RADIO COMMUNICATION NODES

1. Introduction

This technical note describes various terms used for the MOSCAD or DARCOM II as a powerfull Communication Processor Unit **(CPU)**. The CPU here operates as a data network building block or as an inter-networking element, involving a combination of the same or different channels (media) and protocols.

One must be careful using these terms, since some of them are known only in connection with computer data networks (via wirelines), and were not used in connection with RF modems.

The interconnection between the MOSCAD and DARCOM II and other data networks can be done by utilizing various types of communication nodes as described below.

1.1 RF modems

Direct RF modem Direct RF modem is implemented in order to provide a transparent radio link between Data Terminal Equipment (**DTEs**), and a computer center or another DTE.

The Direct RF modem's operation doesn't interfere with the DTE's data stream, and it doesn't provide network functions such as error detection, re-tries or correction. For example such direct RF modem is the **DARCOM II** operating in the 900 MHz band.

RF PAD

RF Packet Assembler Disassembler (**PAD)** is being implemented in order to provide a reliable (error-free) radio link between Data Terminal Equipment (**DTEs**), and a computer or another DTE. The RF PAD is a smart RF modem, which operates by imposing on the DTE's data stream the protocol of the RF modem. The RF PAD provides network functions such as error detection, re-tries or correction mechanism.

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For example use of the MOSCAD CPU or the ROBIN **TMERM** (Transactional Mobile External Radio Modem) as a **RF PAD** provide such radio communication link. Both these are utilizing the Motorola Data Link Communications (**MDLC**) protocol.

1.2. Data Repeaters

Channel Repeater

A channel Repeater is implemented in order to connect between channels which have different Physical Layers (media), but share the same type of Link layer in their protocol set.

For example, one may use a MOSCAD CPU as a **Channel Repeater** in order to connect between lines, microwave, radio or fiber-optics or other media supported by the MOSCAD.

Store & Forward Repeater

Store and Forward Repeater is implemented to connects between radio segments which share the same frequency. Here the data is being re-transmitted by the receiving station (MOSCAD CPU) to another similar designated station by involving only the Physical and the Link Layers of the MDLC Protocol.

For example one may use a MOSCAD CPU as a **Store and Forward Repeater** to communicate between two MOSCAD RTUs located on the opposite sides of a hill.

1.3. Network Connections

Bridge

Bridges may be implemented in order to provide connection between data networks, which utilize different Physical and Link layers in their protocol set.

For example, a MOSCAD CPU can be used as a **Bridge** between an Ethernet Local Area Network **(LAN)**, a Wide Area Network **(WAN)**, radio or other data networks.

Router

Routers may be implemented in order to provide connection between different data networks, which utilize different Physical, Link and Network layers in their protocol set.

For example one may use a MOSCAD CPU as a **Router** for connecting the MOSCAD (MDLC) radio network with a X.25 network using the standard **MDLC-X.25** protocol set.

Gateway

Gateways may be implemented in order to provide connection between different data networks, which utilize **all different** layers in their protocol set.

For example interconnection between MOSCAD RTUs with MODICON PLCs (using the MODBUS), can be implemented with a MOSCAD CPU, which serves as **MODBUS Gateway**.