



# After the Deluge

Rebuilding a post-disaster packet  
processing business

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# Facing Facts: Consolidation Isn't Over!

- ✦ Expect one more round of shrinkage, particularly in photonic components and optical access OEMs
- ✦ Communications upticks will lag behind IT upticks by at least 2 to 3 quarters
- ✦ Even those newcomers who managed successful first rounds in 1H'01 may not be able to live through second rounds



# Facing Facts: Continued Buyer's Market

- ✦ Even if Cisco, Nortel and Lucent are working off *some* inventory, pricing will remain depressed due to availability of "eBay routers."
- ✦ Innovative equipment from startups may bubble above noise (particularly as Cisco kills Monterey, Lucent kills Chromatis), but startups must price equipment attractively
- ✦ At the same time, vendor financing of carriers is *verboten*, and a sure path to death



# Facing Facts:

## Few Carriers for Your Customer's Customer

- ✦ A CLEC market might rise again – but not before 2003 or 2004
- ✦ 1999-2000 overbuild means the only potential for new physical-layer installation is offshore
- ✦ New overlay equipment *might* be attractive added to existing fiber infrastructure – but only at the right price, right feature set

# Don't jump from that ledge – yet!

✦ Yes, Virginia, there is a communications semiconductor business out there somewhere – provided we are smart and prepared for sustained, drawn-out recovery process



# Carrier Realities, Post-2001

- ✦ Usage-based billing is the only way to make a profit, John Perry Barlow notwithstanding – the days of all-you-can-eat Internet access are *over*
- ✦ Residential broadband access still can happen, but at higher rates than DSL CLECs assumed
- ✦ Fine-grained QoS means deep packet classification, complex processors in access equipment *required*

# Carrier Realities, Post-2001

- ✦ Some day, economics may dictate all traffic moving to IP packets. Some day is not next year.
- ✦ Carriers have no incentive for removing Sonet terminals from their networks, or even TDM multiplexers. TDM and circuit-switching will remain important parts of the backbone
- ✦ Make sure your network processor handles aggregation of TDM channels

# Carrier Realities, Post-2001

- ✦ Everything we said about OC-192 and OC-768?  
Add at least two years
- ✦ The 10-Gbit growth market begins now, the 40-Gbit market in a few years
- ✦ Does your packet processor handle "legacy" OC-48 and OC-12 services? *It had better do so!*
- ✦ What happens to optocomponent specialists working on 40-Gbit problems like PMD? Hmmmm





# Carrier Realities, Post-2001

- ✦ Will breathing space allow more adoption of IPv6? Or will it encourage more use of G-MPLS in an IPv4 environment? Or will all IP routing protocols stay the same?
- ✦ Who knows? Keep R&D programs active in all these areas, as no definitive answer to these questions exists

## ● A Few Bright Spots in 2001 (Bright Spots = "sucks the least")

- ✦ 802.11 (a, b, and possibly g) is finally moving!  
Certainly a more exciting market than Bluetooth
- ✦ Fixed wireless might really prove to be a neat broadband alternative!
- ✦ Linux is making serious inroads into Wintel, Solaris, etc. And Microsoft might actually have a working OS with XP.

# A Few More Bright Spots...

- ✦ The metro framing debate on Ethernet in First Mile, use of RPR in metro rings, etc. could lead to interesting products
- ✦ Motorola's compound semiconductor announcement (III-V on STO on silicon) might jump-start a new era in opto-electronic integration, or RF/IF/baseband integration.
- ✦ MSOs are updating HFC infrastructures with interesting packet processors in the headend



Breathe In, Breathe Out,  
Save Money, Head Down...

- ✖ There's no FEMA after this flood. You're on your own
- ✖ Too severe a layoff posture will leave you devoid of seed corn
- ✖ Be prepared to weather several more quarters of minimal profits
- ✖ Use accrued vacation time, cut the soles of your shoes, sit in a tree, learn to play the flute