NAv6TF Mission/Deployment/Vision Status

January 2004

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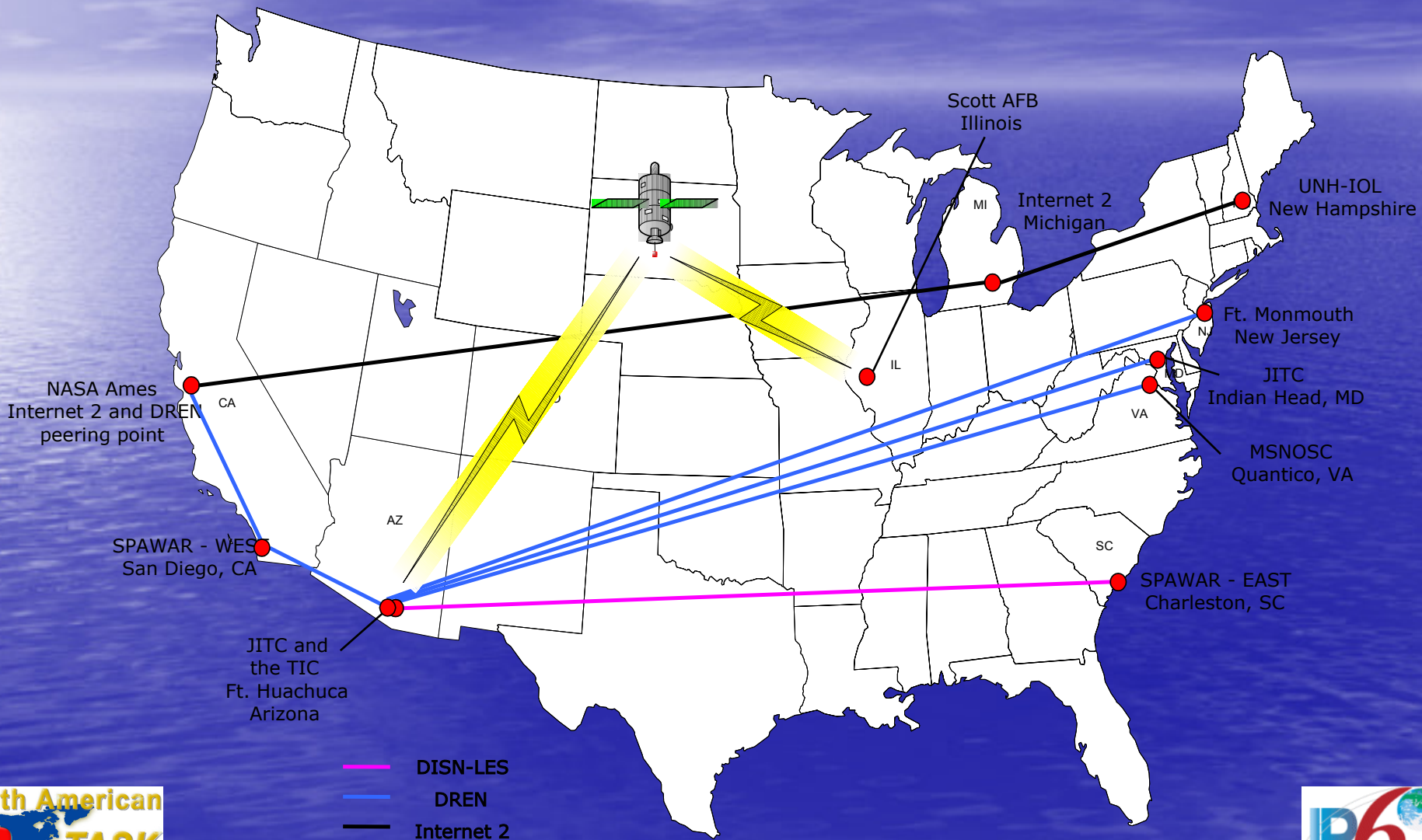
NAv6TF Mission

- Promote the deployment of IPv6 across North America.
- Provide business, marketing, educational, and technical center of expertise for IPv6 in North America to any entity building, deploying, or developing IPv6 for deployment.
- Lead specific projects to support North American deployment efforts as we have done for Department of Defense and in process with the Department of Commerce.
- Continue to lead the Moonv6 IPv6 Network Pilot and expand that backbone network as a worldwide IPv6 backbone Network Pilot. www.moonv6.org
- Develop technology partner relationships with other consortia's and standards bodies working on IPv6.
- Participate in North American industry trade show events, seminars, and technology briefings as IPv6 center of expertise.

MOONv6 Participating Sites



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Deployment State IPv6 (North America)

Core Standards Defined
1993-2000

Initial Network Pilots on Internet and Labs
1996-2000

Base Network Products and Platforms Ship in the Market
2000-2003

RFP's, Requirements Definition for IPv6, Moonv6
2003-2007

Internet Service Providers begin Infrastructure
2004-2007

Applications Development Heterogeneous Platforms
2004-2006

Complete IPv6 Networks and Systems 2008

Evolving Dejure + Defacto Standards, Features, & Models
2000-????

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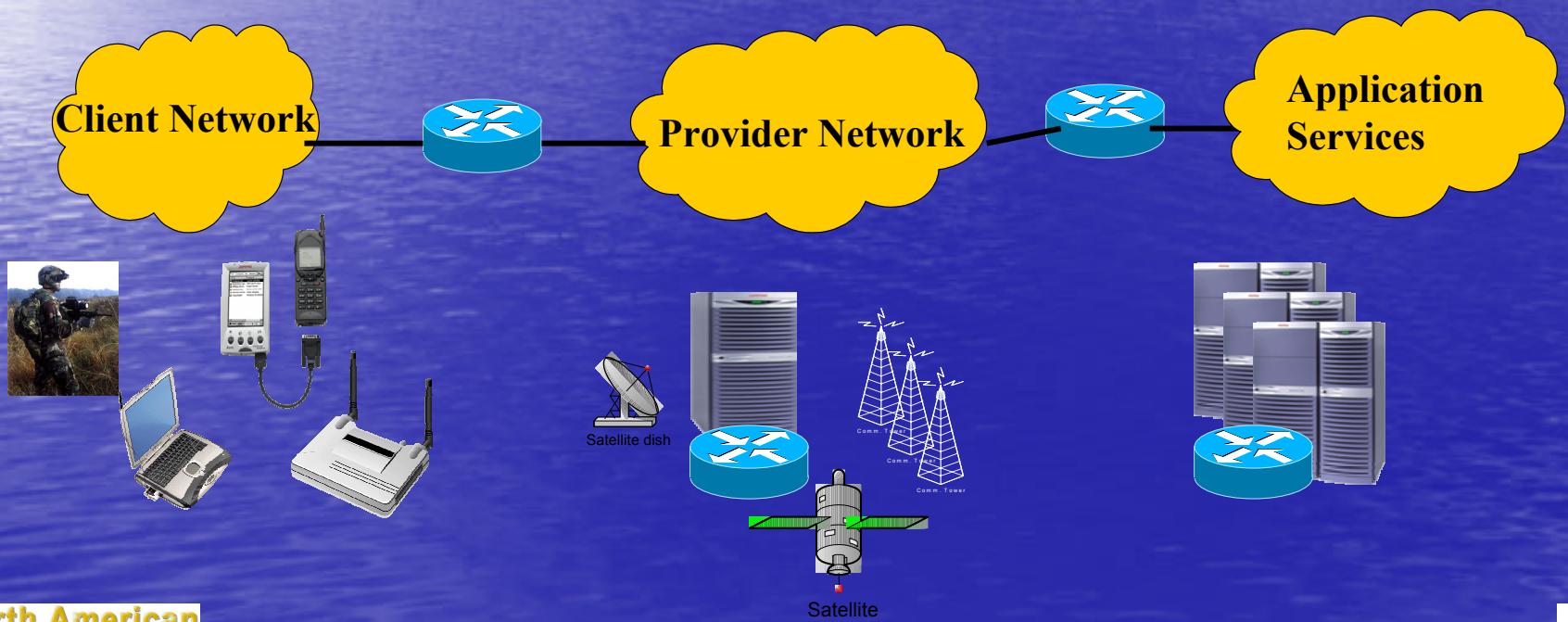
Next Steps 2004-2006

- For applications to run over IPv6 an IPv6 network infrastructure is required.
- Applications are just beginning to be ported to IPv6.
- Now is the time to begin to plan and deploy IPv6 with the IPv6 products that exist today.
- Then you will be able to run applications that support IPv6 over your networks.
- Think IPv6 transition, not "migration", IPv4 and IPv6 will coexist for some time.

But as you deploy IPv6 always be thinking mobility or you will have IPv6 plumbing problems later.

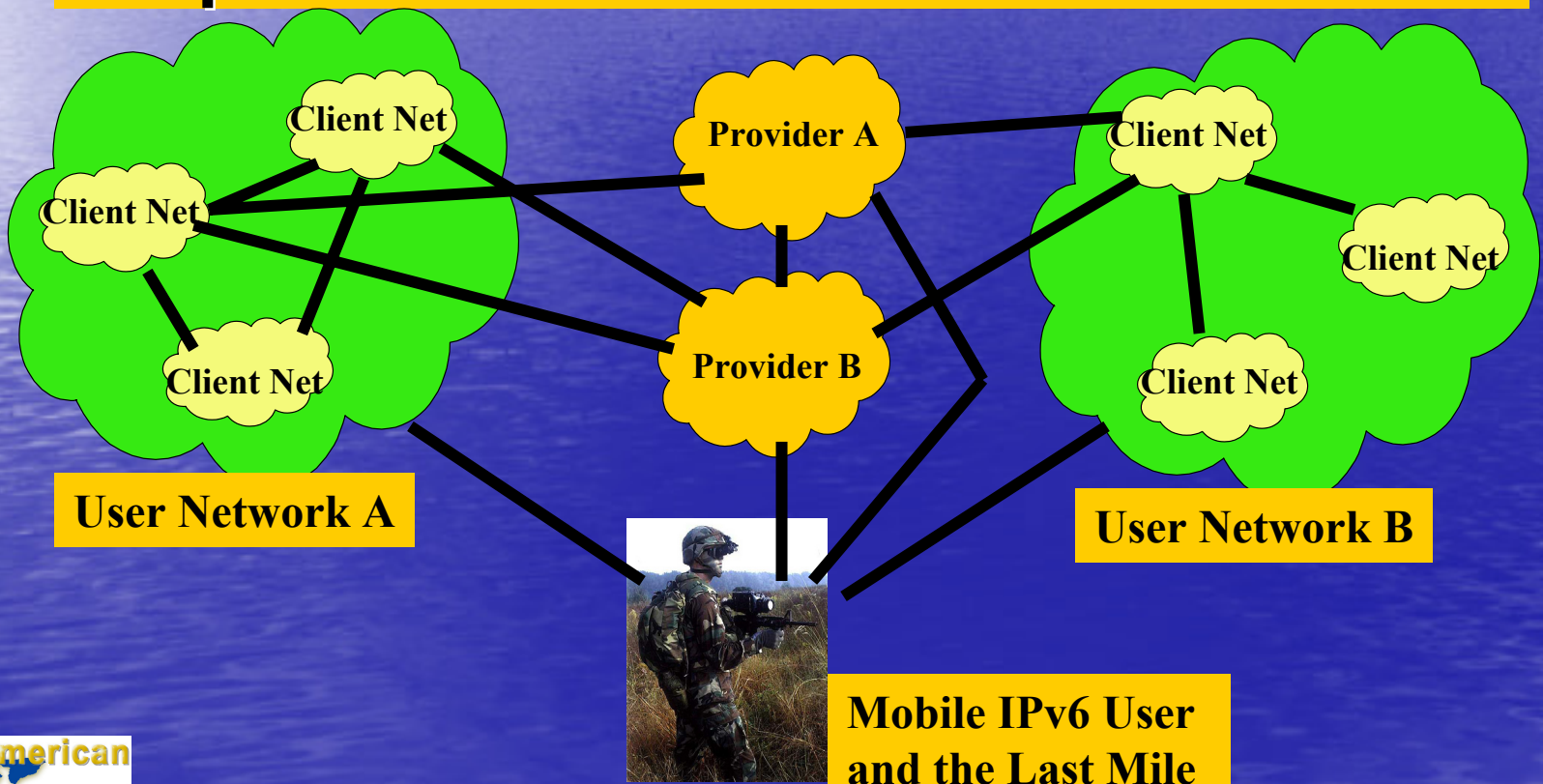
Where is this Network Infrastructure Located?

- At the client network.
- At the provider network.
- At the applications point of services network.



Deploying Network Infrastructure for Mobile IPv6 Networks MUST be a priority.

- Mobile IPv6 networks further complicate the infrastructure planning process, but imperative.



What Are the Components for Network Infrastructure with Mobile IPv6?

Network Access Operations

Network Provider Operations

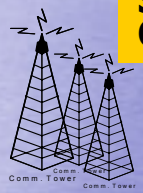
Infrastructure for Network Area of Operations

Wide Area Network Glue

Distributed Network Applications

Secure Network Operations

Secure Network Operations



Provider Core/Edge

Mobile IPv6 Infrastructure Operations

Mobile Ad Hoc Network Glue

Intrusion Detection

Network Management

Client Application and Network Access

Network and Applications Support Infrastructure

User Operations and Ad Hoc Networks

The Last Mile

End-2-End Applications and Security

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Points of Network Infrastructure (Geography)

- Packets over a local link.
- Packets over a site.
- Packets over an Intranet.
- Packets over an Internet.
- Packets over a Mobile IPv6 Network (Wireless).
- Packets from IPv6 Network thru IPv4 Cloud to IPv6 Network.
- Packets from IPv4 Network thru IPv6 Cloud to IPv4 Network.

Review the paths your packets traverse over the Network

Points of Network Infrastructure (Nodes)

- Clients, Servers, Routers, Switches, Printers, Gateways, Firewalls, Proxies, and any network device or applications platform.
- Management Nodes (e.g. Network, Security, Mobility, QOS).
- Any Node supporting Transition Mechanisms.
- Public Key Infrastructure Nodes for Security.

Points of Network Infrastructure (Software)

- Network Management and Utilities.
- Network Internet Infrastructure Applications.
- Network Systems Applications.
- Network End User Applications.
- Network High Availability Software.
- Network Security Software.
- Network Transition Software.

Deployment Network Infrastructure Roadmap Reference Model

- Step 1 - Determine the set of network infrastructure software that must be ported or developed.
- Step 2 – Determine the Geography your applications must span.
- Step 3 – Identify the Network components that must support IPv6.
- Step 4 – Identify the Network components that require IPv6 Transition Mechanisms.
- Step 5 – Identify the Network components that are new or being developed and can be initiated with IPv6 to increase time-to-market of IPv6 network infrastructure deployment, and reduce cost.

Do not use Network Address Translation (NAT)

Infrastructure Deployment Hot Spots

- Wireless Communications and integration with Wireline (Broadband) Communications.
- Mobile IPv6 for Wireless Handoffs and Mobile Ad-Hoc Routing.
- Application Porting Methodology.
- Tunnels around IPv4 encryption-devices that cannot be upgraded to IPv6 immediately and performance of that tunnel.
- IPv6 Security infrastructure requirements.
- IPv6 Intrusion Detection.
- Training, Porting applications, and Hardware Upgrades for some nodes will have cost.
- Network Management of new IPv6 infrastructure and points of transition.
- Key Management for IPsec and Public Key Infrastructure.

Make sure your network edges permit true End-2-End security and operational trust model.

DoD Net Centric Value Proposition

- DoD Net Centric Vision one data point is that all software, platforms, and operations become interconnected using the Internet Protocol (IP) technology and network software infrastructure, based on commercial off-the-shelf products, across the DoD Global Information Grid (GIG).
- Value Proposition includes all DoD Tactical Operations, Enterprise Operations, Human Resource Operations, and DoD joint Government Agency Operations.
- All software, platforms, and operations MUST adopt a transition to Next Generation Internet Protocol version 6 (IPv6) beginning October 1, 2003, and support co-existence with current legacy systems deployed and to be deployed in the interim transition period. Please see DoD CIO Memorandums on the DISA web site. http://jta.disa.mil:8017/ipv6/index-public.html
- IPv6 Capable means that a platform or node supports IPv6 operations. That is the initial requirement for today. Other requirements are in process.
- DoD has required no IPv6 operations be running on production DoD networks at this time until further testing and network pilots are completed.
- DoD Net Centric Value Proposition may be important to the U.S. Homeland Security and Department of Commerce Net Centric Operational objectives

Good News 2004 Predictions North America

- More Providers will provide users access to IPv6.
- Wireless Mobile IPv6 Hot Spots will begin Trials.
- DoD IPv6 Network Pilots will evolve extensively.
- Additional Government Agencies will adopt IPv6.
- Moonv6 Network Pilot will provide access to International IPv6 Network Pilots.
- Home Cable Routers, Modems, and Network Access Points will participate in IPv6 Network Pilots with some early adopter products.
- Large Application Providers will announce support time frames for IPv6 production support and some prototypes will exist.
- Enterprise Businesses will begin IPv6 Network Pilots.
- Vendors, Systems Integrators, and IPv6 Business Leaders will see first phase revenue streams from IPv6.
- Mobile IPv6 Phone will participate in IPv6 Network Pilots.

IPv6 Vision

- Internet Protocol version 6 can restore the original intent of the Internet to provide end-to-end communications globally across our planet. Comprehensive end-to-end communication can be the catalyst for Free Enterprise to reduce the Digital Divide, enabling all six billion people to communicate with each other over the Internet.
- Ubiquitous end-to-end communications between people of different cultures and geographies will enable an unprecedented humanity-wide dialogue. The IPv6 community stands for the possibility that this world dialogue will enable us to come up with new and innovative ways to live in peace and prosperity, to better understand our environment, and to coexist with nature and each other.

Jim Bound
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