Cyber DEfense Technology Experimental Research (DETER) Network
Evaluation Methods for Internet Security Technology (EMIST)
USC Information Sciences Institute • University of California, Berkeley • University of California, Davis • Penn State University
Purdue University • International Computer Science Institute • Stanford Research Institute (SRI) • Network Associates • SPARTA

Routing Data

the PREDICT Anonymization Panel

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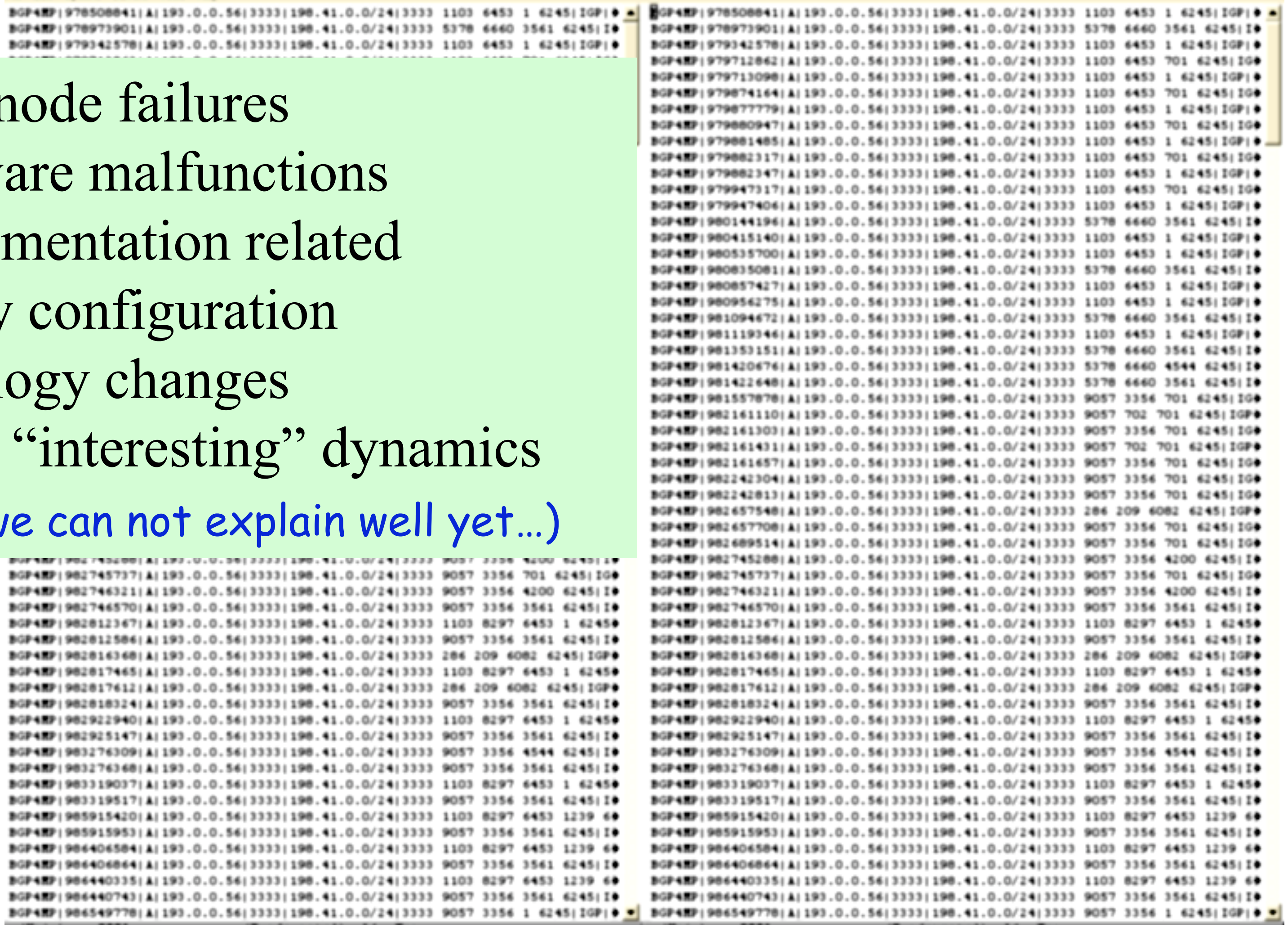
Route View Data

- ➢Link/node failures
- ➢Software malfunctions
- ➢Implementation related
- ➢Policy configuration
- ➢Topology changes
- ➢Other “interesting” dynamics

(that we can not explain well yet…)



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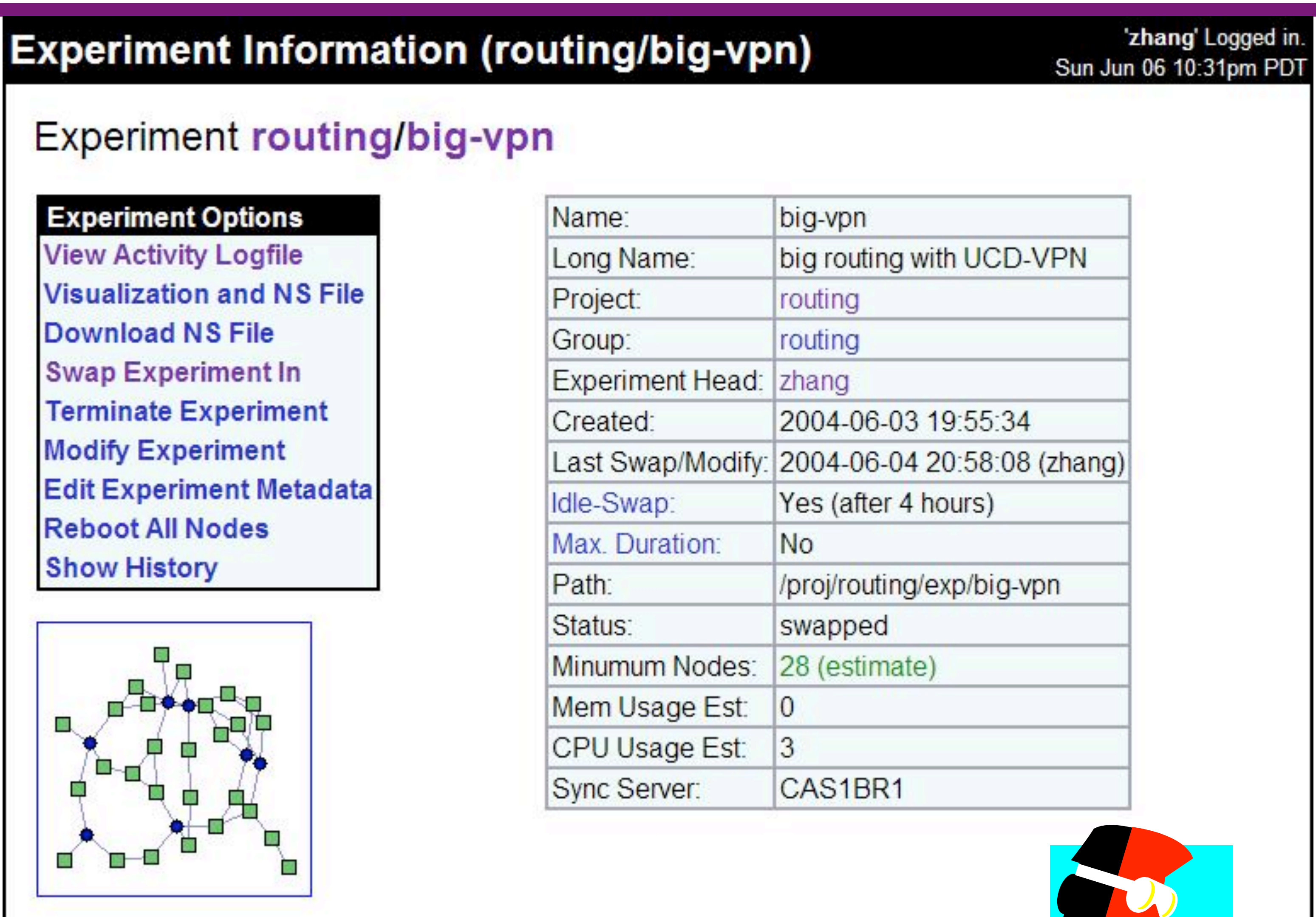
```

What data?

- Replay and “Interactive” Replay

DETER/EMIST Routing Experiments



Experiment Information (routing/big-vpn)

'zhang' Logged in.
Sun Jun 06 10:31pm PDT

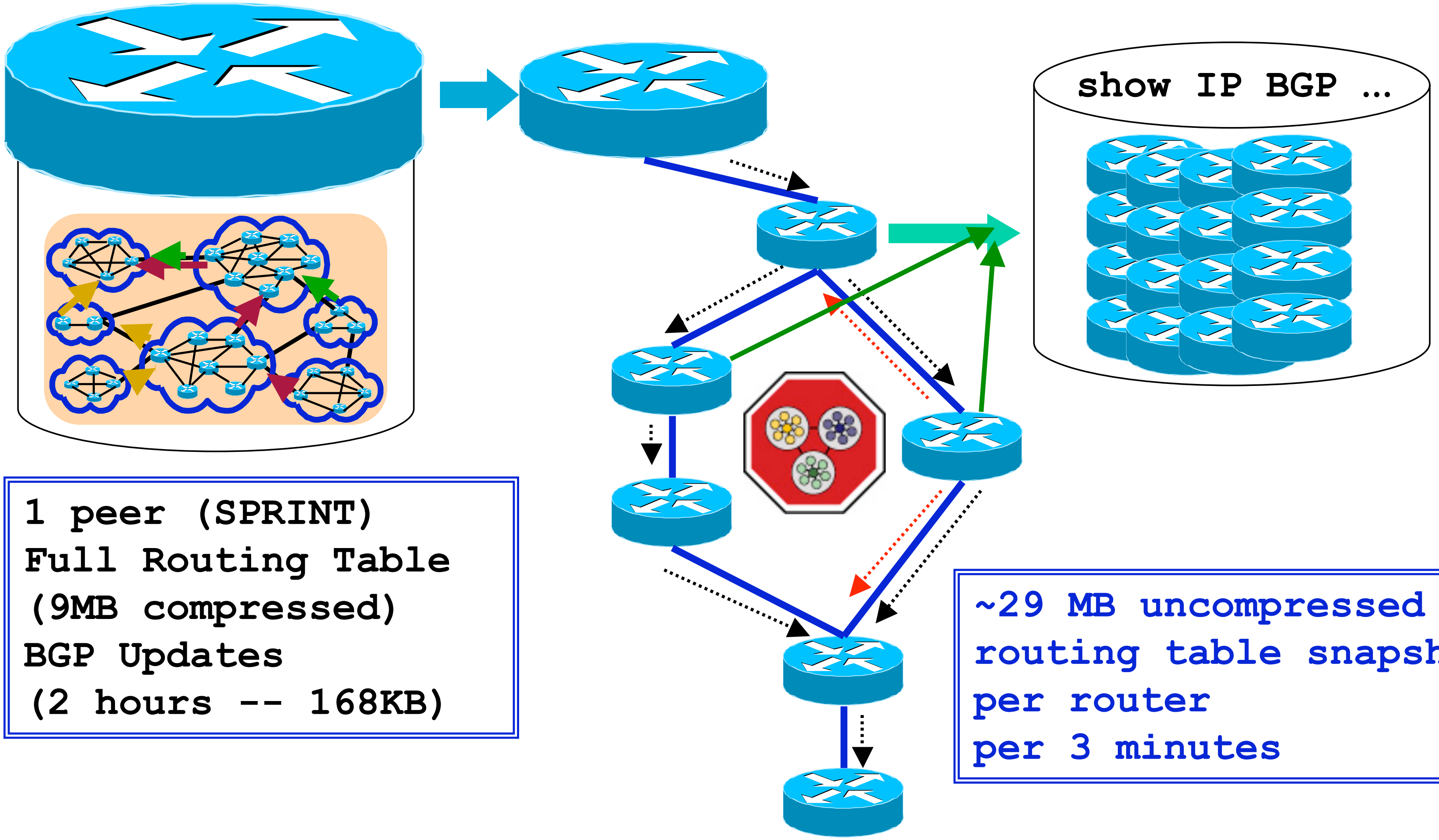
Experiment routing/big-vpn

Experiment Options

- View Activity Logfile
- Visualization and NS File
- Download NS File
- Swap Experiment In
- Terminate Experiment
- Modify Experiment
- Edit Experiment Metadata
- Reboot All Nodes
- Show History

Name:	big-vpn
Long Name:	big routing with UCD-VPN
Project:	routing
Group:	routing
Experiment Head:	zhang
Created:	2004-06-03 19:55:34
Last Swap/Modify:	2004-06-04 20:58:08 (zhang)
Idle-Swap:	Yes (after 4 hours)
Max. Duration:	No
Path:	/proj/routing/exp/big-vpn
Status:	swapped
Minumum Nodes:	28 (estimate)
Mem Usage Est:	0
CPU Usage Est:	3
Sync Server:	CAS1BR1

Routing Experimentation



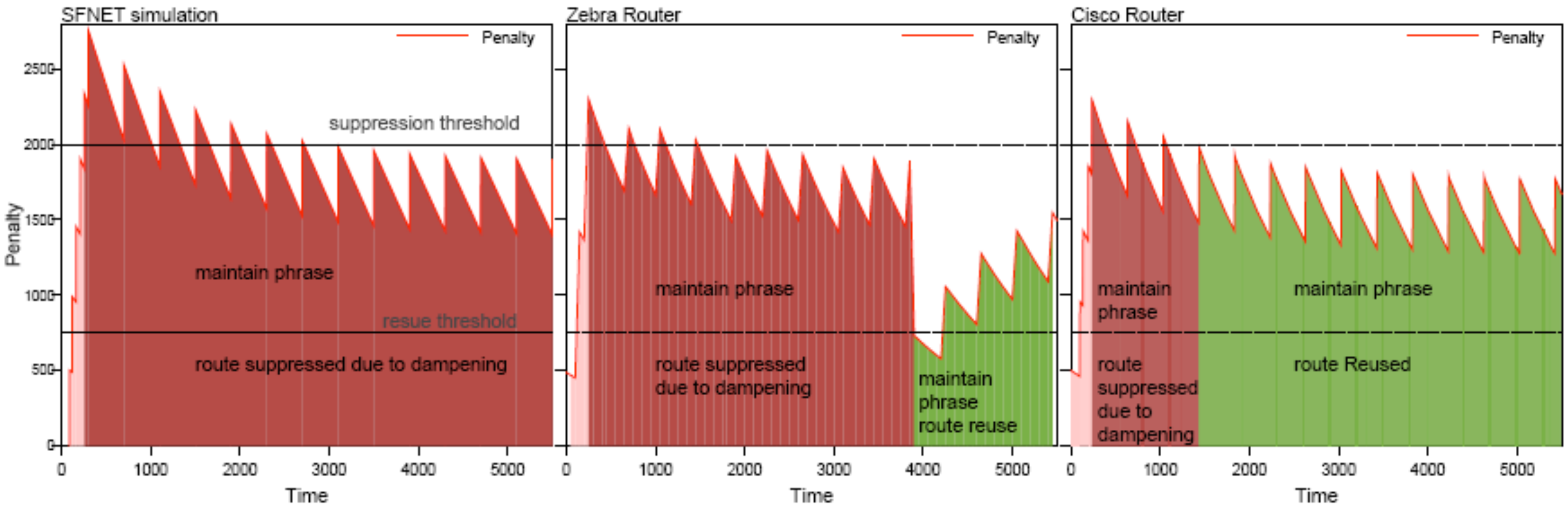
1 peer (SPRINT)
Full Routing Table
(9MB compressed)
BGP Updates
(2 hours -- 168KB)

~29 MB uncompressed
routing table snapshot
per router
per 3 minutes

What data?

- Replay and “Interactive” Replay
- A Sample of Examples:
  - Intra-AS topology and policy configuration
  - Router specific information
    - Dampening implementation
    - MRAI timer

Different Dampening Implementations



SSFNet **Zebra** **Cisco**

Data Anonymization

- Property-Oriented Transformation
  - Interesting/hidden properties
  - Consistent transformation

- The Issue:
  - Correct Transformation → Well-known Properties
  - Unknown properties are our main interest

Why Anonymize Routing Data?

- “cover-up” for operational mistakes or something along the line …

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Why Anonymize Routing Data?

- "cover-up" for operational mistakes or something along the line …
- "valuable" information for critical infrastructure attackers

- The public routing data (e.g., route view) might be sufficient for the attackers already, but is still insufficient for clearly understanding the Internet routing behavior.