reliable wireless solutions with low cost of ownership. CableFree products offer up to Gigabit capacity with Nx E1 integrated multiplexers and are installed in hours, not weeks.



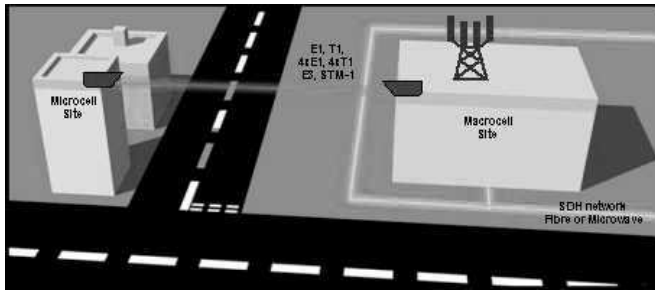
Solution

A CableFree solution offers the following features and benefits:

High performance:	Gigabit Ethernet FSO, 72Mbps radio
Rapid installation:	3 hours achievable; 15 minutes on tripods
Highly reliable:	99.999% availability achievable
License-free Operation:	No fees to pay
No monthly rental fee:	Low maintenance solution
Diverse technology options:	Free Space Optics & Broadband Radio
Fully manageable:	Advanced software tools
Resilient solutions:	1+1 FSO+radio dual link options
Low Total-Cost-of-Ownership (TCO):	Moveable asset
Safe & Environmentally friendly:	Low disruption during installation

CableFree products are field-proven, with thousands of deployments in over 50 countries since 1997. Excellence in performance and reliability are not sacrificed in providing highly competitive priced solutions together with a comprehensive range of support services.

Application Diagram



Two or more vehicles or buildings are connected by CableFree wireless products. Clear Line-of-Sight (LOS) for FSO or Near-Line-of-Sight (NLOS) for radio is required.

The network connections (Nx E1, Nx T1, E3 or STM-1) is connected directly to the wireless units which can be mounted on tripods, rooftops, towers, poles or behind windows.

A site survey is recommended before installation, to determine suitable mounting points, location of cable runs etc. Installation involves physically mounting the equipment, aligning it, connecting data and power circuits and commissioning.

Recommended Systems

CableFree Access	Connectivity up to 155Mbps, range up to 4km
CableFree 622	Connectivity up to 622Mbps, range up to 2km
CableFree Gigabit	Gigabit Ethernet and Fibre Channel up to 1.5km
LaserHop	E1, Fast and Gigabit Ethernet up to 1km
CableFree HPR	Radio links up to 72Mbps, range up to 40km
CableFree MPR	Radio links up to 30Mbps, range up to 40km

Data formats supported

E1/G703 2Mbps • E2 8Mbps • E3 34Mbps • T1 1.5Mbps • STM-1 & STM-4 •
Ethernet 10, 100 & 1000Mbps • ATM-155 & 622Mbps, Token Ring • FDDI •
Fibre Channel • Broadcast Video and CCTV •
Multiplexed voice and data 10+2 and 100+2 solutions available

For more information, please contact CableFree

CableFree Solutions Limited
Holly House, St Clare Business Park
Holly Road, Hampton Hill
Middlesex TW12 1QQ United Kingdom

T +44 (0)20 8941 7975
F +44 (0)20 8941 2410
E info@cablefreesolutions.com
W www.cablefreesolutions.com