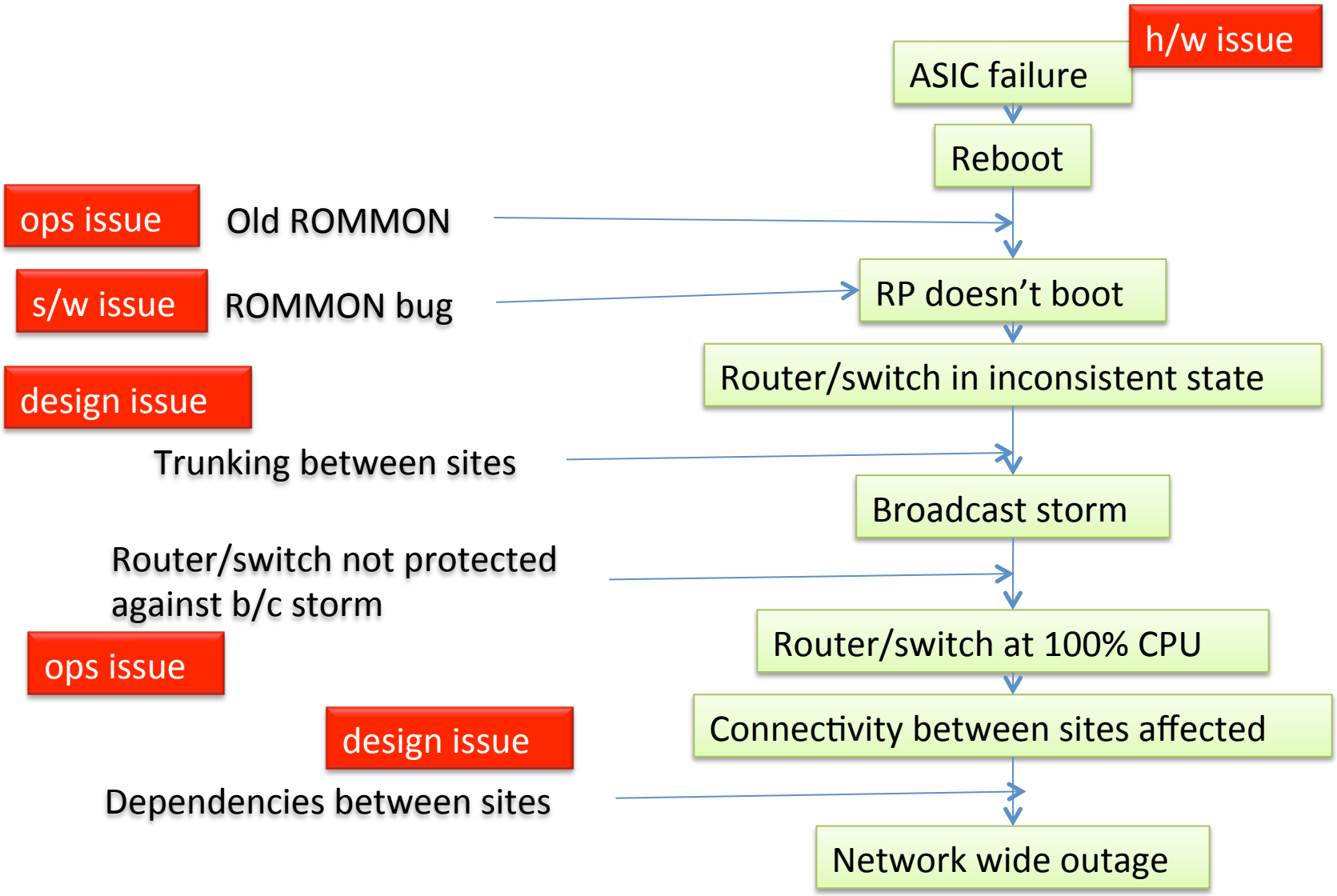
Proposal for a Network Complexity Research Group

IRTF Open Meeting, 27 July 2011, Quebec

Michael Behringer, Geoff Huston

http://networkcomplexity.org/

A “Catastrophic Failure”



Network Complexity

- Questions:
  - What is network complexity?
  - How to measure and compare complexity in:
    - Networks
    - Protocols
  - How to contain, control, reduce complexity
  - Use cases, examples

Objective

Quantifyable

Learning from mistakes

Draft Charter:
Network Complexity Research Group

The Network Complexity Research Group aims at **defining and analyzing the complexity of IP based networks**.

There is a general perception that unnecessary complexity should be avoided, and when deciding between two approaches in networking, complexity is usual an important factor. However, the term "complexity" is rarely well defined, and decisions on complexity are mostly made on subjective terms.

The Network Complexity Research Group **provides objective definitions, metrics and background research to help making decisions where complexity is a factor. The ultimate goal is to provide factual and objective information and metrics to be used in network design and protocol design**. It is highly desirable to have **practical and objective information on network complexity as an input into the IETF process.**

Areas of interest include:

1) Research with the goal of defining "network complexity", and defining relevant metrics.

2) Comparative research between various network architectures, protocols or approaches.

3) Methods and ideas to contain, control, or reduce complexity in IP based networks.

4) Collect use cases regarding specific network designs or failure cases where complexity played a role.

The group will report progress through a publicly accessible web site and presentations at IETF meetings. Relevant information and research developed by the NMRG will be submitted for publication as Experimental or Informational RFCs.

Network Complexity Workshop

Friday, 29 Jul 2011, 9:00-11:30, room 301A

Overview, agenda bashing (10 min)

Classifying Network Complexity (Michael Behringer) (20 min)

End to End Complexity (Geoff Huston) (20 min)

Comparative Complexity Analysis (Michael Behringer) (10 min)

Catastrophic Failure Use Case (Michael Behringer) (10 min)

RG Charter discussion (80 min)

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