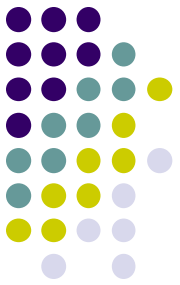


IPv6 Related Network Layer Techniques

Dr. Adnan K. Kiani

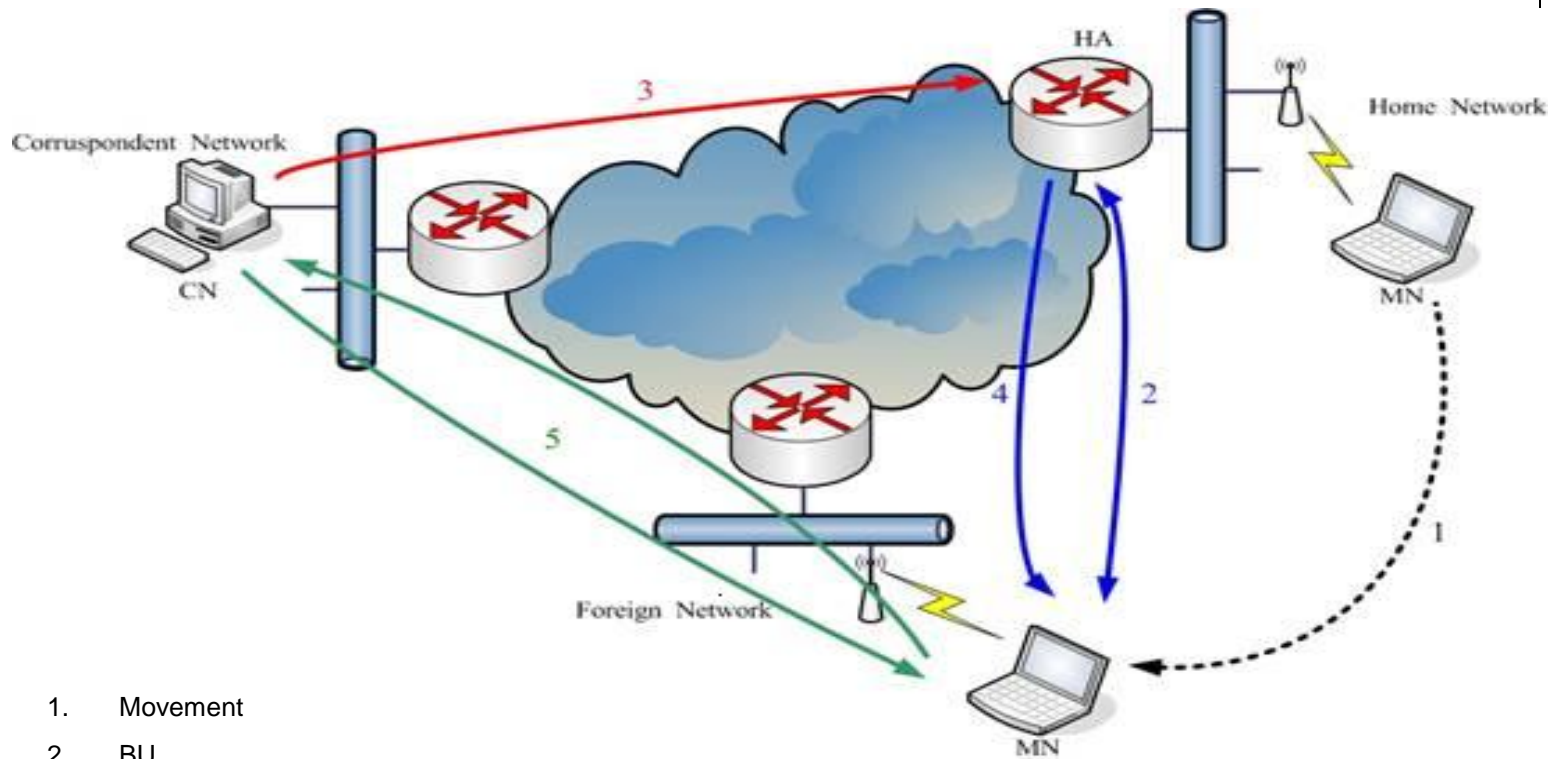
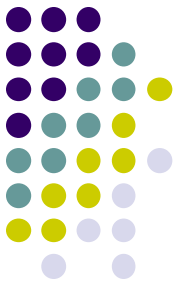




Network Layer Issues

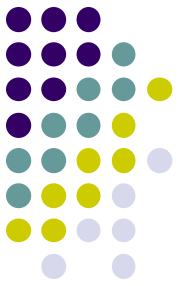
- Mobility.
- Multi homing.
- Security.
- Routing.

Mobility



1. Movement
2. BU
3. MN destination packets
4. BA
5. Route Optimization two-way communications

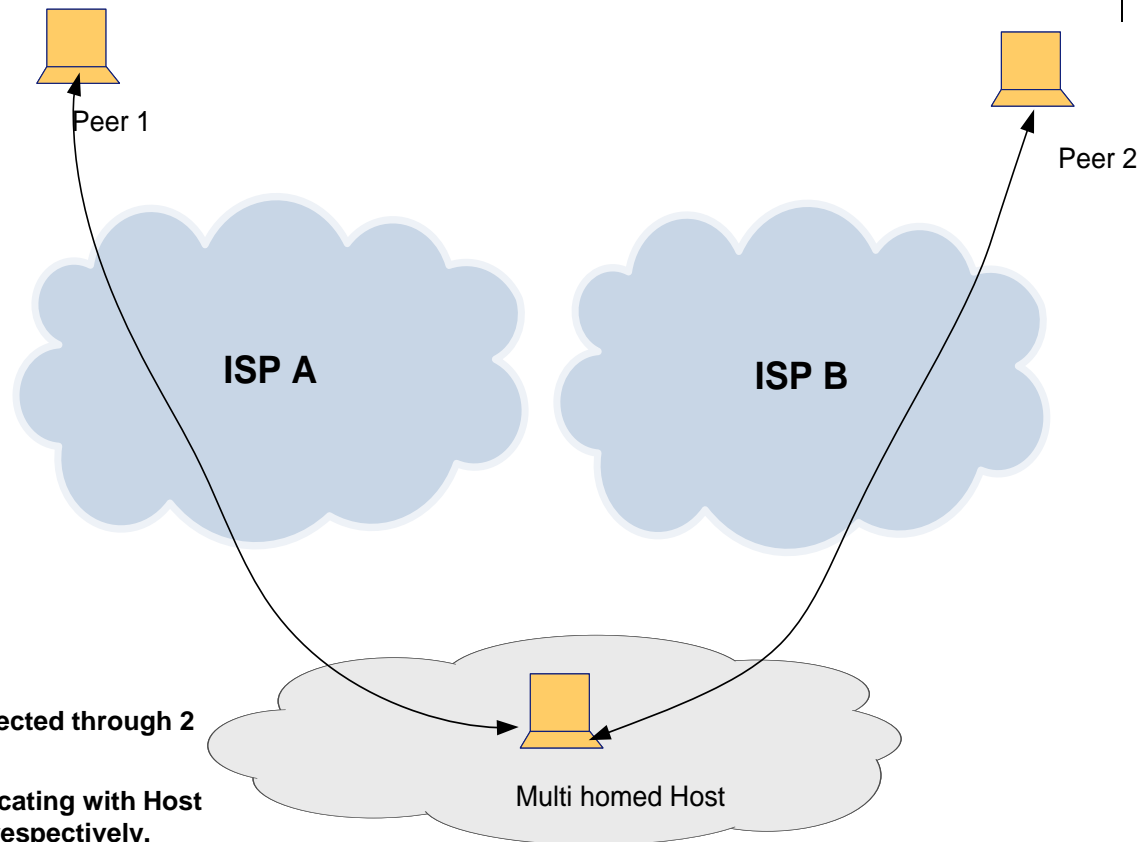
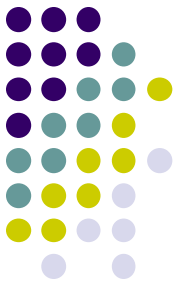
Courtesy: ikn.tuwien.ac.at



Mobility (Cont'd)

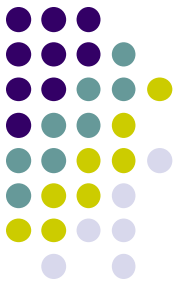
- MIPv4 vs. MIPv6.
 - No Foreign Agents
 - Availability of Enough Addresses in IPv6
 - Route Optimization (RO) Mode.
 - Home Address Destination Option Header.
 - Type 2 Routing Header.
 - Address Auto configuration
 - Neighbour/Router Discovery

Multi homing with IPv6



- **Multi homed Host connected through 2 ISPs.**
- **Peers 1 and 2 communicating with Host through ISPs A and B respectively.**

Multi homing with IPv6 (Cont'd)



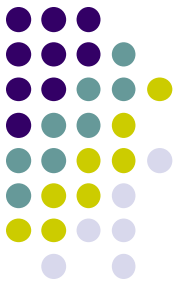
- Multi Interfaced Devices
 - Multiple paths to the internet.
 - Ubiquitous Access
 - Quick Failure Detection and Recovery
 - Session Survivability

Security Improvement with IPv6

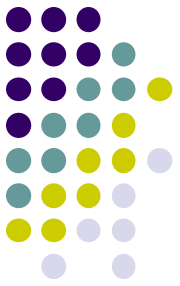


- IPsec Integral Part.
- Authentication Header (AH).
 - Authentication and Integrity
 - Eliminates a significant class of network attacks in IP source routing.
- Encapsulating Security Payload (ESP) Header.
 - Provides integrity and Confidentiality to IPv6 Datagram.
- Leveraging the hop limit.

IPv6 Routing



- Fragmentation at End points
- Source Routing
- Flow label
- Cisco effort.
 - Locator/Identifier Separation Protocol (LISP)



The way forward

- Tremendous research potential.
- Regional Interest.
- Scarcity of experts so get involved.