Frankeni

Tales from the Datacenter
Worst Practices in Systems Management

Larry Bolhuis (aka Dr Franken)   Kevin Mort (aka WebMunster)

"We know a few things, because we've seen a few things!" – Farmers Insurance Guy

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BASIS *(aka FrankenDisclaimer)*

We have seen so many wacko and stupid things that we decided to showcase some of them. The intent here is NOT for you to take these ideas and do them but rather to AVOID these things. Hopefully you will ask questions, sure questions of us, but more importantly questions in your own shop. "Are WE doing that?" You don't need to tell us the answer either, just go back and fix it!!

You should know that EVERY ONE of these stories is TRUE! True stuff is so much more 'fun' and we don't have to think, just remember!

The names have been changed to protect the stupid or in some cases "not guilty". Remember that in some cases you get what your predecessor left you or the facility provides. No amount of 'Diet Cokes' will get us to name names.

GET IT?!?

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> "It could be that the purpose of your life is only to serve as a warning to others."

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Case 1: Your backup SUCKS!

- The facts
    - Power7 installed with 8 internal drives and no hot spare.
    - 22 drive LTO5 library for backup in sequential mode.
    - Customer really has nobody that knows IBM i or Power Systems.
    - Backups are 'Automatic'
    - Backup program does SAVLIB *ALLUSR. Period.
    - Backup does not not initialized or expire tapes.
    - Customer believes a full save happens monthly.
- The oops!
    - IBM Call Home is not enabled.
    - A drive dies.
    - A drive dies. (Yep two of 'em)

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Case 1: Your backup SUCKS

⊫ The right way
- – A full save must happen periodically.
- – Know which tape have full saves.
- – Backups should init or expire tapes.
- – Daily backups also need security data at a minimum, and with near certainty IFS data as well.
- – Do I need to mention setting up call home?
- – Dare I mention hot spare?
- – Other monitoring wouldn't be bad either.

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Case 2: Cables? We don't need these cables!

⊫ The facts
- – Case 1: Contractors in to add an elevator from ground floor to mezzanine.
- – Case 2: Contractors need to raise a horizontal I beam to allow larger and taller lift trucks to pass through.
- – Case 3: Contractors need to raise doorway opening in stud and drywall wall from 9 ft to 14 ft.

⊫ The oops!
- – Cables exist in the areas under discussion.
- – In all three cases they are summarily hacked without notification (and in Case 2 without the 'hackers' even noticing they did it!)
- – Entire areas of facilities are left disconnected and in Case 1, the fire department even showed up as alarm cables were in there.

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Case 2: Cables? We don't need these cables!

- The right way
  - Mark all cable raceways
  - Armor can be useful but not much stops a torch (Case 2) or a sawzall (Case 3)
  - Assure that building maintenance understands where cables run
  - Establish policies to assure cable discovery is part of any maintenance activity.
  - REDUNDANT cables are useful here! This is not difficult with Ethernet these days.
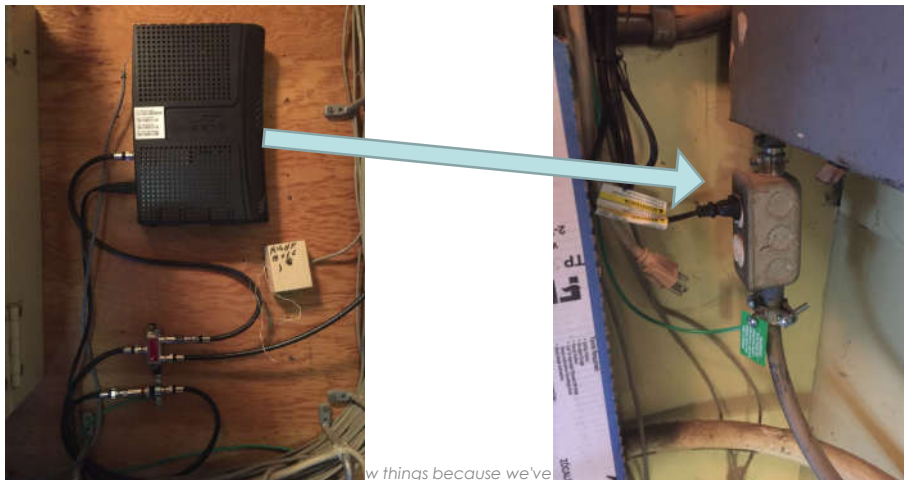   - Do I need to remind you to route redundant cables differently??? ☺

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Case 3 : Easy-off modem

- Here's a cable modem. And its receptacle.

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Case 3: Easy-off modem

- Gee, I wonder why this tape is here?

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Case 4: Out of sight, out of mind

- The Facts:
  - Customer moves all of their POWER5 and VMware into a Flex Chassis with Power and Intel nodes, and V7000 SAN.
  - Customer relocates rack-o-gear to "lights out datacenter"
  - Power node loses it's mind (i.e. main board) and things go down. Hard.
  - Processor board needs replacement…this is where the fun begins
- The Oops!
  - Only option to assist is a Goto Meeting session. Lovely.
  - Customer can't find a working password to the system.
  - FSM is locked up and has been for at least 6 months.
  - No maintenance on software since initial install, roughly 12-18 months before that.

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Case 4: Out of sight, out of mind

- The Oops, cont'd
  - Four hours later finally able to sign on to FSM.
  - Board replaced, system comes up wonky.
  - Upgrade FSM? Why?
  - Support says upgrade firmware. Done. Still wonky.
  - Replace 10G NIC
  - Still wonky. Support says "Oh, need to downrev firmware"
  - Now partition profiles are gone.
  - Restore those….thankfully they come back.

- 20 hours later, system is up. LUCKY!

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Case 4: Out of sight, out of mind

- The right way
  - Outages and failures have a way of exposing your deepest and darkest admin FAILS.
  - Even if not caused by your actions, your LACK of action can make the problem far worse.
  - There is no good excuse for ignoring system maintenance.
    - NO, really. We've heard them all.
  - System access passwords, adequate patch activity, and regular health checks are all critical functions of IT admin.

- Through several acquisitions, customer has now decided to leave platform. Gee, I wonder why.

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Case 5: Sweat'n to the Oldies

⊫ The facts:
- Original POWER5 on V5R4M0 with QIC tape drive and serial console running well known ERP.
- 0.43 of one processor and 768MB RAM (meaning one DIMM is possibly dead too.)
- No Hot Spare support on V5R4M0.
- The system has been moved several times, currently hanging out in a dirty dusty data center that only does Windows/X86. Customer plans move to cloud based software.
- Due to pending move customer drops maintenance.
- Entire I.T. staff is out of country in training for new software.
- ***Murphy puts down his ale and prepares to make with the mayhem.***

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Case 5: Sweat'n to the Oldies

⊫ The Oops
- At least one drive has already died while nobody was looking. Nobody is looking.
- Wednesday: Second drive fails in load source raid set. Data is gone like a '59 Cadillac.
- Panicked calls are place until a local firm agrees to help and sends over a guy who at least has done an IBM i install.
- Hours are spend swapping hardware in desperation hoping data is not lost. Even moving everything to a second server sitting there.
- An HMC is connected to potentially do additional error discovery and provide a working console.
- On day two they finally obtain a LIC CD and boot the thing up. One of 8 drives refuses to even report in and a second fails scan within seconds. Confirmed: Data is gone.

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Case 5: Sweat'n to the Oldies

- The Oops, cont'd:
  – Drives are swapped and initialized and recovery begins.
  – Errors occur as damaged objects are encountered (QIC tape!)
  Recovery tilts multiple times but eventually is completed.
  – Customer wants to go back to serial console and disconnect HMC.
  No. Just No. NO! They try anyway and after a couple hours give up
  and leave it connected.
  – Cross library logicals and journals require a second recovery pass.
  – As of Sunday system is running but on data from previous full save.
  Yet to recover from nightly backups.
  – Sunday the nightly recovery is completed and the customer finally has
  a system once more.

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Case 5: Sweat'n to the Oldies

- The right way:
  – Always be watching.
  – Never cancel maintenance on a production server. Just don't.
  – Get a Hot spare, get two if you can.
  – Do not host your Power Systems with someone who only does X86.
  Don't do it.
  – Get an HMC and keep it, yes even for old systems. The things are
  very cheap on used marked for those older servers.
  – Stay current if at all possible.

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Case 6: Backup and Recovery, NOT

- The facts
  - Disk in RAID set fails, old model 400. Customer calls IBM
  - IBM arrives to diagnose the issue, but found while they could get to DST (those drives were mirrored), there were actually two drives failed in the RAID set
    - First failure was more than 18 months prior
    - Customer did not call IBM because "we have RAID"
  - IBM says "We need to reload. Got tape?"
  - Customer says "Yup it's in the drive." (8MM)
  - IPL from tape attempted but tape is blank
  - Seems the system failed about 5 minutes into SAVE 21, right after the INZTAP part

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Case 6: Backup and Recovery, NOT

- The oops!
  - IBM asked for previous tape. There is no previous tape.
    - Same tape in use for last 3 years, never left the drive!
  - Customer declares "AS/400 is too hard to manage" and leaves the platform
- The right way
  - Rotate tapes! Move tapes to off site storage!
  - BRMS & media management don't hurt either.
  - Monitor your system for failures or pay someone to do it.
  - Assure your system can call home for maintenance.

Here's your sign!
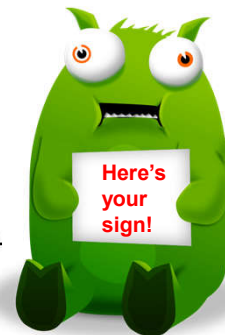
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Case 7: One LUN only…

⊨ The facts
- POWER6 blade with SAN
- BP doesn't understand IBM i
- Customer says "We need 1.2 TB usable in production."
- Performance is, well,…"sub optimal" ☺

⊨ The oops!
- BP configured ONE 1.2 TB LUN for the partition
- Load Source disk cannot be copied to a smaller disk unit
- Required full save and restore, and of course BP hadn't set up a tape drive either
- Much time lost in remediation

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Case 7: One LUN only….

⊨ The right way
- Customer was led astray by a BP who didn't understand what IBM i wants to see. Even in a SAN environment, IBM i wants "arms" – even though they are LUNs and therefore "logical" instead of physical
- SAN is a great thing for IBM i, and only getting better. But you need to understand what IBM i wants and how to configure it.
- Never mind the tape thing…that's an obvious error to not have any kind of backup device

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Case 8: "Security"

- **The Facts**
  - Customer's security team deploys a new network scanning application
  - Scans for all IBM profiles at attempts to connect with them. Uses profile name as password plus some simple ones like 1234 and abc and letmein etc. However they disable every profile in the process.
  - Now that in itself is not fatal, they SHOULD all be disabled anyway but wait, there's MORE!
- **The Oops**
  - Next they take company address book and using email address (e.g. lbolhuis) and try that.
- **Any guesses?**
  - Yep every profile in the system gets disabled. *HAVOC

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Case 8: "Security"

- **The right way**
  - After first scans revealed the behavior of the app, things should have stopped.
  - We MUST understand what expected behavior is for an application, especially when it makes changes to the system!
  - If there's no "Are you sure?" for the administrator to agree to the change…big red flag.

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Case 9: Networking – Proper cable management
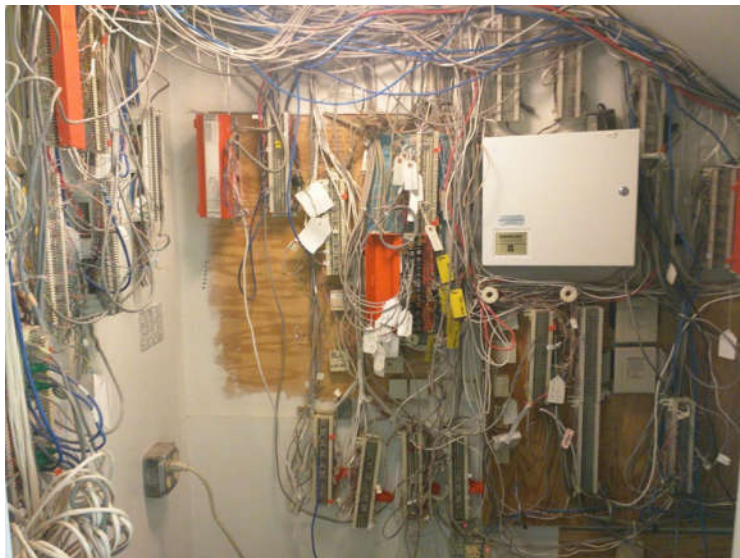
The facts, and
the Oops!

All in one.
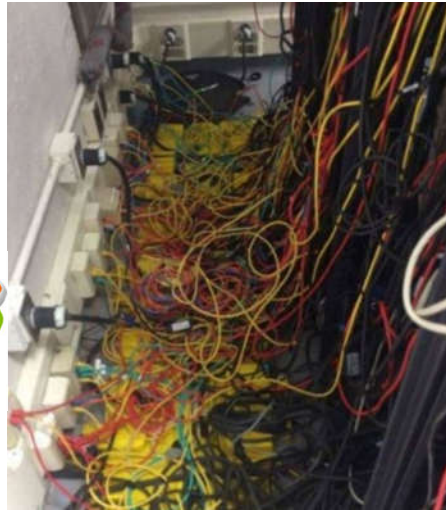
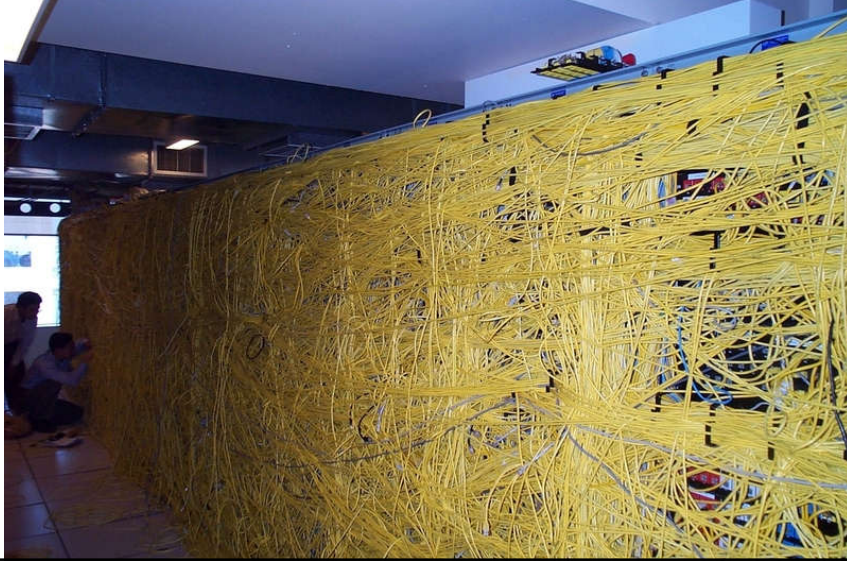Page 26   *"We know a few things because we've seen a few things!"*
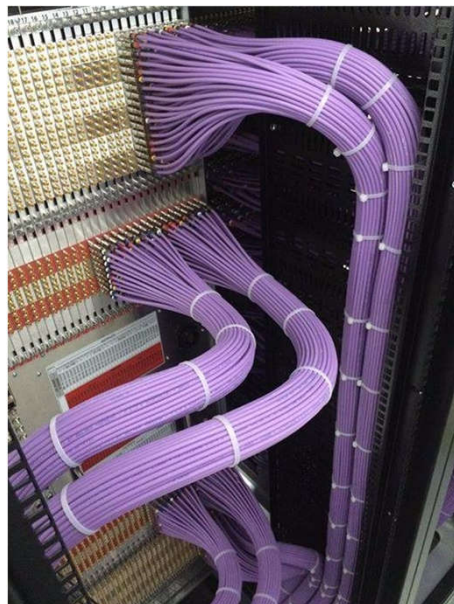

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It could also look like this.

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Or this.

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Cable management bliss.
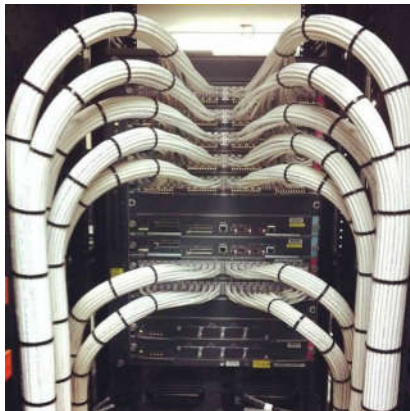
https://www.reddit.com/r/cableporn/

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Case 9: Networking – Proper cable management

⊫ The right way
  – Rack mounted patch panels
    • Your choice of above the racks or in your racks
  – Overhead cable ladders, trays, baskets.
  – NO zip ties, Bread ties, etc.
    • Velcro only! Others can damage cables or in the case of bread ties short out switch ports.
  – Don't make custom cables if you are not equipped to make them correctly and TEST them to assure they are correct.
  – Keep cables off the floor where "Size 12" failures are all too easy.

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Case 10: Reading the messages "Logical Damage"

⊫ The facts
  – Error pops up at 0-dark:30 "Member xyz in file abc has logical damage."
  – Help text says: "To correct the error remove the member and add a new member."
  – That seems simple enough.
⊫ The oops!
  – Anybody know what's usually in file members????
  – On call guy engages keyboard before engaging brain and does as suggested.
  – Data is gone like yesterday!
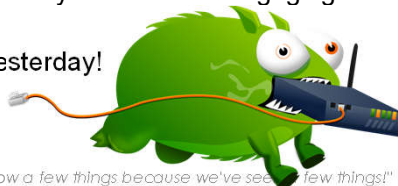
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Case 10: Reading the messages "Logical Damage"

- The right way
  - Above all, think before you act
  - THE simplest question is "what happens if I do this?" and if you're not sure, ASK SOMEONE
  - The fear of looking "dumb" – or the desire to simply make the error go away quickly often leads to this situation
  - We aren't even talking about the right way to correct the error!

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Case 11: Open and Shut

- The facts:
  - Support desk receives an email from customer stating that they cannot get signed on to IBM i.

- The oops…
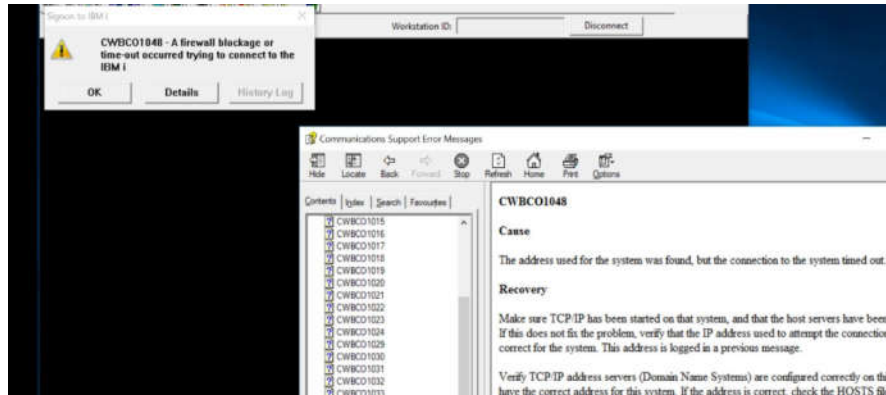
> Hello Guys ,
>
> I need your system expertise:
> We can not ping x.x.x.x `(removed real public IP)`, also we can not tracert this IP.
>
> However when we use that IP in the emulator we are getting logon screen , after entering user name and password we are getting below error.
>
> The question is if we can logon to the system from outside ?

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Case 11: Open and Shut

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Case 11: Open and Shut

- The Oops, cont'd:
  - Where were they trying to access from? Yep, public Internet. No VPN.
  - Which is funny because they have VPN available
  - Worse that they tried it, or that they got as far as they did?

- The right way
  - Yes, there are ways to have IBM i accessible remotely. We do it all the time.
  - But use the right tools!
  - If the system must be accessible without VPN, use certificates and only open a non-well known port, and only the ports needed!

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Case 12: Authority done wrong

- The facts
  - Lady who is in charge of warehouse data entry complains that she can't see jobs running so she can't see when things complete.
  - A 'Friend' in IT gives her *JOBCTL special authority.
  - One day a few months later she posted a MASSIVE inventory update batch, it's taking a L-O-N-G time to complete.
  - Many people were complaining about single thread batch queue being backed up, including payroll.
- The oops!
  - She cancels the job figuring she'll run it later………..

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Case 12: Authority gone wrong

- The right way
  - Take granting authority seriously and know what each special authority does!
  - All she needed here was a display authority or to receive a message on job completion, not full job control!
  - This type of "social engineering" outage is very common, don't give in!
  - Only time Larry ever had to recovery MAPICs from tape!

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Case 13: Fibre gone AWOL

⊩ The facts
- – Flex V7000 control enclosure begins to show problems – unexplained disk failures, other "bad" error messages, but replacing disk etc doesn't seem to fix the issues reappearing.
- – IBM says "Replace the canister node" – CE dispatched to replace node
- – Problems reappear, IBM says "reseat nodes"
    - CE dispatched to do such, node2 then node 1
    - All is fine after node2 reseat
    - Reseat node1 and WHAM! All systems fail.
- – Oh and firmware is woefully backlevel, can't even connect via browser due to "SSL cipher" issues…hilarity ensues.

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Case 13: Fibre gone AWOL

⊩ What happened?
- – Assumption was made when node2 was swapped out that it was fully in operation after the swap. This was NOT the case, as the fibre card was not properly attached to the system
    - The card was there, but it wasn't reporting any ports, therefore node1 was doing all of the work
- – When node1 was pulled, the remaining fibre connections went down with it.

⊩ The right way
- – ALWAYS verify full connectivity in hardware swaps. If you don't know how, ASK!
- – Oh and we know, browsers can be a pain, but keep your code updated!

Page 39   *"We know a few things because we've seen a few things!"*
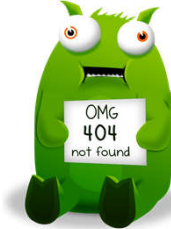
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Case 14: Who ya gonna call?

⊨ The facts
- IBM i as well as the HMC have the ability to call home when needed.
- Information is entered into call home such as email addresses and phone numbers.
- Customer has a failure of a redundant RAID card.

⊨ The oops!
- Customer moves the system to another data center.
- System admin changes as a result of the move.
- Contact information entered was personal.
- IBM is calling but the person receiving the calls wants nothing to do with them. ('Ex employee!')
- Second RAID card joins the first…..

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Case 14: Who 'ya gonna call?

⊨ The right way
- Did you know those fields are not self-updating?
  - Use CHGCNTINF to update.
- If you really DO want IBM to get in touch with you when things go 'bump' in the night YOU need to verify these items.
- ALSO run SNDSRVRQS *TEST periodically
  - This verifies your system can call out to IBM sucessfully.
  - This ALSO verifies you have a service contract **AND** that IBM acknowledges it.
  - IBM should call you and verify that they got the call.
- ALSO run SNDPTFORD SF97710 periodically
  - This verifies your system can call out to IBM for PTFs.
  - SF97710 is a cover letter only.
    - ⊨ Substitute '710' with your current release.

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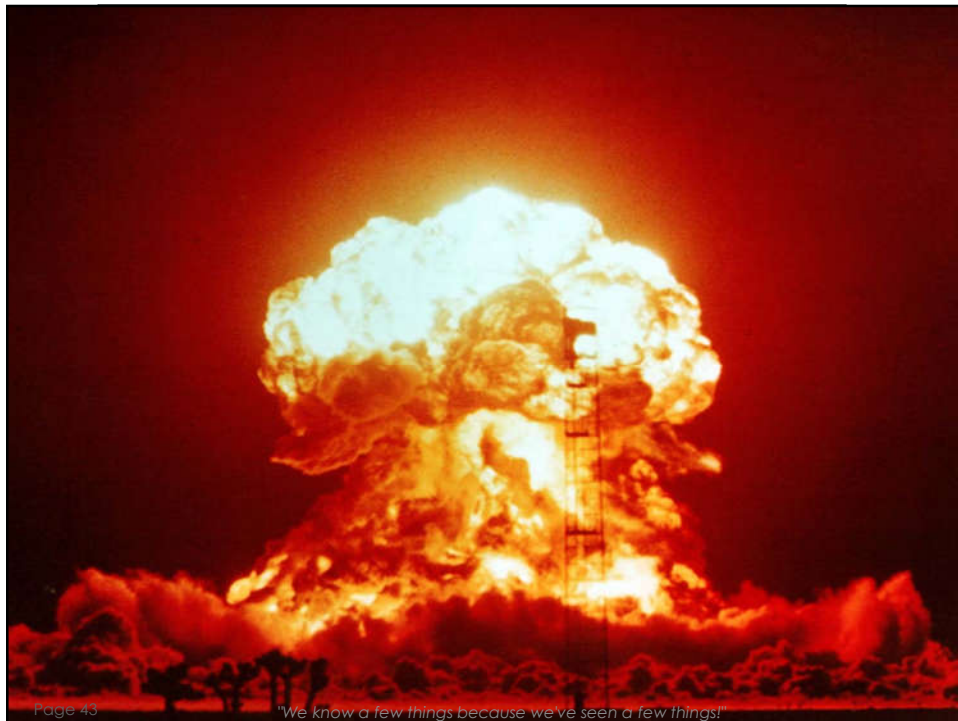### Case 15: Here, push this button.

- The facts
  - Admin finds the need to expand size of VIOS rootvg.
  - Seems they believe what needs to be done.
  - The "correct" procedure is run, system re-started

So what happened?

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Case 15: Here, push this button.

- ▶ The oops!
  - – Turns out notsomuch, VIOS is blown to itty bitty pieces
  - – Rebuild VIOS from scratch, no backups there so disk mapping has to be done based on what the admin can remember. Which is lots apparently.
  - – Downtime, about 24 hours.
- ▶ The right way
  - – Back up your configs before any changes are made, this includes VIOS
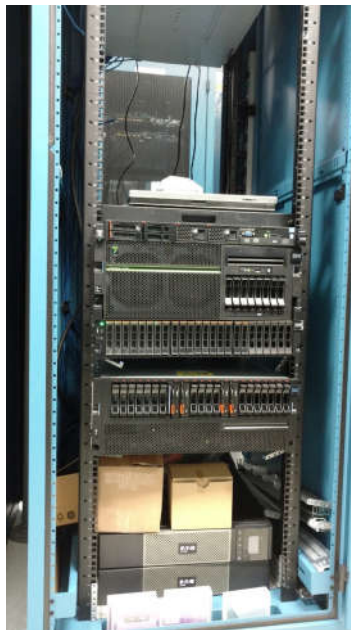 - – Verify any procedure like this with outside sources, triple check if you need to

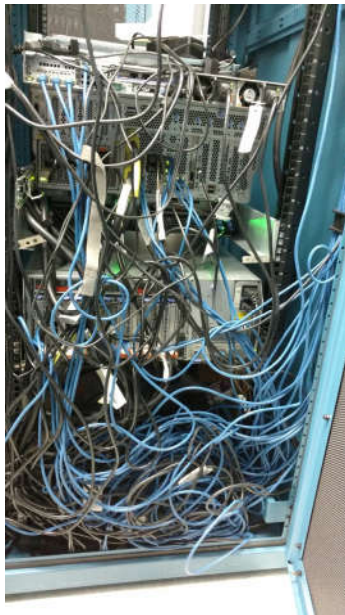Page 44   *"We know a few things because we've seen a few things!"*

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Wall of Shame Gallery

- ▶ Some things just speak for themselves…..and deserve to be laughed at.

- ▶ Enjoy.

Page 45   *"We know a few things because we've seen a few things!"*
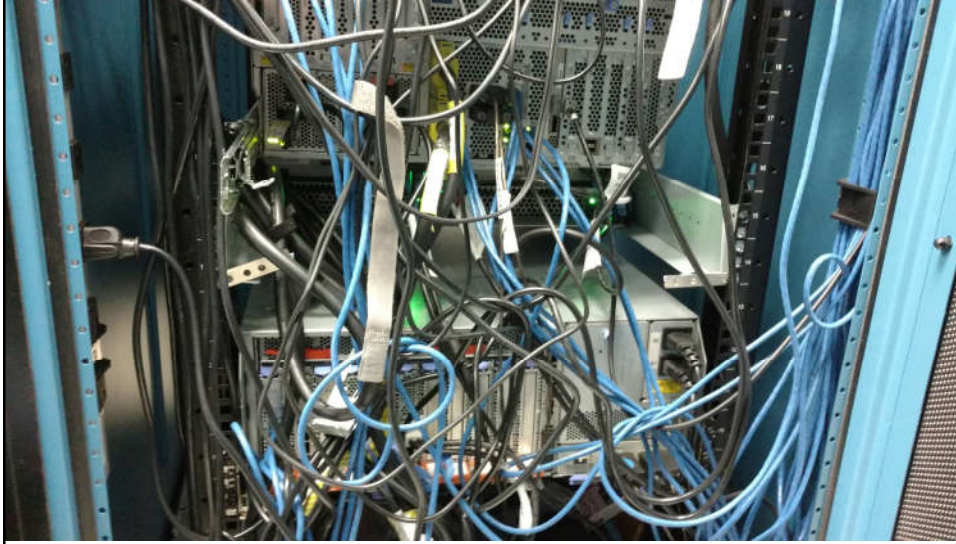
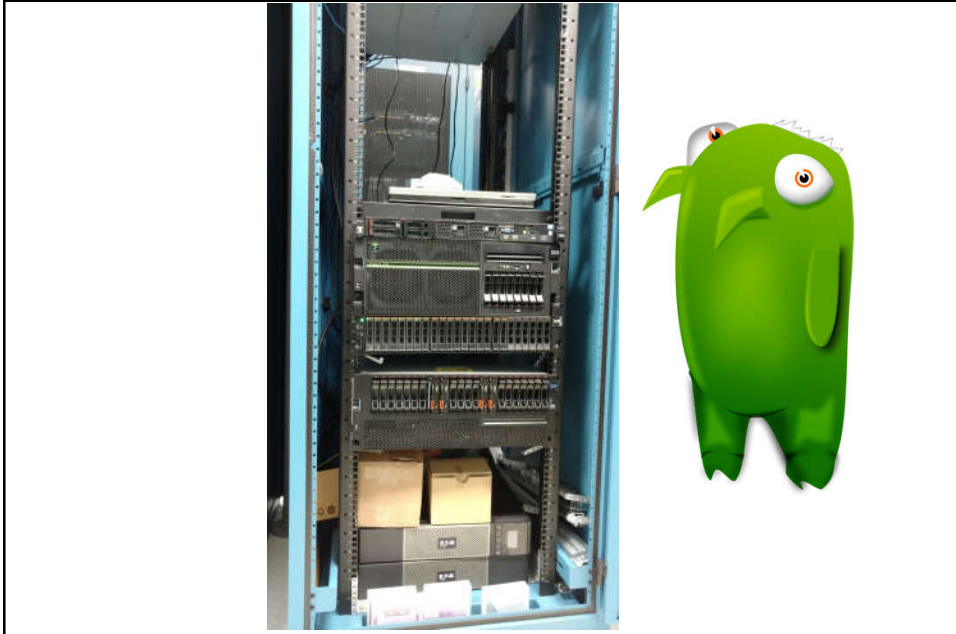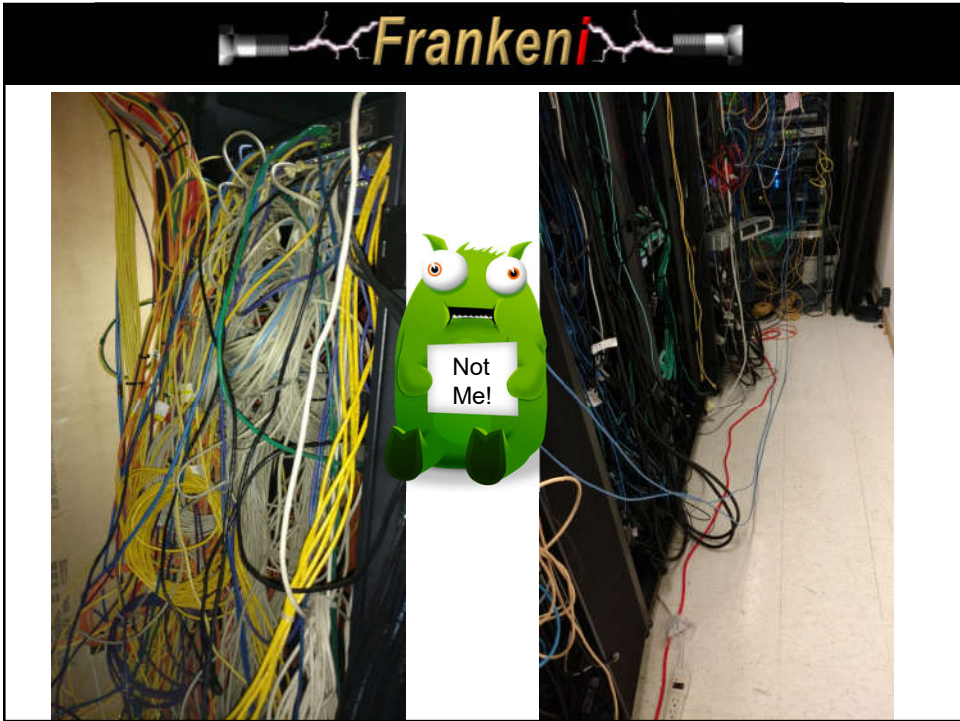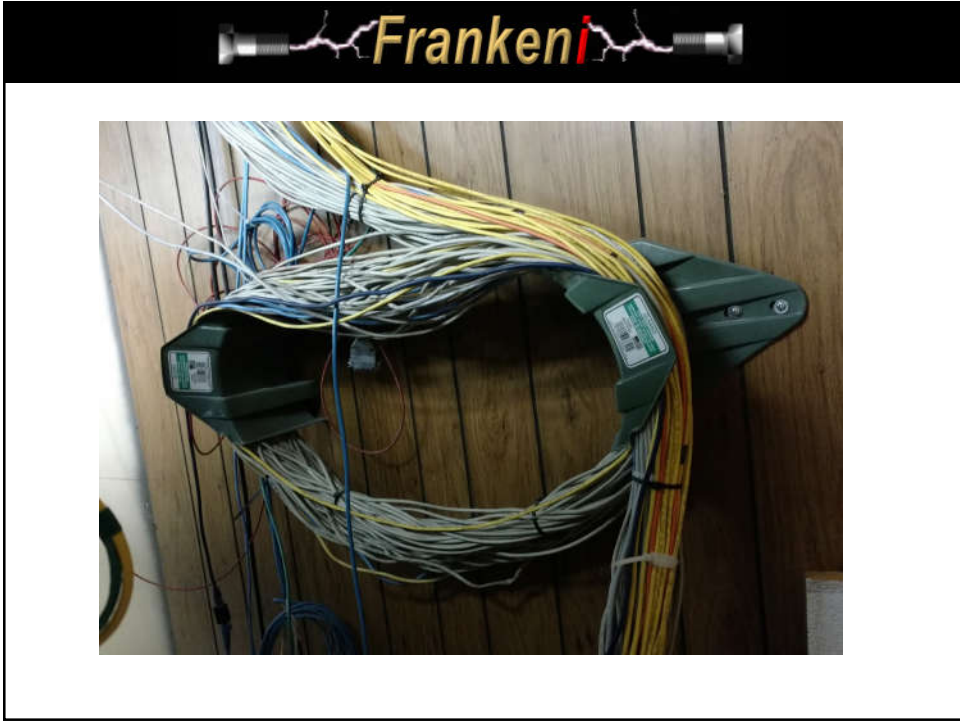## Frankeni

Deep thoughts

- Look, we all make mistakes every now & again.

- Yes even YOU!

- But if you want to stay off this list, stop and think a little bit, and learn from the mistakes of others, as well as your own!

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Your speakers

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(Yah we're certified in many things *i* but don't tell anyone!)

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Thank you!

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Photo – 2013 by Jay Wasson