Hurricane Katrina: Telecom Infrastructure Impacts, Solutions, and Opportunities

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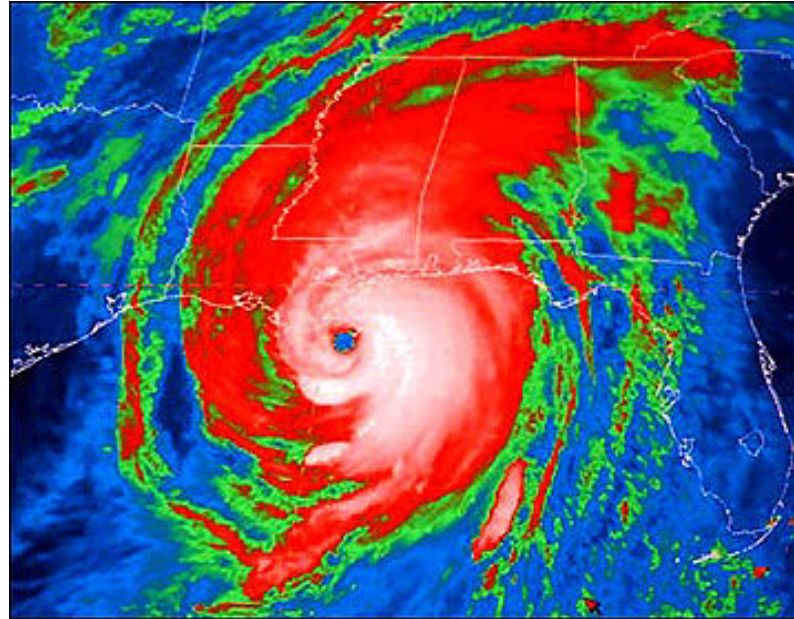
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Agenda

- Hurricane Katrina Recap

- Telecom Infrastructure Impacts

- Telecom Provider Successes

- Business Continuity Planning

- Conclusions

- References

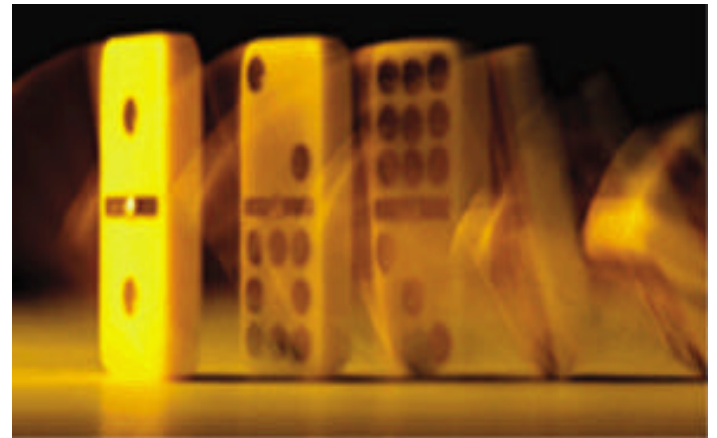- Appendices: Case Examples

Disclaimer

This presentation was developed with the most
accurate information available as of January 2006.
The objective is to educate, assess and learn
in a neutral and non-judgemental approach.

Critical Infrastructure

- Food and water supply

- Energy

- Transportation

- Healthcare

- Banking/Finance

- Telecommunications/ Information

Hurricane Katrina: Gulf Coast Recap

- Port of New Orleans is #1 in U.S. by tonnage
  - ✍ 50% of total U.S. grain exports shipped via Gulf
  - ✍ 10.8% of total U.S. refining from New Orleans

- Key space shuttle facility in Michoud supported fuel tanks for International Space Station

- 1.3M residents reside in greater New Orleans

Katrina's wake impacted geography
the size of Great Britain

Hurricane Katrina: Gulf Coast Recap

- Hurricane hits Louisiana on Aug 29, 2005

- 135 MPH winds; 20-foot storm surge sent inland; 55-foot surges logged in Gulf prior to landfall

- Levee failures create secondary crisis

- 2.3M homes without power

- Spawned 33 reported tornadoes in North America

- 1,090 fatalities in Louisiana recorded to date

Sources: www.abc.net.au; "Tropical Cyclone Report: Hurricane Katrina", National Hurricane Center.

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Map of Eastern Louisiana Parishes
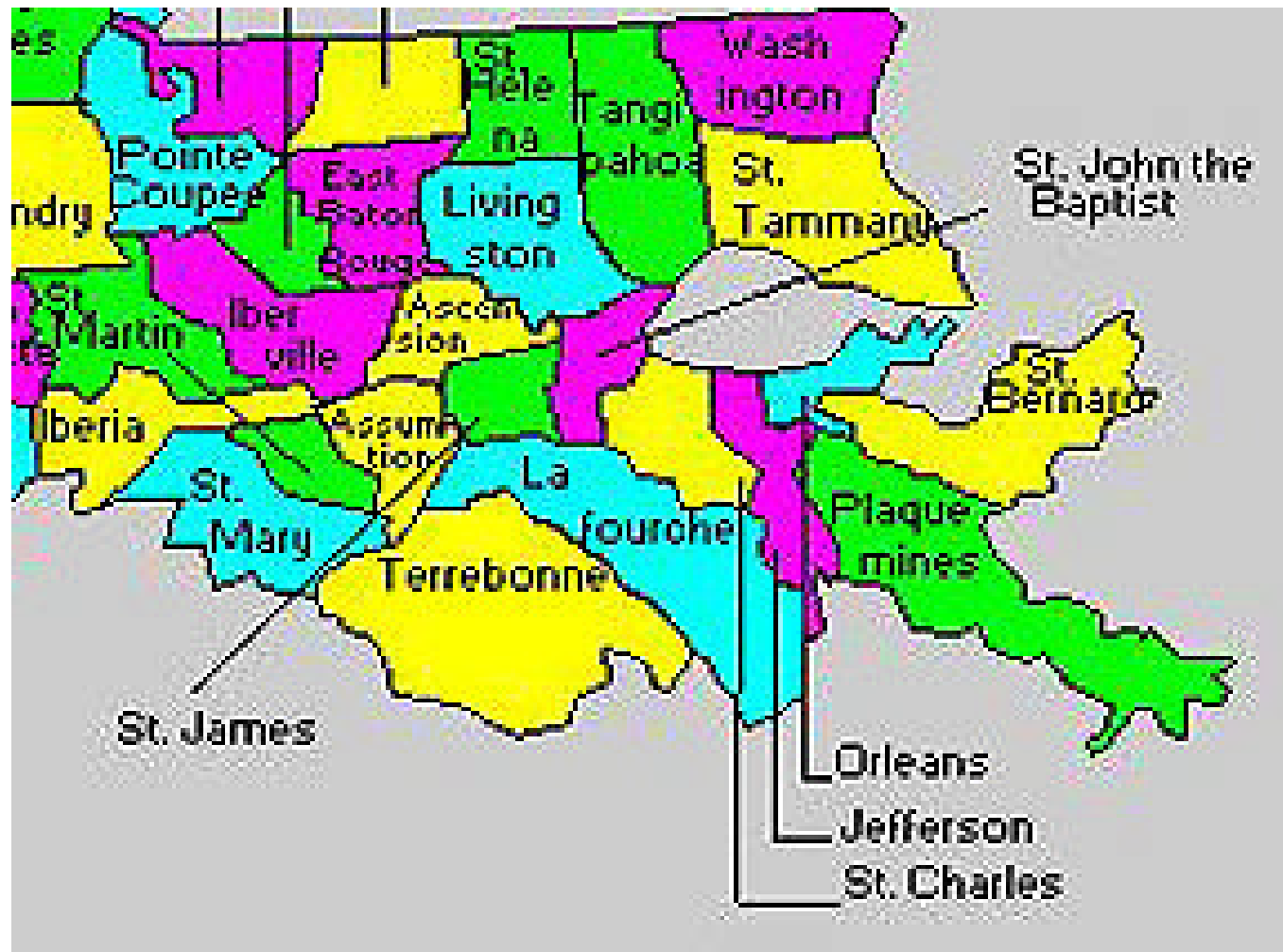
Each Parish Has Its Own Communication Frequency For Emergency Response

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New Orleans: Telecom Impact

(Multi-Carrier)

- 1.75M lines down immediately following Katrina

- Thirty-eight 9-1-1 Centers inoperable initially

- 1,000 cellular transmission towers out

- Two Class 4 Toll Switches initially out of service

- No power/ unable to secure extended diesel fuel

N.O. Central Offices Post Katrina

New Orleans LAKE CO
CLLI: NWORLALK

Venice LA CO
CLLI: VENCLAMA

Buras CO
CLLI : BURSLAMA

Sources: www.thecentraloffice.com

New Orleans: Telecom Impact

- Internet2 / Abilene link from Houston to Atlanta initially out and restored on Sept. 8, 2005

- Fiber optic path on Lake Ponchartrain Bridge is offline following Hurricane Katrina

- WiFi, WiMAX and VoIP play key role in area communications

- Public Internet traffic nationally and globally remains unaffected by Katrina except for local access in LA, MS, AL
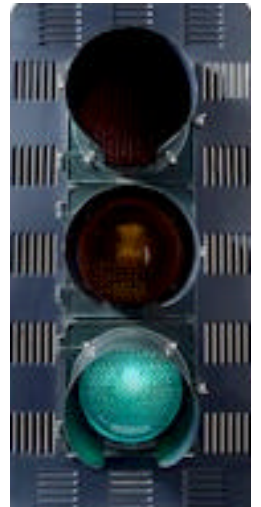
Telecom Provider Successes

(Alphabetic)

- Over 1,000 <u>Amateur Radio</u> operators assisted with communication into and out of New Orleans

- <u>AT&T/SBC</u> companies deployed 140 technicians to assist in recovery and in-kind technology marching valued at $4M per month in services.

- <u>BellSouth</u> prioritized hardest hit areas and restored service in phases to New Orleans metro region

Telecom Provider Successes

(Alphabetical)

- <u>Cingular</u> matched employee donations up to $1M and set up a Text Messaging campaign for donations and to prompt in-store collections

- <u>Cisco Systems</u> donated cash, products, technical expertise, and solution design valued at over $3M to Red Cross, FEMA and to shelters such as the Katrina Help Center and Community Voice Mail (CVM)

Telecom Provider Successes
(Alphabetical)

- <u>Cox Communications</u> is providing video, voice and Data services to nine shelters in LA and to the National Guard and police officers

- <u>Iridium Satellite LLC</u> added 10,000+ new subscribers, many Katrina first responders, in Q305

- <u>MCI</u> recognized by FAA for performance in restoring Air Traffic Control systems after Katrina devastation to facilitate recovery

Telecom Provider Successes
(Alphabetical)

- <u>NORTEL</u> matched donations up to $250K and donated equipment and services to FEMA, the U.S. Army, and to the Air National Guard

- <u>Sprint Nextel</u> contributes cash and in-kind donations such as mobile devices worth $10M

- <u>Verizon</u> provided over 200 employees to area on mutual aid agreement; Verizon Wireless distributed 20,000 wireless devices; Verizon Foundation also contributed more than $8M to relief efforts
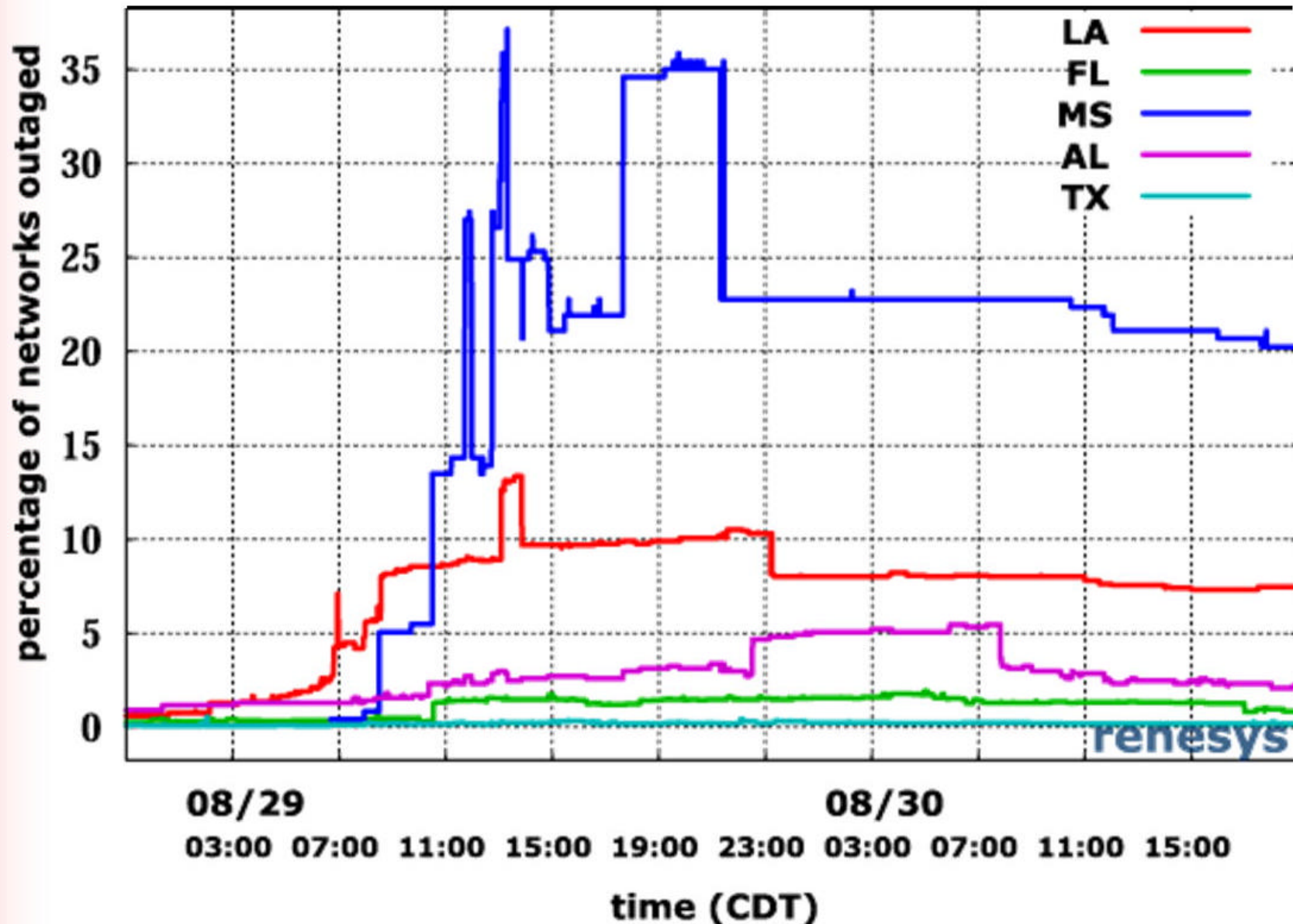
Internet Robustness:
Pre and Post August 29th (#)

Internet Robustness:
Pre and Post August 29th (%)
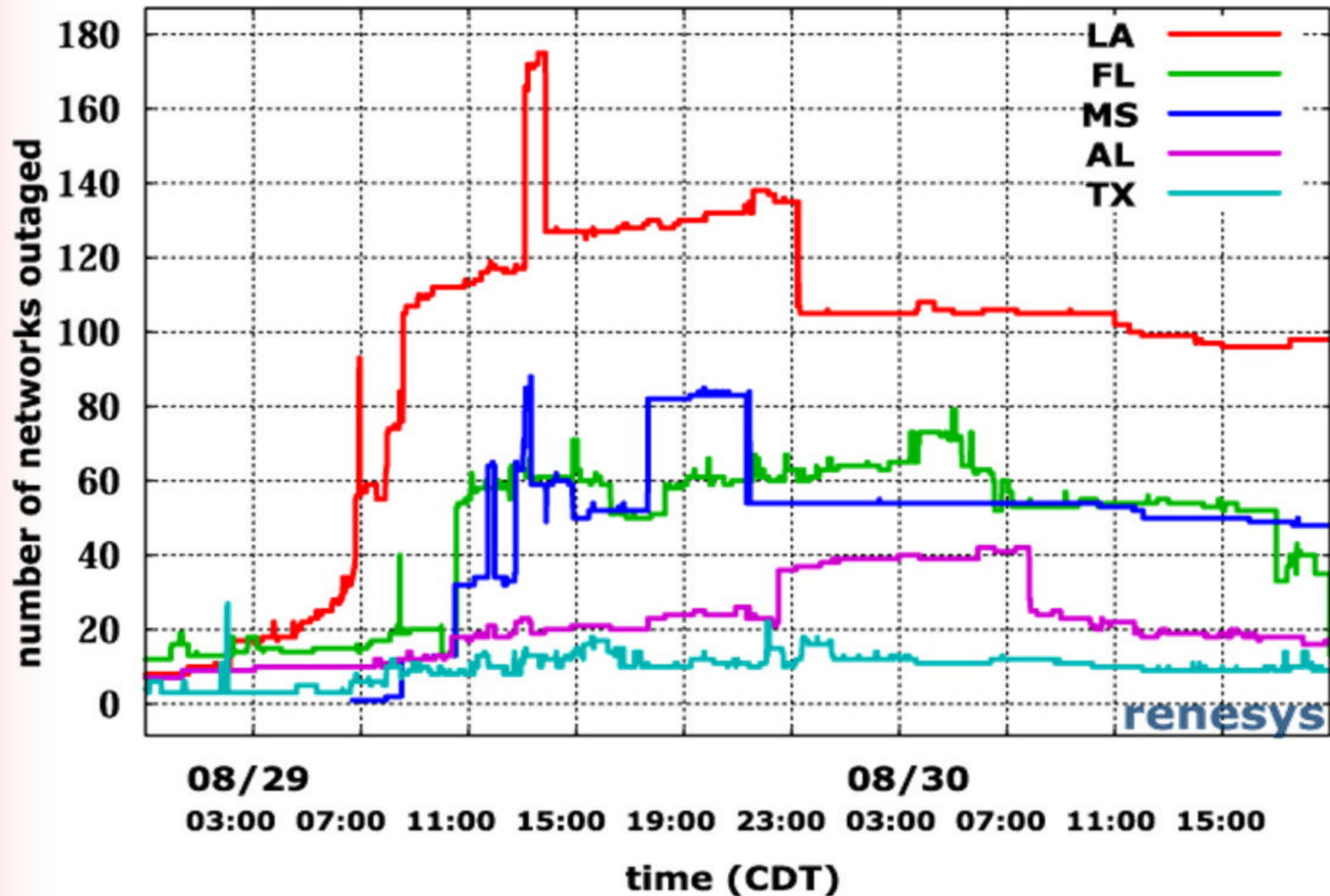
Sources: Renesys Inc. Used with permission.

New Orleans: 6 Months Later

- Port of New Orleans at 50%+ capacity

- 130,000 lines remain out in New Orleans – awaiting local government repopulation plans

- Cellular service fully operational in occupied areas (ie outside of those with restricted access)

- U.S. Congressional Budget Office estimates damage at $60B in insured and uninsured losses
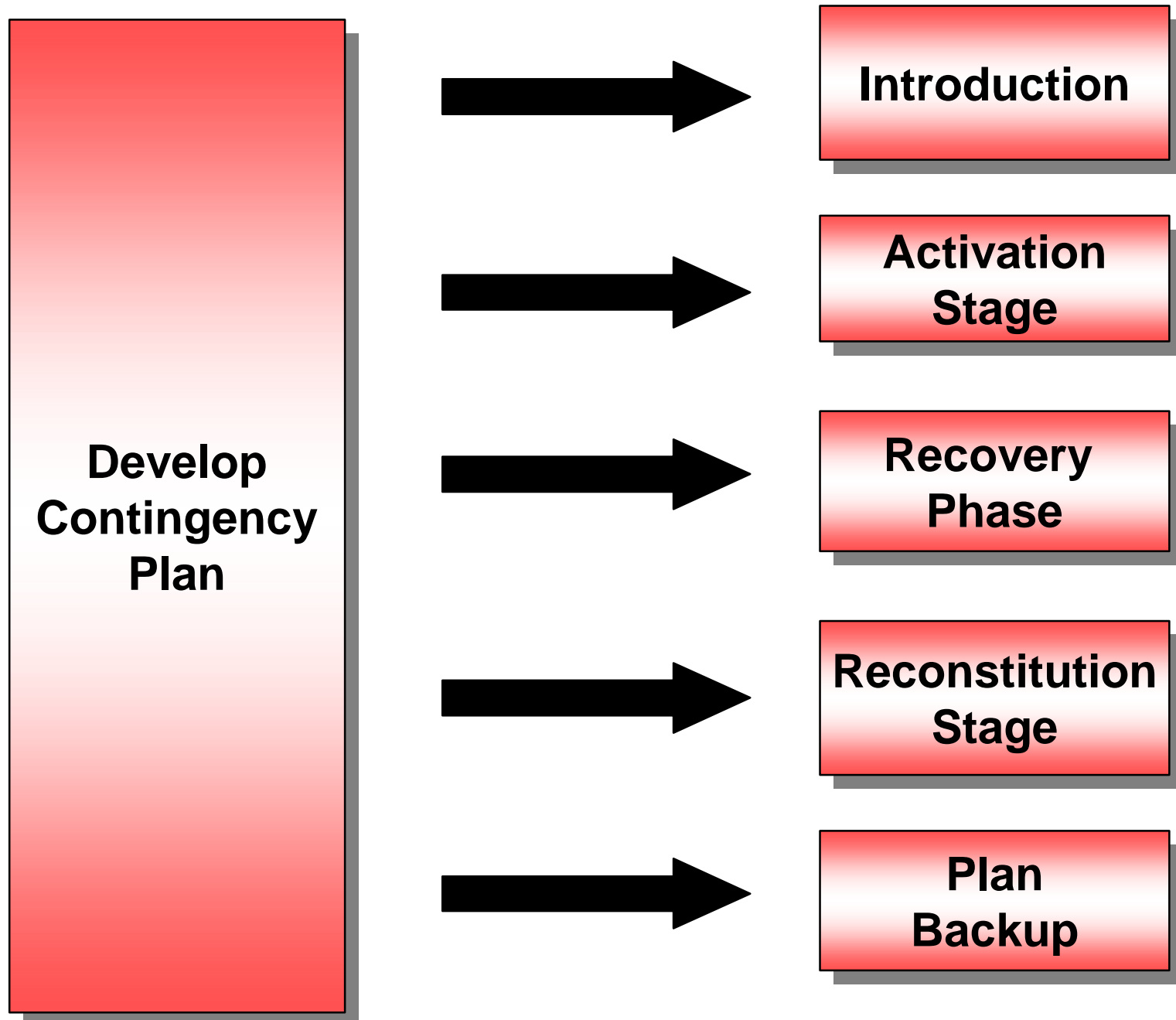
Sources: "Tropical Cyclone Report: Hurricane Katrina", "Orlando Sentinel" online, January 3, 2006; www.bellSouth.mediaroom.com/index ; www.bellsouth.com/community/hurricanes ; www.mcnbc.msn.com/id/9329293

Business Continuity Planning

Will your organization be able to survive a disaster ?

1. What staff, materials, procedures and equipment is absolutely vital to our firm?
2. What suppliers and resources do I need daily?
3. What will you do if your building is not accessible?
4. Have you planned for payroll continuity?
5. Who should you involve in creating your plan?
6. Have you defined crisis management procedures and individual responsibilities?
7. Has your organization coordinated with other firms in your building or area?
8. Do you review your emergency plans yearly? Share with new staff?

Continuity Plan: Components

Develop Contingency Plan

→ **Introduction**

→ **Activation Stage**

→ **Recovery Phase**

→ **Reconstitution Stage**

→ **Plan Backup**

Sources: NIST Special Publication 800-34, "Contingency Planning Guide for Information Technology (IT)"

Study: Gap in Business Continuity

% Stating BC Plan is Important	**62%**
% With Business Continuity Plan	**60%**
% Testing Their Plans in Last 12 Mo.	**58%**
% Who Have Never Tested Plan	**18%**
% Who Have Implemented Security Measures Such as Firewalls, IDS, Hacker Protection, Pswd Authentication	**55%**
% Who Have Set Up Backup Servers	**49%**

Telecom Conclusions

- Interdependent infrastructures increase risk

- Business Continuity Management (BCM) should include plans for "worst case" scenarios

- Operate ---> Interoperate

- Factor in data recovery and storage into plans

- Be Flexible

Vision of Public Internet Realized

- ARPANET launched predecessor to today's public Internet in 1969

- Goals: use disparate computers to communicate in order to provide high reliability and survivability

Hurricane Katrina demonstrated that the public Internet continues to achieve its objective

References & Resources

"Impact of Hurricane Katrina on Internet Infrastucture" by James Cowie, Alin Popescu, and Todd Underwood of Renesys, September 9, 2005.

"Tropical Cyclone Report: Hurricane Katrina", by Richard D. Knabb, Jamie R. Rhome, and Daniel P. Brown of the National Hurricane Center, December 20, 2005.

Presentation of Kenneth Moran, Director, Office of Homeland Security, Enforcement Bureau, Agenda Meeting of the Federal Communications Commission; Atlanta, Georgia, September 15, 2005.

"Disaster Planning in the Private Sector: A Look At The State of Business Continuity In The U.S.", International Association of Emergency Managers and AT&T.

"Hurricane Katrina: Providing Oversight of the Nation's Preparedness, Response, and Recovery Activities", GAO-05-1053T

directNIC blog at *www.livejournal.com/users/interdictor/*

Q & A

Appendices: Case Studies

Case Study: Wal-Mart Stores Inc.

- 126 Wal-Mart stores and centers impacted by Hurricane Katrina

- Used "Lessons Learned" from Hurricane Charlie per CIO Linda Dillman

- Created Emergency Ops Center (EOC) with cross-functional team to prioritize tasks/systems

- Key contributions : mobile pharmacies; associate call center; Emergency Contact Registry

Case Study: Ochsner Hospital

- 520-bed not-for-profit hospital; 1 of 3 to stay open

- Escaped flooding; housed 420 patients AND 1,200 others (patient relatives, friends, evacuees)

- Opened Command Center in Baton Rouge, LA

- Setup employee skill registration (Call Center & online) and provided free child care for staff

- Conducted job fairs for permanent hires – especially for non-medical professionals

Case Study: directNIC

- Part of InterCosmos Media Group, Inc.

- 11th largest domain registrar in the world with 11.1M domains

- CEO Sigmund Solares

- Skeleton staff of 5-6 kept Data Center and Internet service up without interruption through Hurricane Katrina and its aftermath

Source: www.directNIC.com/katrina.php