Shifting Backup Storage Away From AWS

How (and why) WashU is adjusting our hybrid cloud backup architecture to leverage competing S3 compatible storage
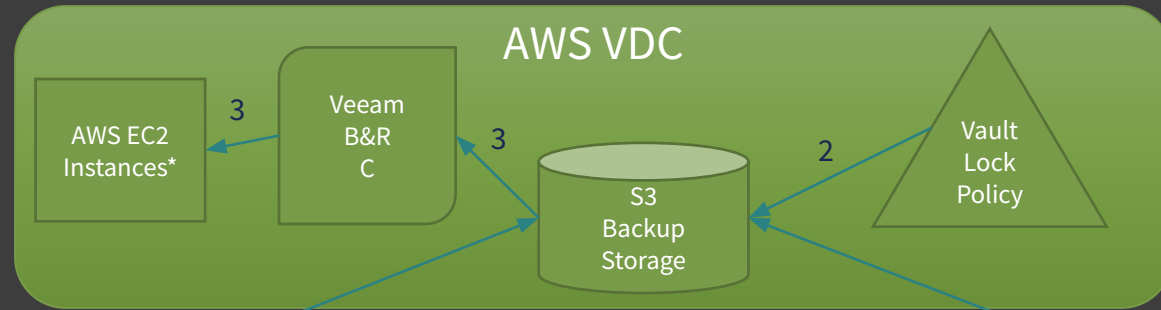
John Bailey
Asst. Director, Cloud Computing
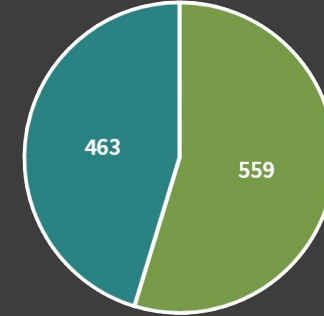Washington University in St. Louis
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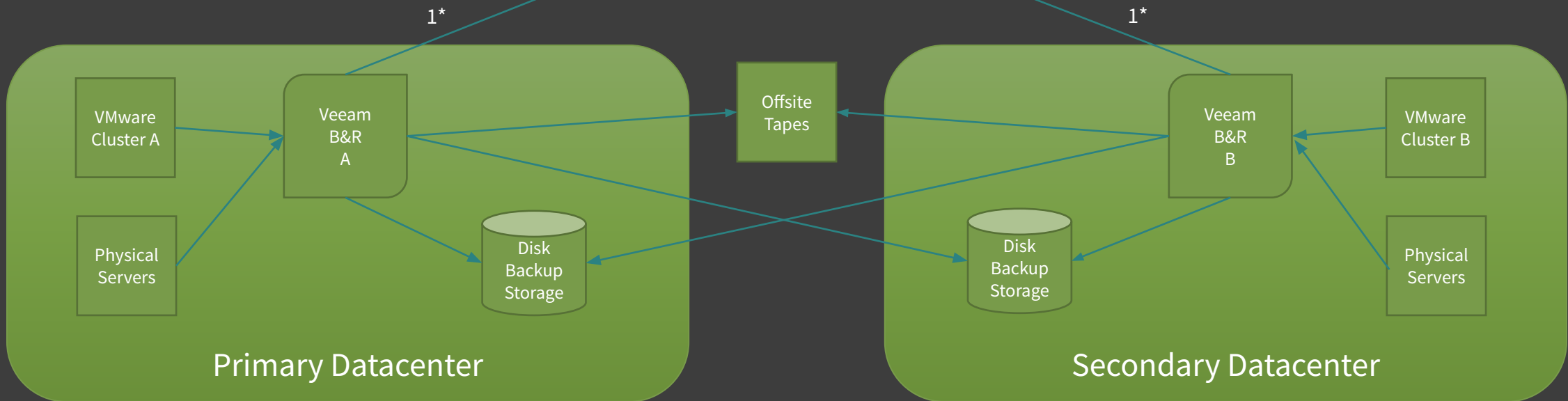2022 Internet2 Tech Exchange

Cloud Backups – Current State

1. Veeam copy jobs replicate a portion of backup data to AWS S3 storage.
2. AWS Vault Lock Policy protects backups from ransomware attacks with data immutability.
3. AWS Veeam B&R instance ready to recover systems to cloud hosted AWS (or Azure)* VM instances.

54% of Servers With Cloud Backups

463 | 559

2/50 Physical Servers
557/972 Virtual Servers
1.18 PB Backup Data

AWS VDC

AWS EC2 Instances* 3 Veeam B&R C 3

3 S3 Backup Storage 2 Vault Lock Policy

1* 1*

Primary Datacenter

VMware Cluster A Veeam B&R A Offsite Tapes Veeam B&R B VMware Cluster B

Physical Servers Disk Backup Storage Disk Backup Storage Physical Servers

Secondary Datacenter

What Went Wrong

- API and early deletion charges caused storage cost to spiral out of control.
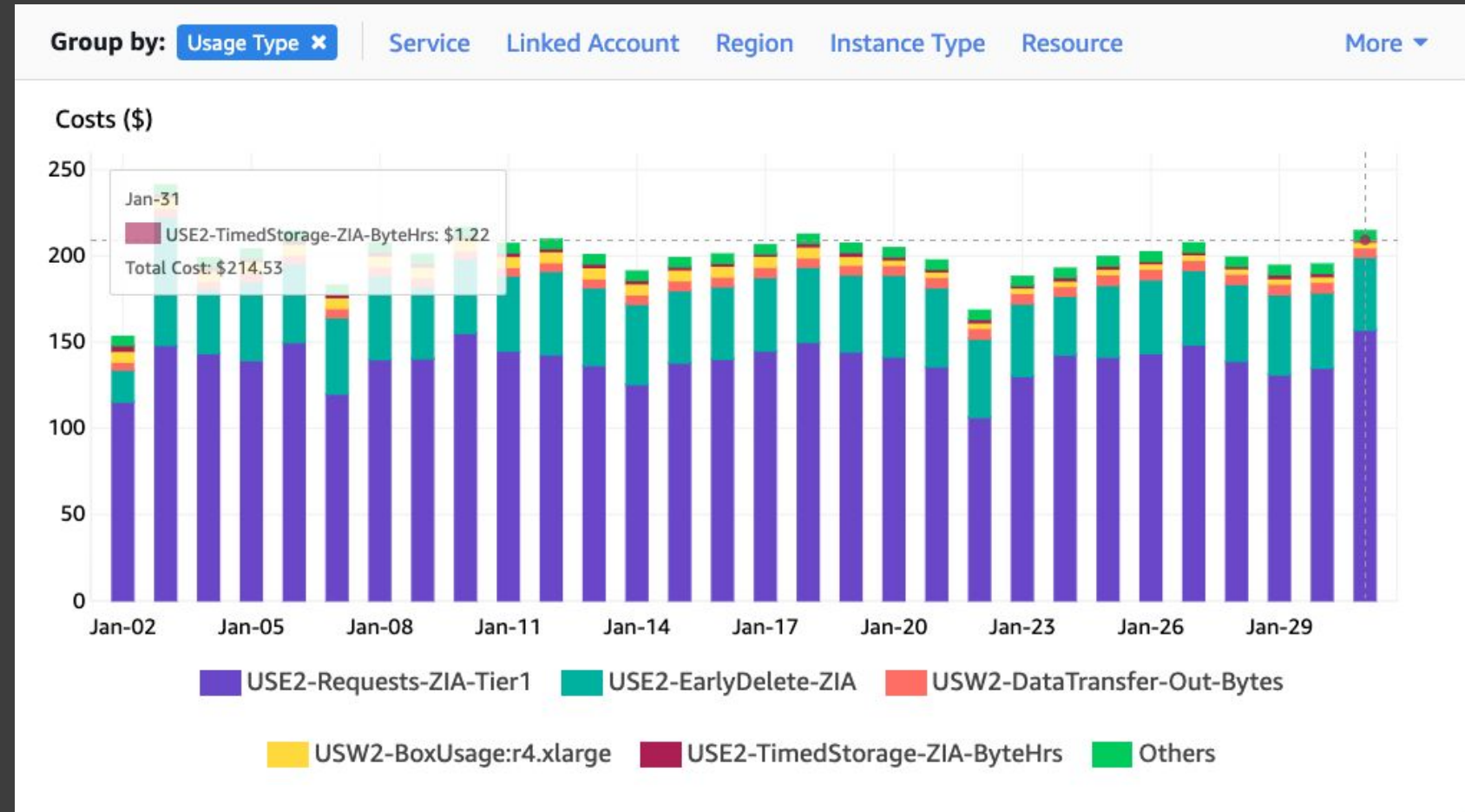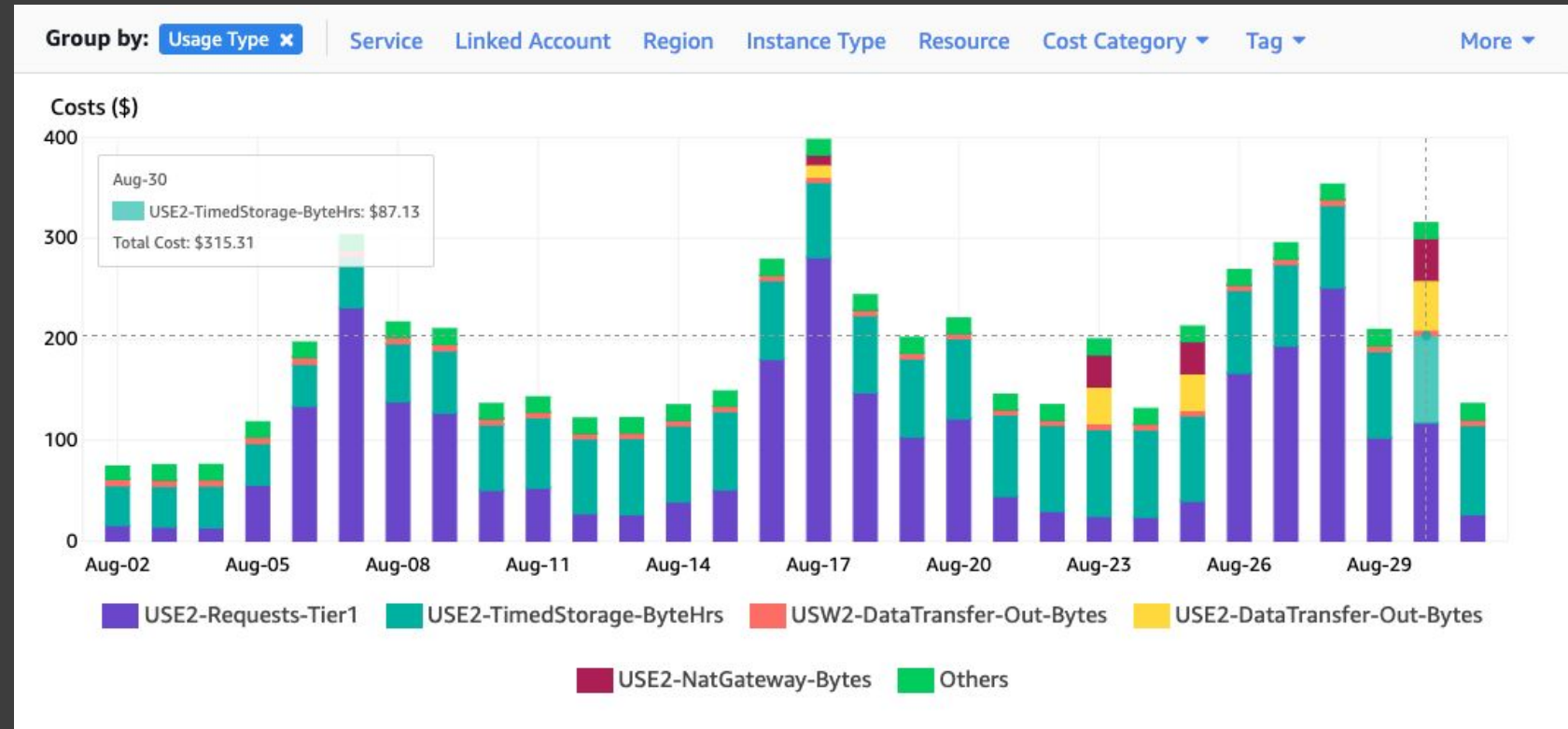
Corrective Actions We Took

Corrective Actions We Took

- Transitioned to S3 standard storage.
- Reduced data retention period.
- Reduced number of servers protected.

Future Corrective Action

- Transition to a new cloud object storage platform that does not charge API or early deletion fees.

- Alternatives WashU is considering:
  - Wasabi
  - Backblaze
  - Cloudian

What to Push Our Cloud Venders For

- Simplify the pricing structure on your storage offerings so that normal people can understand them and make cost projections!
- Dramatically reduce the number of different storage offerings you provide:
  - Block storage fast (SSD / NVMe)
  - Block storage slow (spinning disk)
  - Object storage fast (reasonably priced, for all normal object storage needs)
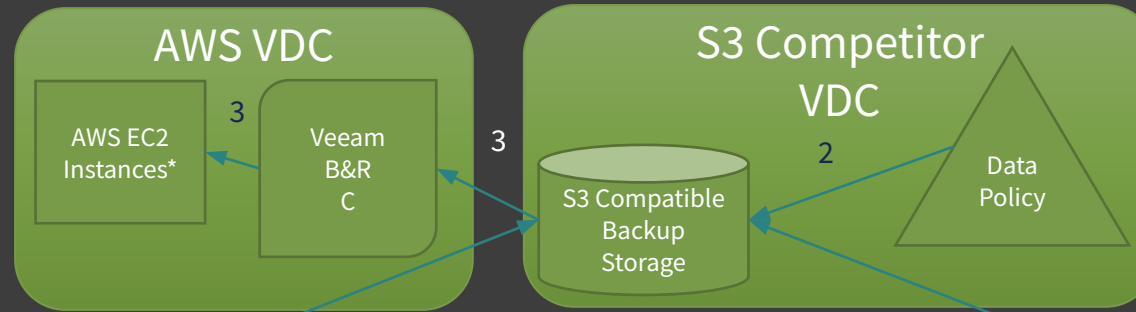 - Object storage slow (cheap, for archival object storage needs)

Why Transition Away from AWS

- S3 compatible competitors offers the same features as AWS (S3) at an estimated 1/5 of our current monthly cost.
- Key features WashU requires:
  - Regions far enough away from STL to be considered "extra regional"
  - Encryption in transit & at rest
  - Immutability (enhanced protection against ransomware attacks)
- Transition will allow us to provide cloud backups for all WashU IT managed servers without increasing spending.
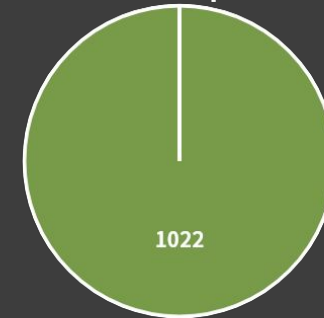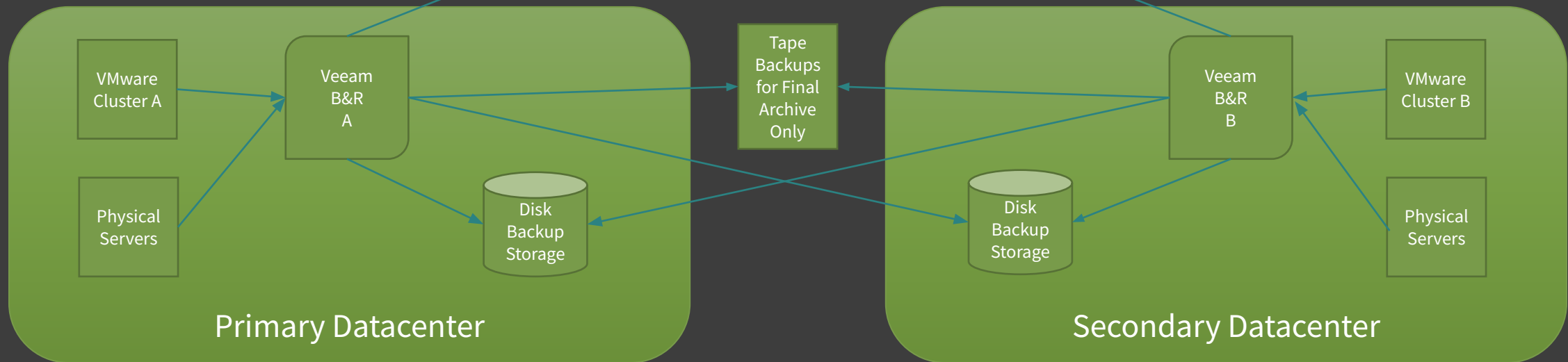
Cloud Backups – Future State

1. Veeam copy jobs replicate all backup data to S3 competitor.
2. Configuration policy protects backups from ransomware attacks with data immutability.
3. AWS Veeam B&R instance ready to recover systems to cloud hosted AWS (or Azure)* VM instances.

AWS VDC

AWS EC2 Instances*

3

Veeam B&R C

3

S3 Competitor VDC

3

S3 Compatible Backup Storage

2

Data Policy

100% of Servers With Cloud Backups

1022

50/50 Physical Servers
972/972 Virtual Servers
3.18 PB Backup Data

Primary Datacenter

VMware Cluster A

Veeam B&R A

Physical Servers

Disk Backup Storage

1

Tape Backups for Final Archive Only

1

Secondary Datacenter

Veeam B&R B

VMware Cluster B

Physical Servers

Disk Backup Storage

Questions?

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