



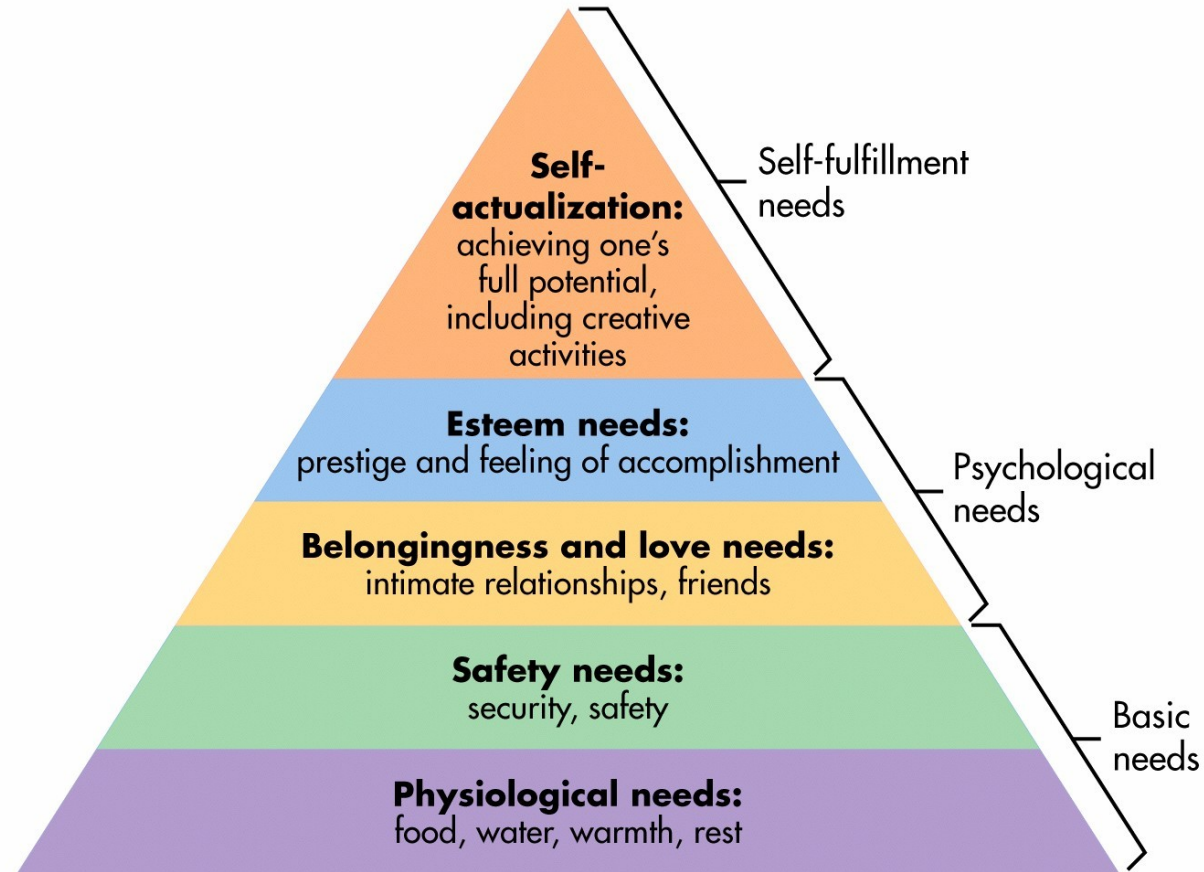
Dropbox

It will break!

Leonid Movsesyan, Dropbox



Hierarchy of needs

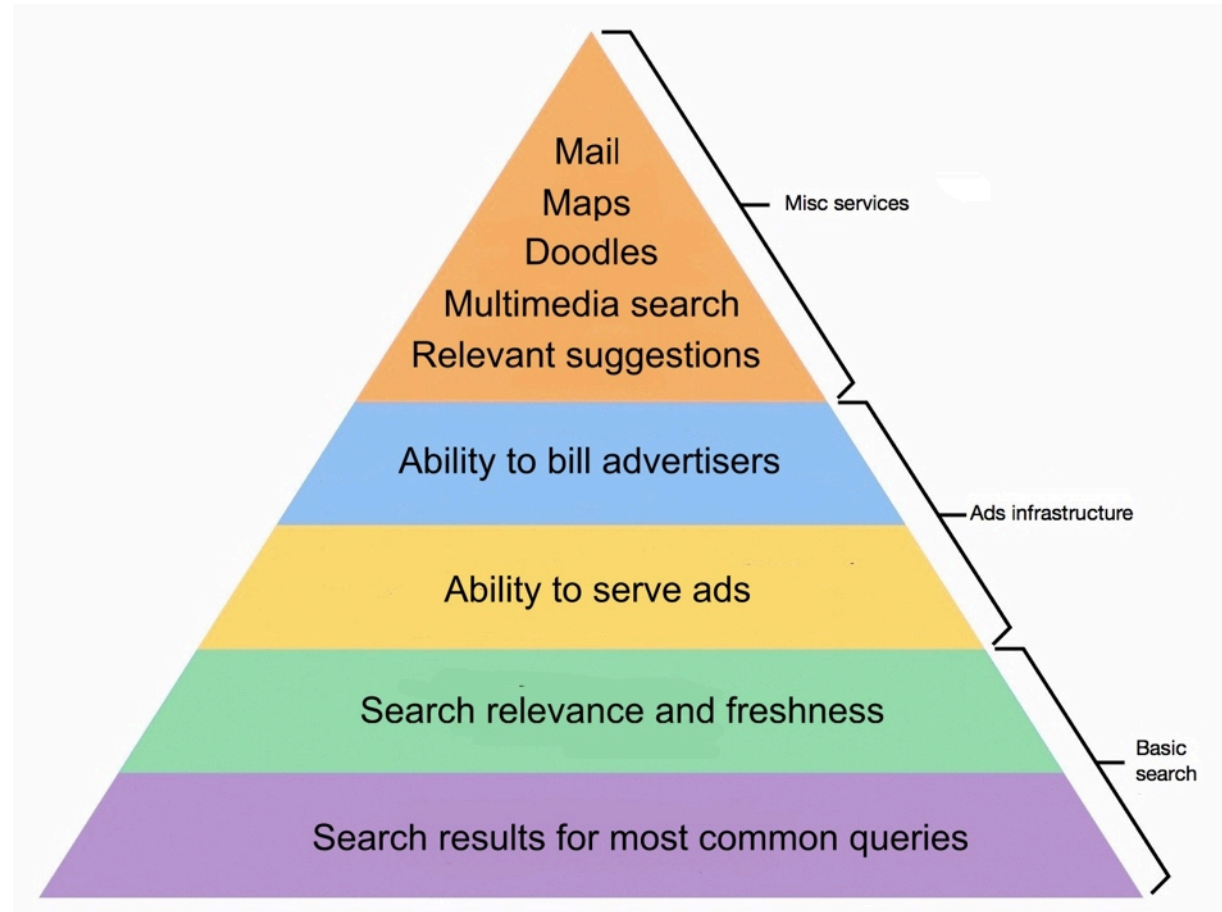


4 easy steps

- Build your hierarchy of needs
- Put together your assumptions about the each layer
- Run regular disaster recovery testing (DRT) as close to reality as possible
- Adjust them constantly to reflect the changes



Search engine example



Optimize for metrics that you
care about



Treat your DRTs how you treat
your unit tests

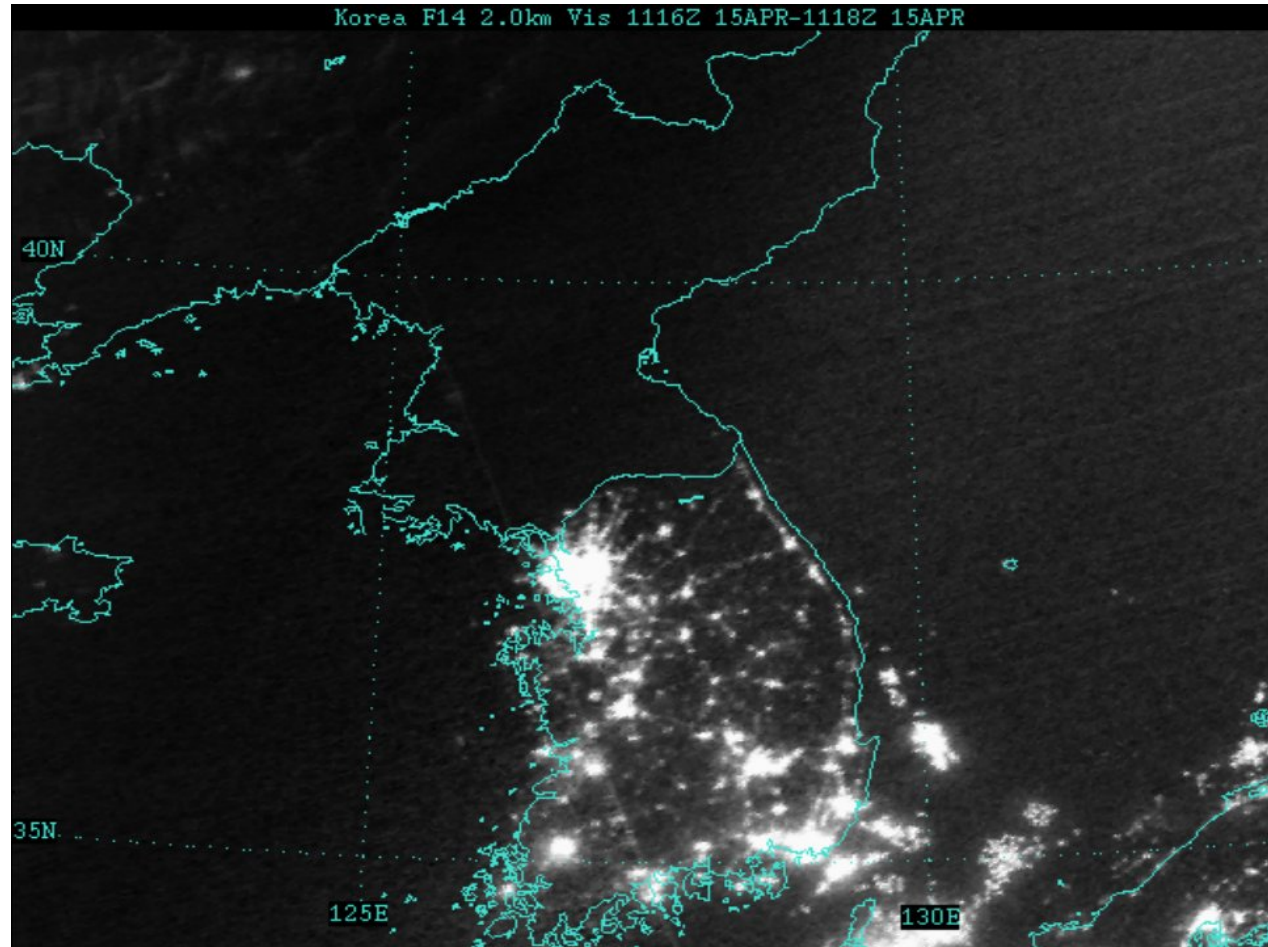


How to design a good DRT?

- For every action in your design ask yourself 'What if?'
 - We'll use S3 to store our data: what if S3 availability zone go down?
 - We'll run credit card processing using this 3rd party vendor: what if it times out?
 - We'll store the metadata in MySQL: what if MySQL master will die?
- Go with this question as deep as possible and use 'what if?' scenarios as a DRT



Power outage



Power will fail



Diesel generators may not start



You'll run out of diesel sooner than you expect

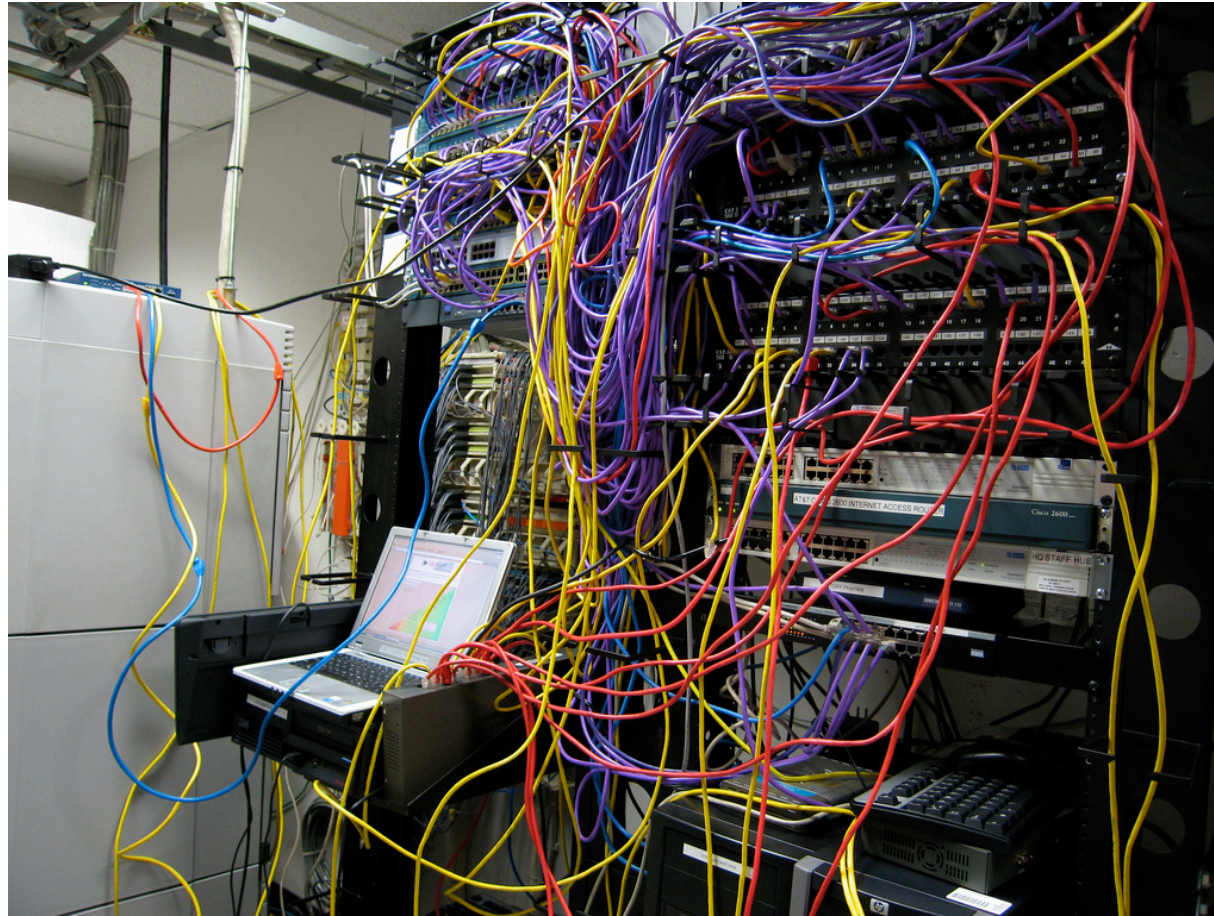


Avoid the consequences

- Split the servers by groups based on the hierarchy of needs
- Create automation that will allow to power off the top of the hierarchy first
- Test this automation regularly as well as your diesel generators



Network outage



Never expect networks you don't control to be reliable



 **Amazon Web Services** 
@awscloud Follow

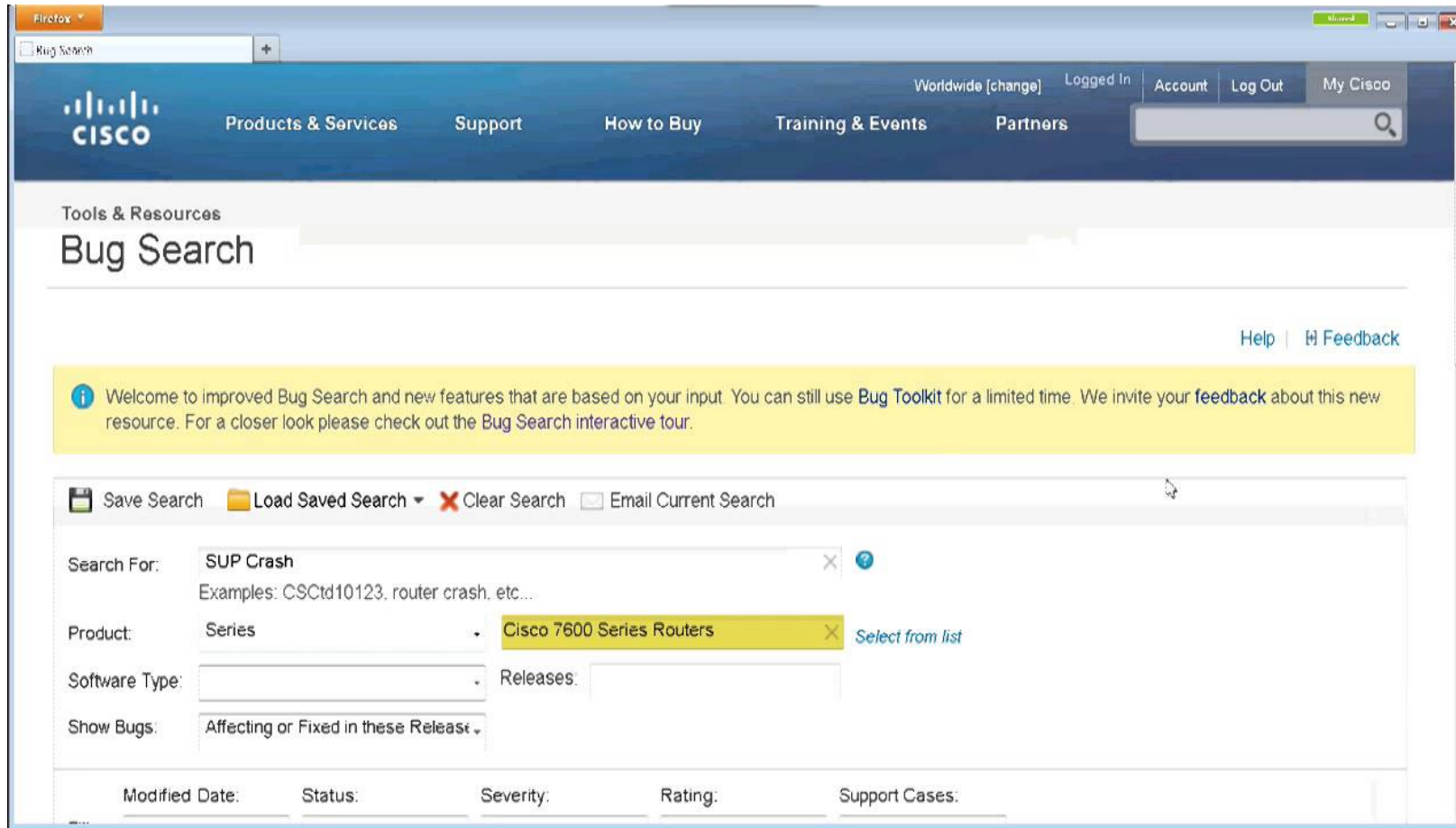
The dashboard not changing color is related to S3 issue. See the banner at the top of the dashboard for updates.

RETWEETS	LIKES
1,956	2,302

11:17 AM - 28 Feb 2017



Never expect you switches on all the levels of your network to be always available



The screenshot shows the Cisco Bug Search web application. The browser window title is "Bug Search". The page header includes the Cisco logo, navigation links for "Products & Services", "Support", "How to Buy", "Training & Events", and "Partners", and user options for "Worldwide [change]", "Logged In", "Account", "Log Out", and "My Cisco".

The main content area is titled "Tools & Resources" and "Bug Search". A yellow banner message reads: "Welcome to improved Bug Search and new features that are based on your input. You can still use Bug Toolkit for a limited time. We invite your feedback about this new resource. For a closer look please check out the Bug Search interactive tour." Links for "Help" and "Feedback" are provided.

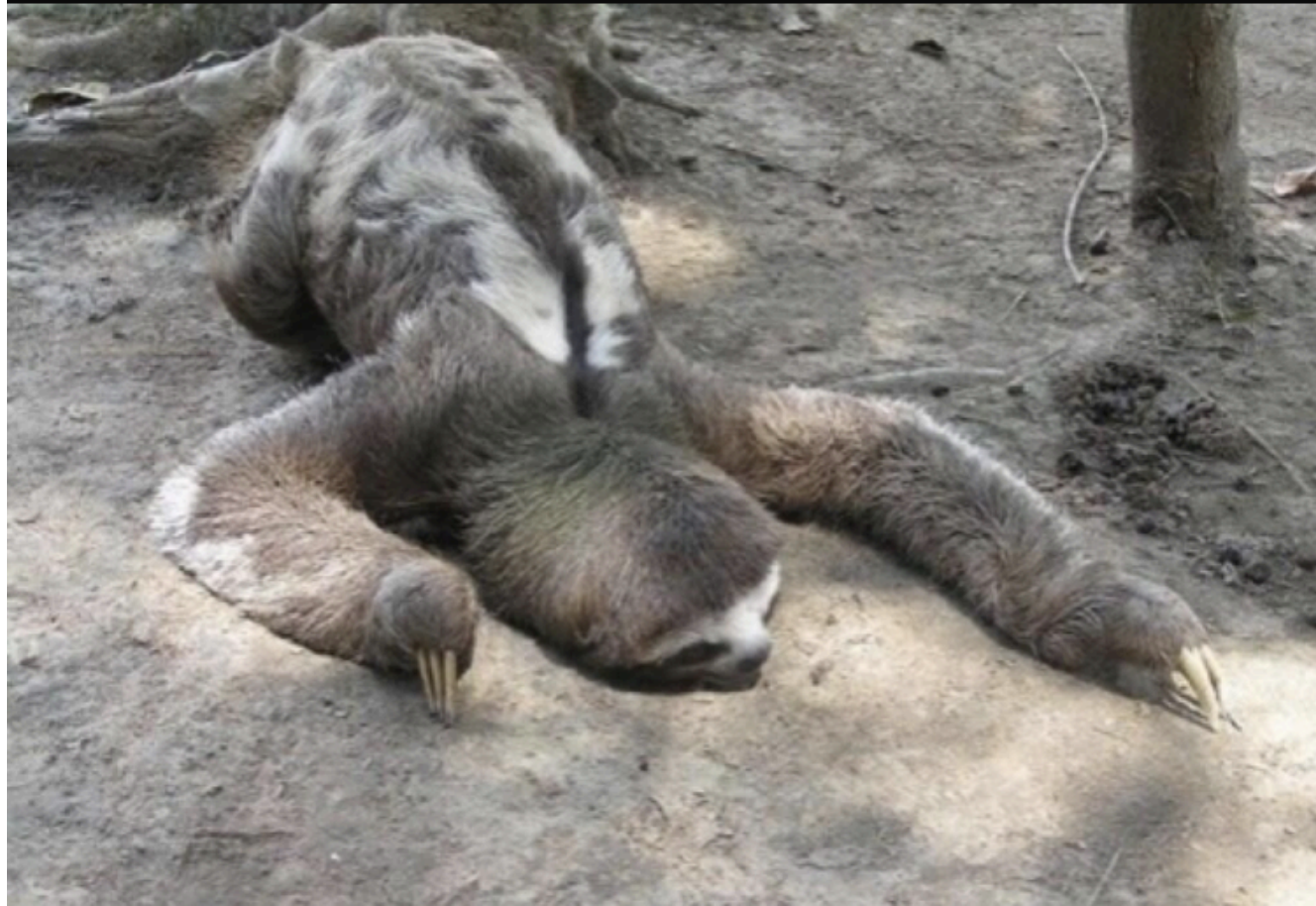
Below the banner, there are search controls: "Save Search", "Load Saved Search", "Clear Search", and "Email Current Search". The search criteria are as follows:

- Search For: SUP Crash (with a help icon and examples: CSCtd10123, router crash, etc...)
- Product: Series (with a dropdown menu showing "Cisco 7600 Series Routers" selected and a "Select from list" link)
- Software Type: (empty dropdown)
- Releases: (empty text input)
- Show Bugs: Affecting or Fixed in these Release (dropdown menu)

At the bottom, there are filter options for "Modified Date:", "Status:", "Severity:", "Rating:", and "Support Cases:".



Expect the network to fail slowly



Network testing

- Use DRTs to fine tune timeouts
- Imitate multiple types of network issues
- Failover every network device in your own topology



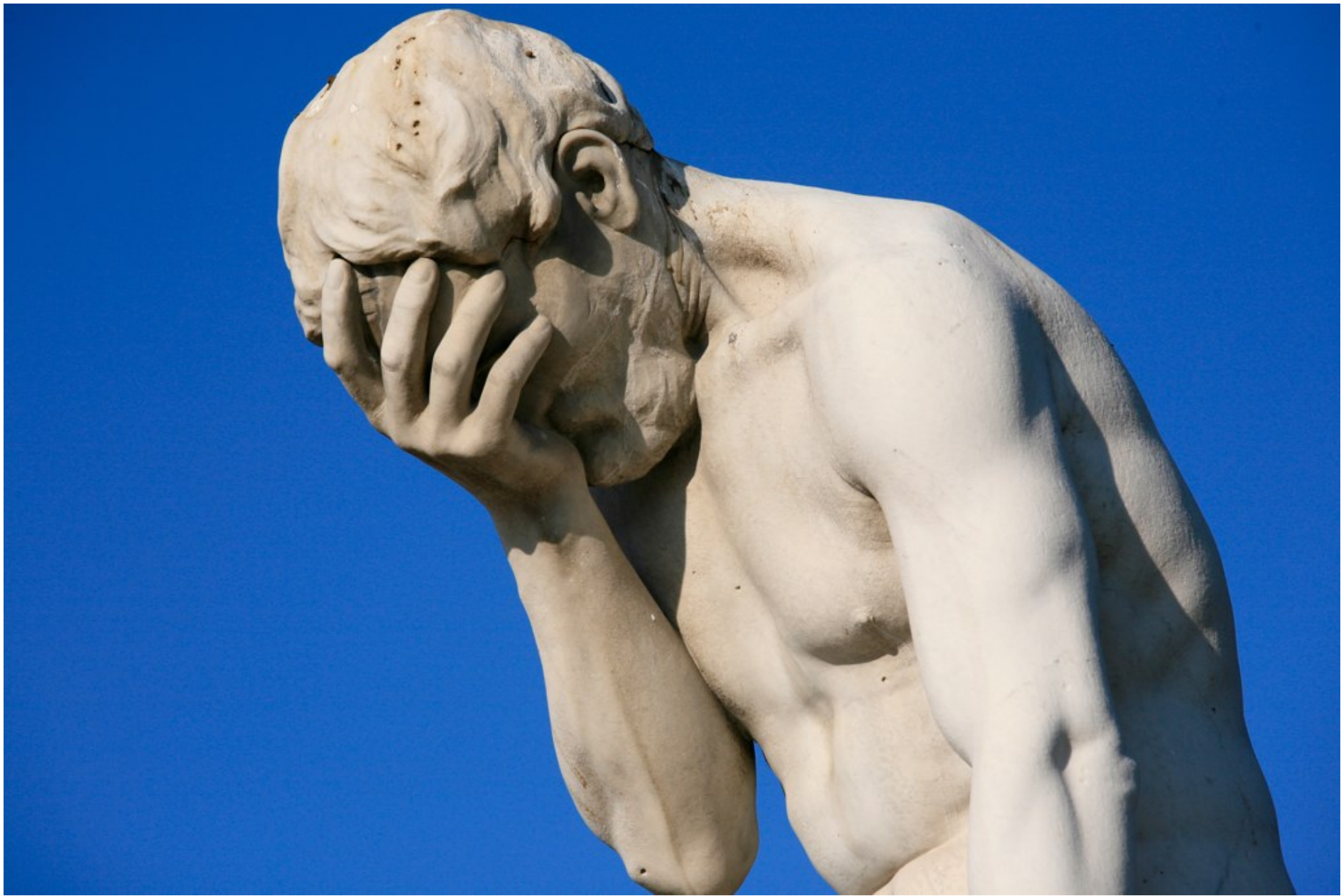
Pro tip: Use switch failover as an opportunity to upgrade the firmware



Wishful thinking

```
for log_file in log_files:  
    send_log_file_to_s3(log_file)  
  
for log_file in log_files:  
    gzip_log_file(log_file)  
    delete_log_file(log_file)
```





Cloud vendors

- Expect your cloud instance to fail
- Expect you cloud stored data to get lost or corrupted
- Expect to lose network connectivity to your cloud provider
- Expect cloud providers to lose the whole region



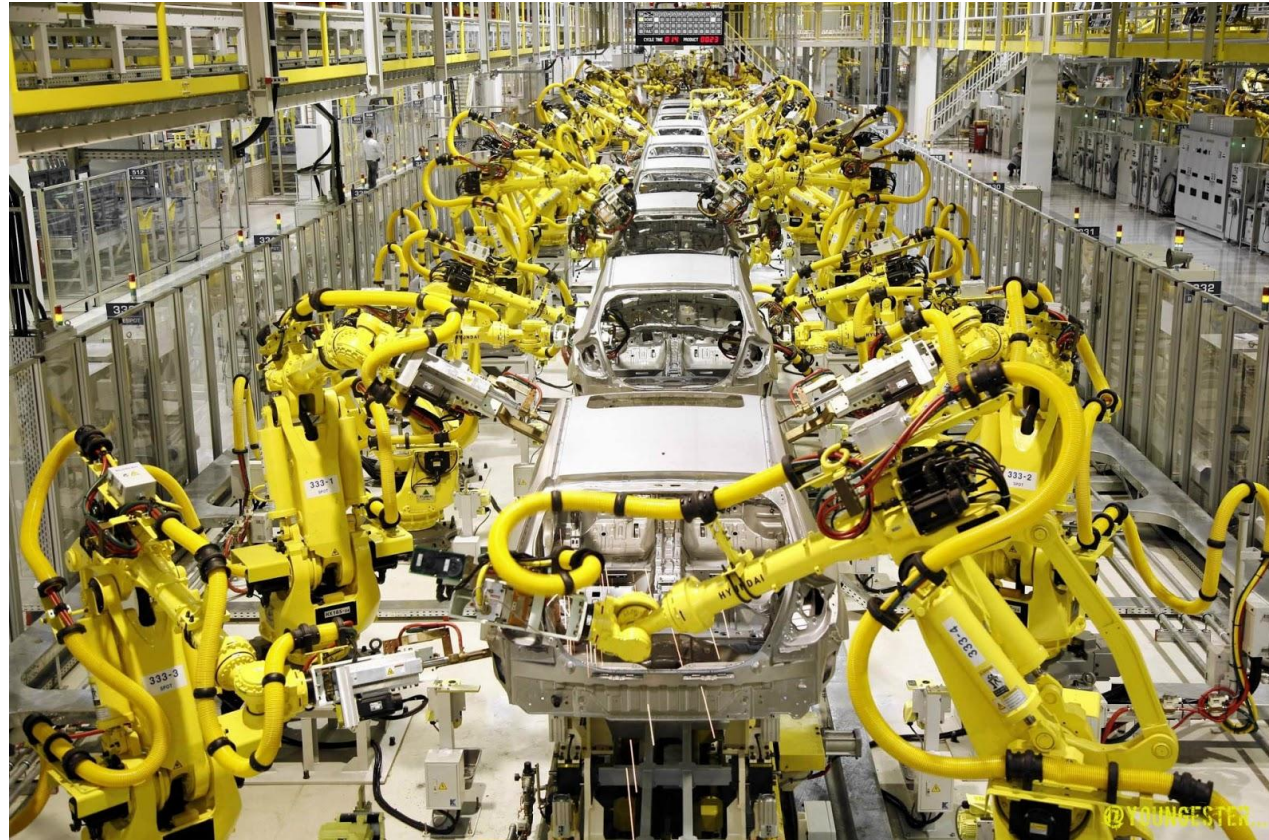
Try not to over-engineer



Don't forget about human error



Avoid any manual operations and runbooks in places where the mistake can not be tolerable



Analyze and group you outages

- Structure the root causes of the outages
- Analyze times to detect, diagnose and recover
- Group outages to identify the patterns



Questions?

