

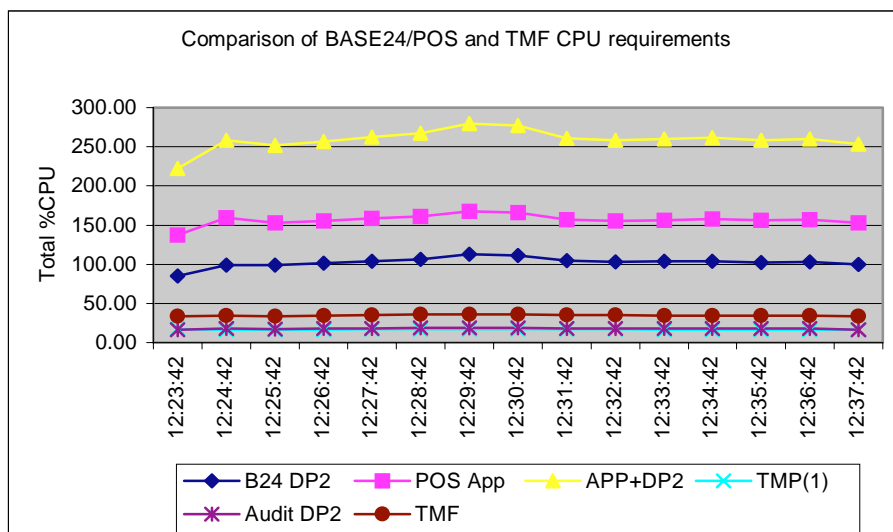
## Barclaycard Merchant Services chooses NonStop™ AutoTMF and RDF for Performance and Disaster Protection of ACI's Base24

Barclaycard Merchant Services, a division of Barclays Bank in the UK, recently migrated to the ACI BASE24/POS packaged solution, from a custom version that had been in production for some years. The custom solution was originally implemented using TMF built into the application, both for the purpose of file integrity and transaction backout. Unfortunately, BASE24/POS was not written with TMF begin/end transaction logic inherent within the application. As a result, an evaluation was required to secure an alternative approach to provide data replication without changing the application code.

Barclaycard Merchant Services undertook an extensive and thorough evaluation of various replication products, but in the end chose NonStop™ AutoTMF and Remote Database Facility (RDF) software from Compaq. A key benefit to Barclaycard Merchant Services was the performance enhancements (disc and CPU) received with the NonStop AutoTMF product. In the tests, NonStop AutoTMF/RDF was able to protect (and replicate) BASE24 transaction data at high transaction volumes (i.e. a level of 250 TPS). This was due to NonStop AutoTMF enabling TMF.

By adding TMF support, NonStop AutoTMF significantly reduces the number of physical database I/Os to files such as the PTLF (i.e., the main transaction log file within Base24). This in turn leads to a significant increase in the transaction throughput capabilities of a single BASE24 Logical Network. This was a major differentiator between NonStop AutoTMF / RDF implementation and the other replication products, and a key factor in the recommendation to proceed with NonStop AutoTMF/RDF.

Fig. 1 compares the cost of running TMF, as a percentage of the BASE24/POS Application Cost, with the Transaction Rate. As can be seen, in this test configuration, the TMF cost is modest as a percentage of the BASE24/POS Application Cost and this reduces at greater TPS. This is assumed to be due to the efficiencies introduced with TMF-Boxcarring.



As TPS rates increase, the cost of running TMF continues to decrease as a percentage of application cost. Other replication products tested consumed from 20% to 50% more resources than did NonStop AutoTMF / RDF.

In the tests, on a per 'Business' transaction basis, NonStop AutoTMF generated 2 TMF transactions in the BASE24 APACS DRA Process and a single TMF transaction in the BASE24 Visa Process.

Additionally, using NonStop AutoTMF, there is a significant improvement in the performance of the disc holding the PTLF (i.e., the main transaction log file within Base24) compared to BASE24-POS running without the benefit of TMF protection.

In analysing the MEASURE data, it was seen that the DISK REQUEST counter is a very good approximation to the Business transaction rate. Typically the tests were running with over 250 REQUESTS/sec and generating some 250,000 bytes of PTLF data per second. Even with this heavy application load, there were only about 4 disk writes/per second and data is being written out in near 56K chunks. Nevertheless, both the Primary and Mirror disks are quiet, with a DEVICE-QBUSY-TIME of around 6%. There is negligible internal queuing.

The net result is the ability to process extremely high workloads through the system with much lower hardware utilization. Without the benefit of TMF, the tests show an upper limit of around 40 physical writes/sec to the PTLF. As previously stated, this was a major differentiator between the NonStop AutoTMF / RDF implementation and the other replication products, and a key factor in the Barclaycard Merchant Services recommendation to proceed with NonStop AutoTMF/RDF.

#### **NonStop AutoTMF Approach/Architecture:**

NonStop AutoTMF was developed by Carr Scott Software in close cooperation with the Compaq TMF and RDF development teams on the design of NonStop AutoTMF to ensure the highest degree of functionality, reliability and performance.

NonStop AutoTMF has been designed and implemented so that currently unaudited Enscribe files can be TMF protected without having to change the existing programs to include TMF begin and end transaction logic. One of the main concepts in NonStop AutoTMF is that once the files are TMF audited, the NSK data manager, DP2, guarantees that all changes to audited files are captured in the TMF audit trail. Then, if using RDF, the guarantee extends so that all committed transactions are applied to the replicated database.

DP2 has been tuned for maximum efficiency with audited data. The NSK components are the most efficient mechanisms available to do data capture and replication. Especially in the case of Himalaya systems, they operate in a small fraction of the time that application level replication could be performed.

Using NonStop AutoTMF you simply turn on the file/table AUDIT flag and then efficient TMF transactions are generated where necessary. This is why an entire system of files can be audited under this approach. Only if you can do all the files, can you have true disaster protection and recovery.

NonStop AutoTMF, RDF and NonStop TMF are all licensed and supported worldwide by Compaq. More information can be found at: [http://nonstop.compaq.com/view.asp?PAGE=RDF\\_SW](http://nonstop.compaq.com/view.asp?PAGE=RDF_SW)

#### **Barclaycard Merchant Services**

Barclaycard Merchant Services is one of Europe's largest acquirers and processors of plastic card transactions. It is dedicated to providing a range of e-commerce solutions to suit all types of business and was the first bank to launch an Internet payment system, ePDQ. In 2000 1.2 billion purchases were made with credit and debit cards in the 131,000 outlets belonging to Barclaycard Merchant Services' customers in the UK. Barclaycard Merchant Services operates the largest on-line, real time bank owned EFTPOS (Electronic Funds Transfer at the Point of Sale) system in the UK with a PDQ terminal base of over 123,000.