

Free Space Optics (FSO) ClusterManager Overview



About CableFree

Founded in 1997 and with headquarters in London, UK, CableFree is a leading designer and supplier of broadband Wireless communication equipment.

With a complete range of solutions including Radio, Microwave, Millimeter-Wave, Free Space Optics, WiFi and WiMax solutions, customers in over 60 countries have chosen CableFree as the "one stop shop" solution of choice for dependable wireless networking.

About FSO

FSO Technology leverages Infrared beams for communication purposes, and unlike Fibre based systems, does so wirelessly. Speeds in excess of a Gigabit are readily available and distances of 4km are possible.

Our FSO links have been deployed in over 55 countries including major telecom and corporate networks, and have many advanced features which increase flexibility, reliability, performance, management capability and total-cost-of-ownership.

System Features

- Management, Monitoring, Logging and Configuration of multiple CableFree links
- Easy-to-use Windows Management Interface
- Viewing modes – Geographical Overview, Alarm Overview, and Network Overview
- Print-out and storage of operational status reports
- Individual configuration files for each link installed
- Real-time, logged, or snapshot-view of link status
- User-programmable major and minor Alarm conditions per-link
- View Serial numbers and Unit identifiers for asset management
- Long-term trend analysis enables programmed maintenance
- Scalability to support from 1 to 1,000 CableFree links
- Runs under Windows95, 98, NT4.0, ME, 2000
- Powerful Management Modules include CableFree LinkManager™, CableFree GraphManager™ and CableFree WebManager™

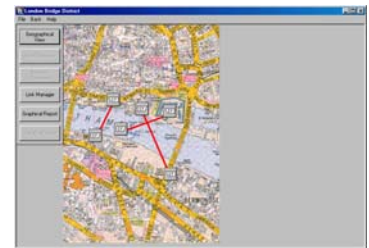
Connection from the Cluster Manager Master Workstation to individual CableFree units can be

- Direct connection via RS232 connection either to PSU or optional IDU.
 - Dial-up access over land-line or GSM modem
 - Ethernet connection to IDU using proprietary format UDP protocols
- Ethernet connection to SNMP Proxy Agent using standards-based SNMP protocols

Views

The CableFree Cluster Manager main console offers three major overviews of network performance.

- Geographical Overview (shown right) offers a multi-level graphical environment, which allows the user to navigate round an installed network of links, from International, National, City and District levels.
- Alarm Overview shows a list of all links in the database currently showing alarms, which are grouped in order of priority, Current Major, Minor and Flagged Major and Minor.
- Network Overview shows a list of all links in the database, which can be browsed, searched or listed in user-selectable order



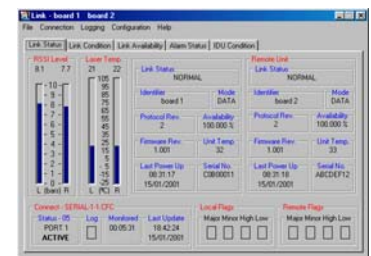
From any of these views, a number of sophisticated management, diagnostics and statistics modules can be launched to look at either a single or a group of links.

CableFree Link Manager™

CableFree Link Manager, which can also operate as a stand-alone tool for diagnostic management of a single link, acts under Cluster Manager to show management information for any given link in the network. Link Manager appears as a tabbed dialog box console, the main page being a summary of link performance.

Link Manager is intended for use in interactive mode, pulling real-time or near-real-time statistics from the link under observation, and interactive reset of alarms, and remote set-up of Link Identifiers.

Local and Remote Statistics can be monitored:

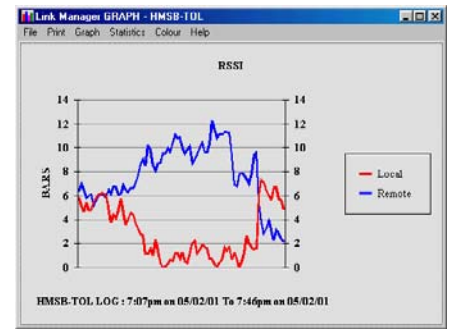


- | | | |
|---------------------|----------------------------|------------------------|
| • RSSI | • Alarms-Current & flagged | • Last Valid Data Time |
| • Availability % | • Connection interface | • Last Valid Data Date |
| • Unit Temperature | • Last Power up Time | • Firmware Version |
| • Laser Temperature | • Last Power up Date | • Protocol Version |
| • DC Head Power | • Monitored Time | • Serial Number |
| • DC IDU Power | • Unavailable Seconds | • Link Identifier |
| • Laser Condition | • Errored Seconds | • Link Operating mode |
| • TX Power in dBm | • Bit Error Rate | |

CableFree GraphManager™

CableFree GraphManager allows both at-a-glance graphical views of historic link performance, using data logged by the LogManager engine. Long-term change or degradation in system parameters can be highlighted and corrective maintenance scheduled.

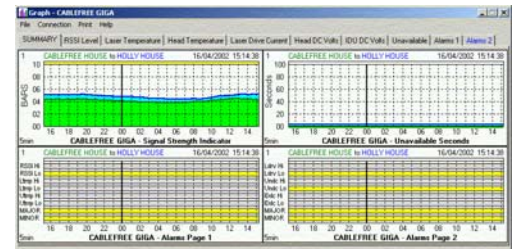
GraphManager displays all of the time-varying parameters available through LinkManager™ above.



CableFree StatisticsManager™

CableFree Statistics Manager is an optional package which enables more sophisticated analysis of historic link performance, based on data logged by the main Cluster Suite LogManager engine.

Statistical analysis of trends includes automated computation and graphical overlay of Minimum/Maximum, Mean, Standard Deviation and Regression figures. Time windows can be applied, so that short, medium and long-term trends can be viewed and analysed.



CableFree WebManager™

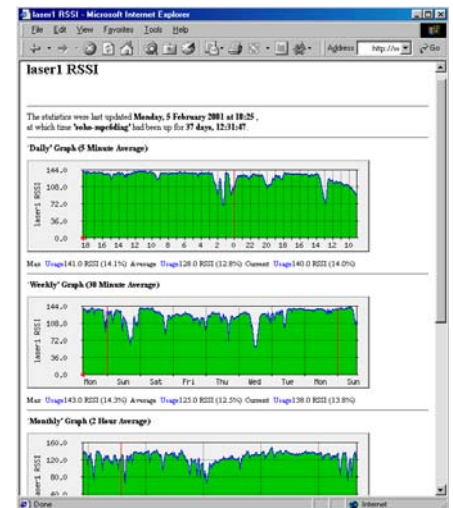
Web Manager provides an optional Back-end portal to the Cluster Manager Suite to allow simple at-a-glance remote Intranet or Internet visibility of network or Link performance.

The main use for Web Manager is to provide visibility to staff or locations not equipped with access to the Cluster Manager suite, or who just need simple at-a-glance information.

Web Manager operates as part of the Cluster Manager suite by generating near-real-time graphical representations of selected statistics and uploading to a pre-defined Internet or Intranet web server. In the user's browser, pre-set web pages

graphical at periodic intervals.

The Web Manager can be customised to display web pages containing any key performance statistics collected



Management Connections

RS232	Local user interface
10BaseT Ethernet	LAN/WAN connection
Dry Contact alarms	8 or 16 inputs (optional)
Protocols	UDP, Proprietary

Overall Software Specifications

O/S Platform	Microsoft Windows™
Compatibility	NT4.0, 2000, 98, ME, XP.

Cluster Server and Cluster Workstations

PC Hardware requirements: Minimum

- Pentium-family 300MHz Processor
- 32MB RAM
- 800x600 screen
- 3Gb free space on Hard Drive
- CDROM drive to upload software
- Network Interface Card

PC Operating System requirements

- Windows 95, 98, NT4, 2000 or ME with TCP/IP networking support installed

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