

# GUPTA



Client-server computing is hard at work today in corporations all over the world. Its powerful architecture supports business-critical applications; its flexible structure keeps hardware and software costs low and user productivity high. In all, client-server is the most cost-effective approach to information management — for the department or the enterprise.

Gupta Corporation, the technology and market leader in PC client-server software, provides front-end tools, back-end servers and SQL connectivity — all the products you need to implement integrated, enterprise-wide client-server applications. No other company in the industry offers a complete PC client-server software solution.

Gupta's graphical tools, SQLWindows and Quest, put the full power and ease-of-use of Microsoft Windows in the hands of programmers and business professionals — dramatically improving productivity for your entire spectrum of users. And Gupta SQLNetwork connectivity software enables these users to simultaneously access data residing on a wide variety of corporate and departmental databases, including Gupta's own high-performance SQLBase Server.

## SQLWindows

GRAPHICAL CLIENT-SERVER APPLICATION  
DEVELOPMENT SYSTEM

### Gupta SQLWindows

For the individual programmer building small SQL database applications, there are literally dozens of Windows-based development tools to choose from. But for corporate IS programming teams developing large, business-critical applications, only one client-server PC tool makes the grade — Gupta SQLWindows.

SQLWindows is the leading development system for building multi-user client-server database applications for Windows, Windows NT and OS/2 workstations. Since its introduction in 1989, SQLWindows has proved itself the software of choice for applications of all kinds and sizes — from departmental applications accessing a LAN database server, to enterprise-wide mission-critical applications with hundreds of concurrent users accessing and updating SQL databases on minicomputers and mainframes.

SQLWindows brings an unmatched level of power, sophistication, and productivity to client-server application development via:

- Collaborative Programming — Increase team consistency and productivity by developing with reusable application building blocks, backed up with secure source-code control and project management capabilities.
- Complete, Easy-to-Use Object-Orientation — Code application objects once — and use them as often as you want.
- Ease of Use — Use the QuestWindow to build applications without knowing SQL or writing a single line of code.

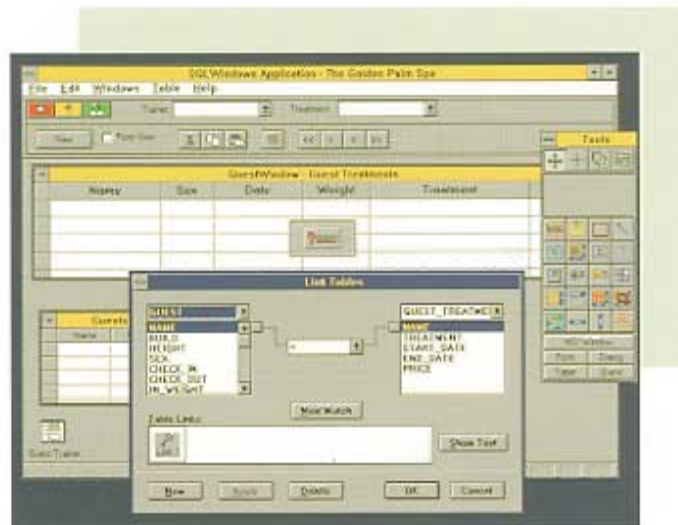
**Application Designer** *Visual programming environment for designing application screens, forms, and objects* As programmers add and modify objects in the Application Designer, using simple point-and-click and drag-and-drop techniques, SQLWindows automatically generates the appropriate code and documentation. In addition to common datatypes, objects can incorporate images, sound, and video for creating highly sophisticated multimedia applications. The Application Designer includes:

- Rich Palette of Painting and Customizing Tools
- Context-Sensitive Help
- QuestWindow — This SQL-intelligent application object enables entry-level programmers to use Quest, Gupta's graphical data access tool for end users, to build applications without writing code or knowing SQL. A programmer can drop a QuestWindow, such as a browse-and-edit table or a form-window object, directly into a SQLWindows application — and use Quest's point-and-click interface to produce SQL code automatically.
- TableWindow — This data-intelligent programming power tool automates data retrieval, display, and updating in tabular form. TableWindow is managed by high-level functions, minimizing programming effort. A single function populates a TableWindow with data from a database; similar functions manage updates, deletions and insertions.

**Application Outliner** *Readable, collapsible outline provides complete overall view of application components* When application objects are added or modified in the Application Designer window, the Application Outliner is automatically updated. The outline provides a convenient, flexible way of documenting and navigating through large applications, and eases application maintenance and enhancement.

**SQLWindows Application Language (SAL)** *Full-featured 4GL for programming custom application actions and object methods* SAL provides programmers with unlimited application control and extensibility to augment the rich visual-programming facilities of the Application Designer and Outliner. SAL supports:

- 500 SQLWindows and Microsoft Windows Functions
- Ability to Create and Share New Functions
- Any Back-End Datatypes
- Variables and Arrays
- Complete Control Flow
- Access to Externally Developed Code (Including C and C++)



The QuestWindow enables programmers to build applications without writing code or knowing SQL. QuestWindow is a facility of the SQLWindows Application Designer, a feature-rich visual programming environment.

**TeamWindows** *Data dictionary-driven repository for project meta-data and*

*reusable application building blocks; Repository-based tools to facilitate and support collaborative programming* TeamWindows puts control of team programming back in the hands of the project manager. It enables sharing and reuse of application components, enforcement of standards across application projects, and specialization of programming tasks.



TeamWindows automates administrative tasks such as staffing, security, standards enforcement, and quality control of the development, test, and production environments of an application. It also produces continual, up-to-date reports on the status of every phase of an application project. Throughout the application development cycle, TeamWindows enables project leaders to manage team members, track application components, and maintain source code at various levels.

The TeamWindows repository takes SQLWindows far beyond the capacities of standard object-orientation. It stores everything from forms and reports to programming standards and staffing information — resulting in fast, consistent, database-aware application development. Programmers can easily implement reusable code across applications instead of rewriting functionally similar code. The multi-user repository employs a full-function relational database server (initially, Gupta SQLBase Server) and enables

- **Data Dictionary-Driven Application Generation** — TeamWindows maintains a central data dictionary of database structural information, including table and column names, primary and foreign-key relationships, validation criteria, and other parameters. This data can even be imported from existing upper-CASE tools.
- **Impact Analysis** — Whenever database structures change or the data dictionary is modified,

TeamWindows automatically modifies any affected applications. Reports can be run that track the use of any object.

- **Secure Source-Code and Version Control** — Once a SQLWindows application is complete, it can be

stored in the repository and managed with the TeamWindows source-code controller. The check-in/ check-out facility enables team members to share and modify application components, while repository security denies access to unauthorized users and ensures that only a single programmer at a time modifies a particular component. TeamWindows also tracks and automatically updates version

numbers for application modules throughout the entire development cycle.

- **Creation and Maintenance of Template Libraries** — TeamWindows provides pre-defined templates for quickly generating SQLWindows screens and applications using data dictionary information. Programmers can also save and reuse screens as templates for new applications across multiple databases.

**Gupta Quest** *Unique query and reporting tool requires no SQL or programming* Quest enables your end users to build ad hoc reports and easily integrate them into the SQLWindows applications they run. And, via the QuestWindow facility, SQLWindows programmers can use Quest's point-and-click interface to build forms, dialogs and other database interfaces for their applications.



TeamWindows and its dictionary-driven application repository provide team coordination and management capabilities previously available only in minicomputer and mainframe-based development systems.

**ReportWindows** *Integrated, full-featured graphical report designer and writer* ReportWindows can produce tabular, cross-tab, and control-break reports to any level of detail. It offers a full selection of fonts, colors, and other formatting options. Reports created with ReportWindows are fully compatible with reports created with Quest.

**Gupta SQLBase Server for Windows** *Single-user multi-tasking copy of a full-function SQL database server* With SQLBase Server for Windows, SQLWindows is the only client-server application development system that's ready for development right out of the box. The single-user database also enables application testing and debugging on stand-alone PCs, even laptops.

#### **Versatile Debugger and Compiler**

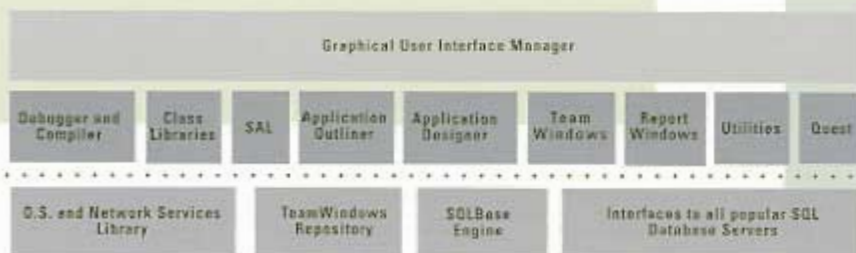
The SQLWindows debugger enables interactive application refinement and testing using multiple breakpoints, single-stepping, watch values, and code animation. Applications can then be compiled into a compact and efficient executable form for deployment on multiple workstations.

#### **Pop-Up Utilities and Help Screens**

SQLWindows' various utilities include tools for database administration, library browsing, and for customizing and translating applications to national languages.

#### **Extensive Integration and Interoperability**

SQLWindows tools and applications utilize the full power of the Microsoft Windows environment. SQLWindows supports Dynamic Data Exchange (DDE), Object Linking and Embedding (OLE), Multiple Document Interface (MDI), and external Dynamic Link Libraries (DLL) in both the Application Designer and SAL. In addition, any Windows message call can be used in SQLWindows. Your programmers get all the flexibility they need to build fully integrated, interoperable applications.



SQLWindows comprises a complete set of integrated, object-oriented tools and services for developing, debugging and deploying Windows-based client server applications.



### **Collaborative Programming**

SQLWindows' unique TeamWindows component and its data dictionary-driven client-server application repository offer the team coordination and management capabilities required for true collaborative programming. These capabilities — many previously available only on minicomputer and mainframe systems — include:

- Project Management and Reporting
- Automatic Application Generation and Impact Analysis
- Secure, Repository-Based Source Code and Version Control (Check-in, Check-out, etc.)
- Configuration Management

Some client-server tool vendors have tried to adapt their products for team programming by adding simple features — file-based check-in/check-out, for example. But experienced IS managers know that coordinating a programming team requires a powerful set of repository-based tools built around a multi-user data dictionary. Gupta SQLWindows is the only PC-based client-server system of this type.

### **Easy-to-Use Object-Oriented Programming (OOP)**

Now your application developers can take advantage of OOP techniques to dramatically improve productivity and application quality — without suffering through a painful learning curve. Because now SQLWindows offers a complete implementation of OOP in a visual environment, integrated with a sophisticated database application language. Full-featured object-orientation has never been so easy to use.

With OOP, programmers combine code and data into logical objects that hide complexity and are simple to reuse, integrate and maintain. As objects and code are created, they can easily be stored and reused. A programmer can create on the fly — and instantly save — a pushbut-

ton that performs a database update. And later, by further customizing the pushbutton or combining it with another object, a different programmer can create yet another reusable object.

Object-orientation in SQLWindows is optional, not mandatory, and it's backed up with extensive on-line, context-sensitive help. So your programmers can move into OOP gradually — and never be more than a mouse click away from expert advice.

Code it once — use it often. The possibilities are endless.

### **Ease of Use for Programmers of All Ability Levels**

Client-server programming on graphical workstations can be a daunting task for programmers who lack SQL knowledge or were trained in linear, character-based development techniques. That's why SQLWindows includes QuestWindow, a facility that enables programmers to build applications without writing code or knowing SQL. QuestWindow significantly reduces the work involved in building basic application components — so even novice programmers can get up to speed and become productive quickly.

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**The Gupta SQL System**

Gupta Corporation is the only software company providing a complete, modular line of client-server products for PC LANs. Our Windows tools, Quest and SQLWindows, support a wide range of SQL back ends; our high-performance DBMS, SQLBase, supports an even wider range of popular front-end tools. So you can use our SQL System products together, as a seamlessly integrated client-server solution — or separately, to meet your specific business needs.

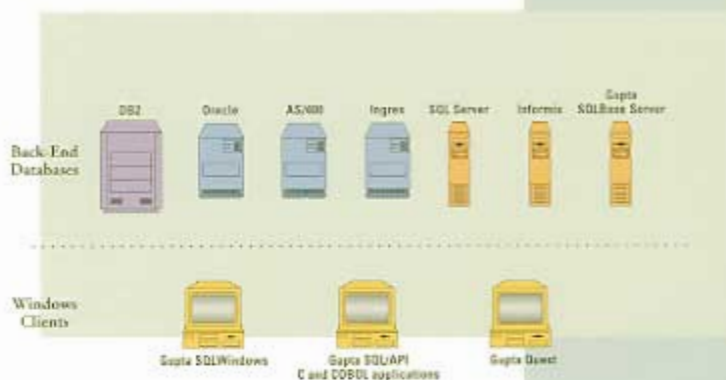
**The Gupta SQL System includes:**

**Gupta Quest** — Easy-to-use, graphical data access and reporting tool for Windows, targeted specifically for SQL databases

**Gupta SQLWindows** — Powerful client-server application development system for Windows, featuring collaborative programming and easy object-orientation

**Gupta SQLBase** — High-performance SQL DBMS, scalable from laptops to LAN servers and priced for PC platforms. Available for DOS, Windows, OS/2, NetWare (NLM) and Sun UNIX

**Gupta SQLNetwork** — Connectivity software from graphical PC clients to LAN database servers and enterprise SQL databases. Supports IBM DB2, OS/2 Database Manager and AS/400; Oracle; Gupta SQLBase Server; Microsoft and Sybase SQL Server; Informix; Cincom Supra; HP ALLBASE/SQL



**Gupta SQLWindows System Requirements**

The SQLWindows Application Development System is available in several configurations. For further information about product features, pricing, and availability, please contact a Gupta sales office or an authorized Gupta Partner (VAR, systems integrator, consultant, or other service provider).

**Database Systems Supported**

- Gupta SQLBase Server
- IBM DB2
- IBM AS/400
- IBM OS/2 Database Manager
- Oracle
- Sybase SQL Server
- Microsoft SQL Server
- Informix
- Ingres
- Cincom Supra
- HP ALLBASE/SQL
- Novell Btrieve

**Minimum Recommended Workstation Configuration**

- Design Mode — 386 SX or higher PC, 4 MB RAM (8 MB recommended)
- Runtime Mode — 286 or higher PC (386 recommended), 4 MB RAM
- Microsoft Windows 3.1, Microsoft Windows NT or OS/2 1.2
- EGA or higher-resolution display hardware
- 12 MB hard disk space for SQLWindows files