

The Internets

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# The Internet

This map depicts the shortest routing routes from a test computer at Lumeta headquarters in Germany, PA, to each of over 300,000 IP addresses or group nodes on the Internet. Each group node can represent a handful of computers in a small network, or perhaps a large company with hundreds of thousands of hosts. Each intermediate node is a router.

This map shows only the shortest path to each destination, not every path that we discover. The A.M. map has about 20 percent more lines and comes out as a colorful blur of IP.

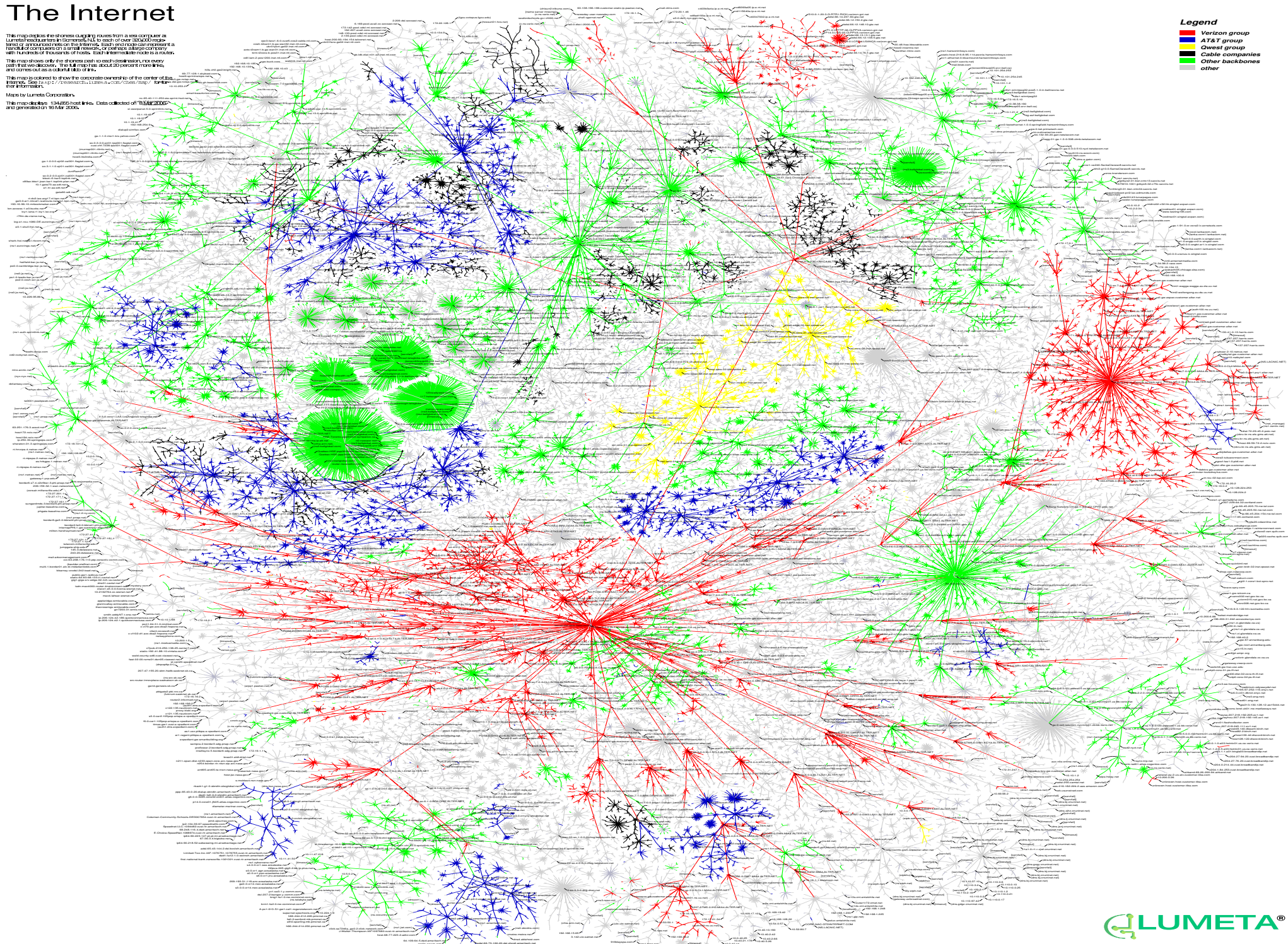
This map is colored to show the corporate ownership of the center of the IP ranges. See <http://2006search.lumeta.com/owner/map/> for further information.

Maps by Lumeta Corporation.

This map displays 15,000 host lines. Data collected on 10/04/2006.

**Legend**

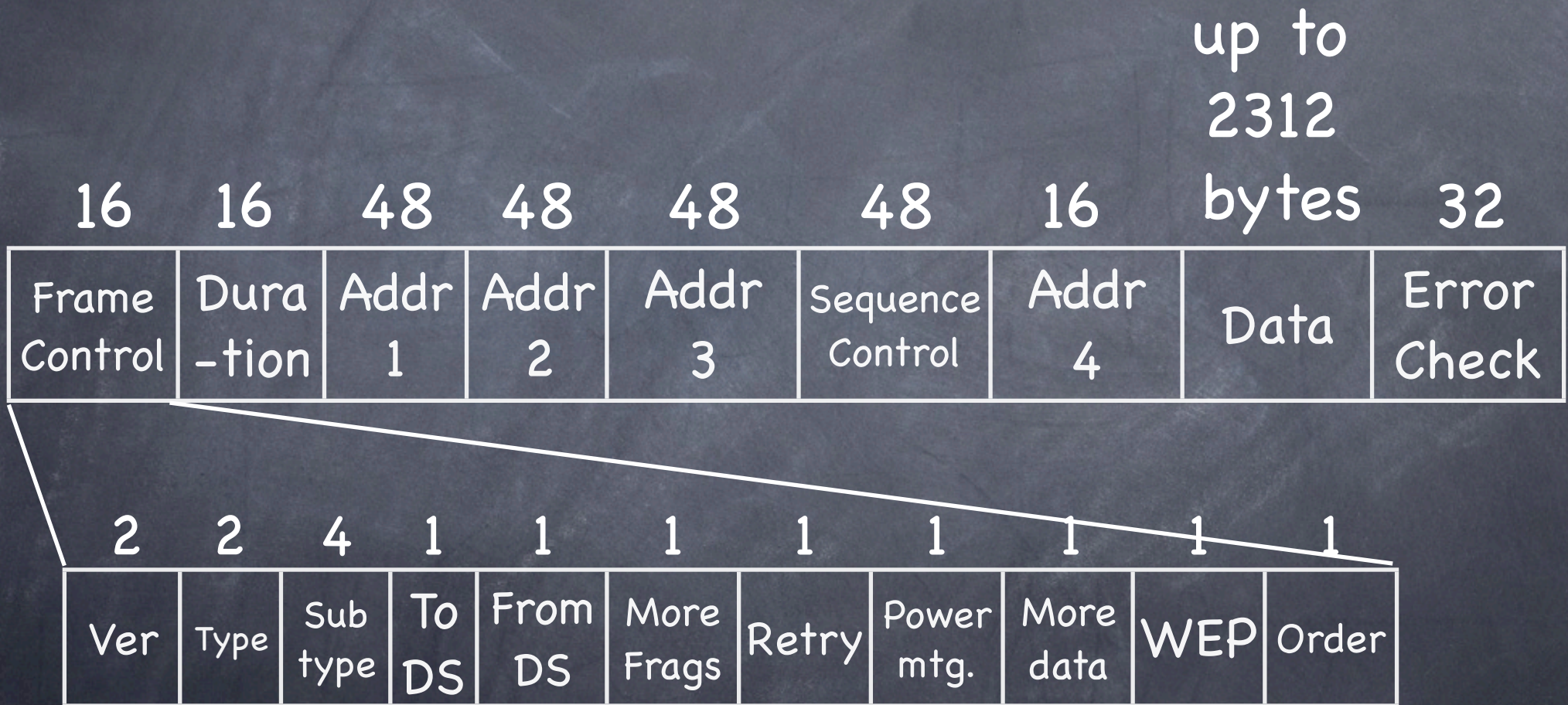
- Verizon group
- AT&T group
- Qwest group
- Cable companies
- Other backbones
- other



# Ethernet Frame Format

|          |    |      |                 |          |                |
|----------|----|------|-----------------|----------|----------------|
| PREAMBLE | TO | FROM | LENGTH/<br>TYPE | DATA     | ERROR<br>CHECK |
| 64       | 48 | 48   | 16              | variable | 32             |

# 802.11 (WiFi) Frame Format



[http://hsi.web.cern.ch/HSI/fcs/spec/overview.htm#b5\\_2](http://hsi.web.cern.ch/HSI/fcs/spec/overview.htm#b5_2)

# FDDI Frame Format



# Who invented the Internet?





IP = ESPERANTO?



# IP Datagram Format

|                          |          |                 |               |
|--------------------------|----------|-----------------|---------------|
| 4                        | 4        | 8               | 16            |
| IP version               | Hdr len  | Service class   | Packet Length |
| Packet Number            |          | Fragment Number |               |
| TTL                      | Protocol | Error Check     |               |
| From Addr                |          |                 |               |
| To Addr                  |          |                 |               |
| DATA (up to 65516 bytes) |          |                 |               |

|                          |            |                  |                  |
|--------------------------|------------|------------------|------------------|
| 4                        | 4          | 8                | 1                |
| IP<br>version            | Hdr<br>len | Service<br>class | Packet<br>Length |
| Packet Number            |            | Fragment Number  |                  |
| TTL                      | Protocol   | Error Check      |                  |
| From Addr                |            |                  |                  |
| To Addr                  |            |                  |                  |
| DATA (up to 65516 bytes) |            |                  |                  |



|          |    |      |                 |          |                |
|----------|----|------|-----------------|----------|----------------|
| PREAMBLE | TO | FROM | LENGTH/<br>TYPE | DATA     | ERROR<br>CHECK |
| 64       | 48 | 48   | 16              | variable | 32             |

# IP Encapsulation

