

博士论坛

## 面向本地分布式存储系统的动态副本策略

伍文静, 程耀东, 汪璐, 武杰, 陈刚

中国科学院 高能物理研究所 计算中心, 北京 100049

收稿日期 2009-12-15 修回日期 2010-3-2 网络版发布日期 2010-4-21 接受日期

**摘要** 针对本地分布式存储系统的拓扑结构与存储组成单元的特性, 提出了一种基于频度的动态副本算法FBDR。FBDR分别采用基于密度的单次频度分析和基于区间长度的两次频度聚合的方法对文件访问流进行分析, 作为确定热点文件的依据, 具有较高的命中率。在副本创建位置选择上, 综合考虑了存储单元的可用空间、负载、IO性能等因素, 使热点文件获得更高的IO速率, 同时兼顾了存储单元之间的负载与资源利用的平衡。

**关键词** [热点文件](#) [频度分析](#) [副本位置](#)

**分类号** [TP311](#)

## Dynamic replica strategy for local distributed storage systems

WU Wen-jing, CHENG Yao-dong, WANG Lu, WU Jie, CHEN Gang

Computing Center, Institute of High Energy Physics, Chinese Academy of Sciences, Beijing 100049, China

### Abstract

Based on the characteristics of topology and storage nodes of local distributed storage systems, a new Frequency Based Dynamic Replica (FBDR) strategy is proposed. FBDR uses two newly proposed algorithms called OFMI (One way Frequency Measure by Intensity) and TFMS (Two way Frequency Measure by Span) to identify hot files based on their access record history to improve the hit rate of hot files. FBDR takes available space, system load and IO performance of storage nodes into account to decide the location to replicate files, which not only improves the IO performance of frequently accessed files, but also balances the system load and resource consumptions on different storage nodes.

**Key words** [hot file](#) [frequency analysis](#) [replica location](#)

DOI: 10.3778/j.issn.1002-8331.2010.12.006

通讯作者 伍文静

### 扩展功能

#### 本文信息

- ▶ [Supporting info](#)
- ▶ [PDF\(905KB\)](#)
- ▶ [\[HTML全文\]\(0KB\)](#)
- ▶ [参考文献](#)

#### 服务与反馈

- ▶ [把本文推荐给朋友](#)
- ▶ [加入我的书架](#)
- ▶ [加入引用管理器](#)
- ▶ [复制索引](#)
- ▶ [Email Alert](#)
- ▶ [文章反馈](#)
- ▶ [浏览反馈信息](#)

#### 相关信息

- ▶ [本刊中 包含“热点文件”的相关文章](#)
- ▶ [本文作者相关文章](#)

- [伍文静](#)
- [程耀东](#)
- [汪璐](#)
- [武杰](#)
- [陈刚](#)