

CHAPTER 5 NETWORK PROTOCOLS

5.1 CABLE COMMUNICATION PACKET

Each cable communication packet to the internet is shown below.

(1) Query from a gateway of the 'zone repeater station' to the 'management server'

- G/w will make a query to the 'management server', serving the callsign information from calling station as an index.

MAC header			IP header	UDP header	Query ID	Flag	Reserved	Query callsign
SA	DA	Type						
6	6	2	20+ $\alpha$	8bytes	2bytes	2	4bytes	8bytes

$\alpha$ : Although the length of IP header for TCP/IP protocol is normally 20bytes, it will make a variable length when options are included, so it depends on the protocols and thus shown here with + $\alpha$ .

(2) Reply to the g/w from the 'management server'

- Searching the management table and retrieving the data, it will make a reply to the g/w that made a query.

MAC header			IP header	UDP header	Query ID	Flag	Reserved	Query callsign	Zone repeater callsign	Area repeater callsign	GW IP address
SA	DA	Type									
6	6	2	20+ $\alpha$	8bytes	2bytes	2	4bytes	8bytes	8	8	4

(3) Request for table update from GW to the 'management server'

MAC header			IP header	UDP header	Update ID	Flag	Reserved	Mobile terminal callsign	Zone repeater callsign	Area repeater callsign
SA	DA	Type								
6	6	2	20+ $\alpha$	8bytes	2bytes	2	4bytes	8bytes	8	8

(4) Reply indicating the completion of the update from the 'management server' to GW

MAC header	IP	UDP	Update	Flag	Reserved	Mobile	Zone	Area	GW IP
------------	----	-----	--------	------	----------	--------	------	------	-------



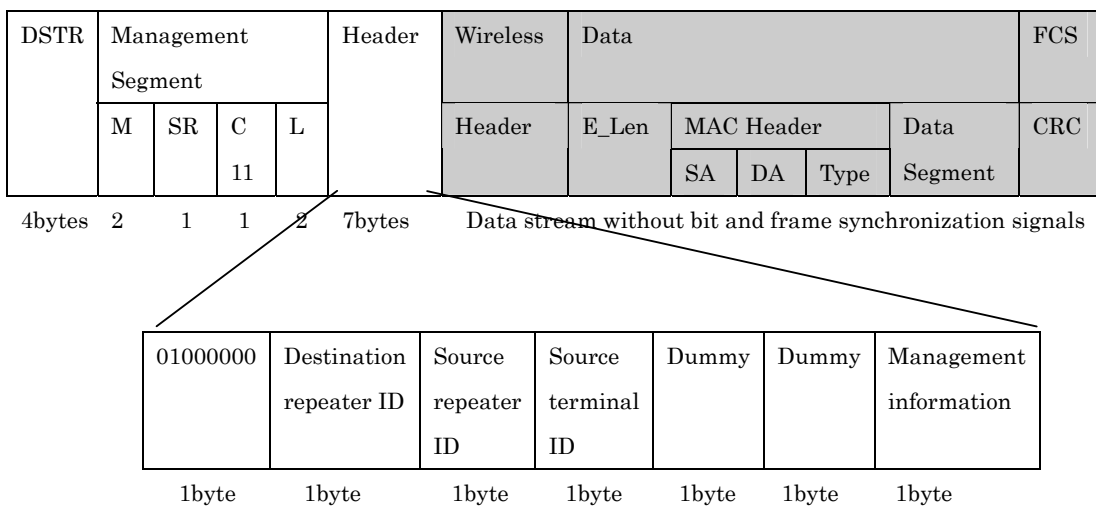
(7) An access to a terminal station through its GW from a station on the internet

MAC header			IP header
SA	DA	Type	
6	6	2	Currently undefined other than the frame construction

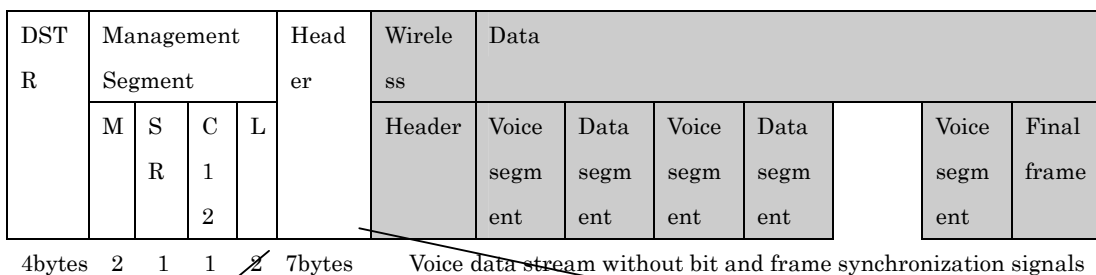
(8) Communication Between Zone Repeaters and Gateway

- A packet for the communication between z/r and g/w will be constructed as follows. A management segment for a packet contains following data.
  - M = the number of sequence (2 bytes)
    - ✧ This is a packet identification number assigned to the packet for communication between z/r and g/w. Normally it will be incremented by one.
  - S R = S, when sent from g/w; R, when received by g/w (1 byte)
  - C = a command which represent packet (1 byte)
  - L = length of the data following this segment (2 bytes)

● a. Data



● b. Voice data



00100000	Destination repeater ID	Source repeater ID	Source terminal ID	Conversation ID (upper)	Conversation ID (lower)	Management information
1byte	1byte	1byte	1byte	1byte	1byte	1byte

● c. Error data

DSTR	Management segment				Error data
	M	SR	C 01	L	
4bytes	2	1	1	2	

● d. Terminal location information data

DSTR	Management segment				Terminal Callsign	Area repeater callsign
	M	SR	C 21	L		
4bytes	2	1	1	2	8bytes	8bytes

(9) Transmission of log data from g/w to a 'management server'

MAC Header			IP header	TCP header	Log ID	The number of records in the log	Source callsign of the log	A log record	A log record	.....	A log record
SA	DA	Type									
6	6	2	20+α	20+α	4bytes	4bytes	8bytes	64bytes	64		64

Record time (sec)	Record time (micro sec)	Source terminal callsign	Destination terminal callsign	Source IP address	Destination IP address	Source zone repeater callsign	Destination zone repeater callsign	Source area repeater callsign	Destination area repeater callsign
-------------------	-------------------------	--------------------------	-------------------------------	-------------------	------------------------	-------------------------------	------------------------------------	-------------------------------	------------------------------------

4bytes 4bytes 8bytes 8 4 4 8 8 8 8