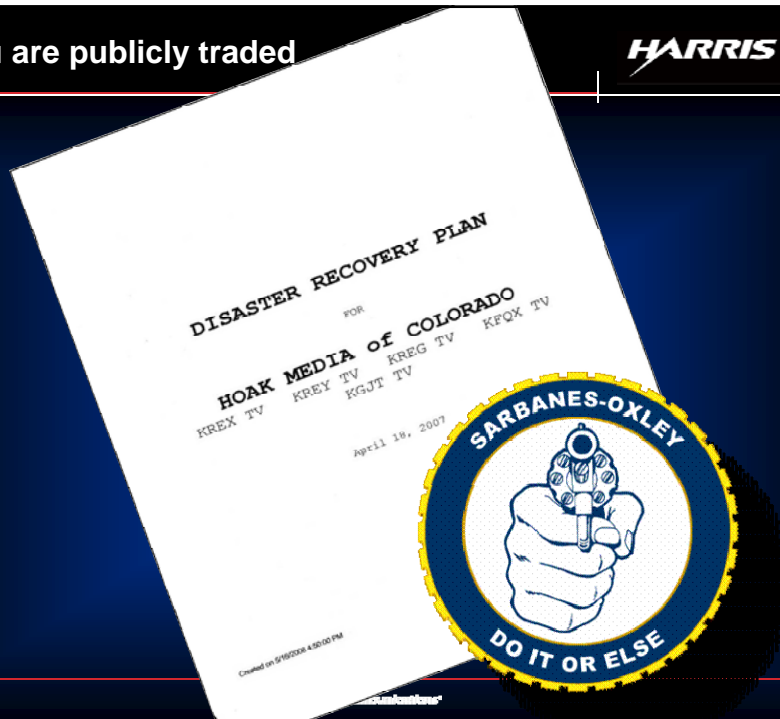


The Real World of Disaster Recovery

Lessons Learned and Mistakes Made at KREX-TV

Skip Erickson
Manager, Systems Engineering Group
Harris Broadcast Communications

If you are publicly traded



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Tower Failure
Transmitter Sites
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Local Safety Personnel
Local Utility Personnel

Page 11 Level Three Disaster
Emergency Management Agency
Power
Vehicle Fuel
Communications

K -- Disaster Response Plan

Natural Disasters (con't)

Task	IC	Status
Ice Storm		
Monitor for EAS and NOAA	2nd floor	
Assist News as required by situation	2nd floor	
Assemble ERT	All	
Assess need for employee pickup/drop-off	1st floor	
Assess need for employee hotel accommodations	1st floor	
Assess operational impact	2nd floor	
Aid in developing plan to restore readiness	All	
Execute plan		

Tower Icing

Assess situation and impact	2nd floor
Advise EMT	2nd floor
Dispatch employees to form perimeter around tower	2nd floor
Assess operational impact	2nd floor
Advise when all clear	2nd floor

Assemble ERT		
Verify call has been made to fire department	2nd floor	
Arrange for local hospital or on-site medical treatment	3rd floor	
Dispatch appropriate engineer(s) to transmitter	2nd floor	
Dispatch tower crew to site	2nd floor	
Assess operational condition and threat	All	
Begin emergency calls for replacement equipment	2nd floor	
Verify cable and satellite transmitters OK	2nd floor	
Monitor operation of main and standby systems	2nd floor	
Advise when all clear	2nd floor	
Execute replacement of equipment (if necessary)	2nd floor	

Sunday January 20, 2008

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When the smoke cleared.....



184th Nielsen Market

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nielsen.com/markets

78,000 Households

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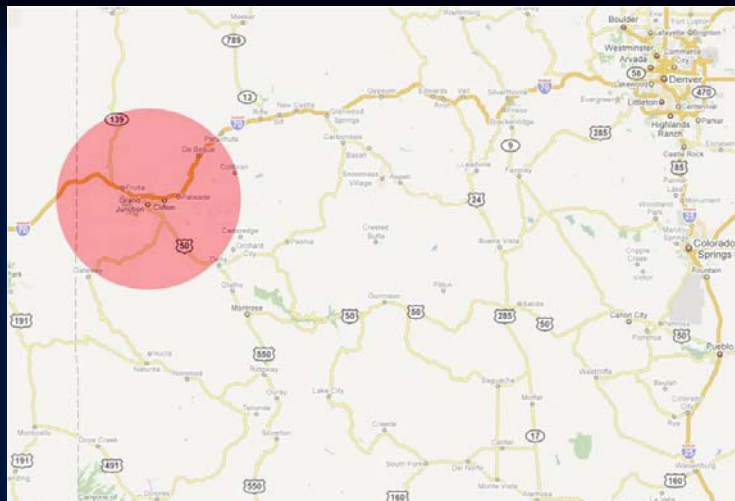
nielsen.com/markets

Tall Towers Not Needed



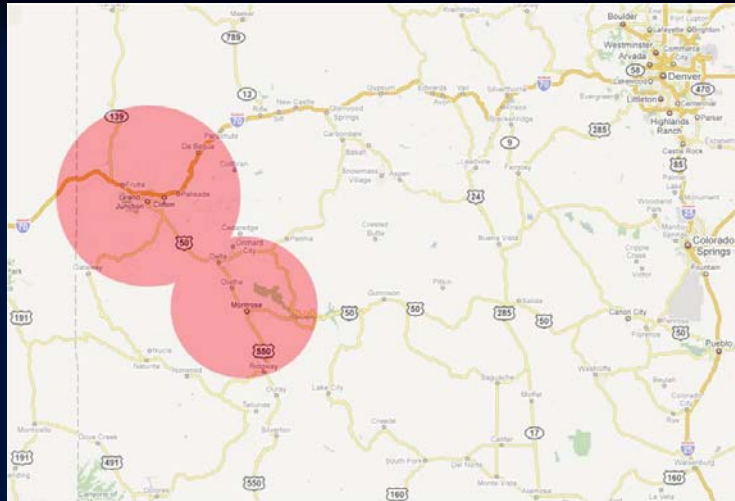
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KREX



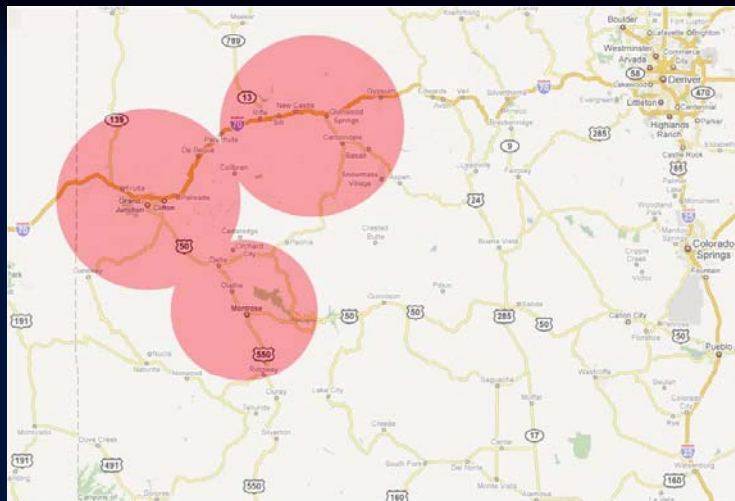
arsionofcommunications

KREX + KREG



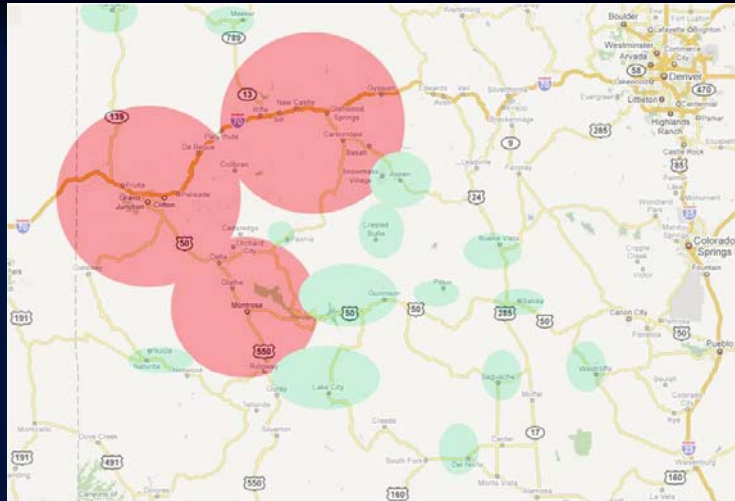
as a service of communications

KREX + KREY + KREG



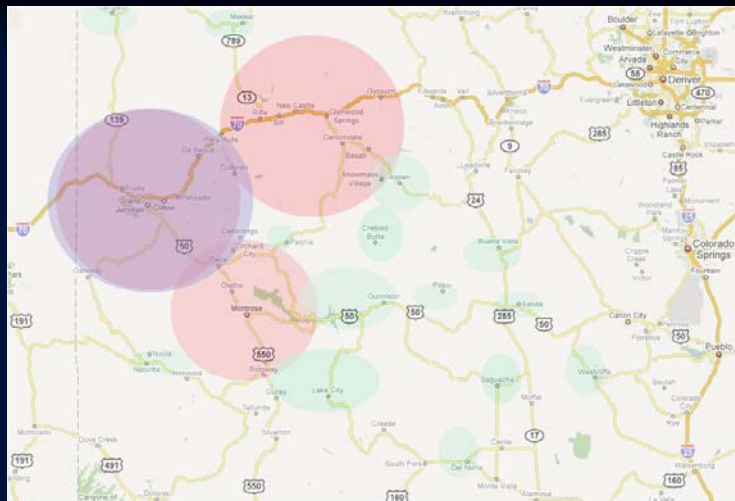
as a service of communications

KREX + KREY + KREG + 60 Translators



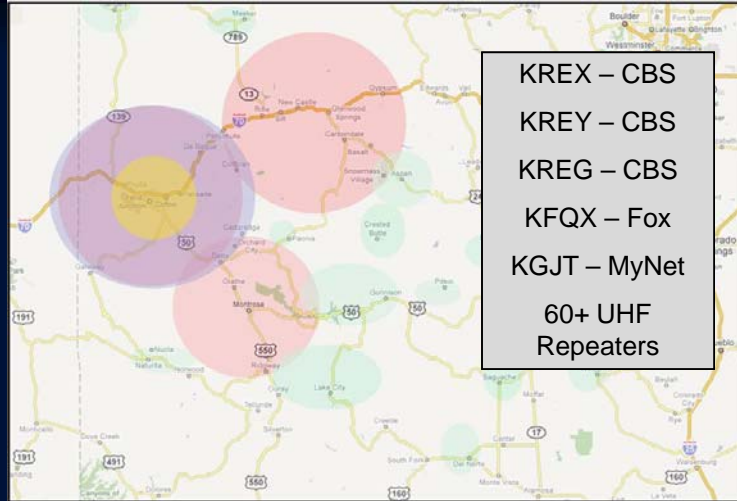
analog.comcast.com

KFXQ – Fox Affiliate



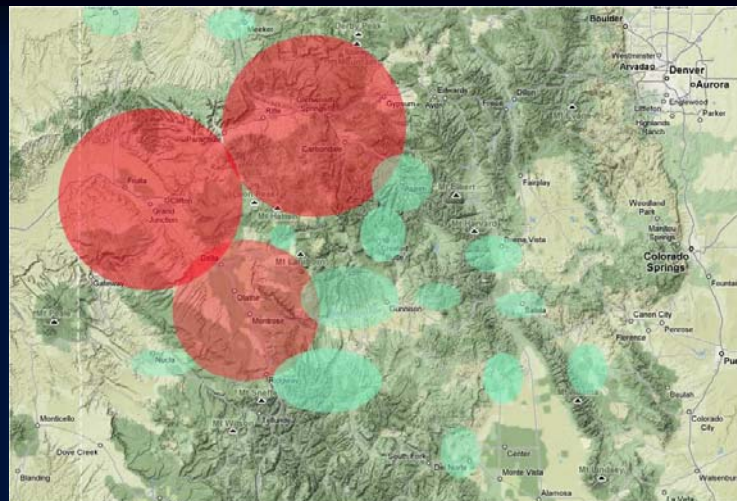
analog.comcast.com

KFXQ – Fox + KGJT - MyNet



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Cable was also out



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The morning after.....

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Fire may have started in a studio heater

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Production Control Room

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Fastest transition to Digital on record!

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The only surviving equipment

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accrued.com

DISASTER RECOVERY PLAN

FOR

HOAK MEDIA of COLORADO
KREG TV KREG TV KFOX TV
KREX TV KGJT TV

April 18, 2007

Created on 5/18/2006 4:01:02 PM

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What the Disaster Recovery Plan Said:



Level One Disaster

Level One Disaster affects only the operations of Hoak Media

Main building loss

Temporary operating facilities will be rented through

Temporary office space rental - TBD

Storage trailer for salvage items - Area Best Storage 1-970-249-9728

Mesa State College and PBS options for studio space

Fire/Smoke

Determine source take safe action (pull plug, use extinguisher)

Call 911 if required

Leave building

Accurately direct responding personnel

Call Staff Contact List

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Lessons Learned

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And now in no particular order.....

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9 Rules for Disaster Recovery

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Probably the last thing you'd do...

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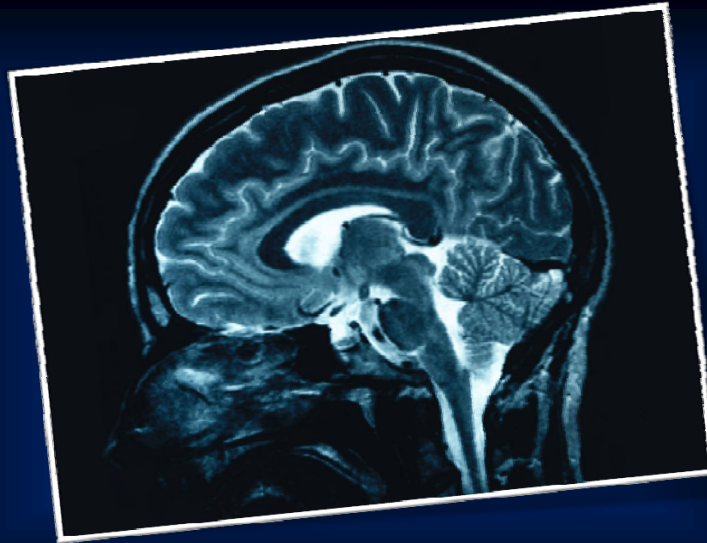
Rule #1:

**Take a deep breath
and relax**

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The most important tool you have!

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The most important tool you have!

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The Psychology Of Disaster Recovery

There will be more pressure on you than
any other time of your engineering
career

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The Psychology Of Disaster Recovery

You will have to call on more than just
your talents as a good engineer

The Stress Formula:

Expectations

The Stress Formula:

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Expectations + Time



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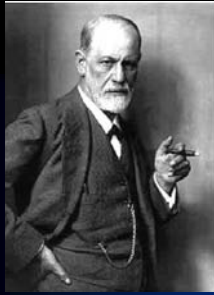
The Stress Formula:

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Expectations + Time = Stress



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Psychologists say Stress is:

A condition or feeling experienced when a person perceives that demands exceed the personal and social resources the individual is able to mobilize

astoria@comcast.net

User Friendly Definition:

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Stress occurs when one thinks they can't handle the demands put upon them.

astoria@comcast.net

Stress reduces your ability to deal with large amounts of information.....

Decision-making and creativity are impaired when because you are unable to take account of all the information available.

Tests found that highly stressed people will persist in a course of action even when better alternatives are available.

*The best way to control
stress?*

Good Engineering Practice
*Easy to forget when
you're off the air*

Rule #2:

**Set up an office
and get wired.**

Not this.....



What you really need:

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Internet Connection
Laptop & Software
Printer/Scanner/Fax
Paper and Notepads
Desk, Chairs, Tables
Tape, Stapler, Labels
Wastebaskets
and a Really Big Table

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And you may also want to consider.....

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Extra Cell and Laptop Batts
Telephone Headsets
Battery Powered LED Work Lights
Wireless Internet access cards
Weather Related Clothing
Hand Cleaner (no one can get sick!)
Hearing Protection
Mop and bucket
Electrostatic Air Cleaners
Climbing Harness

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Crime Scene?

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Rule #3:

**Tell your GM
they're going
to have to
spend a lot
of money**

The second most important tool:



ADU (Accountant Disposal Unit)

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Rule #4:

**Do Not Leave
the Site**

This.....



Not This.....



Minion : [min-yuh n]—noun

1. A servile follower or subordinate of a person in power.

Required Equipment

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Rule #5:

Manage the Human Factors

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Just say NO!

~~20 Hour Days~~

Set a Quitting Time

Watch the Health and Safety Issues

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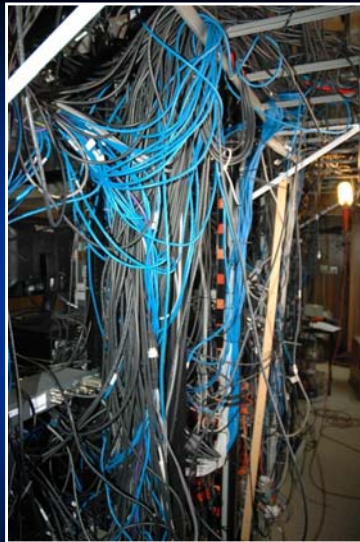
Rule #6:

Document It!

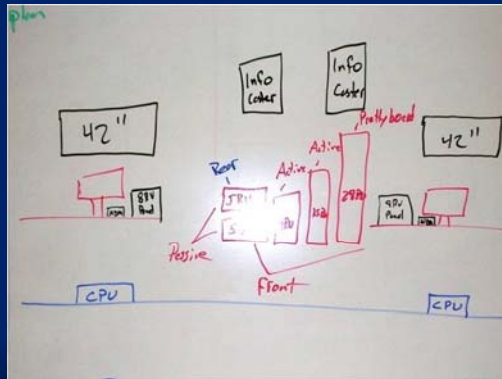
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One of these wires feeds the STL....



Document on Dry Erase



Don't forget to document:

- New Equipment
- RMA's
- Shipping Information
- Borrowed equipment
- Work Assignments

Rule #7:

Have a Daily Meeting

The Daily Meeting

A real pain, but.....

It gives everyone a clear understanding of the goals and expectations of the day

This may come as a shock....

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...but your engineers can't read your mind!



Communicate Clearly and Often

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The Daily Meeting

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A real pain, but.....

It gives everyone a clear understanding of the goals and expectations of the day

It eliminates duplication

It reduces stress!

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Most Importantly:

***It Keeps Your
Management Informed***

***It builds their trust
and you won't see them
for the rest of the day.***

Rule #8:

Ask For Help

Phil Mowbray **Al Ladage**



**Lean on your
vendors!**



**More
Minions!**

**Insurance
Advocate**

Ask Other Broadcasters for:

- **Commercial Spots**
- Test Gear
- Broadcast Tools

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Your Competi

WEALTH

Ma



***Phase One: Get back on the air with CBS & Fox
ASAP with Harris Demo Gear***



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***Phase Two: Get spots, branding and News on the
air and replace the Harris Demo Gear with new
rack mounted equipment***



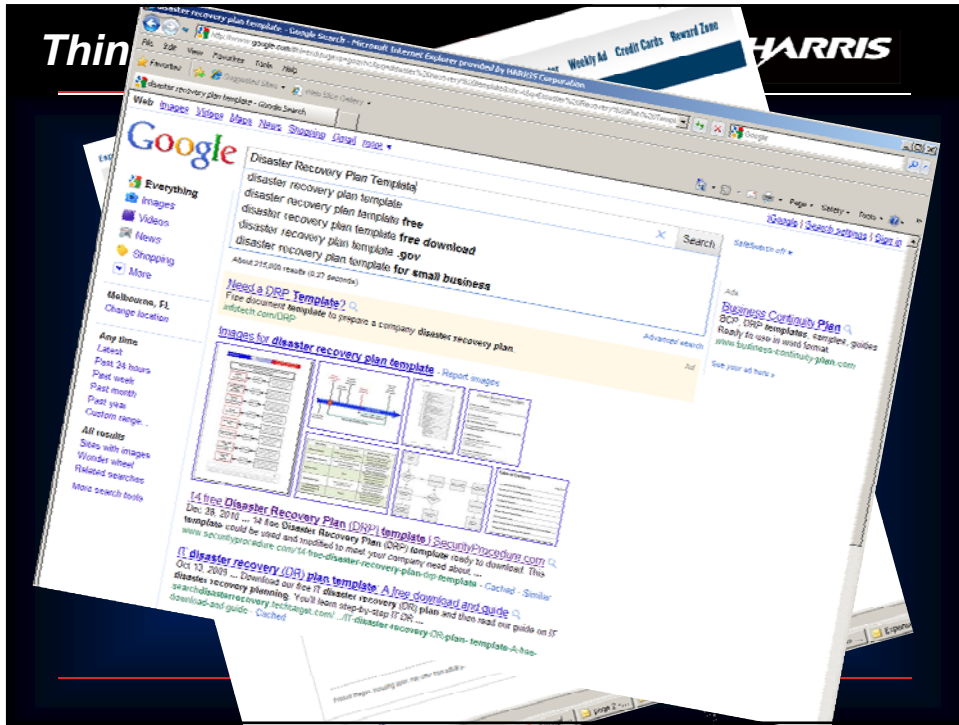
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Phase Three: Build a new building and move all the new gear with losing minimal airtime




Rule #9:

**Be
Prepared**




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Career Path for Broadcast Engineers Who Don't Understand IP:



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A slide with a dark blue background. At the top right is the Harris logo. Below it is a horizontal line. The main text is "Career Path for Broadcast Engineers Who Don't Understand IP:". Below the text is a photograph of a broadcast engineer wearing a hard hat and safety gear, working on a large satellite dish antenna. At the bottom center is the logo for "assuredcommunications".



University SBE
on-line. on-demand.

slip.erickson@harris.com
[My Account](#) | [Logout](#)

Home > Computer Networking for Broadcast Engineers > Computer Networking for Broadcast Engineers > Routing and Route Discovery, and Network Address Translation

PREV NEXT HOME GRADES PRINT FONT (+) FONT (-)

Routing and Route Discovery, and Network Address Translation

Routing Protocols

Routing is the process of moving packets from one network to another. There are two types of network protocols used in routing - the routing protocols and the routed protocols. Routing protocols are special protocols that routers use to share information with each other about the Internet or network infrastructure. Some routing protocols are Routing Information Protocol (RIP) and Open Shortest Path First. A routed protocol is one used by a host looking for a distant host like IP or UDP. These are the packets that routers actually move. Routing protocols are used to discover how to move the routed protocols.


Router's Logical Knowledge

Routers are among the most advanced pieces of hardware in a network. They have an embedded operating system within their firmware which gives them the programming code to do several things.

The first ability a router has is to read network layer protocol addresses like IP and understand the destination and source addresses. Using the network mask or sub-net mask the router can determine what portion of the IP address refers to the network and which refers to the individual host within the network.

The next capability a router has is knowledge of all of its neighboring routers. If a router is connected to another router they will discover each other using one of the routing protocols and "introduce" themselves to each other and start sharing information.

Routers build tables of routers that they are connected to and share that with those routers. Those routers share that with the routers they are connected to and so on and so on until the knowledge about a particular router, its networks, and its connection circuits is great far and wide. When a router table is fully complete with the entries for all routers and paths, it is said to be converged. Inside the router is an algorithm, a mathematical formula, which is used to figure out the shortest or fastest path between any two networks.




A router goes through a step-by-step process to route a packet. First, it determines if the source and destination addresses are in different networks. In the example above there is a packet being sent from the computer on the left with the network address of 192.168.100.x to the network 192.168.110.x. The router can connect these two different networks together.

The next step the router takes is to see if the packet is permitted to be moved between the networks. An

TUTORIAL NAVIGATION

Computer Networking for Broadcast Engineers

1. Introduction to Computer Networking for Broadcast Engineers
2. Physical Media: Copper, Wiring Standards Fiber, Data, RF, and Coaxial
3. Physical Network Topologies: Bus, Ring, Star, Mesh, Cellular, and Hybrid
4. Logical Network Topologies: Bus and Ring and Connection Types
5. The Open System Interconnection Model and Data Encapsulation
6. Introduction to Network Devices: Routers, Transceivers, Hubs, Switches, Routers and Spanning Tree Protocol
7. Ethernet and Network Interface Cards
8. Internet Protocol (IP), Addressing and Subnetting, and DNS Servers
9. Routing and Route Discovery, and Network Address Translation
10. Troubleshooting Procedures, Hardware and Software Tools and Equipment
11. Virtual Local Area Networks (VLANs) and Virtual Private Networks (VPNs)



Update your DR Plan


Know Your Airpath

Check your insurance

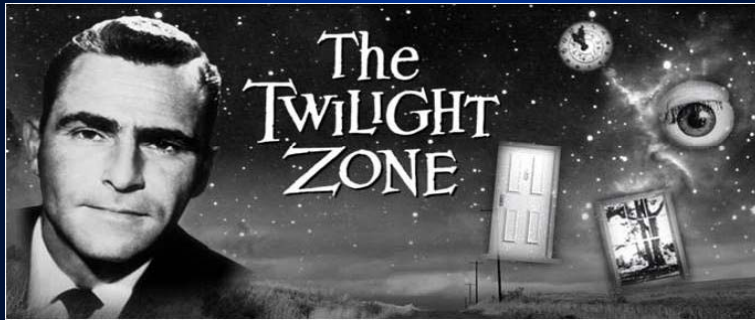
Take Your Data Home

Stay Technically Current

Think Ahead



Imagine if you will.....



Where will the tower fall?



The 1,500-foot tower (above) collapsed after being hit by a tornado that accompanied a band of storms that ripped across Central Florida this morning. The 485-foot guyed tower (below) was also a victim of severe winter weather storms that have blanketed the nation.



Where the ENG truck keys?

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High watermark on DTV TX Power Supply

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Be Prepared

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- Update your DR Plan
- Know Your Airpath
- Check your insurance
- Take Your Data Home
- Stay Technically Current
- Think Ahead

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Everything You Need to Know About Disaster Recovery You Learned on Your First Broadcast Engineering Project

- Don't get stressed
- Have a Plan
- Stay Organized
- Document what you do
- Be Prepared
- Take Care of Your People

Got A Disaster?



Just be a good engineer!

Any questions, comments or stories?



Thanks to:

- Phil Mowbray, CPBE
- Craig Beardsley, CPBE
- Sim Kolliner, CPBE
- Fred Baumgartner, CPBE
- Hoak Media
- KREX News Staff
- Grand Junction Fire Department
- Grand Junction Free Press
- Grand Junction Daily Sentinel
- Ennes Foundation

