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**Panel II:  
Perspectives on Network Routing**

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- Dan Massey - Colorado State University
  - Tim Griffin - University of Cambridge
  - Oliver Bonaventure - Universite catholique  
de Louvain
  - Loa Anderson - Acreo AB
  - Vijay Gil - AOL
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# Context For this Panel

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- 25 years of routing research and deployment
  - Panel focuses on infrastructure routing
    - Provides basic underlying network services
    - Network and routing is managed
    - Must account for commercial interests
    - Massive scale with distributed control
  - What can we learn from past results?
  - What challenges do we face today?
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# What Might Be Done?

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- Cryptographically secure the protocols
    - Prevent hijacking events from occurring.
    - Concept is relatively simple (e.g. apply RSA)
    - But building a complete system is complex
  - Fast and reliable detection, ad hoc response
    - Community very effective at reacting to events
    - Detect events and distinguish from valid ops
    - Reliably send report despite routing problems
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# What Is Being Done?

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- Deployed Defenses to False Routes
  - Public venues for communication (eg NANOG)
  - Private venues for communication (NSP Sec)
  - Ad hoc, but fairly effective reactions (filters)
- Larger Concern is Attack by Edge Systems
  - Limited resources (eg CPU) in infrastructure
  - Vast numbers of compromised edge systems
  - RFC 3682: discard packets with  $TTL < Max - 1$

# What Does This Mean For Research?

- Start From an Informed View
    - 25 years of research innovations and problems
    - 25 years of deployment experience and problems
  - Panel Provides Our (Biased) Views
    - Don't Let Deployment Success/Failure Constrain Ideas
    - Don't Ignore Lessons and Problems of Current Systems
  - Challenge or Enhance This View With Your Questions
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# Outline of the Panel

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- Tim Griffin:  
Abstractions are important
  - Oliver Bonaventure:  
Fast convergence
  - Loa Anderson:  
MPLS and multi-layer networks
  - Vijay Gil:  
Operational practices and backbone design
  - Discussion:  
*Your questions and comments*
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