Lecture 11: When disaster strikes

Hands-on Unix system administration DeCal

2012-04-02

Last lecture

❖ Last lecture
Disasters
Alleviating the pain

- next lecture: special topics
- then final projects and presentations!
- please see us if you have requests/needs for project or advice/help
- directions to connect to project group VM are in lab

❖ Last lecture

Disasters

❖ Software meltdowns

❖ Hardware meltdowns

❖ Criminals on the loose

❖ Escalation of problems

❖ 2003 Northeast blackout

❖ 2003 Northeast blackout

Alleviating the pain

Disasters

Software meltdowns

❖ Last lecture

Disasters

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❖ 2003 Northeast blackout

❖ 2003 Northeast blackout

Alleviating the pain

- system load too damn high
- remote access (networking, firewall, SSH) borken, foobared, etc.

Hardware meltdowns

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Disasters

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❖ 2003 Northeast blackout

❖ 2003 Northeast blackout

Alleviating the pain

- failed hard drives
- failed fans, power supplies, CPU, RAM

Criminals on the loose

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Alleviating the pain

- crackers will do Bad Things
- compromised accounts
- looks can be deceiving, uncertain what to trust

Escalation of problems

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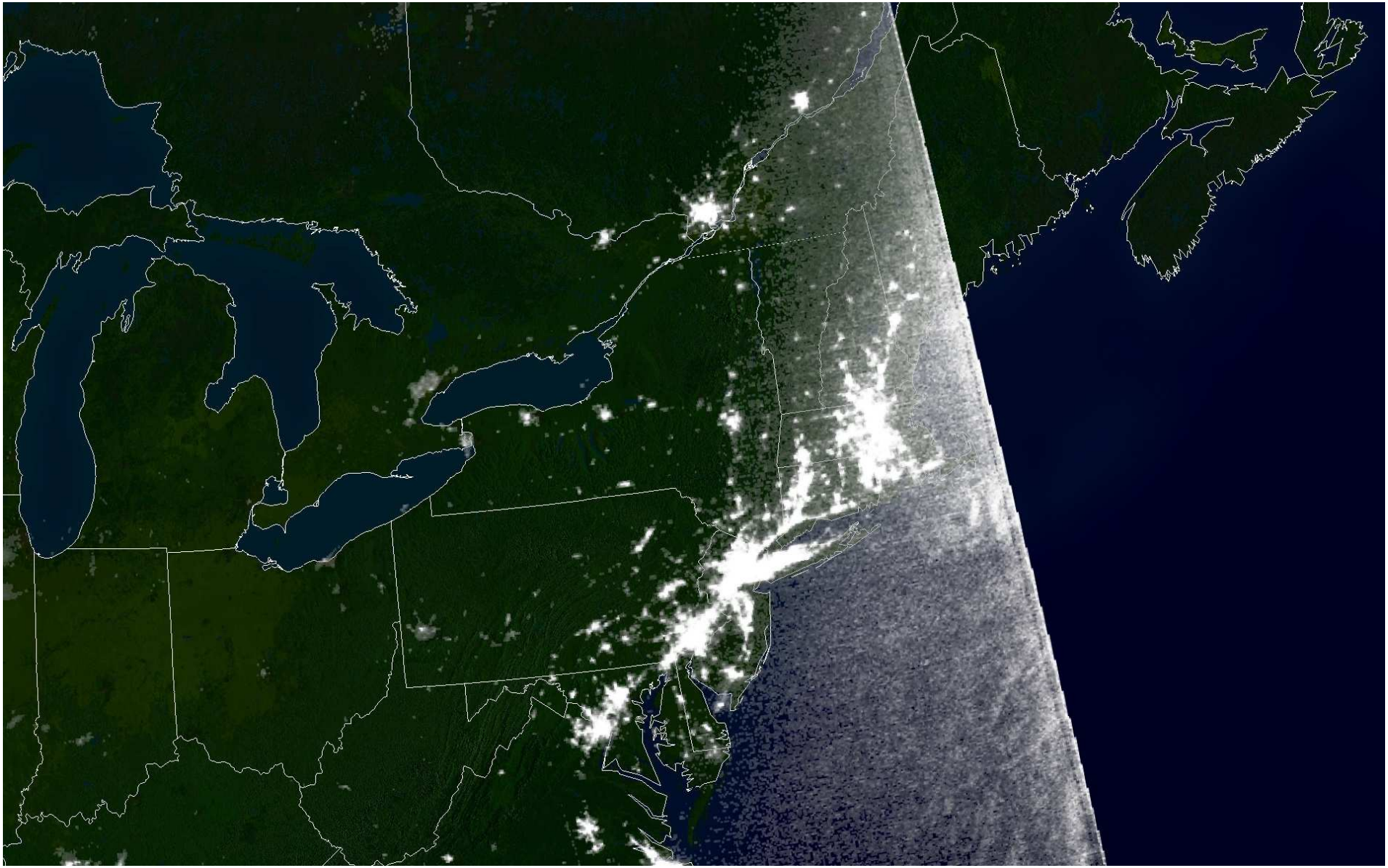
❖ 2003 Northeast blackout

❖ 2003 Northeast blackout

Alleviating the pain

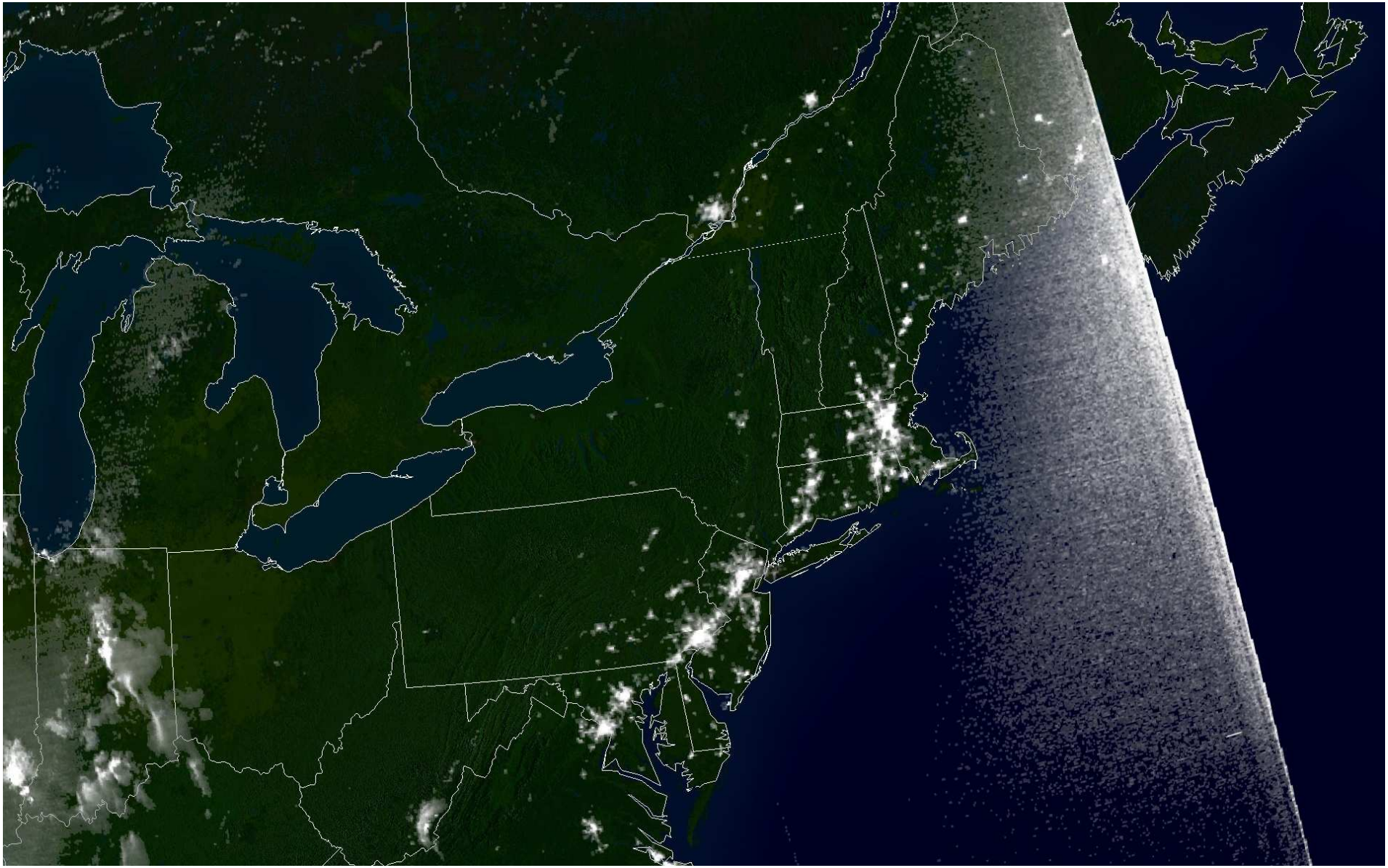
- we like to build systems on top of each other
- if one thing fails, it may break other things, causing other things to fail

2003 Northeast blackout



August 13, 2003, 9:21pm EDT

2003 Northeast blackout



August 14, 2003, 9:03pm EDT

❖ Last lecture

Disasters

Alleviating the pain

❖ Be Prepared
❖ Power management
❖ Out-of-band management
❖ Redundancy
❖ Monitoring
❖ Security
❖ Backups

Alleviating the pain

Be Prepared

❖ Last lecture

Disasters

Alleviating the pain

❖ Be Prepared

❖ Power management

❖ Out-of-band management

❖ Redundancy

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❖ Security

❖ Backups

- Boy Scout motto
- Murphy's Law: "Anything that can go wrong, will go wrong."
- s— happens

Power management

❖ Last lecture

Disasters

Alleviating the pain

❖ Be Prepared

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❖ Out-of-band management

❖ Redundancy

❖ Monitoring

❖ Security

❖ Backups

- Uninterruptible Power Supply (UPS)
- many UPSes can remotely power cycle servers

Out-of-band management

❖ Last lecture

Disasters

Alleviating the pain

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❖ Out-of-band management

❖ Redundancy

❖ Monitoring

❖ Security

❖ Backups

- separate hardware that can be remotely accessed
- independent from rest of hardware, dedicated NIC
- can access BIOS, power cycle, provide visual display
- e.g., IPMI, Dell DRAC, Sun LOM

Redundancy

❖ Last lecture

Disasters

Alleviating the pain

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❖ Redundancy

❖ Monitoring

❖ Security

❖ Backups

- dual redundant power supplies typical
- RAID
- failover servers for high availability
- spare parts (hard drives!) for swapping

Monitoring

- Last lecture
- Disasters
- Alleviating the pain
- Be Prepared
- Power management
- Out-of-band management
- Redundancy
- Monitoring
- Security
- Backups

- many large scale operations (Google, Facebook) have many failed servers at any point in time, monitoring servers reroute traffic appropriately
- monitor syslog
- SNMP traps
- alarm notification by email, text message

Security

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❖ Security

❖ Backups

- subscribe to OS security announcements
- Intrusion Detection Software (e.g., snort, bro)
- be wary of lax permissions
- limit root access

Backups

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❖ Security

❖ Backups

- user data, system configuration
- ideally daily, weekly, monthly rotations
- RAID is not a backup
- e.g., rsync, cron, rsnapshot