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<p>WORK PACKAGE 2 :</p> <p>SCALABLE STORAGE</p>

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PROJECT DELIVERABLE

D2.1: Highly Available HDFS

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Document history

Version	Date	Changes	By	Reviewed
0.1	2013-11-23	First version	Salman Niazi Kamal Hakimzadeh Alberto Lorente Mahmoud Ismail	Jim Dowling

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Executive Summary

This deliverable consists of a software deliverable of the highly available Hadoop Filesystem (HDFS), a userguide for the software, and a short description of the system's architecture.

Our implementation of HDFS provides a new distributed model for HDFS' metadata, based on storing the metadata in MySQL Cluster, a distributed, in-memory, highly available relational database. Our implementation strengthens the replication model of HDFS v2, which is based on eventually consistent primary-secondary replication, to one of shared atomic memory, thus simplifying some of HDFS' internal protocols and enabling support for many NameNodes (as opposed to only a primary and secondary NameNode in HDFS v2). Our implementation also maintains the consistency semantics of HDFS, and we validate this by ensuring that all 300+ unit tests for HDFS pass.

This deliverable also describes the platform-as-a-service (PaaS) support we provide for our HDFS implementation. Our HDFS implementation, along with Apache YARN, can be easily installed by unsophisticated users by just pointing and clicking from our portal website to any of the following platforms: Amazon Web Services, OpenStack or a cluster of (bare-metal) hosts. We also provide a Dashboard to administer and monitor the deployed Hadoop cluster.

The document is structured as a userguide for installing and managing a Hadoop platform containing our highly available HDFS distribution, followed by a brief description of the system architecture.

The code is available for download now, although it is still very much beta and under heavy development.