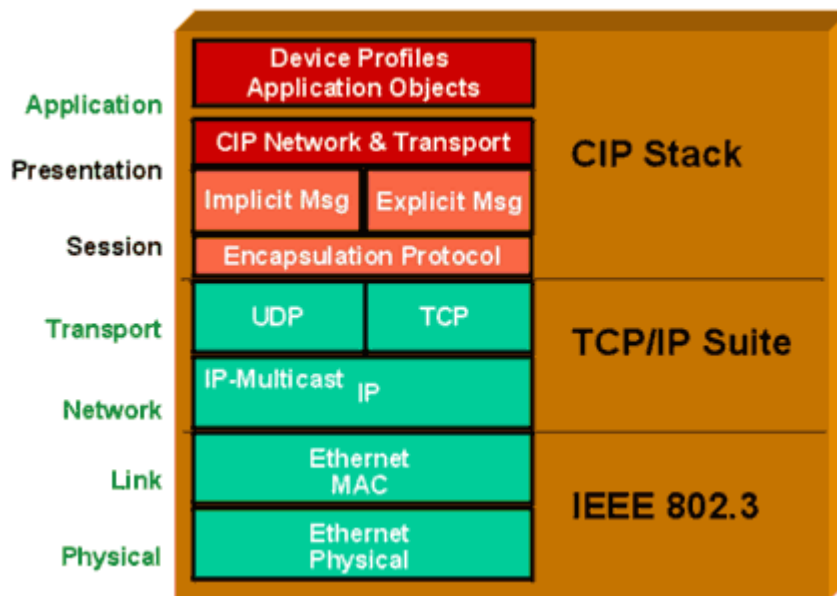




The Industrial Ethernet Protocol (Ethernet/IP) has been developed by ODVA with strong support from Rockwell Automation. It uses the Control & Information Protocol (CIP) which is already well known from ControlNet and DeviceNet.

CIP provides a wide range of standard services for access to data and for control of network devices via so-called "implicit" and "explicit" messages. The CIP data packets must be encapsulated before they can be sent via Ethernet and are given a telegram header which depends on the requested quality of service. The header indicates the significance of the transmitted data to the corresponding service protocol on the receiver side. The CIP data packets which are transported through the Ethernet connection have a special Ethernet header, an IP header, a TCP header and an encapsulation header. The encapsulation header contains fields with control commands, format and status information, synchronization data etc. This allows the CIP data packets to be transported via TCP or UDP and ensures that they can be decoded in the receiver. The disadvantage of encapsulation compared with DeviceNet or ControlNet is, is that a much lower protocol efficiency is achieved. The Ethernet headers are much larger than the user data and lead to a significant protocol overhead. Accordingly, EtherNet/IP is more suitable for sending large data portions (e.g. programs) rather than analog or discrete I/O data for which DeviceNet and ControlNet are better optimized.







**Where is it used and with what products?**

With the global growth of Industrial Ethernet, EtherNet/IP is fast becoming the most used Layer 7 Industrial Ethernet protocol. Used within the Factory Automation industry and with many types of products from Robotics, PLC's, Drives, Inverters, etc.. Originally founded by Rockwell Automation, this protocol is now mainly used in the United States, and is now also gaining popularity throughout Europe & Japan & China. General Motors Corp. (GM), the world's largest vehicle manufacturer, has standardized on EtherNet/IP for its vehicle manufacturing operations. The EtherNet/IP network will provide real-time communication between GM machine controllers, robots and process control equipment, as well as provide information to higher-level business systems. Suppliers to more than 60 GM factories located in Africa, Europe, Latin America, North America, and the Middle East have until Jan. 1, 2007 to make their products EtherNet/IP-compatible.

**EtherNet/IP & AnyBus**

HMS has a variety of products supporting EtherNet/IP. All these products have included "IT Functions" such as HTTP WebServer with support for Java & SSI, Email & FTP Client, and Security and Configuration features. The family consists of an embedded AnyBus-S Interface, AnyBus-IC Single Chip Solution, AnyBus Communicator Serial Gateway and AnyBus-X Bridge/Gateway giving you a choice to bridge EtherNet/IP with any of 14 other fieldbus networks.

EtherNet/IP Facts	
<b>Network Size:</b>	Scalable and nearly unlimited
<b>Network Length:</b>	10/100 Base-T = 100m Fiber Optic media 35-2000m depending on type and speed
<b>Baud Rate:</b>	10, 100, 1000 MBits/s
<b>Bus Topology:</b>	Star
<b>Addressing:</b>	Encapsulation system
<b>System Feature:</b>	Standard layers 1-4 providing Ethernet data transmission, bus access, internet protocol (IP) and TCP & UDP protocols. CIP "implicit" and "explicit" messaging with encapsulation technology. Message routing between EtherNet/IP, DeviceNet & ControlNet

EtherNet/IP AnyBus Products	
	<b>Embedded Products</b> <a href="#">AnyBus-S 10/100 Interface</a>
	<b>Embedded Products</b> <a href="#">AnyBus-IC Single Chip Controller</a>
	<b>Networking Products</b> <a href="#">AB Communicator Serial Gateway</a>
	<b>Networking Products</b> <a href="#">AnyBus-X Bridge/Gateway</a>

**ACP&D Limited**  
 Units 6 & 9A,  
 Charlestown Industrial Estate,  
 Robinson Street,  
 Ashton-under-Lyne,  
 Lancashire, OL6 8NS.

Tel: +44 (0)161 343 1884  
 Fax: +44 (0)161 339 0650  
 e-mail: [sales@acpd.co.uk](mailto:sales@acpd.co.uk)  
 Websites: [www.acpd.com](http://www.acpd.com) &  
[www.acpd.co.uk](http://www.acpd.co.uk)

