

IP Infusion

IPv6 Routing on Servers & Appliances

IPv6 Forum

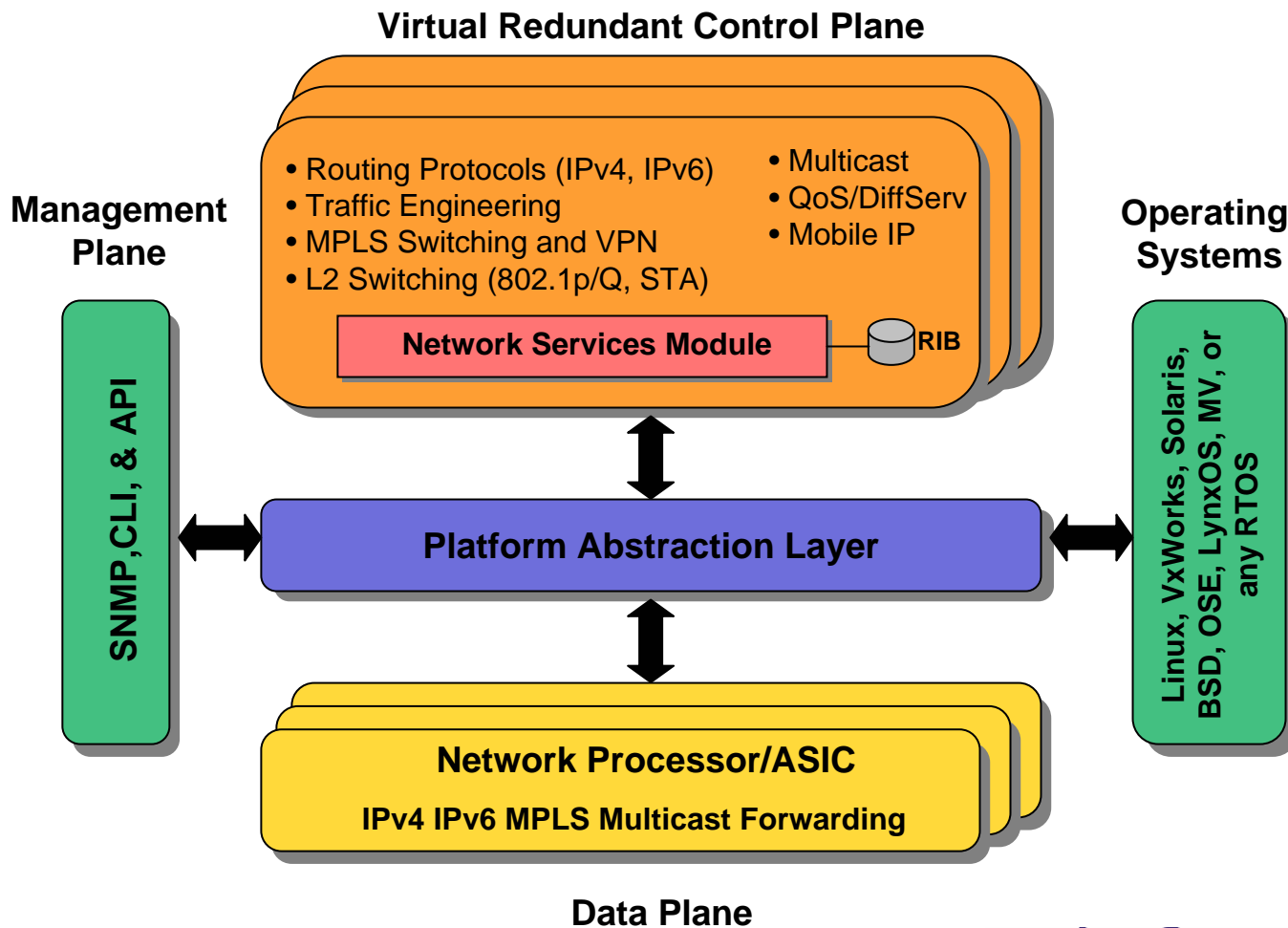
Gary Hemminger

VP Product Management

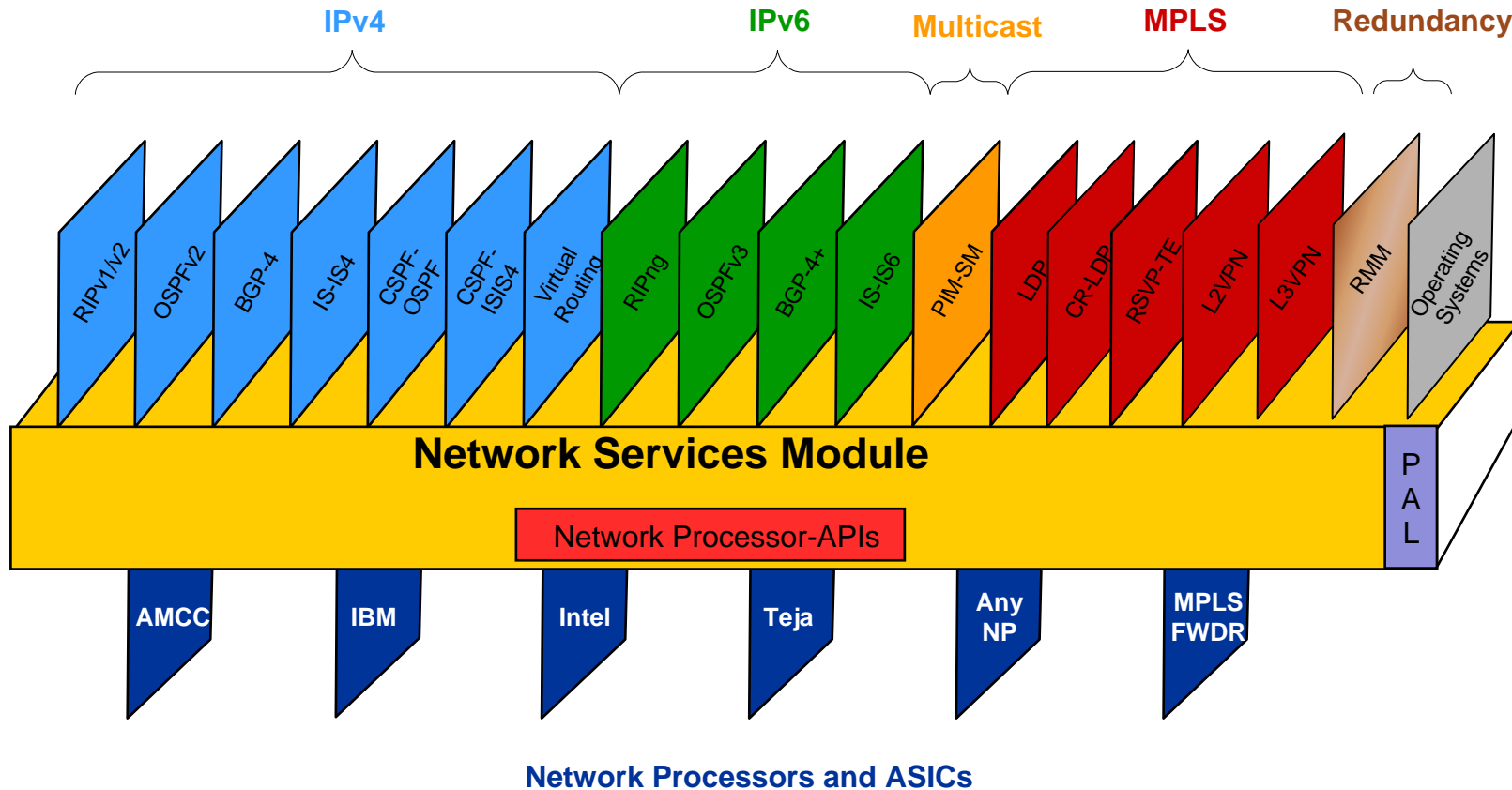
IPv6 Routing on Servers & Appliances

- IP Infusion software architecture
- IPv6 routing & transition software
- Turning Appliances into IPv6 Routers
- IPv6 Applications & Transition

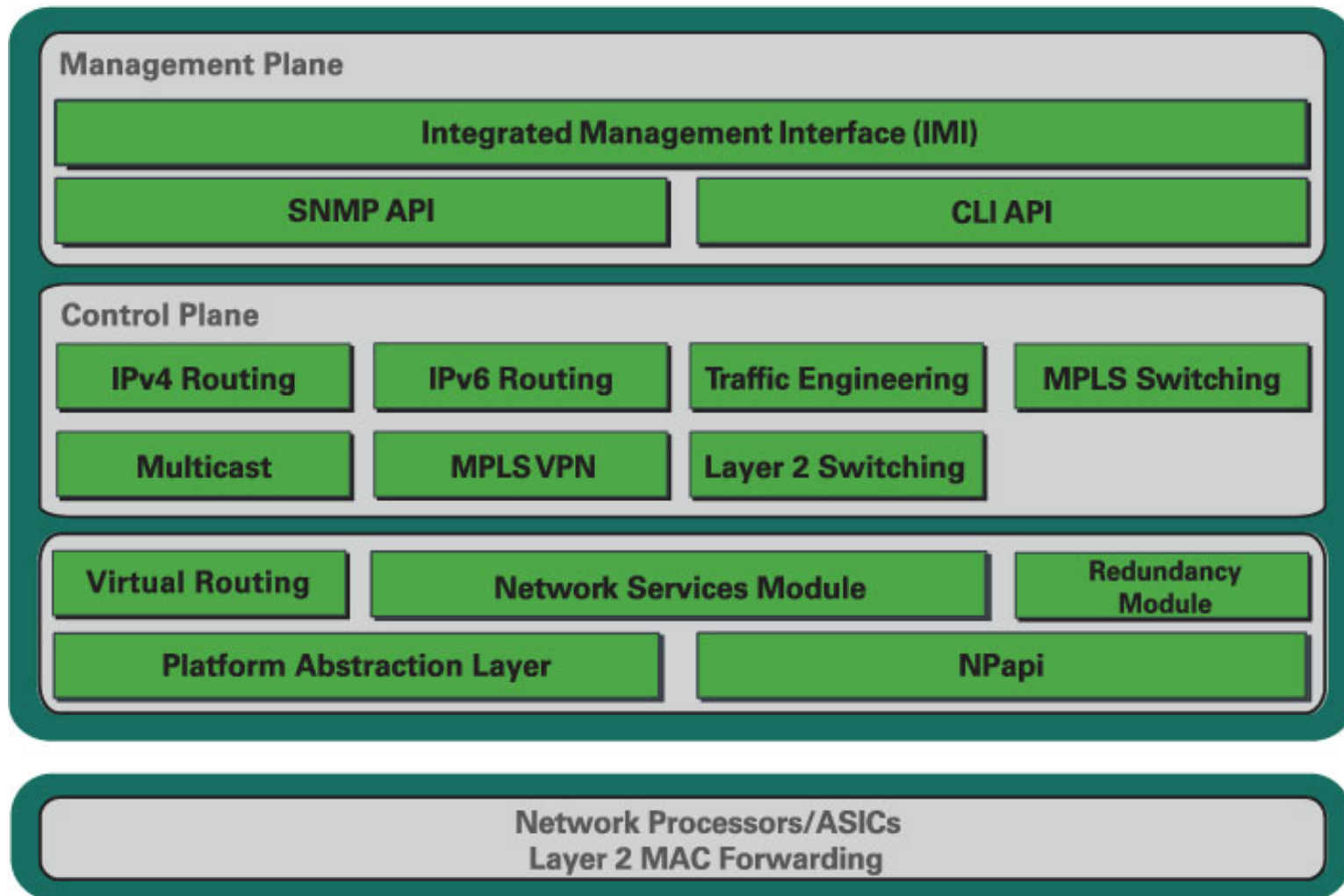
ZebOS Core Technology



Protocol Building Blocks Using ZebOS Network Services Module



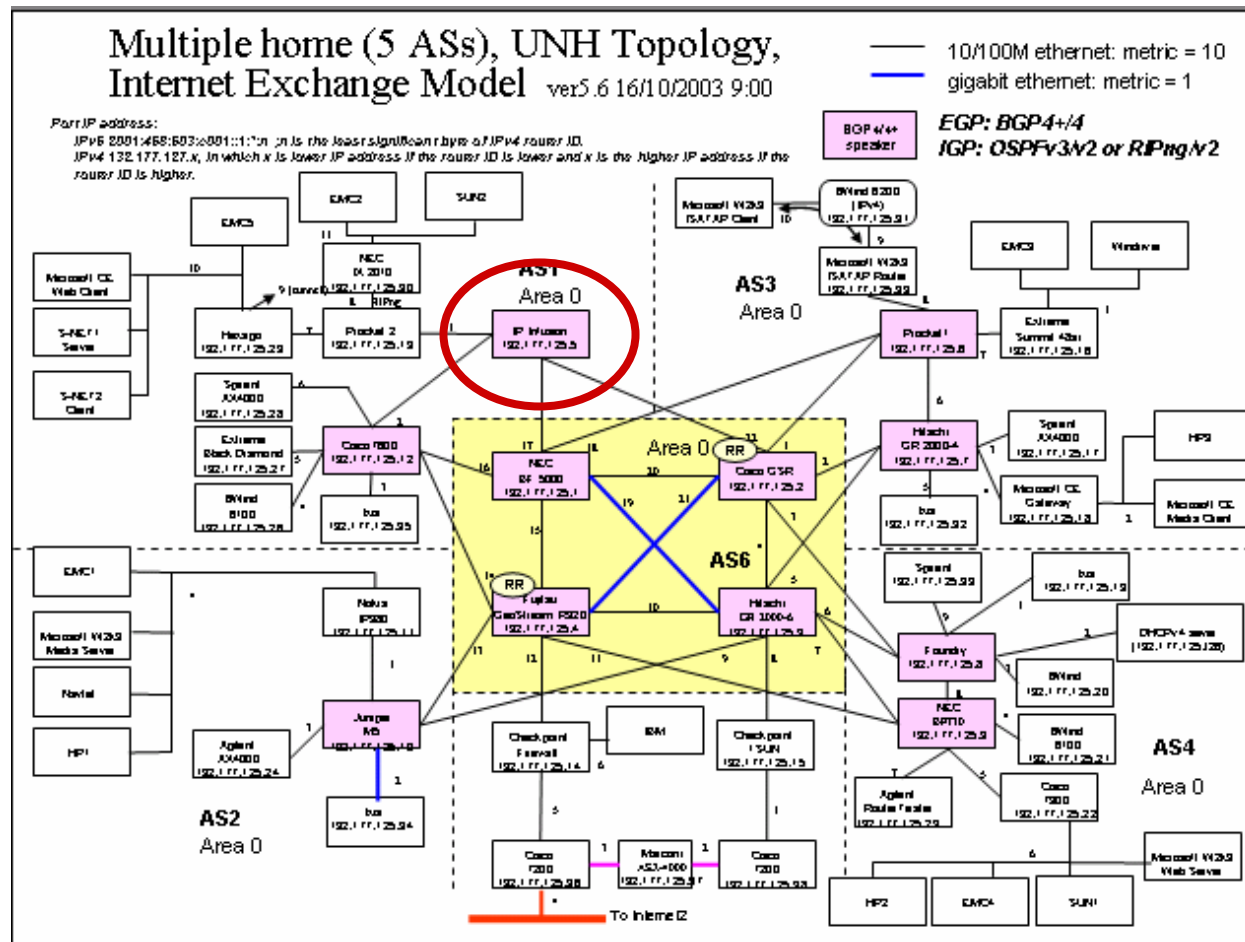
ZebOS Suite of Protocols



IP Infusion's Customers (partial list)



Moonv6 UNH Testbed Topology



IP Infusion was the only software routing vendor

ipinfusion™

IPv6 Routing & Transition Software

- **IP Infusion software modules include:**
 - RIPng, OSPFv3, BGP-4+, IS-ISv6
 - Traffic Engineering extensions to OSPFv3
 - Mobile IPv6 Home Agent
 - 6to4, GRE, IPIP, ISATAP
 - PIM-SMv6 in development
- **Fully integrated with IPv4 Routing, MPLS, DiffServ/QoS, Advanced L2 VLAN modules**
- **Industry standard command line interface & management utilities**
- **Our software is sold to OEM's & Enterprises**
- **ZebOS is used in the 6Bone, Moonv6, and in tester products that you have probably already used.**
- **In Moonv6, the ZebOS IPv6 software was used in 6 of the 12 routers installed at UNH (most we can't tell you about, but one of them was Foundry).**

Turning Appliances into IPv6 Routers

- ZebOS runs on Linux and Solaris
- We can turn any appliance into an IPv4 and IPv6 router, as well as an MPLS and L2 Switch
- We have many customers using our software on an appliance as a replacement for a router (mainly tier 2 ISPs)
- At Moonv6 we are the only software router running on a PC (in this case a Dell box)
- Take our software, put it on a Linux appliance or Solaris server, and you have a very capable router

Simplifying Software Routing

- Too hard to install Linux, then our software, then add Linux patches (ie multicast forwarder, ECMP support, MPLS forwarder, TCP MD5 patch), then configure router
- Customers want to have one software image which when loaded installs everything and they just configure the router
- Early Q1 2004 IP Infusion will have software that you load onto an appliance and up comes a router interface (IPv4, IPv6, Multicast, VRRP, L2 VLAN)

Optimizing Software Routing

- **Software routing on appliances has inherent performance limitations ...intra-card performance is good, but inter-card performance doesn't scale well**
- **IP Infusion is working with the Intel IXP425/2400/2800 network processor to build integrated high-performance routing solutions**

IPv6 Applications & Transition

- **Main applications for IPv6 are probably peer-to-peer and mobility**
- **How will transition from IPv4 to IPv6 go?**
- **Will transition be over a long period?**
- **Will it require translation support (ie NAT-PT) or will dual-stack, ISATAP approaches work best?**
- **Will IPv4 ever go away?**