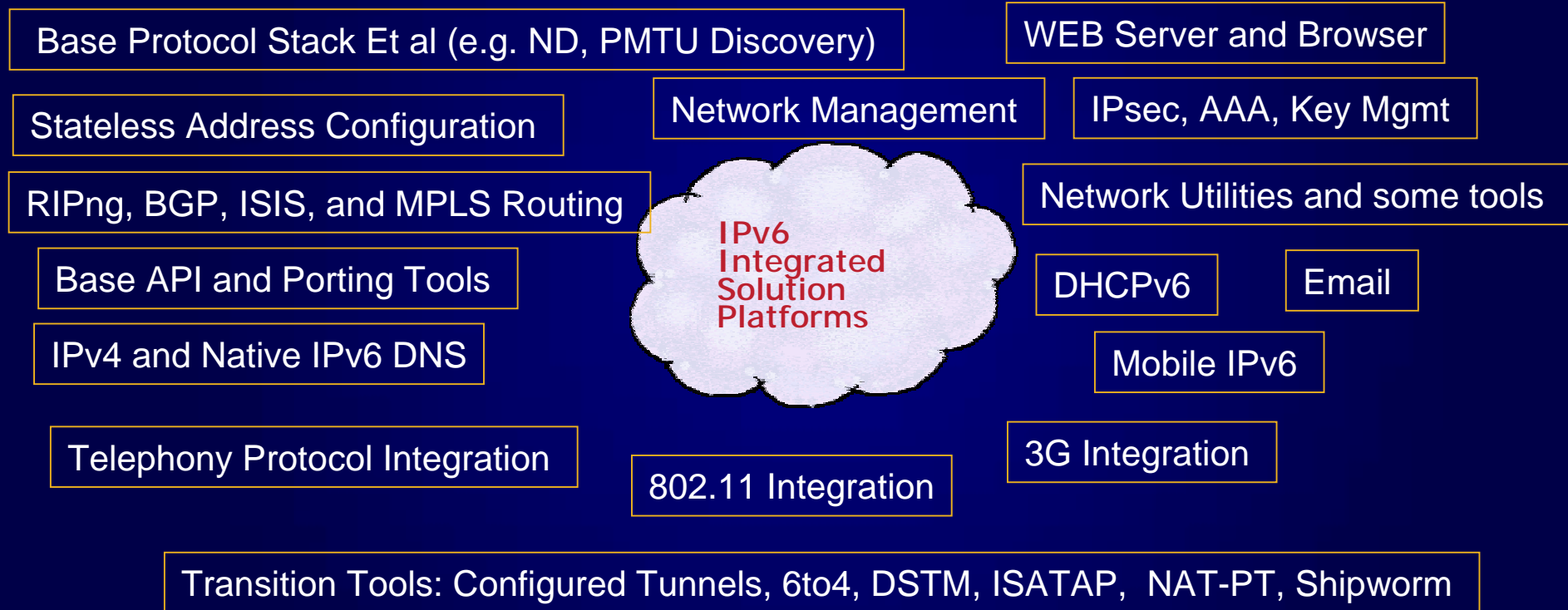# IPv6 Ready Deployment

EU IPv6 Task Force

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Agenda

- **Implementation State**
- **Markets for Deployment**
- **Base-Value Scenarios for Deployment**

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Implementation State Today

Base Protocol Stack Et al (e.g. ND, PMTU Discovery)

WEB Server and Browser

Stateless Address Configuration

Network Management

IPsec, AAA, Key Mgmt

RIPng, BGP, ISIS, and MPLS Routing

Network Utilities and some tools

IPv6 Integrated Solution Platforms

Base API and Porting Tools

DHCPv6

Email

IPv4 and Native IPv6 DNS

Mobile IPv6

Telephony Protocol Integration

3G Integration

802.11 Integration

Transition Tools: Configured Tunnels, 6to4, DSTM, ISATAP, NAT-PT, Shipworm

Deployment Implementation Landscape

- Key immediate-need IETF specs in process MIPv6, Multihoming, and DHCPv6
- Different Vendors are now supporting different strategies for deployment (this is a good thing and will cause competition)
- Different markets are now emerging its not all 3G wireless now.
- Military Industrial Complex Worldwide will be benefactor to IPv6 Deployment
- Europe and Asia will continue to Lead, but U.S. is beginning to awaken
- Most all vendors are shipping products now or will by 2002 and most their second IPv6 product releases
- Need more transition and integration tools for Network Operators to deploy IPv6.
- Need to make sure required infrastructure from IPv4 is moved to IPv6 (e.g. Intrusion Detection, Database, Directory Services, Printers, Utilities)\
- IPv6 Firewalls missing from Implementation State (an opportunity !!!)

Deployment Issues we need to do better on

- Application and Middleware Providers porting to IPv6, but should be well underway by 2004.
- IETF IPv6 Work that can help deployment evolution: Multicast Routing, Security Key Management, Quality of Service, Mobile Routing, Storage Distributed Networking over IPv6.
- More interoperability testing for transition interoperation between IPv4 and IPv6.
- Verify public domain code bases for IPv6 (e.g. Linux, BSDx) have engineered the most efficient implementation of IPv6.
- Embedded Network Processors and Transport Layer/IP Offload Engines supporting IPv6, but should be well underway by 2004
- 3GGP2 is large IPv6 opportunity too not just 3GPP, would be good if base IPv6 systems support both infrastructures, and for GPRS 2.5 too.

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Markets for Deployment

- Emerging Wireless Handheld Technology and Services
- Enterprise Networking (e.g. Retail, Manufacturing, Financial)
- Military Operations
- Government Operations
- Education
- Emerging Broadband Technology and Services
- Provider Infrastructure (e.g. Telcos, ISPs, LECs/CLECs, Greenfield Ops)
- Satellite Communications and Services
- Home and Consumer Networking
- Small Business Operations
- The "Kids"

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Base-Value Scenarios for Deployment

- End-to-End model MUST be restored IPv4 NAT is breaking the Internet and stifling the evolution of applications for the Internet Model.

- Security cannot be End-to-End either today and many want peer-to-peer communications with security with no middle entity (e.g. George Bush is speaking with Tony Blair on a cell phone).

- We may have to do things we don't want to do with IPv6 to get it deployed around the current IPv4 NAT world (e.g. NAT-PT, Shipworm), but we should try to limit it and reduce the long term cost when possible.

- The base networking functions for an IPv6 set of nodes now exist to begin the infrastructure deployment within the previous discussed markets.

- IPv6 Address Space is the primary benefit to IPv6 but there are many other benefits to IPv6 that will delight those planning to deploy IPv6, that do not exist in IPv4.

- Many transition mechanisms are required to fulfill many different deployment needs, the market will decide which ones are effective and useful, and solve real problems.

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Thank you

8