



Pervasive: A Great Low-IT DB

Quick Note

Wayne Kernochan

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Recent years have shown the importance of the SMB (small- to medium-sized business) market—not just as a source of revenues to ISVs and computer vendors, but also as a place where Big Iron cannot easily dominate. For databases in particular, SMBs and their ISVs are often better advised to look to suppliers with long experience and success focusing on this market, rather than the Oracles, Microsofts, and IBMs of the world.

Pervasive Software is an example of just such a vendor. Its lineage traces back twenty-five years to Softcraft, which invented the transactional database called Btrieve.¹ Since then, the company has been reincarnated as Pervasive Software and has established a solid reputation as a transactional/relational database and data management supplier to the SMB space; among its products are Pervasive PSQl, DataExchange, Backup Agent and AuditMaster. Along the way, it has been among the leaders in identifying and serving the unique characteristics of the SMB market. In fact, it was the original framer of the “Low-IT” concept.

“Low-IT” organizations are users—both SMB and workgroup/department—that aim primarily to minimize the cost and the complexity of IT (see Table 1). These users understand that the enterprise databases that consultants and data-center experts reflexively recommend are by nature too complex, too expert- and administration-intensive, and too costly (in cost of ownership terms), and thus are not appropriate for Low IT.

Pervasive PSQl Summit v10, an upcoming release scheduled for September, is a good opportunity to revisit Pervasive’s solution. Ongoing interviews with users show that Pervasive’s simple value proposition continues to work effectively: that is, fast performance in the SMB transactional “sweet spot,” “light lifting” in deployment and operation, and low costs “across the board.” How well does PSQl Summit v10 carry this tradition forward?



¹ Many developers may be familiar with this database from the early days of developing on Novell NetWare.

Table 1: Low-IT vs. Large Enterprise Attributes

Organization	Administration	Flexibility	Scalability	License Cost	TCO
Low-IT	"Very low touch"—non-technical user handles many tasks	Medium—focused on ease of customization and upgrade	Low to Medium	Medium	Low or Very Low
Large Enterprise	"High touch"—requires constant tuning and expert attention	Low—many apps can depend on schema; support for diverse products & standards more important	High to Exceptional	High	Generally High

SMB User Criteria

In over a decade of SMB interviews, I have found that SMB users differ significantly from the usual picture that vendors form—that of the large-enterprise IT department, simply writ smaller. Specifically, SMBs depend much more on a few (2-5) business-critical applications for their survival and success. Moreover, resources are always tighter. It is not easy to find or replace even a Microsoft expert, much less a bevy of product- or technology-specific experts. Low-IT architectures are different. Performance/scalability requirements are less stringent, for example, but no less urgent. And supplier brand means less than supplier fit to SMB needs.² The result is that SMB buyers may employ the same language as larger IT shops, but mean different things.

SMB users typically employ the following criteria:

- Deployments do not need to scale as far as in large enterprises, and therefore emphasize *performance* (or rapid response to users) in a typical user load as much as scalability to especially large loads or systems.
- By *flexibility*, the Low-IT user is apt to mean ease of customization and upgrade, rather than openness to a wide variety of hardware and software.
- By *robustness*, the Low-IT user is likely to mean ease of administration, preferably by non-technical personnel, rather than simply continuing to run 7x24.

- *Programmer productivity* means that the ISV (independent software vendor) that delivers an application can rapidly create and deploy new versions, and the users can customize them easily, rather than the users' writing the application themselves.
- Other key considerations are *security* and *total cost of ownership* (TCO).

PSQL Technology Overview

Pervasive PSQL offers full database functionality targeted expressly at Low-IT Windows and Linux users. To connect to back-office data sources, PSQL supports the usual industry standards: ODBC, JDBC, .NET, and OLE DB. While Pervasive PSQL supports rapid Web and high-level programming,³ interviews suggest that most SMB users are still evaluating adoption of Web and SOA-type services.

PSQL Summit v10 includes native support for oncoming 64-bit architectures like Microsoft's "Longhorn" (aka the forthcoming Windows Server 2008) that allow significant speedups of typical workloads via main-memory processing. For example, in-memory databases have reported speedups of 100 times for applications whose data can be stored entirely in main memory. Page and record compression, as well as I/O optimization features for large OLTP (online transaction processing) jobs with a high percentage of random writes, improve performance.

V10 includes support for Windows Vista and the .NET 2.0 Framework. This allows users to move to

² See our *The Unique IT of SMBs*.

³ Including providing its own development toolset.

Vista immediately upon v10 installation, or to do so later at their own pace. A new small-footprint installer reinforces PSQL's ability, frequently remarked upon by customers, to deliver a simple and swift deployment. Improved security includes upgraded access control on views and procedures, as well as digital signatures for code. "Long metadata" support ensures more flexible naming of data types.

V10 also offers a Query Plan Viewer. The significance is that any developer who employs SQL for complex queries must optimize those queries "by hand" in order to avoid the dreaded "query from hell" or "nonresponsive query" that crowds out other processing (one unwary user noted that an un-optimized non-responsive query monopolized its systems for a week before it was shut down). In the past, complex queries from SMBs have been few and far between, but the increasing sophistication of SMB apps (for example, their increasing mix of both transactional updates and business analyses) means that these queries are showing up more and more. The Query Plan Viewer gives developers a much better tool for understanding and optimizing the resulting complex queries; user interviews show that such a tool is high on users' wish lists.

A key element of PSQL is its suite of data management add-ons, including agents for online backup (Backup Agent), database replication (Pervasive DataExchange), and database logging and auditing (Pervasive AuditMaster). In addition, Pervasive offers a suite of data integration products that provides database ETL (extract-transform-load) and application integration technology.

Sweating the Details

Pervasive takes a different direction from enterprise databases in several areas, with positive results for Low-IT users.

Administrative Ease-of-Use. PSQL automatically keeps the database organized/optimized—a feature vital to avoiding performance degradation, and one often omitted by other database vendors.

Automated backup and recovery utilities and expansion of the database as it nears its capacity likewise go beyond the SMB norm. Pervasive Control Center automates typical cross-server administrative tasks. Pervasive System Analyzer manages components, allows the user to avoid database version conflicts, reports deployment errors, and suggests solutions for problems reported. The result is that users report "near-lights-out" administration by non-technical (cheaper and easier to find) personnel, and most PSQL data stores need to be reorganized at most yearly, if at all—a result better than any enterprise database for which I have conducted interviews, and most SMB-focused databases as well.

Minimal Downtime and Robustness. User reports indicate a very low incidence of PSQL downtime. Features that allow PSQL to achieve this include careful attention to data integrity via automated online backup/recovery utilities and business continuity/disaster recovery options (DataExchange and Backup Agent) that provide the ability to maintain a remote synchronized backup server. This also provides a measure of physical security for user data. For example, the user can provide local backup while the system is running, using Backup Agent, while also providing a remote copy of the database to which end-users can switch in the event of a disaster (DataExchange replicates changed data to the remote copy). While this is still less than the extensive redundancy seen in many large-enterprise architectures, it offers very good "bang for the buck": two-site SMB continuity with easy, cost-effective deployment and administration.

Performance. The typical Low-IT transaction mix involves small to medium-load OLTP updates or "mixed" queries and updates. PSQL's multithreading support allows it to perform very well in OLTP situations, and its "navigational" data-access support, dynamic caching, row-level locking support, and optimizer mean high "mixed" performance as well. The result, to which user interviews attest, is excellent mixed update/query performance and scalability to the top end of the SMB range (typically up to 1,000 concurrent users and 100 gigabytes of storage).

Flexibility. PSQL's support for all Windows variants and Linux, plus .NET, ODBC, JDBC, and OLE DB standard support, is nothing unusual. But developers can also invoke PSQL's administrative features—a highly useful feature for, say, self-tuning applications that monitor system statistics.

Security. PSQL offers a surprising amount of user database security for an SMB database, including encrypted communications between client and server, forensic analysis of logs to detect fraud, and the permissions and digital signage noted above.

Support. Pervasive provides a range of support offerings, including 24/7 access to developer forums, blogs, product documentation, and technical tips.

Pervasive: Case Study

What is striking about qualitative interviews with Pervasive Low-IT users is the consistency with which they note its ability to meet Low-IT criteria, and especially its low TCO. These interviews also are consistent with TCO findings in a study I performed four years ago: PSQL offers 250% better TCO than the nearest comparable database, and 11-to-1 advantage over the average (enterprise) database.

One such case study involved user experiences as reported by a Pervasive VAR (value-added reseller). Size of installation ranged from 1-1000 end-users (10-30 typical) and up to 150 gigabytes of storage. Applications ranged across all industries, with special emphasis on medical/healthcare and airline. Implementations included hosted and customer-controlled applications.

VAR customers report exceptional performance in typical SMB situations, including low-to-medium-scale querying and “mixed” update/query situations, with cost savings for all scales of querying. Installation typically takes 15 minutes per server plus 5 minutes per client PC, for a typical total of 1-3 hours. Administration by either the VAR or the customer is typically minimal, usually involving an untrained “key user” checking that automated backups over the weekend actually

happened. Few, if any, customers report downtime—Pervasive PSQL “typically doesn't break.”

PSQL's SQL support means that use of PSQL with a programmer-productive development toolset is straightforward, with few difficulties reported in training new programmers. Overall, the VAR summed up Pervasive's advantages as “fast for SMB workloads, requires light lifting, with low costs across the board.”⁴

Conclusions

Today's users accept that no enterprise database will replace all existing databases. It makes equal sense that many SMBs and their ISVs are applying a quite different database for Low-IT needs from the databases found in the data center or at the large-enterprise level. A similar conclusion applies to IT buyers for departmental and workgroup solutions, which often have much more in common with SMBs than they do with corporate datacenters. These users cannot afford expensive tune-ups and problem fixes nor expensive database administrators—so they need good performance in workgroup and SMB situations, administrative ease-of-use, minimal downtime (scheduled or otherwise), and flexibility to support their own particular architectures and development needs. My research and user interviews show that Pervasive does especially well in meeting Low-IT needs.

Pervasive PSQL is particularly useful and offers especially low TCO in mass-deployment architectures, wherein multiple workgroups or branch offices in multiple localities each use a local server which may be linked back to a central server. An example is an insurance firm with agents in different cities. In these cases, the local agent can use PSQL-based applications such as proposal generators, but also keep in sync with corporate data stores and policies—without the need for a “roving DBA.”

PSQL Summit v10 shows that Pervasive continues to be exceptionally good at “set it and forget it.”

⁴ Another interviewee summed up Pervasive's advantages, simply, as “simplicity.”

And as Low-IT-type SMBs steadily move towards Web, software as a service (SaaS), and complex-query requirements, Pervasive already has features to support them. Pervasive has found its niche as an SMB supplier. No one should imagine that, after all these years, it will suddenly reinvent itself as an enterprise-centric player; but it continues to provide different, useful—even commendable—technology. As the strong SMB market continues to engender new needs for Low IT, Pervasive is a data management platform worth considering.



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