



Convergence ?

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The Converged Utopia

- A small number of vertically integrated service providers leveraging their base infrastructure investment into a high margin service delivery retail system using a single network platform for service delivery
- Low cost, high value, strong control, fantastic margins!

Wouldn't it be good if...

- You could operate all forms of real time and data services within a single network and a single switching plane
- Your carriage plane could support graded service responses for each class of service usage
- You could support both high resilience high quality real time and various profiles of data services, and all points in between within a common switched network platform
- You only needed a single protocol, a single carriage architecture and a single OSS to drive the entire network operation
- That you could account for, and tariff, delivered services rather than just packets
- Customers paid you for differentiated value-added service solutions, not simple carriage services

Good, but hopelessly unrealistic

- The drive for convergence of services in a single delivery system is a persistent theme in this industry:
 - Mixing Data and Voice with ATM
 - Mixing circuits and packets with MPLS
 - Mixing Video, Voice and Data with Triple Play
- Each new generation of carriage technology is heralded as the harbinger of a wondrous new converged era of communications service provision

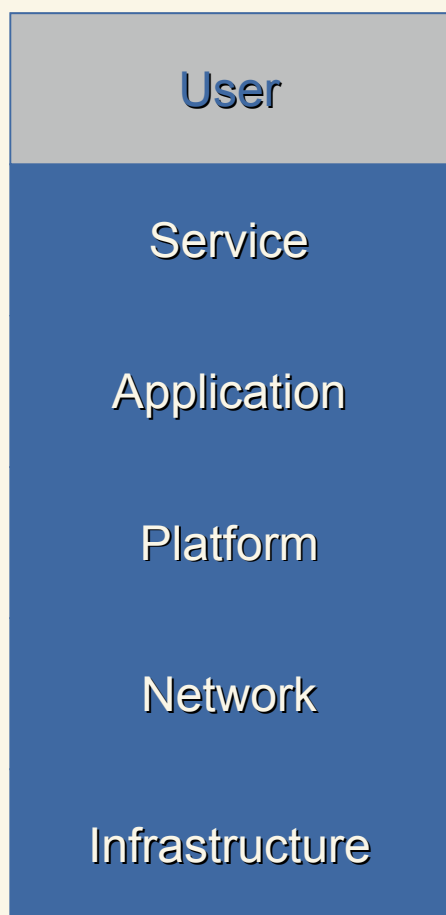
The Unconverged Reality

- Deregulation, intense competition, branching role specialization
- Resulting in many parallel service delivery networks, exposure of niche markets, industry-wide duplication of activities, continual exposure to inefficient resource use, limited planning capability, high investment risks, low prices, low operating margins, negative returns on equity investments

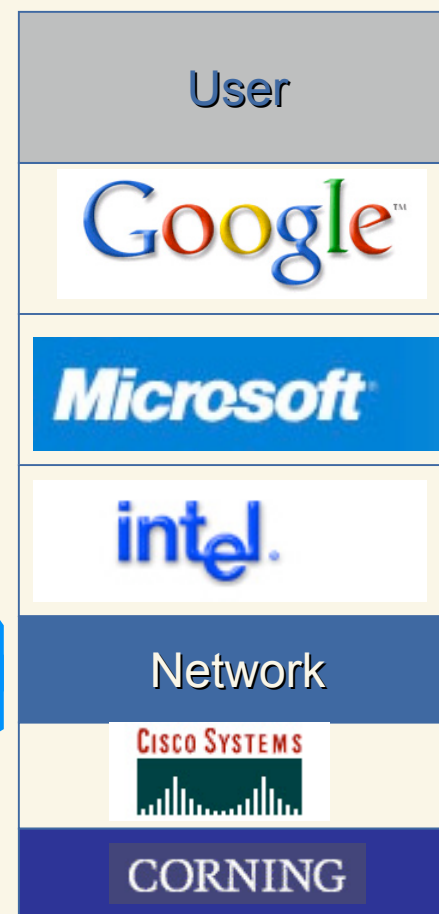
The IP Carrier Role

- The Carrier IP business is being pushed into the roles of:
 - Commodity IP transit provider
 - Consumer market undifferentiated IP access
 - Providing basic packet plumbing in an undifferentiated commodity role

Today's Carrier Squeeze Play



The Nostalgic Model



Reality

Optimism vs Reality

- Voice is no longer the emperor – its reign is over
 - Voice is becoming just another UDP application (and a low volume one at that)
 - Voice signalling is just a SIP rendezvous question
 - VOIP + ENUM is inevitable

Optimism vs Reality

- Triple Play time is over – BitTorrent won



Optimism vs Reality

- Value-Added service networks are causing value added service network providers to go value-added negative EPS
- Overlays now own the user

Optimism vs Reality

- The Internet's major leverage was always cheaper price and lowest common denominator service profiles in the network
- Arming networks with complex quality and service manipulation capabilities is a lose – arming networks with bandwidth is a superior strategy – QoS, NGNs and their converged ilk have lost the plot

Optimism vs Reality

- IP Transit is a volume-based low-value commodity activity
- IP Access is a volume-based low-value commodity activity

Optimism vs Reality

- There is no next vertical “killer app”
- Overlays have already claimed the user!
 - Think XML, Ajax, RSS, Rendezvous, Torrents, Podcasts

Optimism vs Reality

- Bandwidth really is cheap if you can fill the conduit, and IP transports are elastic demand applications



Value transfer has already occurred

Value Redistribution in the Industry

INNOVATOR	EPS (\$)	MKT CAP (\$B)
MCIW	-11.22	6.5
SPRNT/NXTL	-0.31	34
VERIO/NTT	1.98	71.6
LEVEL3	-0.74	1.9
SBC/T	1.41	78
QWEST	-0.45	7.7
COGENT	-7.42	0.2
GLBC	-13.84	0.3
SAVVIS	-0.90	0.12
ABOVENET	n/a	n/a
WILTEL	n/a	n/a
TELEGLOBE	-0.74	0.2
C&W	0.70	4.7B
TWTELCOM	-1.12	1.0
(TWARNER)	0.48	82
XO	-2.18	0.4

INNOVATOR	EPS (\$)	MKT CAP (\$B)
CISCO	0.87	108
GOOGLE	3.41	97
AMAZON	1.25	19
YAHOO	1.07	49
EBAY	0.73	51
JUNIPER	0.53	13
APPLE	1.56	47.
INTEL	1.33	141
VERISIGN	0.93	6.15
DELL	1.27	76.3
MICROSOFT	1.12	269B

source: finance.yahoo.com, 25 oct 2005

Kim Claffey – CAIDA – ARIN XVI IPv4 Roundtable – 26 October 2005

ISP Survival Principles

- Stick to the basics - keep the overheads low and keep the network offering simple, stable, fast and cheap
- User value construction is happening at the edge of the network through overlay structures – opening the network edge up for innovation

What have we learned?

- Vertically integrated service providers have faded away- the deregulated service industry continues to specialize rather than generalize
- Valued service delivery is increasingly based on overlay systems that treat the network as a simple transmission service

- The Converged Utopia of the old world carrier industry remains a piece of nostalgic mythology
- The Unconverged service world of IP is vibrant, innovative, exciting and very much alive
- And maybe that's a Very Good Thing