GOOGLE FILE SYSTEM

PEEYUSH AND SOUMITRA

INTRODUCTION

- A SCALABLE DISTRIBUTED FILE SYSTEM FOR LARGE DISTRIBUTED DATA-INTENSIVE APPLICATIONS.
- IT PROVIDES FAULT TOLERANCE WHILE RUNNING ON INEXPENSIVE COMMODITY HARDWARE, AND IT DELIVERS HIGH AGGREGATE PERFORMANCE TO A LARGE NUMBER OF CLIENTS
- DATA MUTATIONS MAY BE WRITES OR RECORD APPENDS. A WRITE CAUSES DATA TO BE WRITTEN AT AN APPLICATION-SPECIFIED FILE OFFSET. A RECORD APPEND CAUSES DATA (THE "RECORD") TO BE APPENDED ATOMICALLY AT LEAST ONCE EVEN IN THE PRESENCE OF CONCURRENT MUTATIONS, BUT AT AN OFFSET OF GFS'S CHOOSING
- AFTER A FILE IS DELETED, GFS DOES NOT IMMEDIATELY RECLAIM THE AVAILABLE PHYSICAL STORAGE. IT DOES SO ONLY LAZILY DURING REGULAR GARBAGE COLLECTION AT BOTH THE FILE AND CHUNKLEVELS.

ARCHITECTURE

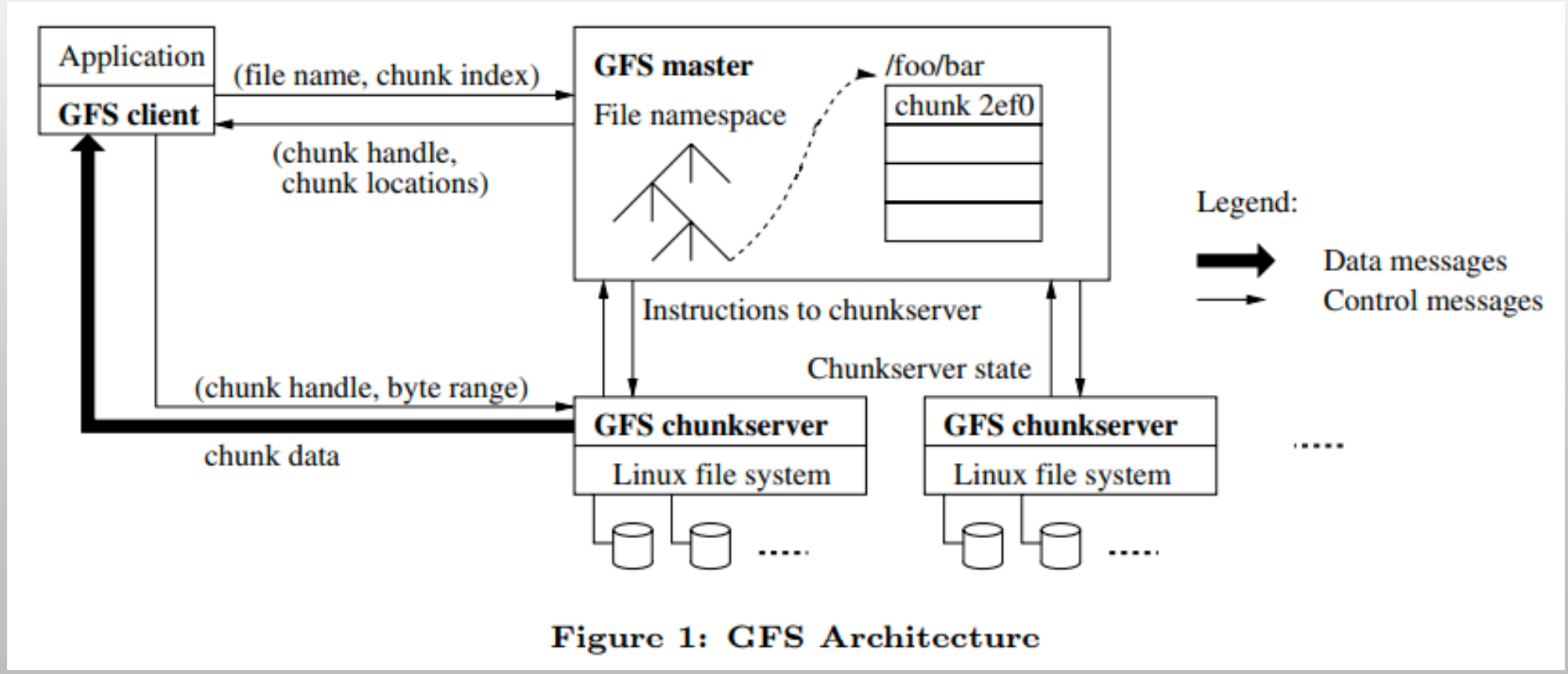

Figure 1: GFS Architecture

ROLE OF MASTER SERVER

- NAMESPACE
- ACCESS CONTROL INFORMATION
- MAPPING FROM FILES TO CHUNKS (DATA)
- CURRENT LOCATIONS OF CHUNKS OR DATA
- SYSTEM ACTIVITIES (EG, CHUNK LEASE MANAGEMENT, GARBAGE COLLECTION OF ORPHANED CHUNKS, AND CHUNK MIGRATION BETWEEN CHUNK SERVERS)
- MASTER COMMUNICATION OF EACH CHUNK SERVER IN HEARTBEAT MESSAGES.

DELIVERABLES

- IMPLEMENTATION OF VARIOUS PROPERTIES OF GFS
- LOCATION AWARENESS
- OPERATIONS
  - LOGIN
  - SIGNUP
  - UPLOAD FILE
  - READ FILE
  - EXIT

THANK YOU