CRB1 Server Failure

June 3, 2014

What are the % of HDD Failures? Do we need warranties & Backups?

Drives Have 3 Distinct Failure Rates
Hard Drive Survival Rates - Chart 1

5.1% annual failure rate

1.4% annual failure rate

11.8% annual failure rate

Backblaze hard drive failure rate, over the first four years.

BACKBLAZE

-92% HDD survive
(1 1/2 Years)
-90% HDD survive
(3 Years)
-80% HDD survive
(4 Years)
-50% HDD survive
(6 Years)
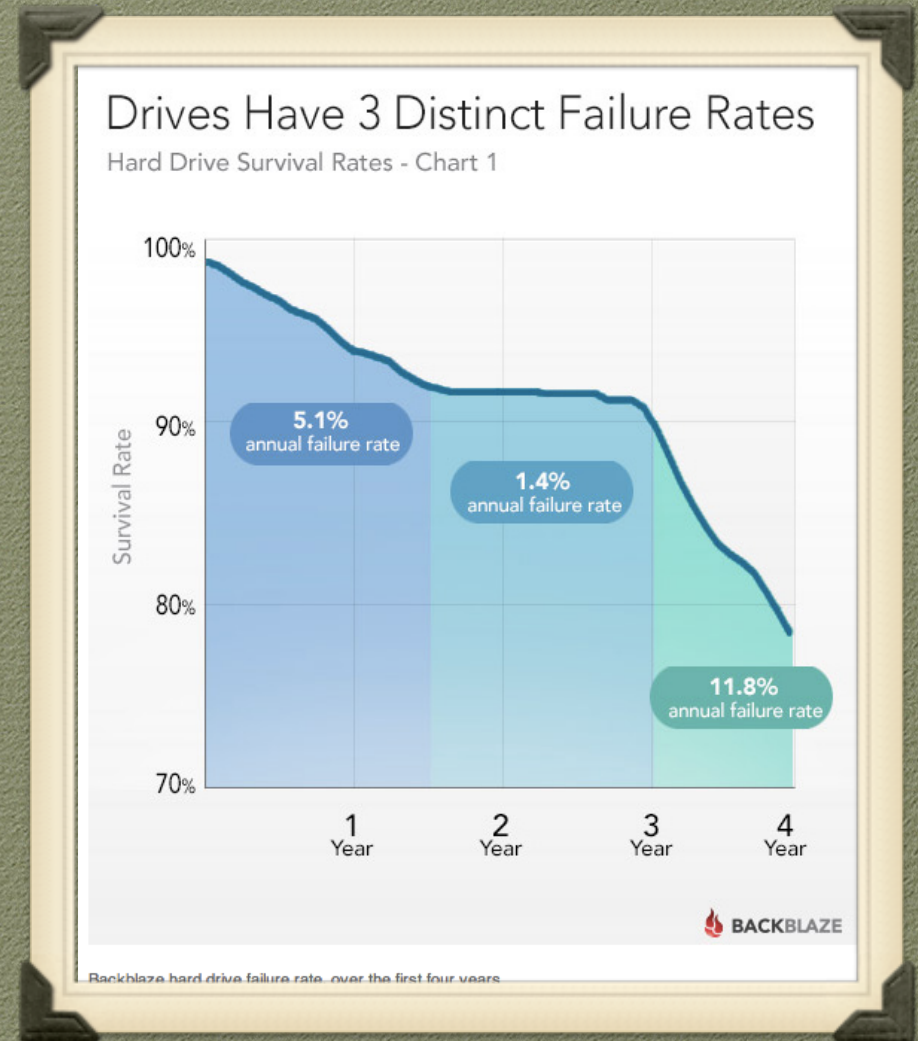
How Old is our Current Hardware?

- IBM Blade Server > 6+ years old

- IBM SAN with 12 HDD in RAID 5 Configuration > 6+ years old

- IBM Site Servers > 6+ years old

How Many HDD can fail at one time in RAID 5 configuration?

- Only one HDD can fail at a time in a RAID 5 configuration

- CRB1 had 3 HDD fail in IBM SAN at one time on the morning of June 3, 2014 and the RAID can not be rebuilt. THE ODDS were not in our FAVOR!

- Data recovery efforts were made through DATATECH but data extracted was not useable due to these multiple hard drive failures and broken RAID. Data was extracted but after further review none of it could be used for the PowerSchool restoration project.

Does CRB1 do data backup & Recovery?

- In October 2013 as part of the "Network Remodel Plan" a full data backup process where contracted to PineCove Consulting of all CRB1 District Servers using a DELL AppAssure Backup, Replication and Recovery. Servers were purchased to provide these backups.

- Previous to this Data Backup and Recovery Product, a product by Barracuda Networks was in place but was not being used District Wide and had very little support and services

- "Network Remodel Plan" - included replacement Battery Backups, Data Backup & Recovery, Servers/SAN, Network Switches, Wireless, cabling/racks, labor and engineering. (Battery Backups & Data Backup & Recovery) were funded in October 2013.(Servers/SAN and 65% of Wireless) were funded in June 2014. Total Funding for the project is $1.6 million

Did the Dell AppAssure Backup and Recovery Work?

- YES, in all cases except PowerSchool Server

- The Technology Department along with PineCove Consulting Team were able to use all backups to recover the rest of CRB1 Servers on the Failed CRB1 Server/SAN. Currently, CRB1 is using older equipment to provide access to servers such as: file server, SPED server, Print Server and other resource servers. There are 10 in all.

- NEW Servers started arriving on Friday June 5 & June 12. We are awaiting New SAN. These servers will be put in production and all of them have a 3 year warranty, which I would recommend that the District either replace or renew warranty at that time.

Why is the CRB1 PowerSchool Server going to be restored to January 22, 2014 and not June 3, 2014

- The CRB1 PowerSchool server and the supporting SAN "Storage Area Network" were 6+ years old and there was increased activity that the Backup Process causing. This Server/SAN would max out processing and memory on a daily basis and the CRB1 Technology Team would have be reboot this server to free up and release memory, while processing power and providing functionality for PowerSchool users. After working with consultants on the issue it was determined that Oracle, which Powerschool runs on, creates its own backup or dmp files and the additional backups were not needed.

- Problem: these Oracle backups or dmp files should have been pointed to another server so that if this server failed they could be recovered from another server increasing the odds of recovery

What has been done in The recovery Effort?

- 1st - IBM SAN sent to DATATECH to recover data off this server

- 2nd - Consulted and gained contract with CLG "Computer Logic Group" to host CRB1 PowerSchool Server to provide greater availability, reliability and server/software updates with a company that works directly with PowerSchool and Oracle. HOSTED SERVER

- 3rd - nearly 20 days were spent working with experts, database administrators at PowerSchool, Oracle and several other DBA consultants

- 4th - after exhausting all technical resources and support, it has been determined that we have no choice but to restore from the last successful backup in January 22, 2014. Four months of student data will have to be hand entered from report cards, disciplinary and state reports to bring these backup to current date.

What are we going to do so that this never happens again?

- 1st - subscribe to HOST SERVER Services for PowerSchool Server with CLG (Provides Current Hardware and Software Support and Services)

- 2nd - Ensure that all ORACLE backup files are being directed to another servicer nightly

- 3rd - To ensure lower failure rates. All Servers that CRB1 hosts or owns must be less than 3 years old and be under warranty.

- 4th - Move as many Servers as possible to HOSTED SERVICES or the Cloud to save the district time money and create high availability, reliability and restorability. Also requires less in house experts and provides for more funds for Technical support and services

- 5th - Spending on Technology needs to be focused on infrastructure first and not on devices

Failure is just a step on the road to success. You can't succeed without first failing.

DON'T LOSE THAT PERSPECTIVE OR YOU'LL ALWAYS GIVE UP BEFORE YOU SHOULD AND YOU WON'T MAKE AND PROGRESS