Tentative MSU PacketWay Multicast Strawman Document Presentation

IETF PktWay (MsgWay) WG

June 24, 1996

Thomas P. McMahon

Overview

- The Multicast Agent
- Additional RRP messages
- Rules for Multicasting
  - for Nodes
  - for Half Routers
- Implementation Ideas
  - Physical layer mapping
  - Use of Symbols
  - SAN sequence numbers

The Multicast Agent (MCA)

- Each SAN that wishes to provide multicasting for its nodes has one and only one Multicast Agent
- A singe Multicast Agent provides a single entry/exit point for multicast messages
- The Multicast Agent ensures that all multicast messages ...
  - coming into the SAN get sent to all Half Routers of the SAN and to all nodes listening for those messages
  - going out of the SAN get sent to all Half Routers of the SAN

JMCG Addition to RRP

- JMCG -- Join Multicast Group
  - Sent to a Half Router by node
  - Reply is an RDRC RRP message saying which node is the Multicast Agent
  - Format....

00 P	Destination-Address		"JMCG"	"RRP"
0 0	Data-Length=1		0 0	Source-Address
ADDR	PL=0	RL=1	AT=1	1010 Logical-Address
PktWay Trailer				

LMCG Addition to RRP

- LMCG -- Leave Multicast Group
  - Sent to a Multicast Agent by node
  - Reply is ????
  - Format....

00 P	Destination-Address	"LMCG"	"RRP"
0 0	Data-Length=1	0 0	Source-Address
ADDR	PL=0 RL=1	AT=1	1010 Logical-Address
PktWay Trailer			

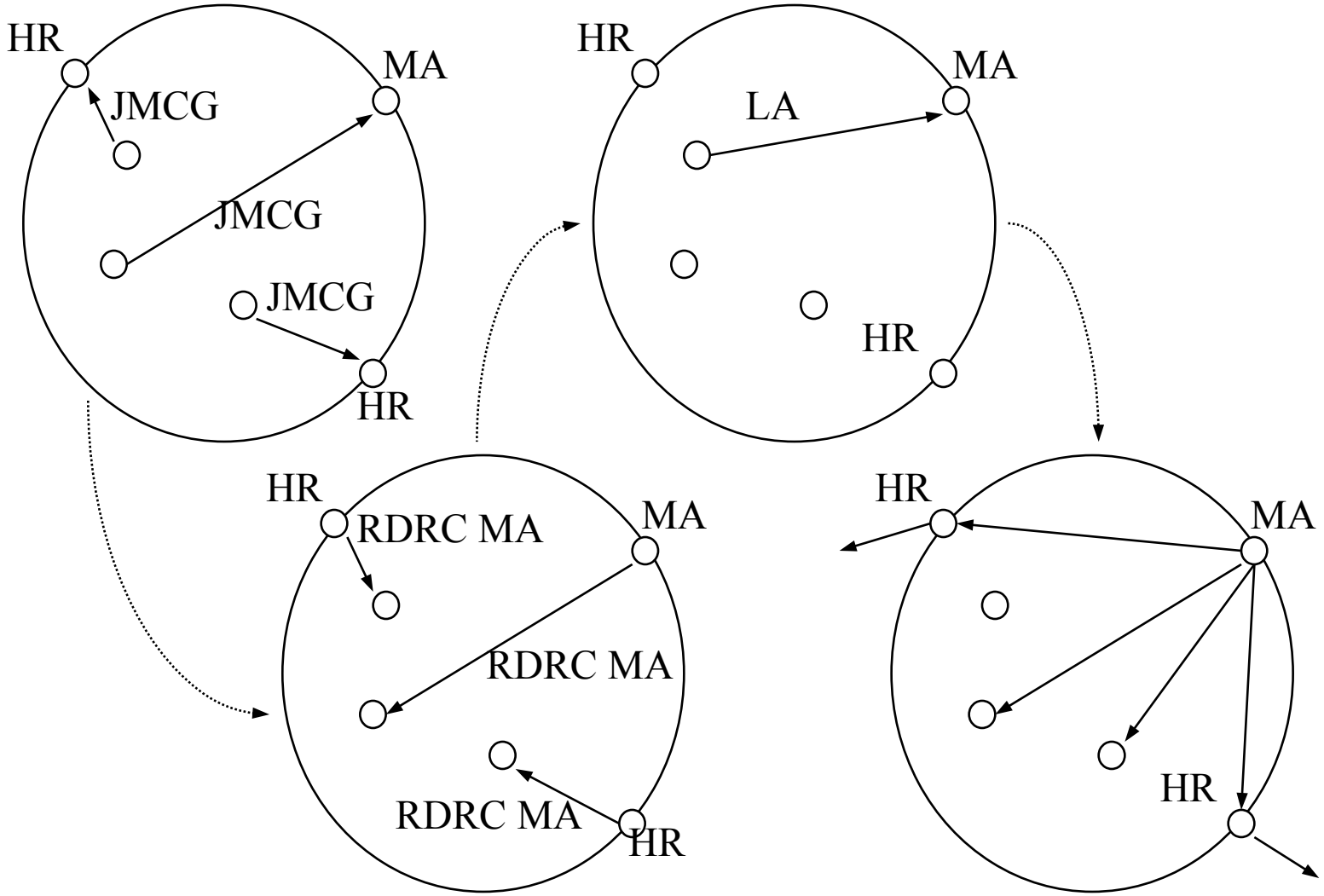
Rules for Multicasting

- Nodes
  - Must insure that all messages sent to a logical address get to the Multicast Agent
  - This can be done directly (point-to-point) or via some physical layer multicast/broadcast
- Half Routers
  - Multicast messages coming into SAN must at least be sent to the Multicast Agent
  - Multicast messages going out of the SAN must be sent to the twin HR **only**

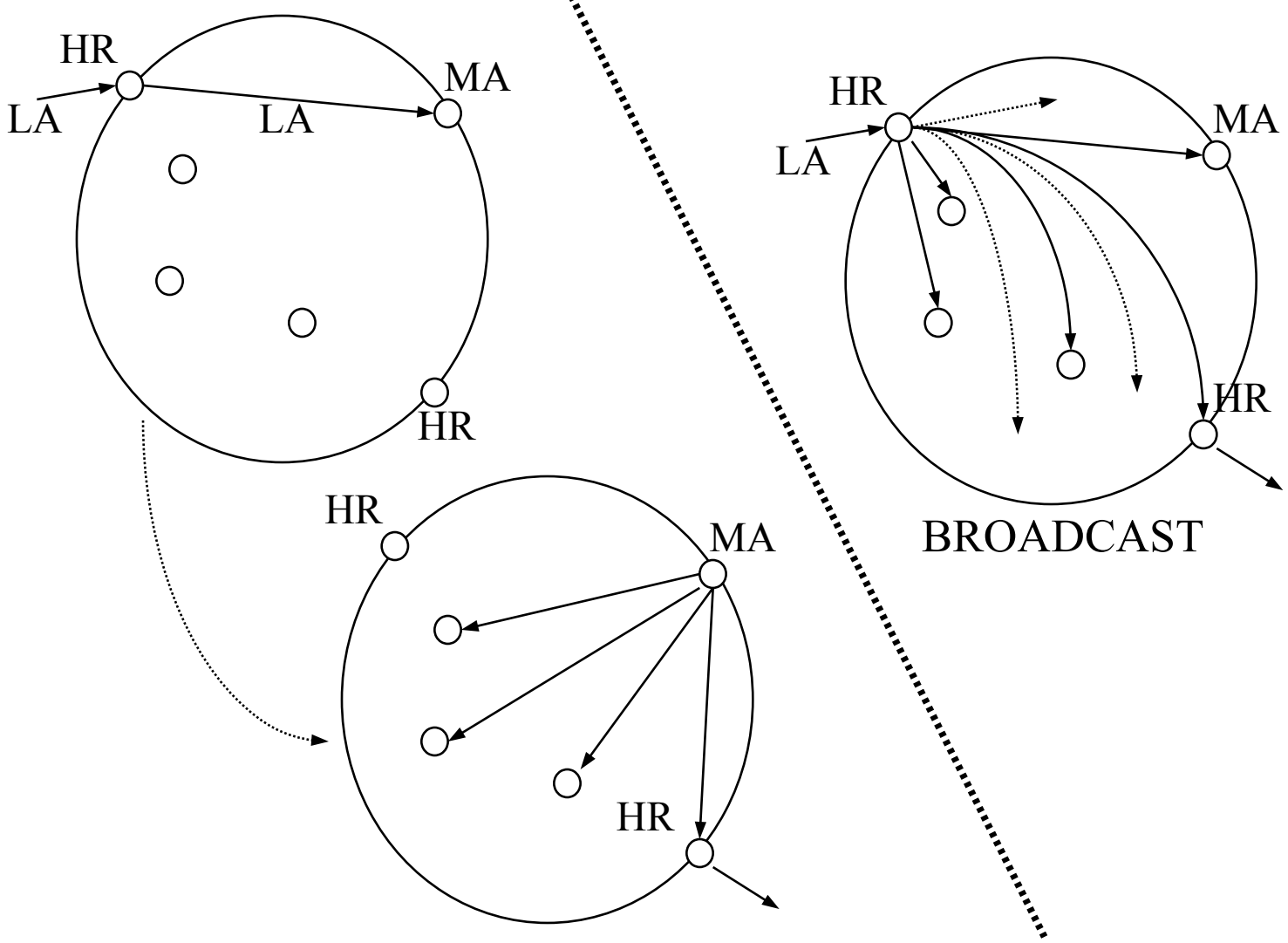
Possible Implementation for Nodes

- ethernet
  - similar to what IP does (RFC 1112)
  - map the logical address space to ethernet address space
  - PktWay multicast is then ethernet multicast
  - Multicast Agent subscribes to all multicast groups
- RACEway
  - can use broadcast or point-to-point
- ATM
  - must use point-to-point

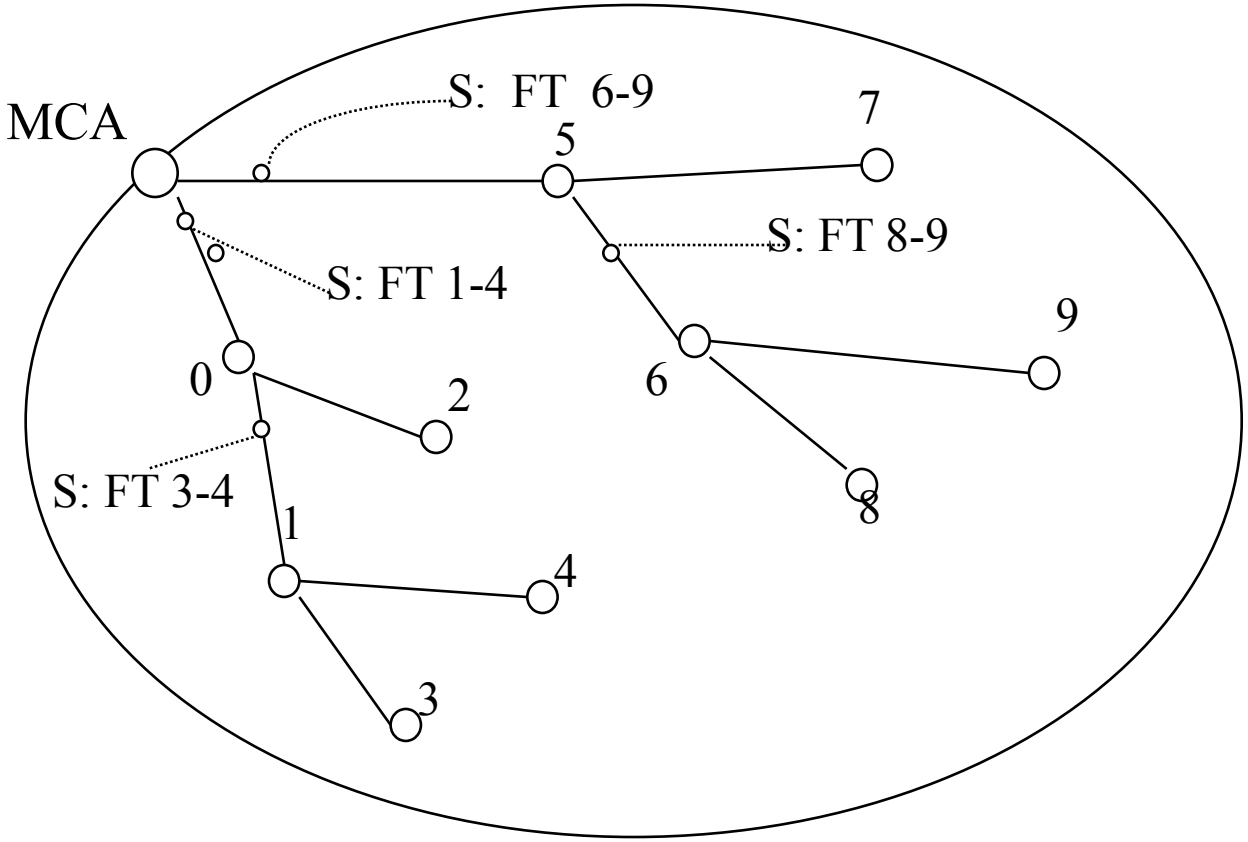
Example (outbound)



Example (inbound)



Use of PW (maybe) Symbols



S: FT 6-9 == This is a symbol, Forward this message To addresses 6 - 9

Potential Duplication Problem

- If there is more than one set of intervening SANs between SAN A and SAN Z...
  - multiple duplicate Multicast messages will arrive at SAN Z
  - FIX: MCA can attach to every Multicast message a SAN ID and SAN sequence number
  - Each MCA, as single entry point to SAN, keeps a table of last sequence number received from each SAN
  - This can be used by the MCA to eliminate duplicate Multicast messages upon entry to SAN