



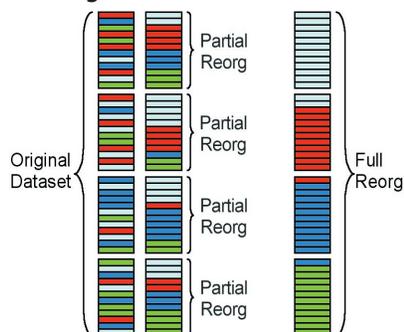
New Partial Dataset Reorganization feature in DBGeneral

Improves Performance Using Smaller Maintenance Windows

Bradmark Technologies has developed a new detail dataset reorganization feature in its flagship product **DBGeneral for IMAGE**. This new technology provides the database administrator several important options to maintain optimum detail dataset performance. First, you no longer need to work on the entire dataset at once! Now you can process an extremely large dataset in two, three or even more separate database maintenance windows to minimize database downtime while improving performance with each maintenance step. This gives the database administrator the opportunity to reorganize a large detail set over several maintenance periods when it cannot be performed within a single maintenance window. Second, this new technology is not subject to the same performance impact of walking the detail chains that your application experiences. It utilizes a serial processing technique to minimize the cost of disc I/O while still maintaining the chronology of entries on the detail chain path. Administrators can now reorganize a dataset in several partial steps, each within a reasonable maintenance window and enhance database performance with each partial step.

DBGeneral's new **"Partial Reorg"** technology accomplishes the reorganization by clustering records together by key value while maintaining the chronological sequence on all chains. Walking the chain for the primary path may not move serially forward in the clustered region. However, because like-entries are now clustered together, less I/O is needed when accessing the entries in those dataset areas that had been reorganized because those disc areas may already be in memory. As more sections of the dataset are reorganized, additional performance gains are realized due to the additional groups of entries in each of these sections reducing the need for disc I/O in obtaining each entry on a chain. Once optimized by **"Partial Reorg"**, it is now possible to further optimize the dataset by additionally performing a chained reorganization. Initially too slow to complete within a database maintenance window, this method runs much faster once the dataset has been optimized using **"Partial Reorg"**.

In the figure on the right, the "Original Dataset" is pictured in quarters. The **"Partial Reorg"** results are shown as clusters of like key values (indicated by color) within the each reorganized section. When a full

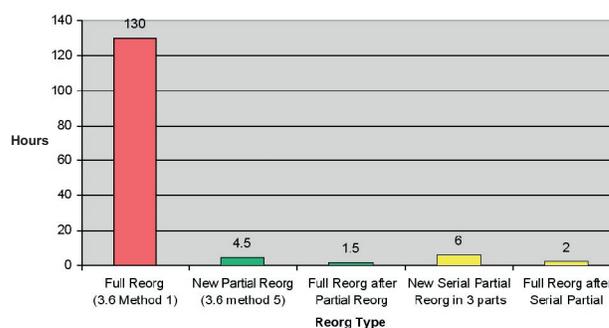


reorganization is applied all entries with the same key value from the entire dataset are clustered together and forward chained reads move sequentially thru the dataset.

Partial Reorg Processing Phases

- **Phase 1 - Selective extraction**
- **Phase 2 - Sort of Selected Entries**
- **Phase 3 - Replacement of Entries**
- **Phase 4 - Updating of Detail Paths**
- **Phase 5 - Updating the related masters**

Reorg Time Comparison
60 million entries, 50000 keys repeated 1200 times.
Two Auto Masters, total volume 16 million sectors



The chart **"Reorg Time Comparison"** above illustrates comparative testing numbers for three separate tests, each beginning with the same restored database. Test One is a chained reorganization which walks the chain and writes a new dataset in 130 hours (ouch!). Test Two, the new **"Partial Reorg"** completes the entire dataset in an amazing 4.5 hours. After optimization by test two, a chained reorganization of the dataset completes in 1.5 hours (as oppose to the 130 hours in Test One). In Test Three, a **"Partial Reorg"** is done by dividing the dataset in 3 parts to minimize the maintenance window. Each **"Partial Reorg"** completes in a 2-hour period for a total of 6 hours. After optimization into 3 reorganized sections, a chained reorganization is conducted which completed in 2 hours. Test Two had a total time of 6 hours requiring a 4.5 and a 1.5 hour maintenance window. Test Three had a total time of 8 hours requiring four 2-hour maintenance windows.

Bradmark's new **"Partial Reorg"** technology provides companies that have minimal maintenance windows a new option in their efforts to improve performance while maximizing application availability.