



# Tomorrow's Service Desk Today

Building a DNA-Based  
Enterprise Service Desk

## Table of Contents

An Architectural Overview .....	2
What is Windows DNA.....	3
Component Application Development Model.....	4
Component Services .....	5
Web Services .....	5
N-Tier Magic TSD Architecture.....	6
Application Services .....	8
Magic TSD Functionality.....	9
Scalability .....	10
Customization .....	10
Enterprise-Level Functionality .....	10
Integration .....	11
Conclusion.....	11

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## An Architectural Overview

With Magic Total Service Desk\* (TSD) Enterprise Suite, Network Associates introduces the next generation in integrated service desk technology. Magic TSD uses an N-tier design based on the Microsoft Windows Distributed InterNet Applications (Windows DNA) architecture to deliver a fully browser-based service desk.

Many vendors have attempted to build a scalable, browser-based service desk to meet the market's needs for customization, integration, and full enterprise functionality. Magic TSD integrates the industry-leading feature sets of Network Associates' SupportMagic\* SQL and McAfee\* Total Service Desk product lines. The integration incorporates the latest-generation technology available for browser-based application development. The marriage of Network Associates' innovative service desk feature sets and Microsoft's Windows DNA architecture provides a dramatic leap in the ability to implement a service desk solution that solves both functional and distribution challenges.

This white paper describes the high-level architecture of the Magic TSD solution. It introduces the basics of the Windows DNA architecture and describes how Network Associates implements that architecture in Magic TSD. It also describes how the Magic TSD architecture enables Network Associates to build a product that is uniquely scalable, customizable, and tightly integrated, while providing a full array of enterprise service desk features.

## What Is Windows DNA?

The Magic TSD N-tier, browser-based architecture is based on Microsoft's Windows DNA architecture. Windows DNA is a multitier distributed application model that brings together the benefits inherent in client/server computing and the best of Internet technologies around common, component-based application architecture.

Windows DNA is a key component of Microsoft's digital nervous system vision for the next stage of the information revolution. The digital nervous system is an approach to using technology to ensure that employees can access the knowledge that resides within the organization. Integration, easy information flow, and easy employee access to tools and information characterize the digital nervous system. By providing an architectural basis for the development of scalable, customizable, multitier applications, Windows DNA supports the overarching digital nervous vision.

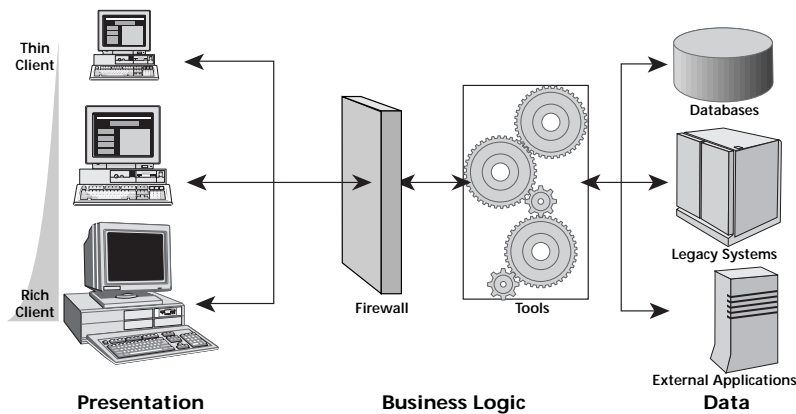


FIGURE 1.

Microsoft Windows  
DNA Architecture

The Windows DNA model replaces the conceptual categories of traditional single-tier and two-tier models—high-level programming languages, database management systems, and graphical user interfaces—with a vision of cooperating components organized in a presentation or client layer, a business logic or business rules layer, and a data layer (Figure 1). This model is the foundation for developing scalable, manageable, and maintainable multiuser applications to support the digital nervous system.

The Windows DNA-based architecture addresses five key design issues to provide the foundation for a scalable, customizable, full-featured service desk implementation:

- **Multitier client/server applications** — The Windows DNA architecture is based on a model of cooperating components that are built using the Component Object Model (COM). Applications based on components and the Windows DNA model rely on a common set of

infrastructure and networking services provided in the Windows-based application platform, removing the complexity of building multitier applications. Thus, Magic TSD is made up of modules, clearly separated into distinct functional groups, with common communication protocols linking the groups together. This component architecture enables faster development and easy integration of future enhancements.

- **Client transparency** — The multitier Windows DNA architecture separates the business logic from the presentation (or client) tier. This gives applications like Magic TSD the flexibility to rapidly generate new presentation solutions as browser technology evolves.
- **Transactional processing support** — Magic TSD must support multiple operations in its various tiers or levels. The Windows DNA architecture helps guarantee the integrity of these operations by providing transparent control over each set of operations and monitoring each step of the process.
- **Application fault tolerance** — No network is 100-percent fault tolerant. The Windows DNA architecture enables Magic TSD to ensure data integrity in case of network delays and rapid recovery from software failures.
- **Distributed applications** — In a distributed application environment, the problem of communication between the various parts must be addressed. In the past, developers often had to create their own methods for passing information between the parts of the application, resulting in higher design costs and poor interoperability between applications. Windows DNA standardizes the communication protocols and interfaces, boosting developer productivity and application reliability.

Of the three tiers in the Windows DNA model, the heart of the application is the business logic tier. The following section describes the application development model and supporting services that enable the development of a flexible, scalable service desk platform.

## Component Application Development Model

The business logic tier is where the application-specific processing and business rules are maintained. Business logic placed in components bridges the client environments and the data tiers. The Windows DNA application platform supports high-volume, transactional, large-scale application deployments, and provides a powerful run-time environment for hosting business logic components. The application platform for developing Windows DNA applications include component services and Web services.

## Component Services

In the Microsoft COM application development model, business objects or rules are encapsulated into software components. A component has one or more standard or custom interfaces that are used by other components and services in the application. As long as the component's interfaces remain the same, the component's internal code can be changed, even completely replaced, without disrupting the operation of other services or components in the application. This treatment of business objects as components has a number of important benefits:

- **Reduced cost** — By compartmentalizing rules and functions, the number of bugs is reduced and separate components can be developed in parallel.
- **Performance** — Different components can be built using the languages and methods best suited to their functions and requirements.
- **Stability** — Because the design is compartmentalized, it is easier to isolate errors or faults. There also is a reduced risk that maintenance changes to one part of the design will introduce errors elsewhere.
- **Upgradability and extensibility** — As business needs change, existing rules and functions can be easily updated and new rules and functions can be added to existing components without disturbing the rest of the application.

COM supports distributed applications using Microsoft Transaction Server (MTS). MTS is an extension to the COM programming model that provides services for the development, deployment, and management of component-based distributed applications.

COM+ is the next evolutionary step of COM and MTS. The unification of the programming models inherent in COM and MTS services makes it easier to develop distributed applications by eliminating the tedious nuances associated with developing, debugging, deploying, and maintaining an application that relies on COM for certain services and MTS for others.

## Web Services

Integrated with Microsoft's application platform is a high-performance gateway to the presentation tier. Microsoft Internet Information Server (IIS) enables the development of browser-based business applications that can be extended over the Internet or deployed over corporate intranets. With IIS, Microsoft introduced a new paradigm to Internet transactional

applications. Transactions are the plumbing that makes it possible to run real business applications with rapid development, easy scalability, and reliability.

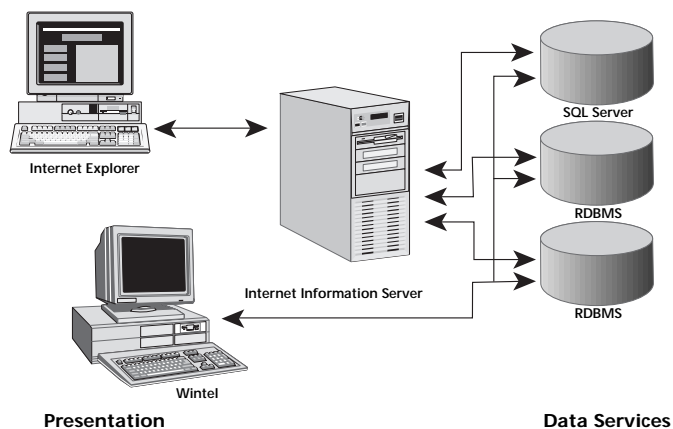
Active server pages (ASP), components of IIS, provide the language-neutral, compile-free, server-side scripting environment that is used to create and run dynamic, interactive Web server applications. By combining dynamic hypertext markup language (DHTML), scripting, and components, ASP enables application developers to create dynamic, interactive Web content and powerful browser-based applications.

Supporting a distributed enterprise service desk requires flexible and reliable communication among applications. Applications built using a combination of active server page scripts communicating with cooperating components can interoperate with other existing systems, applications, and data.

## N-Tier Magic TSD Architecture

Past client/server applications were built on a two-tier model, in which the business rules were included in the client tier. The resulting desktop applications were often as large as 30 MB, making them difficult to install on the desktop and unwieldy to customize or upgrade. This two-tier model also was not well positioned for migration to a browser-based client interface. To implement a browser-based client, the business logic had to be duplicated in a separate IIS-based server (Figure 2).

FIGURE 2.  
Past Client/Server  
Technology



By contrast, the Windows DNA-based architecture of Network Associates' Magic TSD enables the use of a multitier service desk architecture. In the N-tier architecture, the business

logic is completely independent of the client tier, allowing it to be accessed equally from any client implementation (Figure 3).

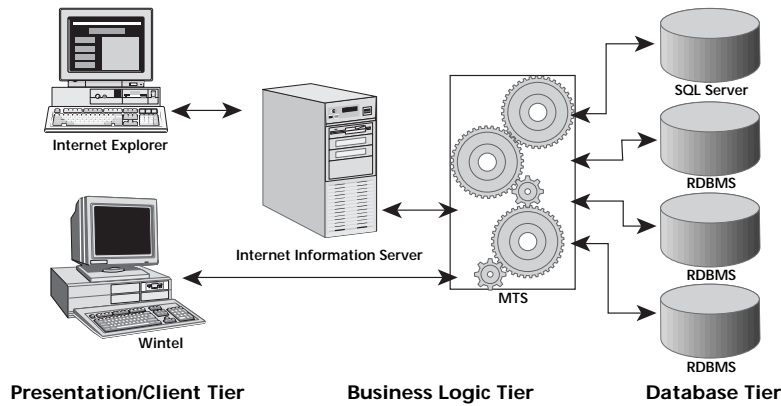


FIGURE 3.  
N-Tier Technology

The Magic TSD client tier is based on the Microsoft Internet Explorer Document Object Model (DOM). Written using dynamic HTML, it provides all the functionality of a standard Windows-based environment. Interface elements include drop-down menus, pop-up selection windows, and controlled tab order. The DHTML environment allows for drag-and-drop customization of the client interface by the user, for a rich, highly flexible user experience in a browser-based desktop interface.

The middle tier(s) of the N-tier Magic TSD architecture includes the business logic or business rules. These can be implemented as a single logical tier or several, logically separated tiers residing on a single server or multiple, distributed servers. The presentation tier communicates with the business logic tier using IIS version 4.0 and ASP, as shown in Figure 4.

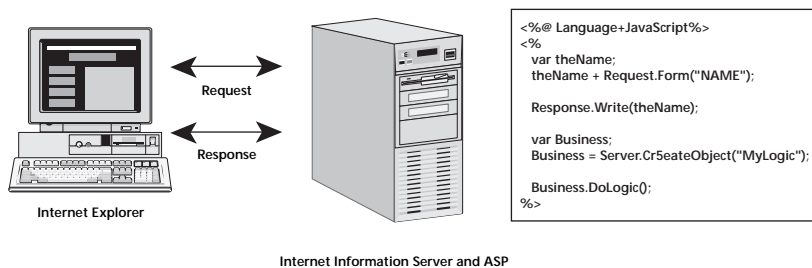


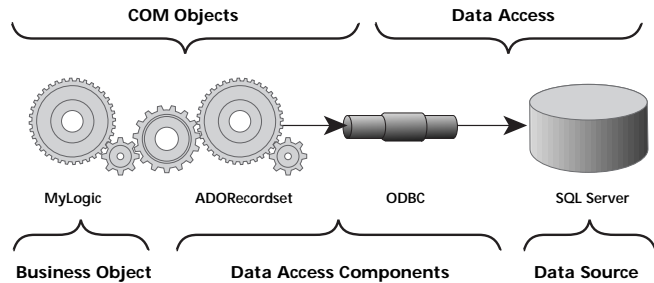
FIGURE 4.  
IIS and Basic ASP



As described earlier, the business rules tier is built using the Microsoft Component Object Model. Microsoft Transaction Server enables load balancing and scalability.

The back-end or database tier runs on Microsoft SQL Server(tm) version 6.5 or later. It interacts with MTS and COM in the business rules tier using the Microsoft Data Access Components version 2.0 object model (Figure 5).

FIGURE 5.  
Transition from Business  
Rules Tier to Database Tier



Application Services

Windows DNA encompasses a set of services that are provided by the Microsoft Windows NT Server network operating system. The application services are provided by various components of the Windows DNA model. Table 1 lists some examples of application services implemented in Magic TSD Enterprise.

TABLE 1.  
Application services

Application Service	MS Example
Database	Microsoft SQL Server
Message queuing service	Microsoft Message Queue Server (MSMQ)
Transaction service	Microsoft Transaction Server
Scripting	Active server pages, dynamic HTML, Microsoft JScript development software, Microsoft Visual Basic Scripting Edition
Web browser	Microsoft Internet Explorer
Mail and collaboration service	Microsoft Exchange Server
Universal data access	ActiveX Data Objects (ADO), OLE-DB, Open Database Connectivity (ODBC), etc.
Web server	Microsoft Internet Information Server

Using Windows DNA means that each of these services provides a common and easily accessible interface through which other components and scripts can access them. Magic TSD uses whichever language best suits each particular component. For example, Magic TSD uses JScript, an interpreted, object-based scripting language from Microsoft, to manipulate DHTML objects on the client. JScript has the advantage of providing a scripting solution for more than one browser. The most utilized business objects, such as a trouble ticket engine, are written in the Visual Basic development system. This allows for easy modification and creation of new business rules to extend the application's functionality. Data-centric business objects are written in C++ using Microsoft's Active Template Libraries to ensure peak performance.

Figure 6 shows the various tools and languages employed in the Magic TSD architecture.

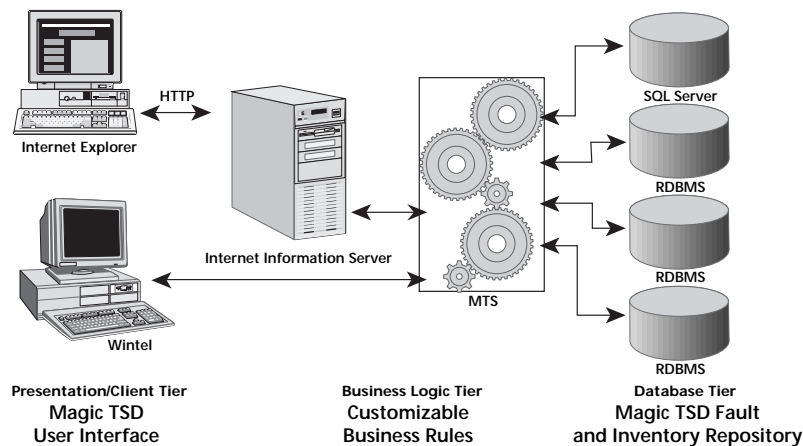


FIGURE 6.

Tools and Languages Used  
in Magic TSD

## Magic TSD Functionality

Using this scalable, flexible architectural design, Network Associates has leveraged its depth of expertise in the help desk market to build the next-generation service desk product. Magic Total Service Desk draws from the rich feature set of both SupportMagic SQL and McAfee Total Service Desk. It is the culmination of Network Associates' clear vision, market leadership position, and longstanding commitment to consistently deliver leading-edge information technology (IT) support solutions. The product's features encompass four key areas.

### Scalability

- **Thin client** — Requires only Internet Explorer version 4.0 on the client desktop.
- **Supports** — 1,000+ concurrent users.

### Customization

- **Fully customizable user interface** — Using drag-and-drop functionality, users can dynamically modify the styling and positioning of each element on the user interface.
- **Fully customizable Navigator Bar** — The Navigator Bar can be assigned to a user or workgroup, and can become a portal for links to Web sites, such as Microsoft's TechNet or other help desk-related Web resources.
- **Database customization** — Using database administration tools, users can customize any group view or create tables, indexes, base views, and group views.
- **Extensible business rules** — Professional services or value-added resellers can extend the functionality of Magic TSD by writing custom business objects for integration with other applications and custom data processing.

### Enterprise-Level Functionality

- **Problem/crisis management** — Automated whiteboard crisis management capability allows widespread problems to be centrally posted for all help desk operators to see. Related calls can be linked to the whiteboard with a single click, automatically generating a complete trouble ticket. All linked tickets are automatically closed when the problem is resolved.
- **Service level management** — Contract definitions, escalation rules, and policy requirements can be easily automated through an intuitive, point-and-click interface, providing full control and oversight of service levels for each company or department supported.
- **Asset/change management** — The asset management module tracks inventory and configuration data. The work order module is fully integrated with the help desk module, allowing both tools to be used as necessary to manage all the tasks associated with a problem.
- **Event management** — Whenever a monitored device or system experiences a problem, Magic TSD automatically generates a detailed trouble ticket and dispatches notification to the appropriate support specialists before end users are impacted.
- **Network management** — Integration with Network Associates' Total Network Visibility• and third-party monitoring tools such as Tivoli TME and HP OpenView automates reporting and resolution of network-related problems.

- **Self-service extensions** — Clients can type in their problems using natural language and the Statistical Information Retrieval (SIR)\*search engine will simultaneously search the experience base, electronic documentation, and any third-party knowledge bases to offer the client a list of solutions ranked by relevance. If this does not solve the problem, a help desk ticket can be generated at the touch of a single button.

## Integration

- **Desktop integration** — Integrated desktop management tools support automated discovery of desktop hardware, software, and system file inventory.
- **Network integration** — Integration with network analysis and monitoring tools from Network Associates and third-party vendors allows proactive, automated reporting and resolution of network problems.
- **Remote control** — Remote administration tools let the technician remotely access problem desktops to troubleshoot and resolve problems quickly and easily.
- **Self-healing PC** — The product includes a comprehensive utility suite that includes protection against application crashes, provides the ability to revive hung applications, diagnoses and repairs problems, provides updates automatically via the Internet, provides backup functions, and virus detection.

## Conclusion

The N-tier architecture of Magic TSD represents a breakthrough in service desk scalability, functionality, and integration. Supporting 1,000 or more concurrent users, the platform can scale with the growing IT requirements of organizations of all sizes, helping to reduce the cost of ownership of technology assets. Customization at every level of the product ensures its adaptability to the needs of virtually any enterprise or user for greater operational efficiency. Integration with a wide range of desktop management, network management, and security management capabilities enable a view of the entire IT operation from a single, browser-based interface.

By automating and integrating a wide spectrum of service desk functions, Windows DNA-based Magic TSD helps reduce overall support staffing costs, speeding return on investment. And the component-based architecture of Magic TSD will make it relatively cost effective to extend and enhance as technologies and user needs evolve over time. Magic TSD is the first service desk application robust enough and flexible enough to take its place as the central element of IT operations.



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