

Microsoft Platforms -
The Foundation for Company-Wide
Business Solutions with SAP R/3®



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Microsoft Platforms - The Foundation for Company-Wide Business Solutions with SAP R/3

In the spring of 1993, SAP and Microsoft agreed to support Windows NT as an operating system for R/3. R/3 was ported to Windows NT in just a few months' time. All R/3 applications were immediately ready for use on the new platform.

R/3 has been available for Microsoft's Windows NT client/server operating system since the spring of 1994. And it is highly successful: at the present time (figures from May 1997), more than 42% of all new R/3 customers choose Windows NT as their operating system platform. There are more than 2900 installations of R/3 on Windows NT worldwide.

Independent of the relationship Microsoft decided in July 1995 to implement R/3 Financials and went live in April 96 on Windows NT and SQL Server. Today, Microsoft runs its worldwide financial and procurement operations with about 1700 users on SAP R/3 and recently also added the R/3 human resource software for its worldwide personnel administration operations.

A Homogeneous Environment for Business Solutions with R/3

Most R/3 installations on Windows NT are homogeneous solutions, which means that all three tiers of R/3 run in a Microsoft Windows environment. Windows NT serves as the operating system for the database and application servers, while Windows 95, Windows 3.x, or Windows NT Workstation is used for the presentation servers. With R/3 Release 3.1 Windows NT serves also as the operating system for the new Internet Transaction Server.

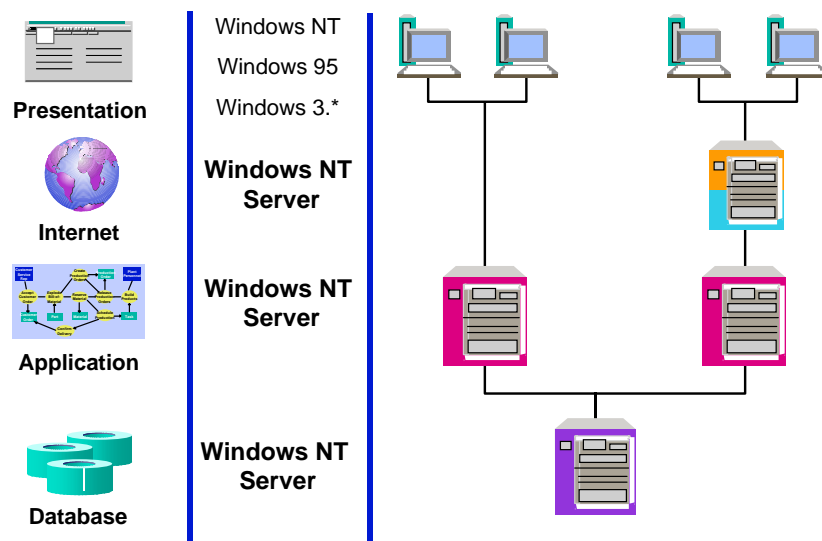


Figure 1: Homogeneous infrastructure

Customers can choose between different client/server configurations as well. Thanks to its flexible infrastructure, R/3 can be implemented to meet the customer's specific requirements.

The R/3 installations on Windows NT cover the entire application spectrum. Customers who have chosen this solution range from mid-sized companies to multinational corporations. Their decision to implement R/3 on Windows NT was primarily based on the following criteria: low IT infrastructure costs through a uniform, universal, user-friendly platform, and the attractive price/performance ratio of the hardware platforms available for NT.

The Scalability of R/3 on Windows NT

Windows NT represents a platform for all kinds of R/3 customers. The scalability of the platform enables extreme flexibility. A look at the benchmark figures shows that the Windows NT platform achieves excellent results in comparison to other platforms, thanks in part to enhancements in the hardware area. New, faster chips from Intel and Digital are available at regular intervals, and deliver noticeably higher performance in an R/3 installation.

This is especially apparent in the switch from Intel's Pentium chip to the Pentium Pro mid of 1996. Customers will continue to benefit from such developments in the future.

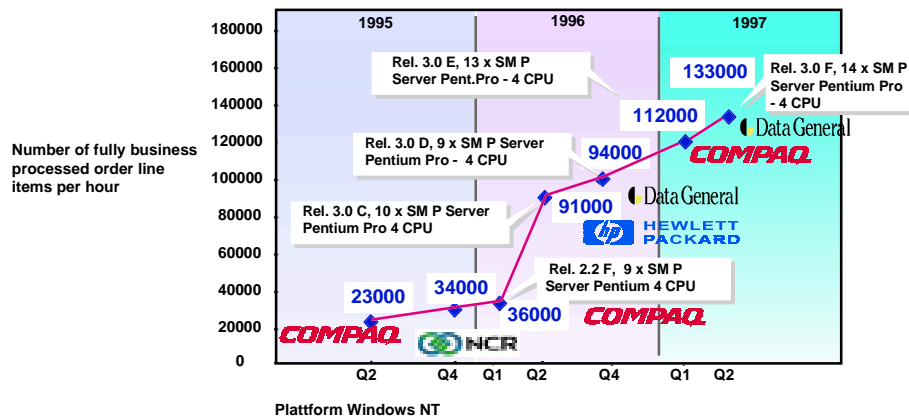


Figure 2: R/3 Standard Application Benchmarks - SD Module

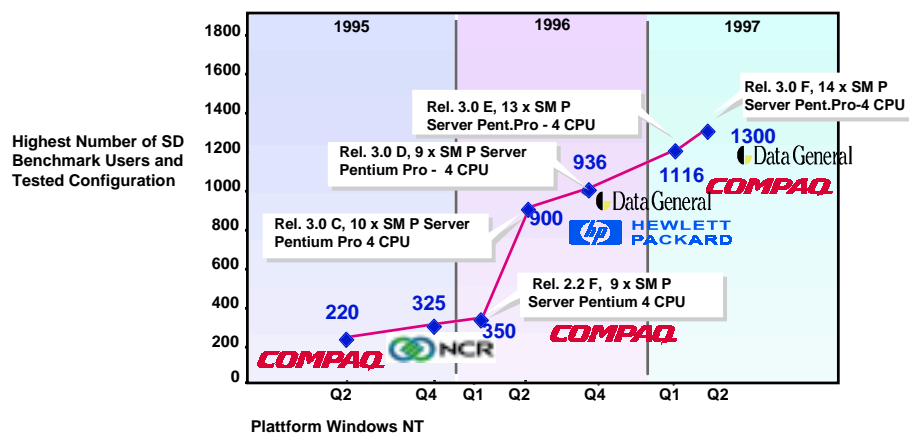


Figure 3: Published results (Three-tier Client/Server Configuration)

Supported Databases:

Various databases are available for an installation on Windows NT. The R/3 System allows freedom of choice in this area as well: you can choose between Microsoft's SQL Server, Oracle, Software AG's Adabas D, and Informix. The support of IBM DB2 for Windows NT is planned.



Hardware Requirements:

An R/3 installation requires at least one server with

- 128MB RAM
- Min. 8 GB disk capacity

However, in most cases this minimum configuration will not suffice to run a production R/3 installation. The necessary and/or optimal hardware configuration for an R/3 installation can be discussed with a certified NT hardware partner, who will perform a system sizing based on the information you provide. Please note that SAP and Microsoft cannot provide this information, as the results depend on the specific hardware platform.

Certified Hardware Partners for R/3 on Windows NT:

Various manufacturers have certified hardware platforms for R/3 on Windows NT. Only these certified platforms are supported by SAP. This policy ensures that every supported hardware platform stands up to R/3's high requirements. The certified partners (status May 1997, in alphabetical order): Amdahl, Compaq, Data General, Dell, Digital, Fujitsu, Hitachi, HP, IBM, Intergraph, Mitsubishi, NEC, NCR, SNI, Sequent, Tandem, Unisys and Zenith. The latest list of certified platforms can be found at <http://www.r3onnt.com>.

Reliability through Clustering

Many enterprise customers have used clustering technology in the past to provide greater availability for their mission-critical applications like R/3. However, these clustering solutions involving proprietary switchover products lack a standard interface for the integration of the DBMS and R/3. This increases the complexity of the integration and installation at the customer site.

Microsoft, in conjunction with the computer hardware and software industry, will bring the benefits of clustering technology to the mainstream of client/server computing. Microsoft will deliver on this vision by developing clustering technology, code-named "Wolfpack", for the Microsoft Windows NT Server operating system.

A two phase approach

Microsoft is developing together with partners like SAP cluster Application Programming Interfaces (APIs) that will allow applications to take advantage of Windows NT Server in a clustered environment. The company will deliver clustering products in two phases:

Phase 1: Switchover solution - Two-node cluster

A switch-over solution improves data availability by allowing two servers to share the same hard disks within a cluster. When a system in the cluster fails, the cluster software will recover and disperse the work from the failed sys-

tem to another server within the cluster. Phase 1 is currently in the beta phase and planned for availability in summer 1997.

Phase 2: Scalability solution - Multiple node cluster

Phase 2 will enable more than two servers to be connected in a cluster for higher performance and reliability. Phase 2 is currently planned to enter beta in 1998.

SAP's strategy for integration of R/3 and Microsoft cluster technology

SAP participated in Microsoft's open design process for Wolfpack and is working with Microsoft on the integration of R/3 and the Wolfpack clustering technology. Microsoft's cluster solution for Windows NT will become the standard cluster solution for R/3 on Windows NT.

Phase 1:

SAP plans to deliver an R/3 Switchover Kit supporting a two-node switchover solution based on Wolfpack cluster technology, where the DBMS (DB) and the Central Instance (CI) are installed on the two different cluster nodes and a mutual switchover is possible. The separation of the two resources DB and CI to two different nodes will provide enhanced performance in normal operation. In case of a node failure both resources will run on the surviving cluster node.

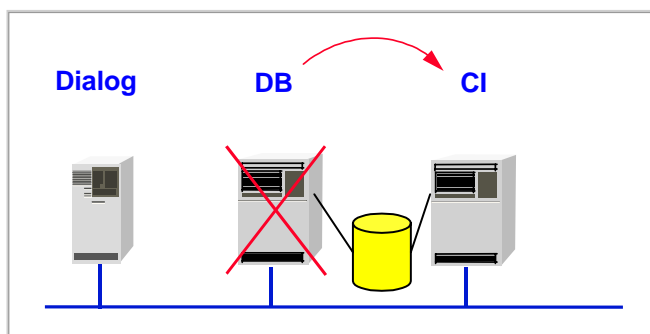


Figure 4: DataBase Switchover to Central Instance node

SAP will support all databases that are Wolfpack enabled.

Phase 2:

Currently SAP can not make any statements regarding the R/3 integration of Wolfpack's phase 2 (multi-node clustering) today. SAP is involved in this discussion and will participate in the development.

Integration with Microsoft BackOffice

An ever-increasing factor for the success of R/3 on Windows NT is that Microsoft's BackOffice provides additional components for the NT environment - like SQL Server, Exchange Server, Internet Information Server (IIS) or System Management Server (SMS). SAP and Microsoft are committed to



achieving tight integration between R/3 and the BackOffice products. This will enable customers who use R/3 with the Microsoft BackOffice platform to use their chosen products to the fullest. R/3 is a Microsoft BackOffice Logo certified application.

Microsoft SQL Server

SAP and Microsoft ported R/3 to the Microsoft SQL Server database which has been available as solution since October 1995. SAP engineers were an integral part of the Microsoft SQL Server 6.0 development team and worked closely with Microsoft developers in Redmond. SAP's requirements for Microsoft SQL Server were incorporated into the product, resulting in a database system optimized for enterprise use with R/3.

SAP takes part in the development of the next generation of SQL Server. SAP's SQL Server development team is based in Redmond which ensures synchronization of release levels, thorough pre-releases testing and a dedicated resource in support situations. Whenever Microsoft ships a new SQL Server version or release pack, customers can assume, that it has been tested for use with R/3. Currently SAP and Microsoft are working on MS SQL Server 7.0.

Microsoft Exchange Server

With the new R/3 Release 3.1 Microsoft Exchange Server is being integrated as a messaging server infrastructure for R/3. The integration of R/3 and Microsoft Exchange will give users more flexibility in designing custom desktop R/3 processing environments, giving more users access to R/3-based applications. The messaging component will open R/3 for inbound and outbound processing to a host of industry-standard gateways supported in Microsoft Exchange.

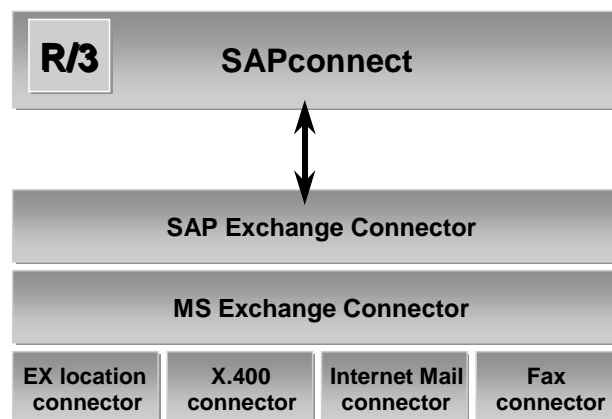


Figure 5: SAP Exchange Connector acts as a message translator between the R/3 System and MS Exchange

This client integration via MAPI support will allow users of R/3 to view Microsoft Exchange and R/3 mail messages in one inbox and to manage both types of messages in common folders.

Integration on the server side via the SAP Exchange Connector will allow users of R/3 to send messages into and out of R/3 using any Microsoft Exchange-supported gateway. This ability will expand options for users of R/3 communicating with external systems such as fax and the Internet.

Microsoft Exchange also supports electronic forms that can trigger SAP workflow processes. SAP Business Workflow is an integral part of the R/3 system; Microsoft Exchange integration will allow users of SAP Business Workflow to build their own custom forms for entering data into the R/3 system and triggering workflow processes.

Systems Management Server

SAP also supports Systems Management Server, automating the distribution and update of SAP front-end software to desktops in a corporate network. One of the key benefits of SMS is the efficient centralized administration, installation and upgrade capability of the IS department, especially when R/3 users are dispersed throughout a large company or even several locations. SAP has developed and distributed an installations script with R/3, that allows customers who have implemented SMS within their company to distribute and upgrade the SAPGUI centrally – obviously saving significant system administration resources.

Microsoft SNA Server

Microsoft's SNA Server has been supported by SAP as a gateway to integrate existing IBM legacy systems with R/3 and allows customers to access data from non SAP IBM or R/2 systems.

Internet

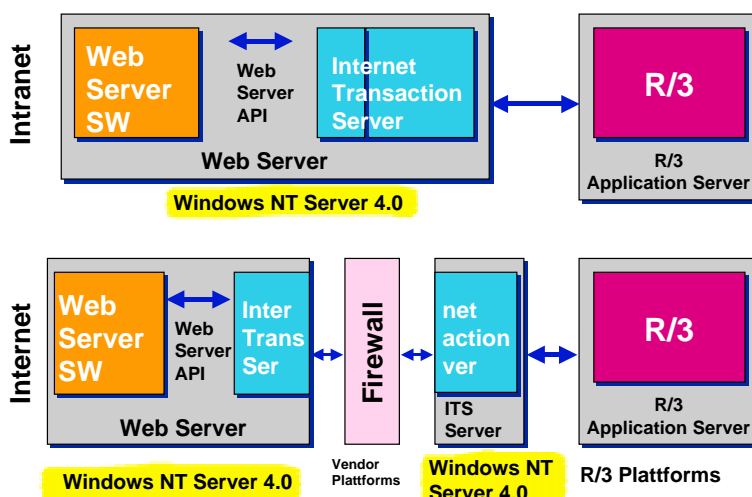


Figure 6: R/3 Internet architecture for Windows NT

Use of the Internet will continue to increase in importance. To give customers the most from their use of R/3 with Microsoft products, SAP and Micro-



soft are also working together in the Internet area. SAP has developed an Internet Transaction Server based on Windows NT that enables a substitution of the R/3 presentation layer with HTML Templates. The business logic is implemented in Internet application components which are optimized for web-based R/3 transactions.

SAP and Microsoft are working closely together to define an open standard for direct communication between business applications based upon Business Application Interfaces (BAPIs). These BAPIs enable external access to the business processes and object in the R/3 system via the Open Group ActiveX object standard (COM). The Internet Component Interfaces are - of course - also exposed as BAPI's.

The goal is to provide a system architecture for commercial applications in the Internet based on SAP's business functionality and Microsoft's technology infrastructure.

Perspectives

Beyond its success as an R/3 platform, Windows NT has generally established itself as a primary operating system for client/server solutions. If the analysts' forecasts are correct, Microsoft will become the leading supplier of client/server operating systems within the next few years.

Microsoft has announced its next version of Windows NT Server, the Microsoft Windows NT Enterprise Edition. This new version of the Windows NT Server contains many new features which makes it a even more complete platform for enterprise-class distributed applications. SAP will make best use of these new features to provide our mutual customers with high scalable and high available R/3 installations on Windows NT Server, meeting the vast requirements of even larger customers.

The most important new features of the Windows NT Server Enterprise Edition for R/3 customers are

- Microsoft Cluster Server, to provide high availability and easy manageability
- 4 GB RAM Tuning (called 4GT), a feature which can increase the amount of real memory available for R/3
- support for up to 8 processor symmetric multi-processor (SMP) servers.

All of these features make R/3 on Windows NT even more attractive for large customers with high workload and a large number of concurrent users. From the figures provided in this paper about scalability of R/3 on Windows NT we have already seen great improvements on scalability and performance of Windows NT platforms. With Microsoft's commitment to deliver scalability improvements over the next 12-18 months, we are confident to see an even higher degree of scalability growth within that timeframe compared to the past. This in conjunction with the ability of Windows NT Enterprise Edition to support clustering of more than two nodes in a cluster (part two of the previously mentioned clustering



technology Wolfpack) will make Windows NT Enterprise Edition a compelling server platform for mission critical and high volume R/3 systems. Large R/3 installations will also benefit from the enlarged memory of Windows NT Enterprise Edition. R/3's performance can be significantly improved through increased memory space at the applications servers, to be used to buffer application data and programs out of the data base for fast access. Last but not least, the higher number of symmetric multi-processors supported with Windows NT Enterprise Edition will gain a significant improvement to the overall performance of an R/3 installation on NT Server.

SAP and Microsoft have a strong and close collaboration based on their complementary strengths — SAP as the provider of the industry-leading R/3 business enterprise solution, and Microsoft as the provider of the industry-leading Windows NT Server and Office solutions technology. Customers benefit from this collaboration with open, flexible, extensible systems that are easy and cost-effective to install, use and upgrade.

See what they can do for you.