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# MAS

## Morse application server

version 7.45  
7/2/2015

### Morse Application Server

- is designed for interconnecting one or more applications running on LAN and MORSE networks
- is a software application which can be started in any MORSE communication unit with an Eth interface (family of MR radio modems, MC100 controller, GPRS modem MG100 or Morce/Walrus software)
- creates an application interface between an IP network and a MORSE network, i.e. it is possible to communicate with the whole of the MORSE network via one IP address
- communicates with applications on a LAN via UDP/IP
- runs on specific IP address and UDP port 8888
- creates (maps) MORSE addresses from IP addresses and vice versa
- puts user data from UDP datagrams into the data of MORSE datagrams

### Passage of a packet from an IP application via MAS to the MORSE network

- The application running at the given IP address sends an IP datagram to the MAS destination IP address.
- MAS creates a standard MORSE packet. Its destination and source addresses are derived from the original IP datagram using the ART conversion table. Data is taken from the IP datagram.
- A MORSE packet is sent to the MORSE network and is routed according to the set routing to the destination MORSE node.
- The destination MORSE node separates the header from the received MORSE packet and sends the data via the respective interface (typically the serial port with the given protocol) to an externally connected device (PLC, RTU, betting terminal, etc.)

### Passage of a packet from a remote PLC in a MORSE network to an application connected by means of MAS

- PLC sends data (typically via the serial port with the given protocol) to the connected MORSE CU

- The SCC protocol creates a MORSE packet with source and destination addresses and sends it over the MORSE network to the given MORSE address, where MAS is running
- MAS creates an IP datagram from the incoming MORSE packet. Its data is the same as that of the MORSE packet, and the header with addresses is created from the addresses of the packet and from other information stored in MAS.
- An IP datagram is sent over LAN to the IP address of the respective application

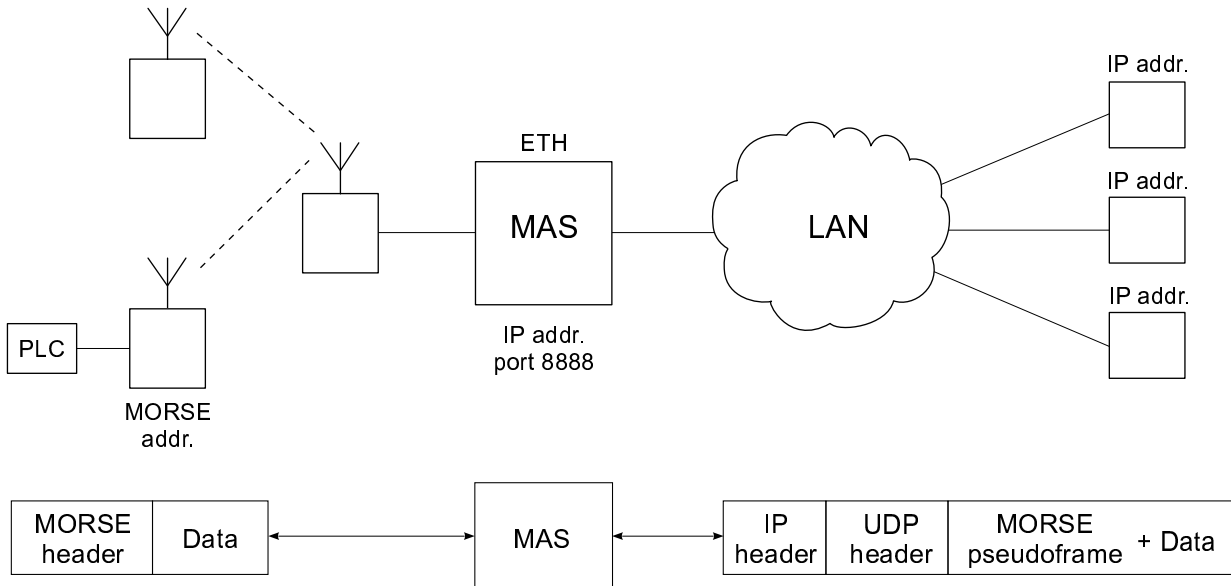


Fig. 1: MAS overview

### Range of addresses

- IP addresses of the application can be selected in the range of the lower 14 bits of the IP address, the upper 18 bits are the same as the MAS IP address or the selected default gateway
- The MAS port is 8888 = 0x22B8, application ports can be selected
- MORSE addresses can be selected according to the conditions of the MORSE network

### Configuration

- Configuration of MAS is described in MORSE Firmware Documentation<sup>1</sup> and in the MORSE Guide 3<sup>2</sup> manual.

### Example of a MAS datagram

For making it clearer here is an example of an IP datagram from the manual *MORSE Guide 3, MAS mode*, Example 1<sup>3</sup> with some comments. A more detailed description can be found in chapter Format of UDP datagram IPGW for Morse<sup>4</sup> of the same manual.

<sup>1</sup> <http://www.racom.eu/eng/support/firmware/mr400/eth.html>

<sup>2</sup> <http://www.racom.eu/eng/support/morse-m3/ethernet.html>

<sup>3</sup> <http://www.racom.eu/eng/support/morse-m3/eth-mas.html>

<sup>4</sup> <http://www.racom.eu/eng/support/morse-m3/eth-ipgw.html>

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```
10:19:11.404 rsi:52 rx|0002A949B897 |00C09F63CFAB | IP/UDP/MOR/USR/DATA
0002 A949 B897 00C0 9F63 CFAB 0800 4500 0026 1295 0000 8011 DED8
C0A8 6401 C0A8 6407 1F40 22B8 0012 8137 0000 8981 690F 5605 AAAA
```

Items which are significant for understanding the datagram :

0002 A949 B897	destination ETH address
00C0 9F63 CFAB	source ETH address
C0A8 6401	source IP address
C0A8 6407	destination IP address
1F40	source port UDP
22B8	destination port UDP
690F 5605	CU address in MORSE net, destination here
AAAA	user data transmitted

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