EtherNet/IP

EtherNet/Industrial Protocol (EtherNet/IP) a member of the Common Industrial Protocol (CIP) provides the network tools to deploy standard Ethernet technology to enable industrial automation applications and enterprise connectivity for data and control. This protocol runs over TCP/IP or UDP/IP. TCP/IP uses the reserved port **0xAF12 (44818)** for transmitting explicit messages while UDP/IP uses the reserved port **0x08AE (2222)** for transmitting I/O messages. A typical Ethernet frame with the encapsulated EtherNet/IP data and the encapsulated packet format are shown in Figures 16 and 17, respectively (Schiffer, 2016).

Figure 16. Ethernet Frame with Encapsulated EtherNet/IP

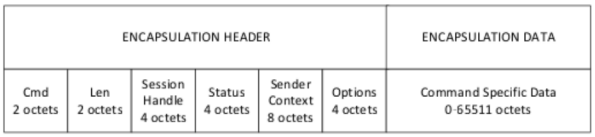

Figure 17. Encapsulation Packet Format

The two-octet command (Cmd) field represents various types of commands such as broadcast, session opening and closing, and receiving and sending data for connected and unconnected messaging (Francia & Francia, 2013).

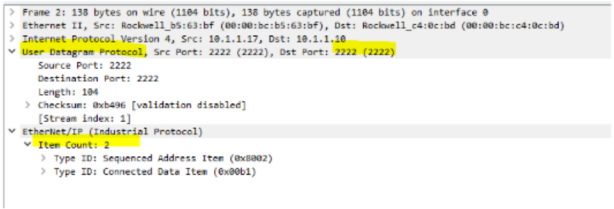

Figure 18. Packet Details of Ethernet/IP over UDP