



90 Points of Failure

Are you ready to survive

By Nancy Dewitz

Beyond Indigo Pets

A bit about me and how we got here

- Almost 30 years
- Different perspective
- Discoveries
- Understanding through stories (horror)

Are there really that many?

I have identified over 90 of them.

If even one fails.....

What is YOUR tolerance to downtime?

Point of Failure

- What is a point of failure
- Anything electronic within your business that can interrupt your daily transactional function that does not have a replacement is a "point of failure"
- Can it affect the following?
- Patient care transaction
- Dollar transaction
- It is a Point of Failure if you answered yes to either

Sample Inventory

1-10(HIGHEST) How important is this to your business

CATEGORY	POF	RATING	TASK	NOTES RELATED
MISC MEDIA	10		SMART PHONES	What to have access to? Email, etc who supports
MISC MEDIA	8		PHONE SYSTEMS	Installation of new nodes, monitoring & managing
MISC MEDIA	8		FACILITIES SECURITY SYSTEMS MONITORING	Installation, monitoring, fine, theft? notifications
MONITORING	10		SERVER AND STATION LEVEL MONITORING	What is being required moment by moment of the
MONITORING	10		ROUTER MONITORING	Routers need continued monitoring to prevent or
MONITORING	10		MALWARE MONITORING	Because of the internet usage of the organization,
MONITORING	9		SOFTWARE ALERT MONITORING	Are there items causing issues within specific proc
MONITORING	10		NETWORK ALERT MONITORING	Any related network issues
MONITORING	9		SERVER PERFORMANCE MONITORING	This is necessary for continued improvement and
MONITORING	8		NETWORK TRAFFIC MONITORING	Continued monitoring of traffic will help determi
NETWORK	10		SYSTEM NETWORK SECURITY ADMIN	Who has access to what in the network. Can some
NETWORK	9		SYSTEM SECURITY OUT OF BUILDING ACCESS	Home access etc
NETWORK	8		WIRELESS ACCESS MONITORING	Issues? Connection drops. Evaluate and correct
NETWORK	8		WIRELESS ACCESS SECURE	Employee access only
NETWORK	8		WIRELESS ACCESS PUBLIC	Public access, protecting main network
NETWORK	2		PASSWORD MAINTENANCE	What are all necessary passwords, change and not
NETWORK	8		ISOLATED NETWORKS (BUSINESS OFFICE)	Separate networks must have administration and
NETWORK	10		ROUTERS, SWITCHES, ACCESS POINTS - EQUIPMENT	Sourcing, warranty maintenance with vendor
NETWORK	10		ROUTERS, SWITCHES, ACCESS POINTS - NETWORK ADMIN	Network connectivity standards and administration
PC LEVEL	7		PC REPAIR REPLACEMENT	Onsite repaired or equipment determined repair
PC LEVEL	4		MAINTAIN PC SPARE INVENTORY	Be able to quickly drop and go. take bad unit, fix it
PC LEVEL	3		PATCH MANAGEMENT PC OPERATING SYSTEMS	Important to keep up to date, yet not hinder daily
PC LEVEL	2		MAINTENANCE - CLEANING AND UNKEEP PC	PCs are large air cleaners, scheduled review of eq.

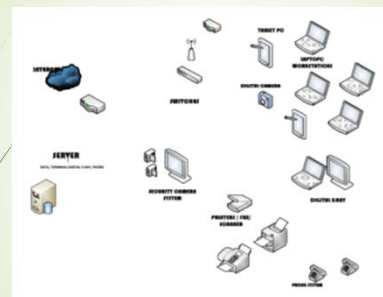
Budget? Mmm!

- Evaluate each piece of infrastructure
- "Can I be without?" & "How long?" +
- "How many people does it affect?" +
=Down Time Tolerance
- The answers to this question help determine your budget.

Determining POF's

- IT (Information Technology) What is IT?
- All items that are electronically driven and handle data are included in IT. Make a list.
- Data Server and workstations
- Credit card machine
- Tablet pc, iPad, iPhone
- Digital X-ray
- Cameras
- Educational displays
- And so on and so on..... Oh how I could go on!!

IT Universe



Well we have a list, now what?

- ▀ Assign a value to all your pieces
- ▀ How much does it cost the business if it fails?
- ▀ This can be in dollars or lost efficiency
- ▀ What can be done to prevent the failure?
- ▀ What can be done to prevent extended downtime?
- ▀ What is Redundancy.....?

Start by taking the list apart

- ▀ Decide what is at the top of the list
- ▀ Generally, you will find the server
- ▀ Lets discuss what can be done..

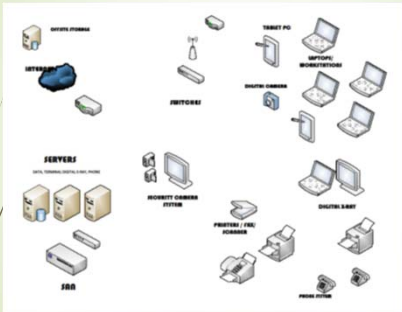
Redundancy –Dictionary Defines

- ▀ noun, plural-cies. 1. the state of being redundant. 2. superfluous repetition or overlapping, esp. of words. 3. a redundant thing, part, or amount; superfluity. 4. the provision of additional or duplicate systems, equipment, etc., that function in case an operating part or system fails, as in a spacecraft.

Redundancy-Simply Stated

- ▀ Redundancy is the ability to have something to replace a failure.
- ▀ **Automatic** – designed to, without human intervention, take over for the failed piece of equipment. For example, multiple hard drives in a system can take over for a failed drive. If you have multiple servers, one can take over for the other. This will keep you up and running when it is crucial.
- ▀ **Manual**-designed to need human intervention for replacement of failed equipment. For example, extra printer in the back room. ©

IT Redundancy



Proactive Approach

What can we do for the following...

- Server
- Workstations
- Printers
- Switches, routers, modems
- Battery Backup (have you tested yours lately?)

Server and Workstations

What can fail...

- Hard Drive
- Power Supply
- Network Card
- Main system board

What is RAID (redundant array of independent disks)

Sneaky issues, creeping in

- Power issues – major culprit – is it just the server?
- Thing of the Chinese water torture, drip, drip, drip.....
- Even a rock can't hold up to that.

Consider the cloud

- ▀ What is cloud computing vs cloud backup
- ▀ What is the risk vs the reward
- ▀ Is your infrastructure in your area ready for this move.
- ▀ Many new items to consider.

Does Price Matter?

- ▀ Workstations come in a large price range
- ▀ What to consider when purchasing workstations
- ▀ What is the primary role
- ▀ Remember Down Time Tolerance
 - ▀ They don't tell you that yesterday was their last day.

These are IT also, do you have some?

- ▀ Network Switch
- ▀ Router
- ▀ Modems
- ▀ ISP
- ▀ Phone systems

You must feed them

- ▀ Printers – duplicate/spare
- ▀ Ink on the shelf
- ▀ Power issues to be aware of

A few more for your list

- Digital X-Ray
- Dental station
- Electronic monitoring
- Nuisance items
 - Signature capture devices, bar code readers, cameras, internet filters, battery backup units,

Data Protection


- Protecting your data in the event of failure is of top importance. While the ultimate is a complete duplication of your data off site, it is not realistic.
- Consider categorization to help prioritize what to pay for off site and what to backup on site.

Power protection

- Battery Backup – have you tested yours
- Surge strip
- Battery Backup
- Line Conditioner
- Electrician tested


Proactive monitoring

- Many pieces of equipment within the practice can be monitored.
- If proactive maintenance is provided on a regular basis, you are less likely to experience a problem that will be catastrophic.
- Is data backup happening where and when it should?
- Are all virus / spam software up to date, have all patches been applied, are computers running properly.....and so on....



List created

- There are many ways to build redundancy into your infrastructure for your business.
- Your down time tolerance will be a determining factor in this infrastructure and its contents.
- If you require little or no down time, your build will be much different than the business that can handle 48 hours down.



Questions

- Thank you very much for your time today. I am happy to answer as many questions as we have time for.