



Overview of MEF

Mike Tighe
MEF Chairman
Executive Director Product Strategy
Verizon Communications

FutureNet Conference

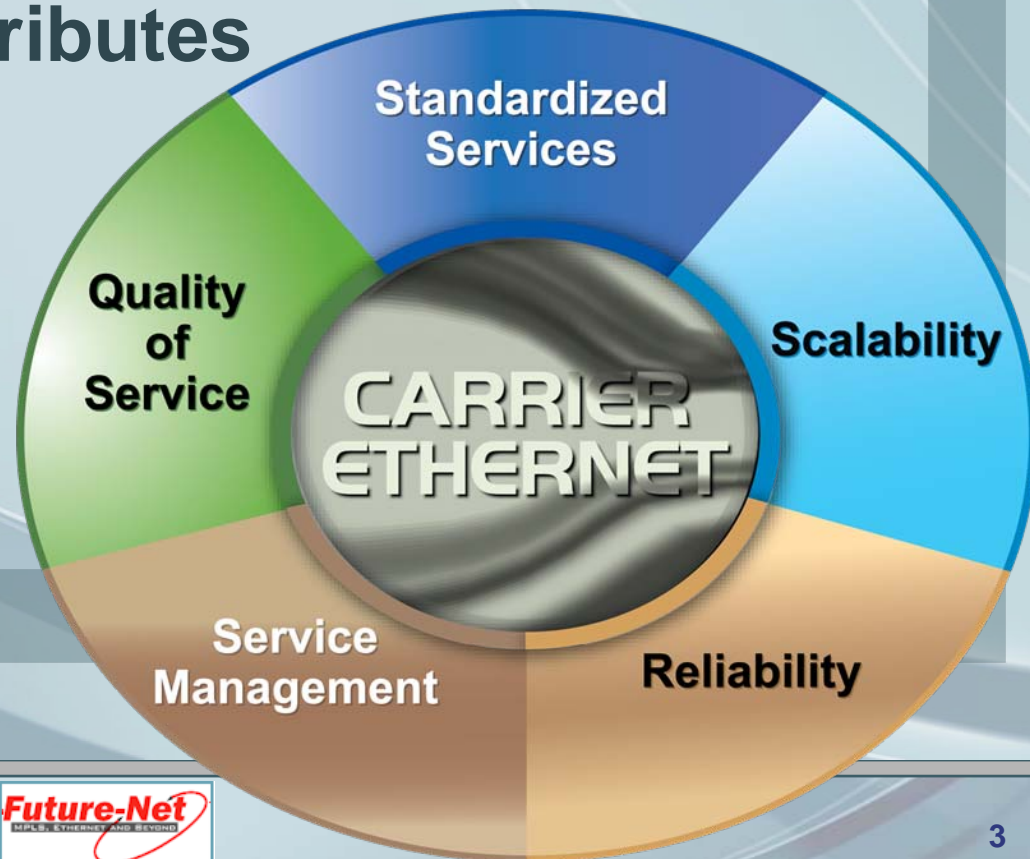
- **What is Carrier Ethernet**
- **Who is the MEF?**
- **The MEF, its mission & key areas of work**
- **Standards & certification**
- **Key industry challenges and the MEF initiatives in these areas**
- **Q & A**

Carrier Ethernet Defined

Carrier Ethernet is:

A ubiquitous, standardized, carrier-class
Service and Network

Defined by **five attributes**
that distinguish it
from familiar
LAN based
Ethernet



Who is the MEF?

- Representative group of 143 service providers, equipment providers & test companies with uniformity of purpose - to accelerate the global adoption of Carrier Ethernet networks & services
- Highly successful in establishing 20+ globally adopted Carrier-class Ethernet specifications
- Over 200+ industry thought leaders at each quarterly meeting developing technical and marketing programs on a global and regional basis



MEF Membership ... Now 142 Companies

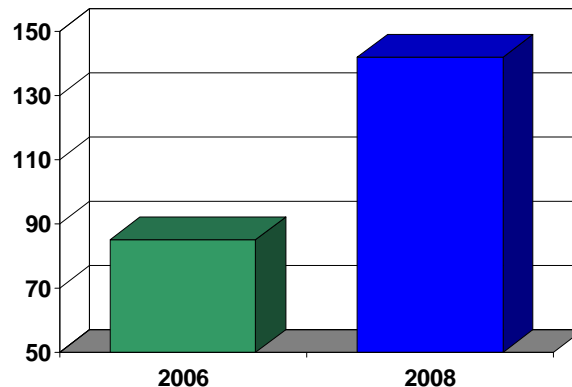
- Continuing growth
 - Membership doubled within 2 years
- Diverse
 - Mix of SP, vendor and test groups
- Commitment
 - Active involvement in Forum workgroups

Service Provider and Cable MSO Members

- | | | |
|--------------------------|--------------------------------|--------------------------|
| • AboveNet | • FiberTower | • Suddenlink |
| • Alpheus Communications | • KDDI R&D Laboratories | • Swisscom |
| • AT&T | • Level 3 Communications | • Symphony Communication |
| • Bell Canada | • ntl: Telewest | • Telecom Italia |
| • Bright House Networks | • NTT Advanced Technology | • Teliasonera AB |
| • British Telecom | • Optimum Lightpath | • Telus |
| • Cable & Wireless | • Orange Business Services | • Time Warner Cable |
| • Charter Communications | • PCCW | • Time Warner Telecom |
| • China Telecom | • PT Prime | • T-Systems |
| • Cincinnati Bell | • Qwest Communications | • Uecomm |
| • Colt | • RCN Business Solutions | • Verizon Business |
| • Comcast | • Reliance Communications | • VSNL International |
| • Cox Business | • Shanghai Information Network | • XO Communications |
| • Demand Broadband | • Singapore Telecom | |
| • Embarq | • Sprint | |

Equipment Vendors, Test Companies, Lab Members

- | | | | |
|----------------------------|----------------------------------|---------------------------|----------------------------|
| • Accedian Networks | • D-Link | • Ixia | • SMC Networks |
| • Actelis Networks | • Do Networks | • JDSU | • Soapstone Networks |
| • Adtran | • Dowlake Microsystems | • Juniper Networks | • Spirent Communications |
| • Advia Optical Networking | • EANTC | • Lightstorm Networks | • Sunrise Telecom |
| • Aethera Networks | • ECI Telecom | • Matisse Networks | • T Pack |
| • Agilent Technologies | • Ericsson | • Maxim | • Tejas Networks |
| • Aktino | • Ethos Networks | • Motorola | • Telco Systems |
| • Alcatel-Lucent | • EXFO | • MRV Communications | • Telcordia Technologies |
| • AMCC | • Extreme Networks | • Nakina Systems | • Tellabs |
| • ANDA Networks | • FibroLAN | • NEC | • Telrad Networks |
| • ARRIS International | • FiberHome Technologies | • Nokia Siemens Networks | • Transition Networks |
| • Atrica | • Fluke Networks | • Nortel Networks Corp. | • Transmode Optical |
| • Aurora Networks | • Foundry Networks | • Occam Networks | • Transwitch Corporation |
| • Axerra Networks | • Fujitsu Network Communications | • Omnitron Systems | • Turin Networks |
| • Bay Microsystems | • Gridpoint Systems | • OpVista | • UNH-IOL |
| • Broadcom | • Hammerhead Systems | • Overture Networks | • UTStarcom |
| • BTI Photonics | • Harris Stratex | • Quosera | • Vitesse |
| • CableLabs | • Hatteras Networks | • PCT International | • Vyvo |
| • Calix | • Hitachi Cable | • RAD Data Communications | • Wuhan Fiberhome Networks |
| • Canoga Perkins | • Huawei Technologies | • Raisecom | • World Wide Packets |
| • Ceterus Networks | • IBM Internet Security Systems | • Rolute Networks | • Zarlink Semiconductor |
| • Ceragon Networks | • IMC Networks | • Rivulet Communications | • Zhone |
| • Ciena Corporation | • Infovista | • Safenet | • ZTE Corporation |
| • Cisco | • Iometrix | • Salira | • Zyxel Communications |
| • Corrigent Systems | • Iptek | | |



Carrier Ethernet Thought Leadership



Mike Tighe

Chairman of the Board and
Director MEF
Executive Director, Business
Product Strategy,
Verizon Corp



Dennis R. Kruse

Director, MEF
Vice President
Network Solutions
Orange Business Services



Paul Bottorf

VP, Secretary, Director
Co-Chair of MEF Technical
Committee.
Director, Switching
Architecture, Nortel Networks



Nan Chen

President and Director
MEF



Arie Goldberg

Director MEF
Founder & CEO
Omnitron Systems



Eric Puetz

Director, MEF
Executive Director, Metro
Technologies
AT&T Labs, Inc



Brendan Gibbs

Director, MEF
Senior Director,
Ethernet Product
Marketing, Cisco



Gloria Zhang

Deputy Managing Director
International Business
Department
China Telecom



Matt Squire

Director, MEF
Chief Technology Officer,
Hatteras Networks



Kevin T. Curran

Director, MEF
Senior Vice President
Marketing, Cablevision
Systems Corporation



Alireza Mahmoodshahi

Director, MEF
CTO, COLT



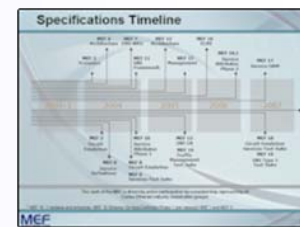
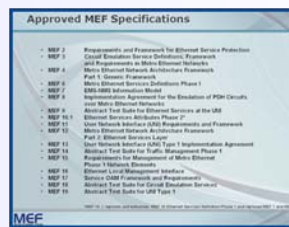
William Bjorkman

Co-Chair of MEF Technical
Committee.
Chief Ethernet Architect
Verizon Communications

MEF Mission & Key Areas of Work

Accelerate the worldwide adoption of Carrier Ethernet networks and services

Specifications and Liaison



Marketing Carrier Ethernet

Certification Program

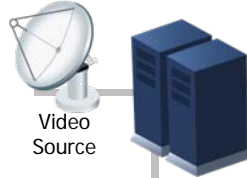


Carrier Ethernet Scope and Reach

Internet information
& Software apps



HD TV, TVoD, VoD,
Content Providers



Host applications,
Consolidated Servers



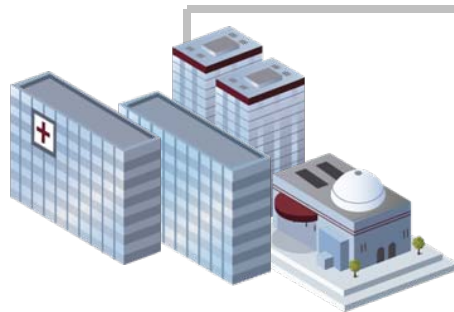
Gaming, DR, ERP



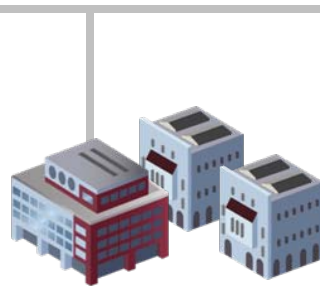
Voice/Video
Telephony



Carrier Ethernet wire-line and mobile backhaul
with copper, fiber, cable, wireless access network delivery



Enterprise Clients



Small/Medium Business



SoHo & Residential Triple-Play



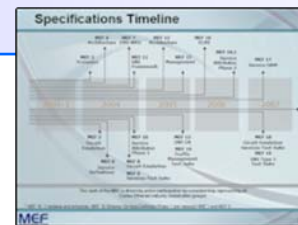
Mobile data/video

MEF Key Specifications

- **Architecture**
 - **MEF 4**, Generic architecture provides a basis for offering services and building out national/international networks
- **Services**
 - **MEF 6 – Ethernet Services Definitions** –defines E-Line and E-LAN service types, and defines in detail Ethernet Private Line (EPL) and Ethernet Virtual Private Line (EVPL) service
 - **MEF 10.1 - Ethernet Service Attributes** – Phase 2 defines the key UNI and EVC attributes that can be used to build services.
- **Abstract Test Suite for Ethernet Services**
 - MEF 9 & MEF 14 - basis for certification of vendor equipment and service provider services



Approved MEF Specifications	
MEF 1	Requirements and Framework for Ethernet Service Protection
MEF 2	Global Ethernet Service Definitions Framework
MEF 3	UNI Requirements in Metro-Ethernet Networks
MEF 4	Multi-Ethernet Network Architecture Framework
MEF 5	Part 1: Generic Framework
MEF 6	Ethernet Services Definitions Framework
MEF 7	Part 1: Ethernet Services Definitions Framework
MEF 8	Part 2: Ethernet Services Definitions Framework
MEF 9	Abstract Test Suite for Ethernet Services of the UNI
MEF 10	Ethernet Service Attributes Phase 1
MEF 11	User Network Interface (UNI) Requirements and Framework
MEF 12	Multi-Ethernet Network Architecture Framework
MEF 13	Part 2: Ethernet Services Definitions Framework
MEF 14	Abstract Test Suite for Traffic Management Phase 1
MEF 15	Requirements for Management of Metro-Ethernet Phase 1: Network Elements
MEF 16	Ethernet Local Management Interface
MEF 17	Service OAM Framework and Requirements
MEF 18	Abstract Test Suite for Global Ethernet Services
MEF 19	Abstract Test Suite for UNI Phase 1



Why a Certification Program?



- Assures service providers that Carrier Ethernet Equipment complies with MEF Specifications
- Assures enterprises that Certified Carrier Ethernet services will perform to defined service level specifications – *minimizes risk*
- Facilitates migration to Carrier Ethernet – Assurance that SP Carrier Ethernet offering is reliable and supports converged applications

“Are you MEF compliant?” frequently seen in RFP’s

Approaching 500 systems and services certified



19 service providers, 59 equipment manufacturers

Industry Challenges & MEF Initiatives

Challenge	MEF Work
<i>Service Availability</i>	<ul style="list-style-type: none">• MEF E-NNI Project delivers standards-based means of network-network interconnect, accelerating provisioning of customer orders• Wholesale Access Interconnect Group defining Access Services & wholesale processes• Access Technology Group promotes use of MEF specs including OAM on all available access technologies (copper, fiber, cable etc.)
<i>Support Evolving Requirements</i>	<ul style="list-style-type: none">• Mobile Access Working Group supports evolving voice, data and content requirements of mobile operators.• ESD2 - E-Tree, and detailed definitions for four new services – EP-LAN, EVP-LAN, EP-Tree, and EVP-Tree.
<i>Service Management</i>	<ul style="list-style-type: none">• UNI Type 2 will add manageability between the customer and network for Ethernet services.• NID Network Interface Devices enables Service Provider management of Ethernet services to the customer's premises.

Enterprise and SP Networking Challenges

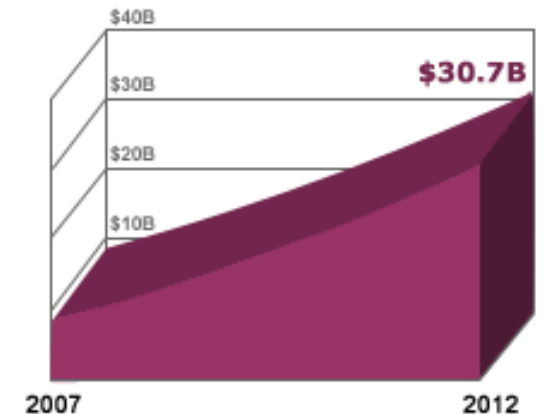
- **Massive Growth of IP Applications & Content**
 - Enterprise bandwidth requirements growing 40-60% per year
 - SP bandwidth requirements growing over 100% per year
- **Scalability & Cost Effectiveness**
 - Legacy services e.g. TDM and ATM cannot meet requirement
 - Price compression of Public & Private IP Services
- **Availability of Capacity**
 - Cell Towers, Branch Offices, Rural Data Centers

Worldwide Business Ethernet Services

Worldwide revenue for Business Ethernet Services mounts steadily to nearly \$31 billion by 2012.

- Robust enterprise customer demand is projected for the next five years, with double-digit annual growth across all geographic regional markets: Asia/Pacific, EMEA, U.S., and ROW.
- Service providers throughout the world are committed to Ethernet as the future ubiquitous standard for network service connectivity.
- Ethernet equipment vendors are actively enabling this important transition.
- Customer accessibility to fiber facilities is the top challenge to worldwide growth of Ethernet services.
- Detailed market statistics are available through Vertical Systems Group's **ENS Research Programs** (www.verticalsystems.com).

**Worldwide Ethernet Services
Business Applications**
Revenue in \$Billions



Copyright Vertical Systems Group - **ENS**
www.verticalsystems.com

Business applications for Ethernet Services include Dedicated Internet Access (DIA), Ethernet Private Lines, Ethernet LAN / VPLS, and Ethernet access to other network services (e.g., IP/MPLS VPNs, Frame Relay, etc.).

Carrier Ethernet for Business

Covered in “Market Drivers” presentation

What are the drivers behind the growth of Carrier Ethernet for enterprises and business users?

- Top Market Sectors
- Benefits
- Principal Applications



Questions?