R/3 and NT: Business Software in a modern environment

The advantages of Windows NT as an Operating System for R/3.

- Windows NT is a modern operating system, designed for client/server, with a graphical user interface and platform independance.
- Windows NT allows the user to run all three levels of the R/3 system on Windows. This reduces the overall operating costs considerably.
- Windows NT runs on a variety of attractive hardware platforms. R/3 for Windows NT runs on Intel-based platforms of various manufacturers.
- Windows NT as an operating system for R/3 offers an ideal environment for integrating Microsoft technologies in an R/3 environment.

The world of corporate computing today is heterogeneous.

In most corporations today, one or more mainframes are surrounded by a plethora of terminals, PCs and workstations. While most business applications still run on a mainframe, more and more users, in order to take advantage of better user interfaces and dedicated computing power, prefer to do as much of their work as possible on PCs and workstations. The level of integration between mainframes and PCs/workstations is usually not very high since both worlds were not designed to talk to each other and thus integration is complicated and expensive. To make matters worse, very often even the PCs/workstations run different operating systems.

A lot of time is wasted by users either reentering or reconsolidating data or working with tools that are not the best for the job. In a perfect world, all computers would run the same operating system and all applications would communicate based on a common architecture. Recent advances may have taken us a little closer to this vision.

Microsoft Windows

Microsoft Windows has become the standard for Graphical User Interfaces. The increasing number of compatible software products enables users to choose the best solution for their particular task. The competitiveness of the Windows software and the PC hardware markets makes it possible to provide powerful hardware and several software packages to each user at reasonable cost. The ease of use of Windows and the Windows applications allows users to benefit from multiple applications - without incurring prohibitive training expenses. Windows is continously extended to provide new capabilities. OLE (Object Linking and Embedding), for example, is the foundation for compound document applications and other forms of program interoperability.

SAP R/3

The SAP R/3 system exploits new technologies like Client/Server, Relational Databases in a transactional environment, and Graphical User Interfaces to provide integrated, international business applications in the open systems world.

Using these new technologies enables R/3 to offer

- scalability
- portability
- openness

Customers can use R/3 across a wide variety of organizations, ranging from very small to very large .

R/3 runs on different operating systems and hardware platforms and supports several databases and graphical front-ends (like Windows).

Users can access the R/3 system utilizing local area networks (LAN), remote connections (WAN) or even dial-in from a laptop. The openness of R/3 goes way beyond multi-platform support.

- R/3 data models enable customers to develop specific add-on components.
- R/3 utilizes relational databases. Customers can use the database vendor's or third party tools to access information in the R/3 system.
- R/3 allows external programs to call the R/3 business functions via RFC (Remote Function Call) and also via OLE (Object Linking and Embedding).
- ALE (Application Link Enabling, available with Release 3.0 of R/3) supports communication and data consistency between distributed systems. ALE enables business data exchange between SAP systems and also external systems.
- R/3 actively supports Electronic Data Interchange (EDI) for the intercompany exchange of standard business messages.

R/3: Heterogeneous or homogeneous?

Implementing R/3 in homogeneous and heterogeneous NT environments

Where as the ability to distribute an R/3 system across three layers is a prerequisite for the level of scalability that companies need, in the past it often led to different operating systems on the application server and the front-end. The vast majority of customers wanted Windows as the front-end because of the advantages cited above, and UNIX for the application and database servers because of price/performance, reliability, and openness.

Mixing operating systems to use the best possible solutions for differing tasks (ease of use and availability of end-user software versus support for multi-user, multi-processor high-end servers) was the only available choice. R/3 manages this by facilitating many of the inherent tasks. However, running R/3 in a homogeneous Windows NT operating system environment has the added benefit of enabling the user to take advantage of specific Windows features like MAPI (Mail Application Programming Interface) and OLE.

Windows NT

Wide range of possible configuration scenarios

The arrival of Windows NT changes the situation considerably. On the one hand, Windows NT could be called „just another UNIX“ since its openness, portability, reliability, security, multi-processor support etc. rival that of UNIX. On the other hand, Windows NT's Application Programming Interface (API) is a superset of the one found in DOS/Windows, thus making the port of existing Windows applications extremely easy and guaranteeing a large selection of applications from the start.

R/3 and Windows NT

SAP provides all three layers of R/3 on Windows NT. With the hardware platforms available for NT today, it will be possible to have the same level of scalability of R/3 on NT machines that exists today in the UNIX world.

The R/3 system has been specifically designed to support heterogeneous environments. This provides tremendous flexibility in configuring platforms. There are three main scenarios.

Scenario I

An organization that wants to expose itself to Windows NT gradually might want to start by just supplying Windows NT machines to some power users. In this scenario just the presentation layer of R/3 would run on Windows NT, whereas other users would continue to use their current front-ends and the application and database servers would remain UNIX systems.

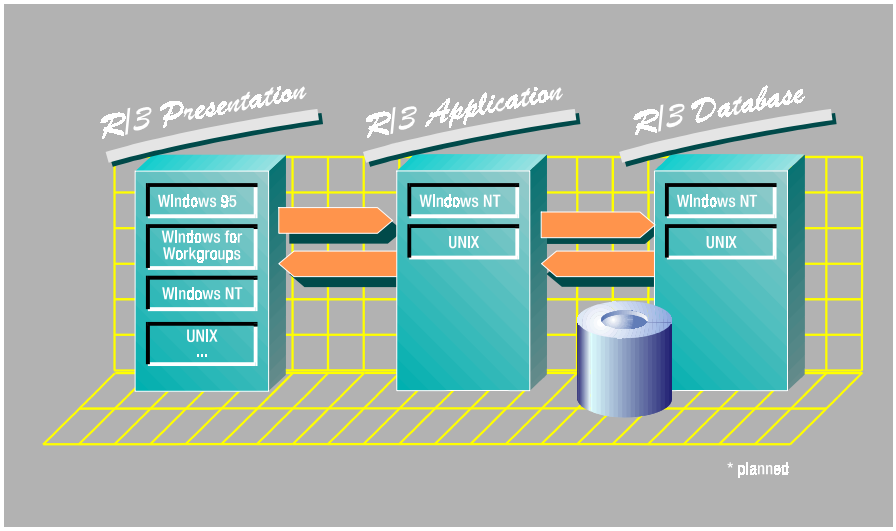

Figure 1: R/3 in a heterogeneous operating system environment

Scenario II

At least some of the application servers run Windows NT. The end-users could use a mix of front-ends including DOS/Windows and Windows NT, depending on requirements and available hardware. This protects the investment in a high-end UNIX database server in allowing a customer to add Windows NT to a current UNIX-based R/3 installation with new application servers running Windows NT.

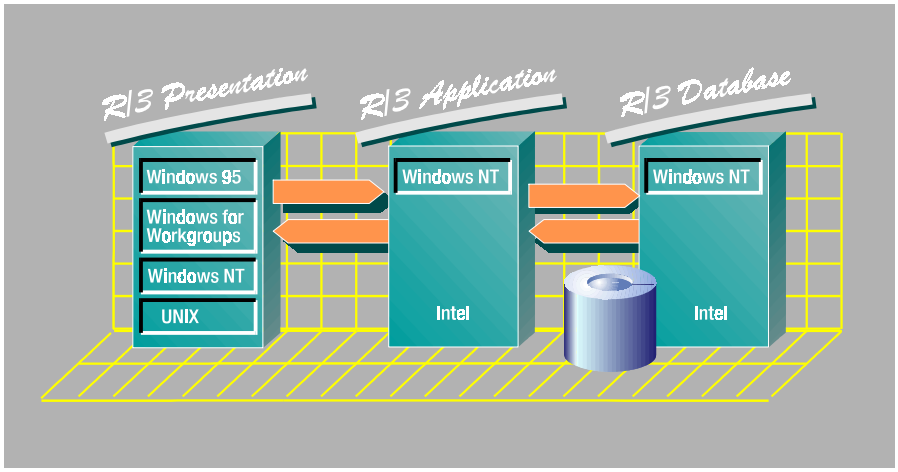

Figure 2: R/3 in a homogeneous NT operating system environment

Scenario III

This scenario utilizes Windows on all layers of the R/3 system. The database and application servers would run Windows NT, the presentation servers a mixture of Windows NT and Windows 3.1. While this scenario is probably more applicable to new R/3 installations than to existent ones, it has specific advantages:

- The operating environment becomes easier to maintain
- It is much easier to profit from Windows solutions such as Microsoft Mail and other workgroup products.

Scenario IV

A fourth scenario involves using standard UNIX systems as a database server for ORACLE for R/3, while the actual R/3 system itself is running on Windows NT servers.

This configuration can be implemented by SAP's existing UNIX partners as well as by providers of standard UNIX platforms. The first vendor to take advantage of this implementation is Data General.

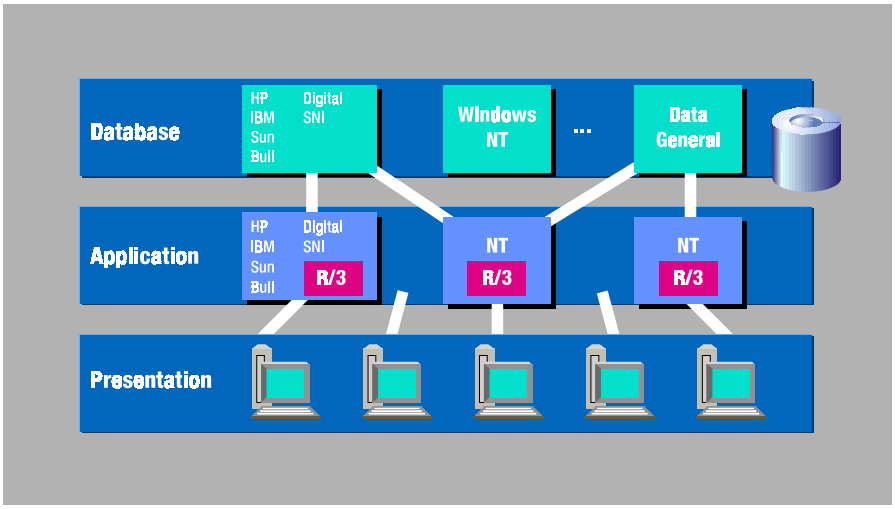

Figure 3: Standard UNIX System for the Oracle Database for R/3

Data General´s Aviion UNIX system was released at the end of 1994 as a platform for the database in the R/3 environment.

The advantage of this scenario is the ability to combine powerful UNIX bakkend server systems with easy to use price performant Windows NT servers for the R/3 application.

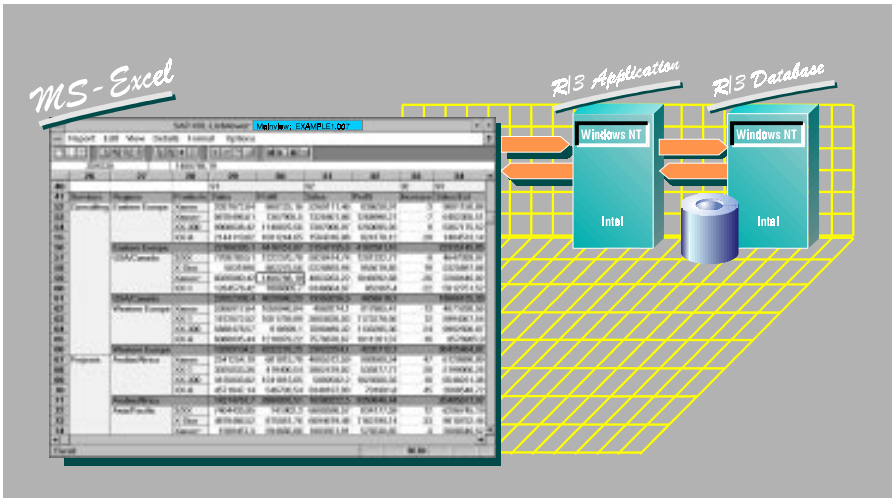

Figure 4: Open Access to the R/3 Database by Microsoft Products

Integration of Microsoft desktop products

Integration of Microsoft desktop products at the R/3 front-end and support of Microsoft standards

Todays Windows applications increase the user's productivity by offering high functionality and ever improving interoperability. SAP would like to offer its customers the possibility to use these tools together with the R/3 System.

Microsoft supplies a full range of Windows applications including Word, Excel, Project, and Access. Since many users are already familiar with these products and they are considered among the best in their categories, it makes sense for SAP to integrate them with R/3 wherever possible. Users can enjoy the superior functionality of dedicated Windows applications while still being able to access up-to-date information in the R/3 system.

Support of Microsoft standards

Openness of software can be defined as its ability to interoperate with software from other vendors. The ease with which this can be accomplished hinges on the availability and acceptance of standards. Only standards that were designed with clearly defined practical goals in mind will actually gain enough momentum to be of value to the customer.

Microsoft has defined several standards to facilitate interoperability. The most important one is Object Linking and Embedding (OLE 2.0) which lays the foundation for an object-orien-ted approach to software integration. Other relevant standards are MAPI for mail-enabling and ODBC (Open Database Connectivity) as a general interface to databases. SAP understands the importance of these standards and is committed to make the best possible use of them.

R/3 and Windows: Future trends

Windows NT and OLE 2.0 are major steps forward towards an object-oriented operating system. Version 3.5 adds additional scalability for R/3 and supplies additional functionality for software developers and users.

An object-oriented file system (OFS) together with a new desktop paradigm facilitate the development of exciting new applications. The distributed file system (DFS) allows the user to find information no matter where it resides. SAP will utilize these new technologies to make R/3 an even more open and user-friendly system.

Despite ongoing efforts by some vendors to make certain Windows APIs available on other platforms, it will be much easier for software suppliers such as SAP to support and utilize new technologies in an environment that consists exclusively of machines running various flavors of Windows.

Availability

R/3 for Windows NT offers the same level of business functionality as R/3 for UNIX-based platforms. Databases supported include Oracle 7 and ADABAS-D from Software AG. SAP has also announced the availability of SQL Server 6.0 as a database for R/3.

R/3 for Windows NT runs on several hardware platforms, including Intel-based systems from AT&T, Compaq, Data General, HP, IBM, Sequent, SNI and Zenith (Bull). Other platforms are expected to become available in the near future.