

Mobile IPv6

Holly Xiao

703-983-6722 • hxiao@mitre.org

Defense Information Systems Agency and
MITRE Innovation Grant

The logo for the MITRE Technology Program, featuring a stylized graphic of stacked blocks in yellow, orange, and blue to the left of the text.

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The MITRE logo, consisting of the word "MITRE" in a bold, black, sans-serif font inside a white rectangular box.

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Problem

- IPv6 in Future Combat Systems demand: Network **ubiquity**, **mobility**, and **security**
- Mobile IPv6 will be increasingly used in military environments for its ability to minimize configuration changes needed for supporting mobile users.
- Mobile IPv6 is a feasible way to provide static IPv6 addresses for mobile terminals.
- Mobile IPv6 may accelerate the adaptation of IPv6 in the DoD environment.

Background

- **Mobile IPv6 – What are the issues?**
 - **Security is the road block** of Mobile IPv6 standardization in IETF.
 - **Most currently proposed Mobile IPv6 security solutions use cryptography for authentication. Little attention has been devoted to authorization algorithms.**
 - **There are no known solutions of Mobile IPv6 VPN.**

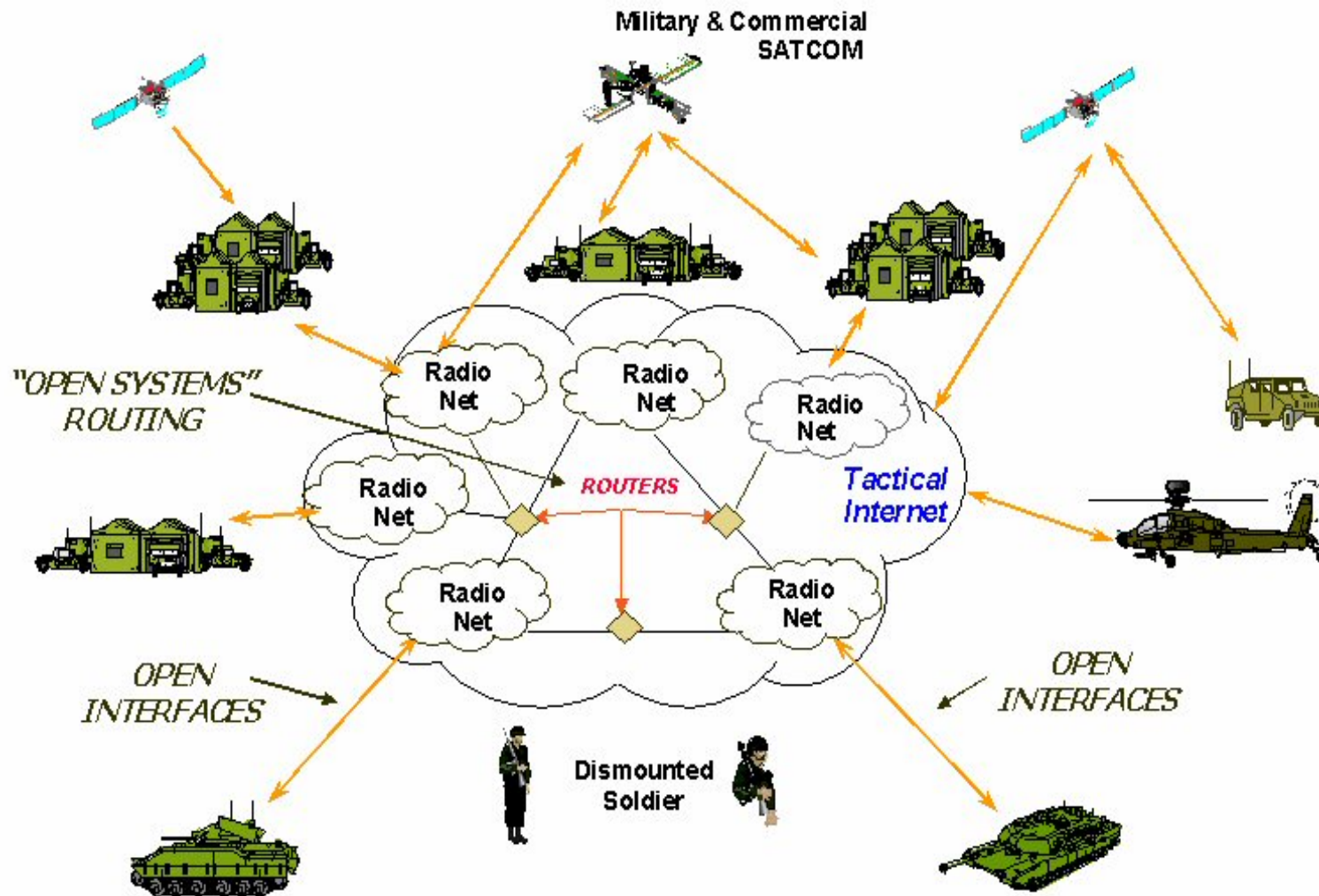
Objective

- **To demonstrate Mobile IPv6 implementations**
- **To investigate Mobile IPv6 VPN solutions**
- **To enhance the Mobile IPv6 security**

Activities

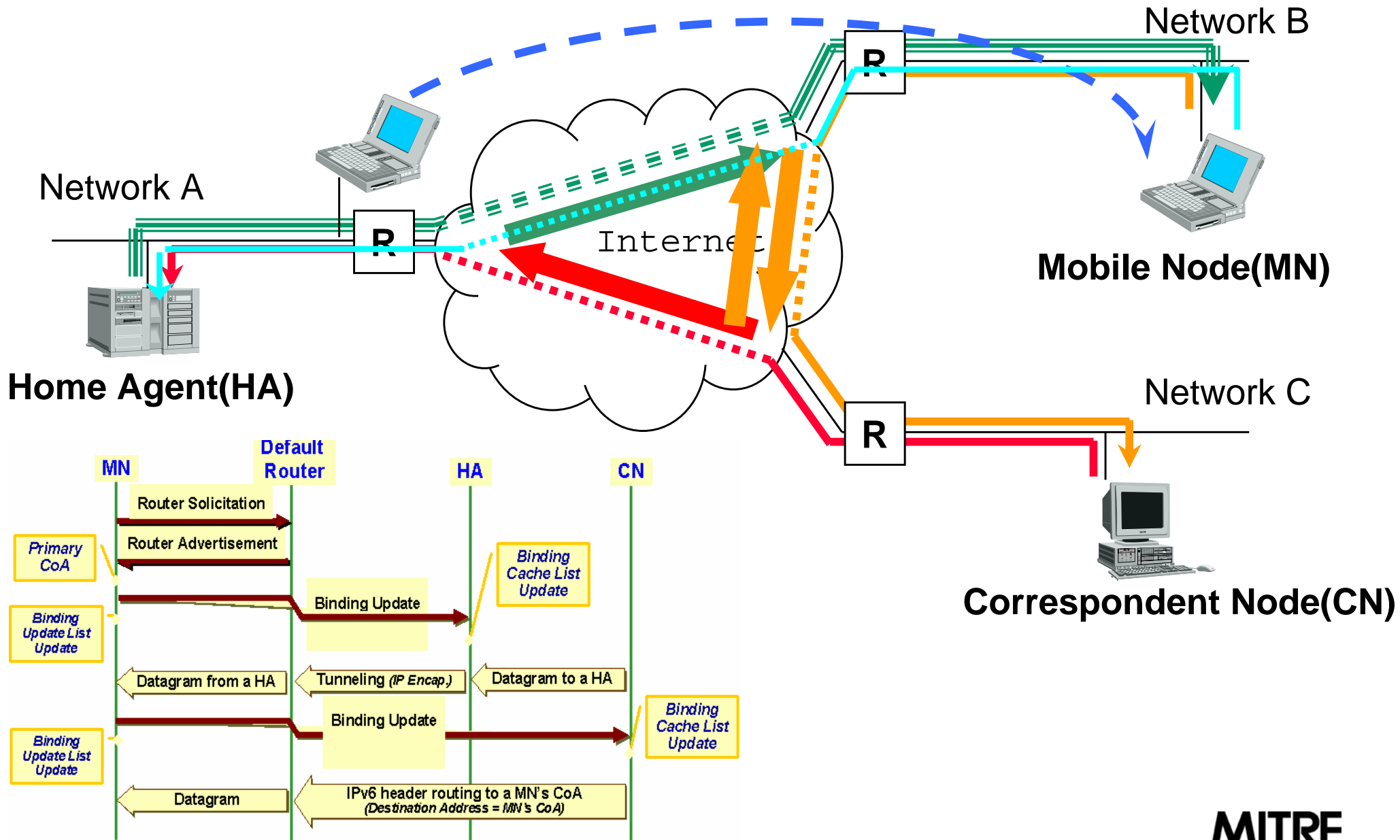
- **Extend the Washington Mobile Computing Lab (WMCL) and DISA DForce Technical Analysis Center (DTAC) test beds with IPv6, Mobile IPv6, and cryptographic support for experimentation**
- **Study Trust Management for Mobile IPv6 Binding Update**
- **Conduct performance analysis on Voice over Mobile IPv6**

Highlight: Mobile IPv6 is Needed



For the next generation internet, Mobile IPv6 is the natural candidate to manage mobility in all-IP networks (in DoD, the digitized battlefield and net-centric warfare).

Highlight: Operation of Mobile IPv6



Impacts

- **Sponsored project impact**
 - This study will provide strong guidance to DoD on the transition to IPv6 and demonstrate a secure infrastructure for net-centric operations and warfare.
- **Impact on research groups and academia**
 - While the Mobile IPv6 RFC awaits approval, the results of this research can influence the Mobile IPv6 Working Group on improvements to the security protocols.

Future Plans

- Investigate Mobile IPv6 security using IPsec and other non-PKI based solutions
- Extend the WMCL & DISA DTAC test beds with IPv6, Mobile IPv6, and cryptographic support for experimentation