

Application Server Access over Local Area Network in a Distributed Environment

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Connectivity Solution for accessing a Remote Server from a Distributed Network of Clients using a Fiber Optic Network

A local area network (LAN) connecting a central server to a number of distributed clients is a common way of organizing online applications. While it is easy to lay LAN cabling in a building or in a small area, a LAN spread over a bigger area and covering isolated points spread out over several kilometers is quite a different proposition. Cygnus offers its CYGNUS 894 Fiber Optic Multipoint Network Access solution. The network could be organised either as a ring covering a wide geographic area, or in a linear fashion covering multiple linearly located points (e.g., along a track or road).

Two types of CYGNUS 894 units are used in a network. CYGNUS 894C units are typically placed at the central server site. CYGNUS 894R units are located at user sites. A CYGNUS 894 network splits the bandwidth of the optical fiber in such a way that each CYGNUS 894R get guaranteed throughput of 10 Mbps to the central site. A 4-port Ethernet Switch built into each CYGNUS 894R unit allows up to 4 Ethernet devices to be directly connected to it and share this 10 Mbps bandwidth. All CYGNUS 894 units in the network are connected together using Optical Fiber Segments. Fig. 1 and Fig. 2 show two ways in which a CYGNUS 894 network can extend the LAN from the central site to remote sites over optical fiber.

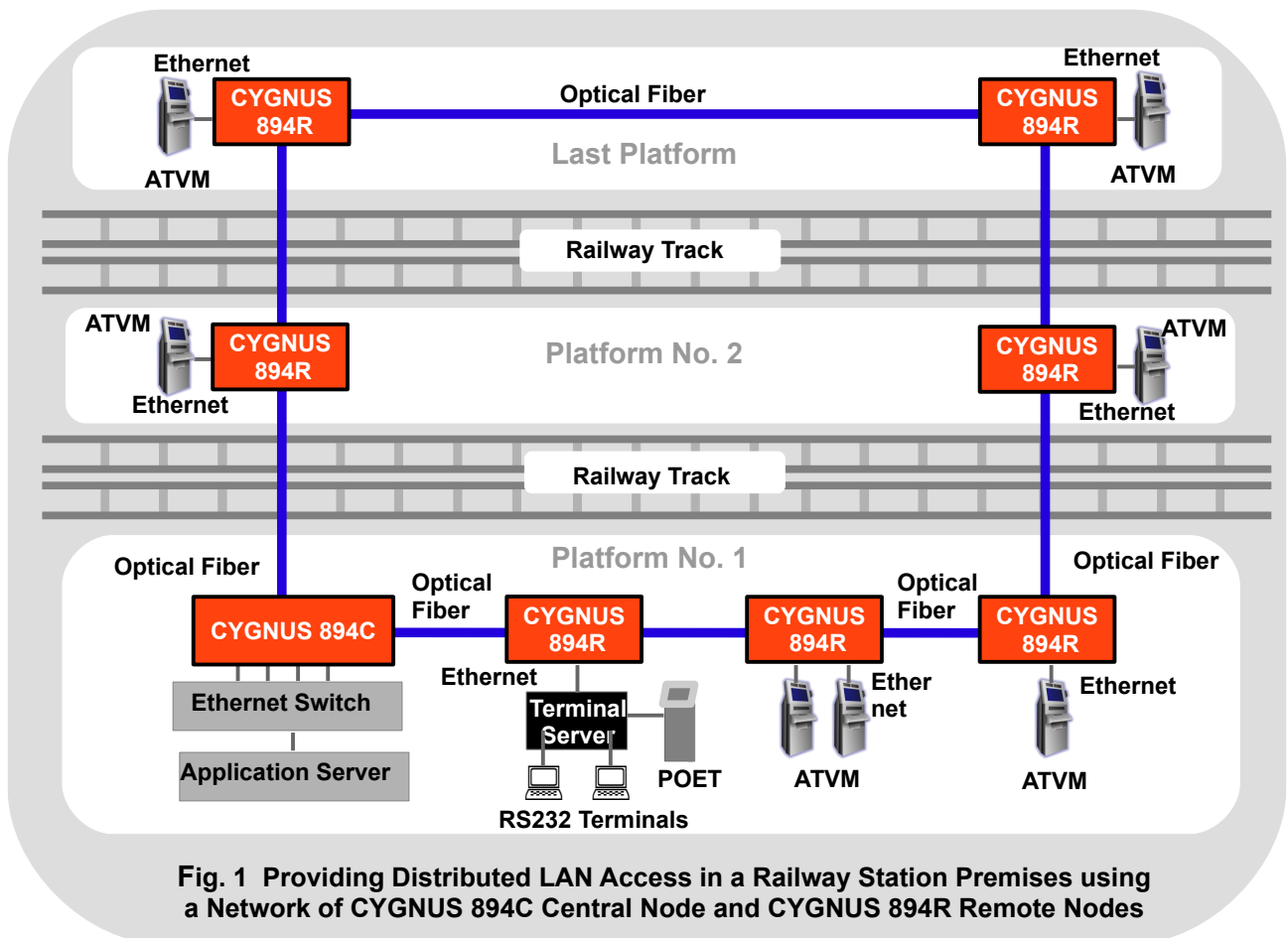


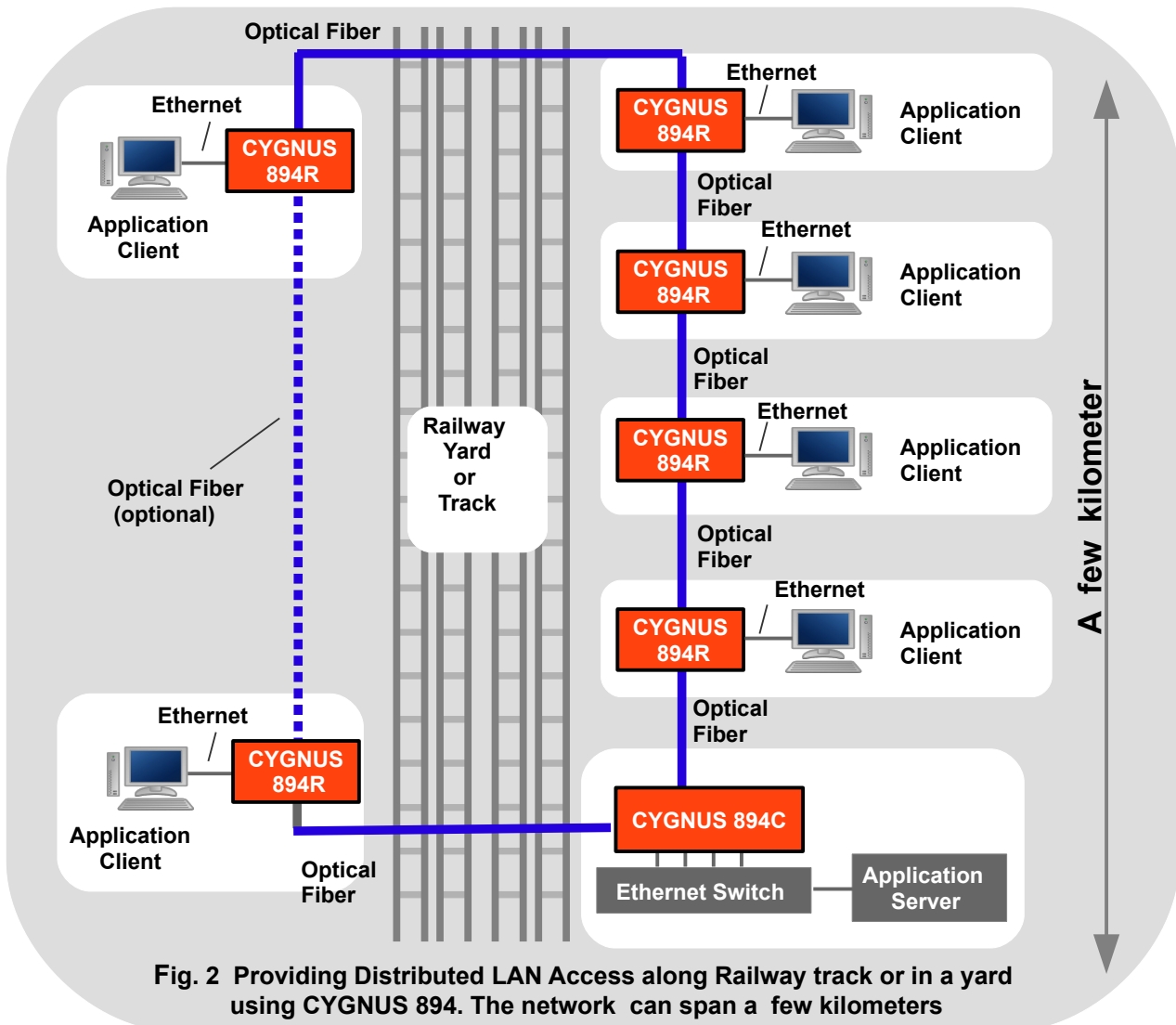
Fig. 1 Providing Distributed LAN Access in a Railway Station Premises using a Network of CYGNUS 894C Central Node and CYGNUS 894R Remote Nodes



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In Fig. 1 the last CYGNUS 894R unit in the network is connected back to the central site CYGNUS 894C, forming a ring. If the network is closed in this manner, a “ring protection” feature is offered by the CYGNUS 894 network, which may be used to provide fault tolerance. Ring protection is a special algorithm using which the network re-routes data transparently in the opposite direction if a fiber segment in the network fails. This “resilient” ring therefore continues to provide connectivity to all devices even if a fiber segment fails.

In Fig 2 the CYGNUS 894R unit farthest from the central site on the ring is shown connected with a dotted link to its 894C side fiber port. It shows that the dotted link is optional. This type of topology where the ring is not completed avoids excess use of fiber. Such a “linearly” connected network will also provide LAN extension to all remote sites. However since the ring is not complete, the network will not have ring protection, and any single breakage in fiber links may isolate a part of the network from the Application server.



It may be mentioned here that a CYGNUS 894 network can also be used for connecting remote devices with serial asynchronous interfaces (RS232/RS422/Current Loop) to a central server over a fiber optic network. For details please see CYGNUS Application Note AN-PP-01. A hybrid network that has both ethernet and serial port devices is also possible.

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