

Carrying Geo Coordinates in BGP

Draft-chen-idr-geo-coordinates-01

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Geo Location in Routing

(From Acee's slides at IETF 95)

- P2P, P2MP, and Hybrid automatic link cost
- Find-My-Router Apps
- Proximity services in content sharing and SFC
- Network topology maps
- Dynamic DNS loadsharing
- Traffic matrix of location pairs
- Same 'subnet' over WAN and ECMP
- Future routing/service/mgmt apps
- Static provisioning, utilize additional information or GPS capable device

Why Geo Coordinates in BGP

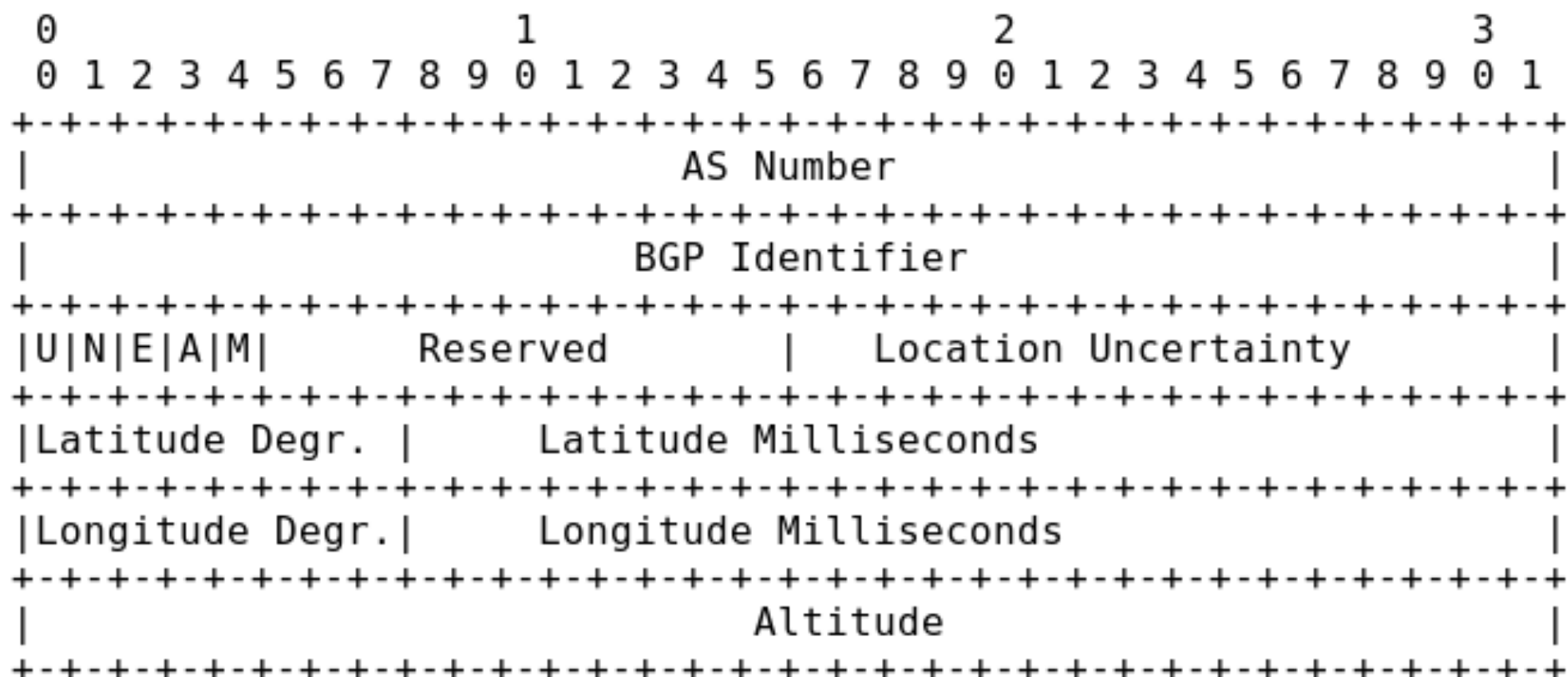
- Certainly for inter-domain
- BGP Path selection in overlay network
- “Service chaining function” optimization
- Replace or supplement community-based location tagging

Geo Coordinate Capability

0										1										2										3									
0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1								
U N E A M										Reserved										Location Uncertainty																			
Latitude Degr.										Latitude Milliseconds																													
Longitude Degr.										Longitude Milliseconds																													
																				Altitude																			

- Flag: U, N, E, A, M
- Location Uncertainty in centimeter
- Latitude and Longitude in milliseconds
- Altitude is a signed integer, in centimeter or meter
- Mostly for EBGP when IGP are accessible

Geo Coordinate Attribute



- One or more such tuples
- Usual policies - prepend / override / strip

How to Use It

- Local policy dictates
- Location based services
- Tie-breaker in path selection
- MED advertisement

Security

- Increase of attack vector
- Geo location information can be sensitive, proprietary or physical security/safety related
- Implementation **MUST** allow removing of the attribute
- Deploy mechanisms for session security and content integrity