

# ADAM GRAY

📍 Chicago, IL

✉ adam@adamgray.us

🌐 adamgray.us

🌐 adam-m-gray

🌐 adam-gray

## EXPERIENCE

### Principal Software Engineer

#### IBM Cloud Object Storage

📅 August 2021 – Present 📍 Chicago, IL

- Lead R&D effort to decouple components within software monolith and begin migration of service to Kubernetes, expanding observability, scalability, and reliability.
- Lead development for object versioning feature, unlocking key workflows that were not previously available to COS and helping reach a greater level of parity with competition.
- Member of Invention Development Team to help mentor and enable developers to innovate and properly protect IBM's intellectual property. 37+ patents issued and pending.

### Staff Software Engineer

#### IBM Cloud Object Storage

📅 July 2017 – 2021 📍 Chicago, IL

- Owned critical data ingest path including data input streaming, compression, encryption, key management, metadata management, usage, and data consistency.
- Acted as technical leadership for dozens of features and projects throughout the development process from idea, gathering requirements, design, implementation, testing, and customer deployment.
- Researched and developed data compressibility proof of concept in partnership with IBM Research, resulting in potential savings of 5 - 10% in usage
- Researched methodology to have an integrated bucket / data tiering solution for future COS features.

### Senior Software Engineer

#### IBM Cloud Object Storage

📅 November 2015 – July 2017 📍 Chicago, IL

- Developed and acted as technical leadership for integration with IBM Cloud services (IAM, KeyProtect)
- Part of team which brought Cleversafe's on-prem solution to an infinitely scalable solution which is the foundation of IBM Cloud services

### Senior Software Engineer

#### Cleversafe

📅 July 2013 – November 2015 📍 Chicago, IL

- Built Cleversafe's Mirrored Vaults feature, which allowed customers to have only two data-centers instead of three (or more) for multi-site reliability, consistency, and performance at a reduced cost
- Created a unified S3-compliant storage that seamlessly adapts to other industry standard APIs (Swift, HDFS, Webdav, POSIX) on a unified object storage backend

### Software Engineer

#### Cleversafe

📅 June 2011 – July 2013 📍 Chicago, IL

- Created Cleversafe's dispersed, lock-free, concurrent index when an existing NoSQL key-value store didn't fit Cleversafe's scalability needs
- Reduced time-to-first byte by developing a metadata-local data optimization to reduce disk seeks and network latency by 50% on small object GETs
- Rewrote Cleversafe's streaming data API to be asynchronous and single object writes in excess of 100GB

## MOST PROUD OF



### IBM Master Inventor

Awarded the title of Master Inventor in October 2021



### Cleversafe's Growth

From employee #25 and zero customers to acquisition by IBM and millions of customers



### Mentor to Many

Mentored many junior developers to help them with their careers

## STRENGTHS

Self-driven

Dedicated

Mentor

Innovator

Diversity & Inclusion

Positive Attitude

Excellent Communicator

Big Picture Focus

Team Player

Java

Python

C/C++

Linux

NoSQL

REST

CI/CD

Paxos & Raft

2 & 3 Phase Commit

Eventual Consistency

Replication

Distributed Clocks

Concurrency

Garbage Collection

JVM Optimization

Cryptography

Identity Access Management

Key Lifecycle Management

## LANGUAGES

English

German



## EDUCATION

### B.S. in Computer Science

#### Indiana University

📅 2007 – 2011

### Computer Science

#### Purdue University

📅 2004 – 2005

## Patents

- Baptist, A., Gray, A., Horan, S., Leggette, W., Resch, J., Volvovski, I., & Wozniak, E. (2020, March). *Storing data in a dispersed storage network with consistency*. U.S. Patent and Trademark Office. US10628399B2.
- Dhuse, G., Gray, A., Khadiwala, R., Leggette, W., & Resch, J. (2020, March). *Slice-embedded object metadata*. U.S. Patent and Trademark Office. US10585750B2.
- Dhuse, G., Volvovski, I., Gray, A., & Baptist, A. (2020, June). *Storing indexed data to a dispersed storage network*. U.S. Patent and Trademark Office. US10671585B2.
- Gray, A., Dhuse, G., Baptist, A., Khadiwala, R., Leggette, W., Horan, S., ... Viraraghavan, P. (2020, May). *Unidirectional vault synchronization to support tiering*. U.S. Patent and Trademark Office. US10656866B2.
- Gray, A., Dhuse, G., Baptist, A., Khadiwala, R., Leggette, W., Horan, S., ... Resch, J. (2020, April). *Pessimistic reads and other smart-read enhancements with synchronized vaults*. U.S. Patent and Trademark Office. US10642687B2.
- Gray, A., Hegde, H., Leggette, W., Motwani, M., Resch, J., Scholl, D., ... Vedpathak, Y. (2020, June). *Use of key metadata during write and read operations in a dispersed storage network memory*. U.S. Patent and Trademark Office. US10693640B2.
- Gray, A., Khadiwala, R., Dhuse, G., Resch, J., Viraraghavan, P., & Fordyce, R. (2020, March). *Data compression in a dispersed storage network*. U.S. Patent and Trademark Office. US10594790B2.
- Gray, A. M., & Leggette, W. B. (2020, June). *Method for partial updating data content in a distributed storage network*. U.S. Patent and Trademark Office. US10691541B2.
- Baptist, A., Dhuse, G., Gray, A., Leggette, W., Resch, J., & Volvovski, I. (2019a, March). *Allocating rebuilding queue entries in a dispersed storage network*. U.S. Patent and Trademark Office. US10241866B2.
- Baptist, A., Dhuse, G., Gray, A., Leggette, W., Resch, J., & Volvovski, I. (2019b, February). *Allocating rebuilding queue entries in a dispersed storage network*. U.S. Patent and Trademark Office. US20190146877A1.
- Baptist, A., Dhuse, G., Gray, A., Leggette, W., Resch, J., & Volvovski, I. (2019c, February). *Prioritized rebuilds using dispersed indices*. U.S. Patent and Trademark Office. US10204009B2.
- Borich, F. [Franco], Gray, A., Horan, S., Khadiwala, R., Li, M., Motwani, M., ... Vossberg, T. (2019, February). *Monitoring and sharing registry states*. U.S. Patent and Trademark Office. US10216436B2.
- Dhuse, G., Gray, A., Horan, S., Khadiwala, R., Reid, T., Scholl, D., & Volvovski, I. (2019, November). *Engaging a delegate for modification of an index structure*. U.S. Patent and Trademark Office. US10467095B2.
- Gray, A., & Dhuse, G. (2019, March). *Preventing unnecessary modifications, work, and conflicts within a dispersed storage network*. U.S. Patent and Trademark Office. US20190197032A1.
- Gray, A., Dhuse, G., Baptist, A., Khadiwala, R., Leggette, W., Horan, S., ... Scholl, D. (2019a, September). *Linking common attributes among a set of synchronized vaults*. U.S. Patent and Trademark Office. US10423359B2.
- Gray, A., Dhuse, G., Baptist, A., Khadiwala, R., Leggette, W., Horan, S., ... Scholl, D. (2019b, August). *Synchronously storing data in a plurality of dispersed storage networks*. U.S. Patent and Trademark Office. US10387252B2.
- Gray, A., Dhuse, G., Baptist, A., Khadiwala, R., Leggette, W., Horan, S., ... Resch, J. (2019, November). *Generating time-ordered globally unique revision numbers*. U.S. Patent and Trademark Office. US10489247B2.
- Gray, A., Leggette, W., Resch, J., & Seaborn, M. (2019, November). *Slice-level keyed encryption with support for efficient rekeying*. U.S. Patent and Trademark Office. US10491386B2.
- Leggette, W., Resch, J., Vedpathak, Y., Vas, S., Smith, E., & Gray, A. (2019, June). *Utilizing data object storage tracking in a dispersed storage network*. U.S. Patent and Trademark Office. US10334046B2.
- Gray, A. (2018, November). *Prioritizing dispersed storage network memory operations during a critical juncture*. U.S. Patent and Trademark Office. US10120757B2.
- Gray, A., Dhuse, G., Baptist, A., Khadiwala, R., Leggette, W., Horan, S., ... Scholl, D. (2018, September). *Using tombstone objects to synchronize deletes*. U.S. Patent and Trademark Office. US20180107728A1.
- Gray, A., Leggette, W., & Resch, J. (2018, September). *Large object parallel writing*. U.S. Patent and Trademark Office. US10114697B2.
- Gray, A., Motwani, M., Khadiwala, R., Resch, J., & Vedpathak, Y. (2018, November). *Topology aware computing device to reduce network latency*. U.S. Patent and Trademark Office. US20200145511A1.
- Dhuse, G., Leggette, W., Gray, A., Volvovski, I., & Baptist, A. (2017, July). *Retrieving data utilizing a distributed index*. U.S. Patent and Trademark Office. US9715504B2.
- Gray, A., Dhuse, G., Baptist, A., Khadiwala, R., Leggette, W., Horan, S., ... Scholl, D. (2017a, December). *Handling failures when synchronizing objects during a write operation*. U.S. Patent and Trademark Office. US20180101451A1.
- Gray, A., Dhuse, G., Baptist, A., Khadiwala, R., Leggette, W., Horan, S., ... Scholl, D. (2017b, December). *Listing types in a distributed storage system*. U.S. Patent and Trademark Office. US20180101434A1.
- Gray, A., Dhuse, G., Baptist, A., Khadiwala, R., Leggette, W., Horan, S., ... Scholl, D. (2017c, August). *Synchronizing storage of data copies in a dispersed storage network*. U.S. Patent and Trademark Office. US9727427B2.
- Gray, A., Dhuse, G., Baptist, A., Khadiwala, R., Leggette, W., Horan, S., ... Abhijeet, K. (2017, December). *Vault redundancy reduction within a dispersed storage network*. U.S. Patent and Trademark Office. US20180107535A1.
- Gray, A., & Resch, J. (2017, November). *Resolving write request conflicts in a dispersed storage network*. U.S. Patent and Trademark Office. US9817611B2.
- Borich, F. [Franco], Gray, A., Horan, S., Khadiwala, R., Li, M., Motwani, M., ... Vossberg, T. (2016, March). *Monitoring and sharing registry states*. U.S. Patent and Trademark Office. US20190146690A1.
- Dhuse, G., & Gray, A. (2016, June). *Efficient updates within a dispersed storage network*. U.S. Patent and Trademark Office. US20170374148A1.
- Dhuse, G., Gray, A., Horan, S., Khadiwala, R., Reid, T., Resch, J., ... Volvovski, I. (2016, January). *Utilizing a hierarchical index in a dispersed storage network*. U.S. Patent and Trademark Office. US20170212925A1.
- Dhuse, G., Volvovski, I., Gray, A., & Baptist, A. (2016, October). *Retrieving indexed data from a dispersed storage network*. U.S. Patent and Trademark Office. US9465861B2.
- Clifone, B., Gray, A., Horan, S., Leggette, W., Resch, J., Shree, S., & Volvovski, I. (2015, October). *Determining byte-hours usage of a vault or by users*. U.S. Patent and Trademark Office. US20170192698A1.
- Dhuse, G., Leggette, W., Gray, A., Volvovski, I., Baptist, A., & Resch, J. (2015, October). *Merging index nodes of a hierarchical dispersed storage index*. U.S. Patent and Trademark Office. US9171031B2.