Making Room for IEEE 802 Protocols in the Local Space

Document Number:

Date Submitted:
2014-11-05

Source:
Roger B. Marks
EthAirNet Associates
404 Montview Blvd
Denver, CO 80207 USA
*<http://standards.ieee.org/faqs/affiliationFAQ.html>

Voice: +1 802 227 2253
E-mail: roger@ethair.net

Re: Proposed P802c PAR

Venue:
IEEE 802.1 Working Group

Purpose:
To urge that a swath of local address space be reserved for IEEE 802 protocols.

Notice:
This document represents the views of the author and is offered as a basis for discussion.

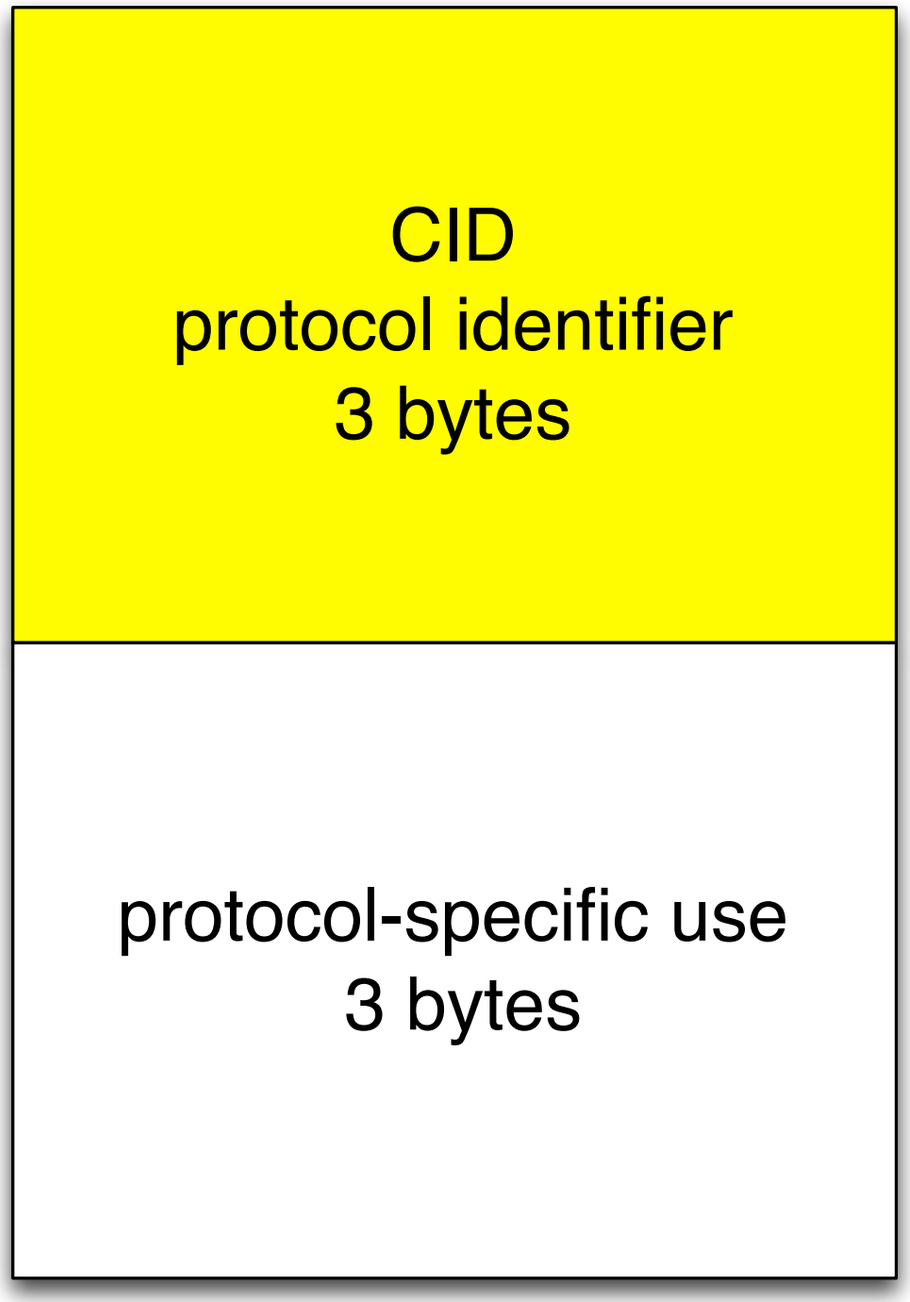
Making Room for IEEE 802 Protocols in the Local Space

Roger B. Marks
EthAirNet Associates

Reference

- *Zonal Address Partitioning in the Local Space*
- Key points
  - NAT-like address aliasing means that local space partitioning in the network core need not be applicable to the edge
  - Local address structuring allows interesting protocols, such as zone-based switching
  - Interesting protocols should be standardized in IEEE 802, not outsourced via Company ID

What I think P802c foresees



What I prefer from P802c

non-802 Protocols

CID
protocol identifier
3 bytes

private CID
protocol-specific use
3 bytes

IEEE 802 Protocols

Header byte

IEEE 802-specified use
6 bytes

Local address details

first three bytes

non-802 Protocols

more assigned CID				RA CID Quadrant		Local bit	Multicast bit
				1	0	1	0

more assigned CID
more assigned CID
more assigned CID

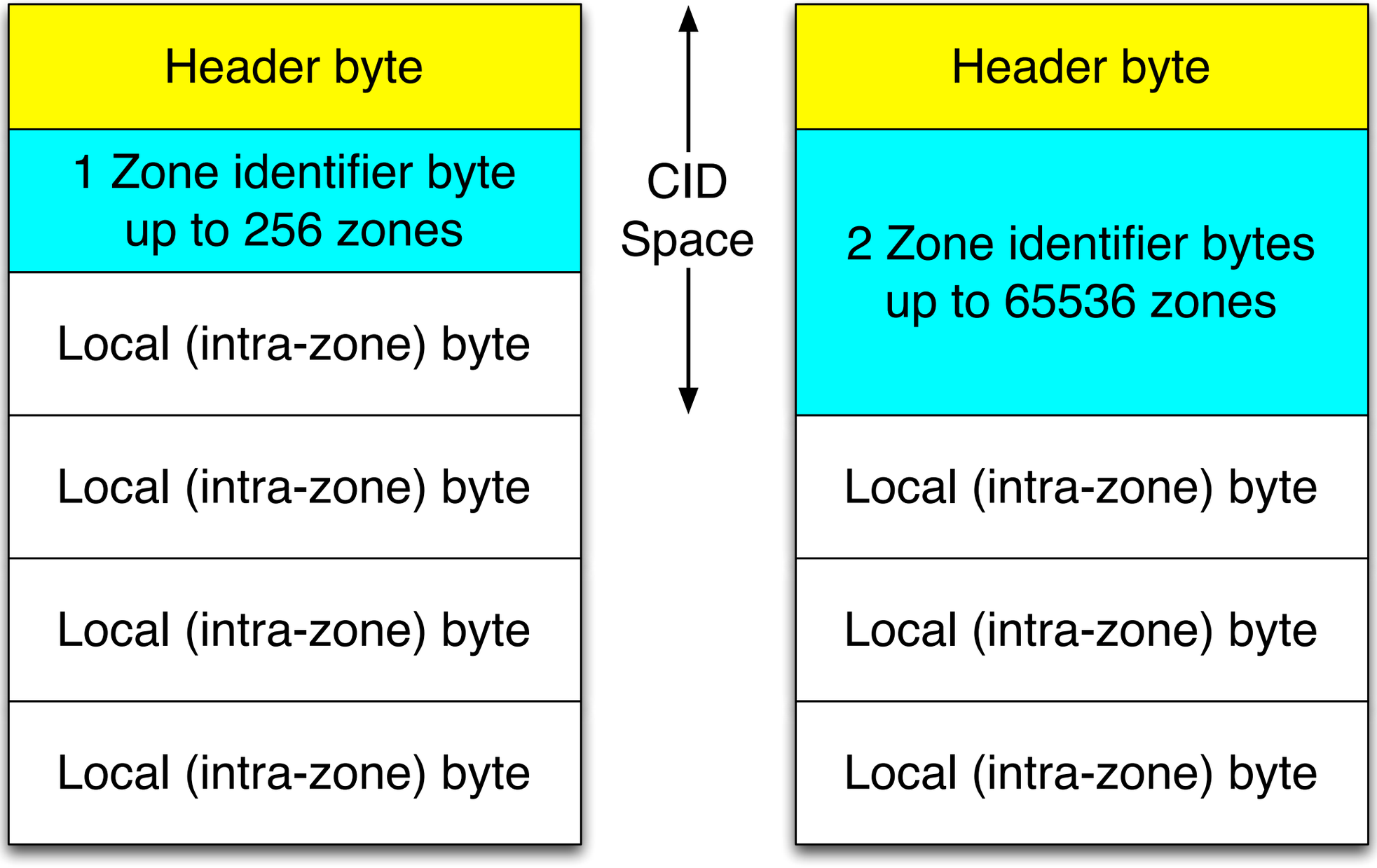
IEEE 802 Protocols

IEEE 802 Protocol Identifiers and Parameters				RA CID Quadrant		Local bit	Multicast bit
				1	1	1	0

Zonal Addressing

Bytes of Zone ID (if zonal)	structure identifier	quadrant identifier	Local bit	Multicast bit
00=1 byte 01=2 bytes 10=3 bytes 11=4 bytes	00=zonal 01=reserved 10 reserved 11 reserved	01 or 11 if RAC agrees to avoid CID allocations (10 is already off-limits, and 00 is slightly problematic)	1	0

Example address structures for zonal addressing



Address Aliasing

Core Switch

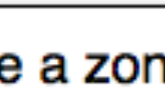
Address is partitioned to incorporate a zone identifier.
Switch selects a port based on zone identifier in the zonal DA.
Switch learns zones, not addresses, based on zonal SA.

Core address

Access Point (AP)

Local mapping table maps each internal (user-side) address to a corresponding external (core-side) alias address.

Access point replaces access address with core alias address in transmissions to core, and vice versa.



Core address	Access address
alias unique within the core	local (could be terminal-selected) or global
alias unique within the core	local (could be terminal-selected) or global

Access address

User

terminal selects among many (46?) random bits

or could use a global address

Address Updating

Core Switch

Address is partitioned to incorporate a zone identifier.
Switch selects a port based on zone identifier in the zonal DA.
Switch learns zones, not addresses, based on zonal SA.

Core address

Access Point (AP)

Local mapping table maps each internal (user-side) address to a corresponding external (core-side) alias address.

Access point replaces access address with core alias address in transmissions to core, and vice versa.

Core address	Access address
alias unique within the core	local (could be terminal-selected) or global
alias unique within the core	Unique, once assigned by AP; could be Identical to Core address

Access address

User

terminal selects among many (46?) random bits

or could use a global address

later, AP assigns unique address (could be identical to Core address)

What *might* an 802c standard say

(1) If a device is used in a domain in which multiple local address assignment or usage protocols are active, then the first byte of the device address should end in 1010 only if the first three bytes of the address are a CID allocated by the IEEE RA and the address is assigned in accordance with the protocol specified by the owner of that CID.

What I’d like an 802c standard to include

(2) If the first byte of an address ends in [for example] {1110 or 111110 or 1111110}, then the address should be interpreted per protocols specified by IEEE 802.