



HP thin client computing  
A financial services industry white paper



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A thin client component-based approach to branch renewal will enable a tailored and flexible branch offering to be pushed out to the branches.

—William Connor, EMEA Manager, Datamonitor, March 2006

## Executive summary

Recent years have seen big changes in the financial services industry driven by a number of factors—customer demand for higher service levels, the impact of deregulation, changes in employment patterns, and the ever-increasing scrutiny for good governance amongst them. In turn, these factors have had a major impact on the performance requirements of the underpinning IT infrastructures.

Institutions that recognize these factors, and address them thru deploying an agile, flexible IT system, will certainly be more competitive and emerge with a business model better aligned with the dynamics of the modern financial services sector. One example of adding this agility and flexibility is to consider the major benefits offered by thin client computing.

Software applications run by institutions represent the core processes and services provided to keep the business operating. In a typical branch-based network there are often many thousands of desktop and mobile users who all require access to the applications they need, and as changes are introduced to reflect new service features, the task of maintaining the network can spiral out of control.

With HP thin client computing, the complexity of managing the desktop environment is greatly reduced by centralizing applications. Not only are costs reduced, but the resulting infrastructure becomes more resilient with higher availability, and is scalable to suit the business need.

HP offers a proven methodology to help institutions move to thin client computing. With a unique end-to-end capability and unrivalled expertise in all aspects of system management, HP can deliver the major benefits of:

- Improved customer service
- Operational excellence
- Greater staff productivity
- Demonstrating compliance and security

## Breathing new life into FSI desktop environments

The consistent delivery of high-quality, customer-facing services is a key ingredient of success in the modern world of choice and opportunity. Even more so in the financial services industry—where product differentiation is limited and the stellar growth in numbers of new Internet-enabled providers is threatening traditional institutions such as banks, mutual societies and insurance companies.

The days of unswerving loyalty to particular providers have disappeared, along with the outdated concept of cradle-to-grave management of individuals' accounts. Financial institutions with large branch infrastructures are under pressure to make them more suited to this new environment, with ambitious plans to improve what they offer, the way they do it, and—at the same time—reduce the cost of management.

Much of this change in behavior has come from the deregulation of financial markets over the last 20 years or so, stimulating greater competition. And yet during this time, paradoxically, more regulation has been introduced to improve the standards of governance to protect customer and shareholder interests.

These factors, along with increasing shareholder demand for better business performance, are responsible for shaping the key business drivers faced by institutions. Although open to debate, most of them consider four main drivers as central to their future-state operating models:

- **Customer retention**—Competition has led to the introduction of many new financial institutions offering a wide range of products and services. Loyalty to traditional providers is declining, yet customer retention remains the most highly valued prize. The point at which customer and supplier meet, and therefore a major source of competitive differentiation, is the delivery of the core customer applications that set the scene for the relationship. Innovative, rapid, and consistent customer experience has been identified as key to improving retention levels.
- **Operational excellence**—This is not measured by cost alone. Financial institutions also have to balance their need for future agility, ensuring they are positioned to take rapid and effective steps to grow revenue, launch new products and services, and introduce new processes—either proactively or in response to trends and competition. With many institutions having large, distributed branch networks, optimizing the way in which highly available core services are delivered, configured, and managed will play a big part in meeting this challenge.
- **Productivity**—Working practices in financial institutions are changing to reflect staff levels, the need for desking flexibility, the growth of home working, outsourcing, and the drive for better utilization of people and space. To some extent, many institutions have been limited in addressing this issue by the lack of agility in their traditional IT environment and architectures. Flexibility in the delivery of applications is essential to take advantage of the changes that—when properly addressed—will yield significant benefits in productivity and utilization.
- **Compliance and security**—Intense scrutiny of governance from national and international regulators requires process compliance along with traceable and retrievable audit trails. Expansion into new geographic markets and cross selling of services highlight the need for rapid rollout of consistent, high-quality applications to branches that can also reflect local conditions. And the persistent issue of security requires that delivery of the applications and services, along with enforcement of processes, is a key means to reduce risk exposure.

These elements touch every part of the operation— from front-end customer engagement all the way to the complex demonstration of regulatory compliance. In terms of IT technology, institutions are looking deeper than ever before to justify investments, moving away from those purely cost focused to those that allow a closer alignment with the business itself, and the business drivers in particular.

The requirement now is to introduce a consolidated architecture that supports new ways of working so that financial institutions can not only address the business drivers of today, but also be ready to anticipate those of tomorrow. The combination of improving service at the same time as reducing cost is not a new phenomenon; indeed it is central to most IT deployments. When you throw in the dynamic of a large branch infrastructure, and the need to reverse many years of decline in its fortunes, the argument for a fresh approach is as compelling as its cost-reduction potential.

That fresh approach is ‘thin client computing’. In this paper we consider the way in which the delivery of the core business applications to all users—which, in effect, become the services that are provided to customers—is one of the most important functions of IT, and one currently dominated by an obsolete architecture that adversely impacts the four business drivers.

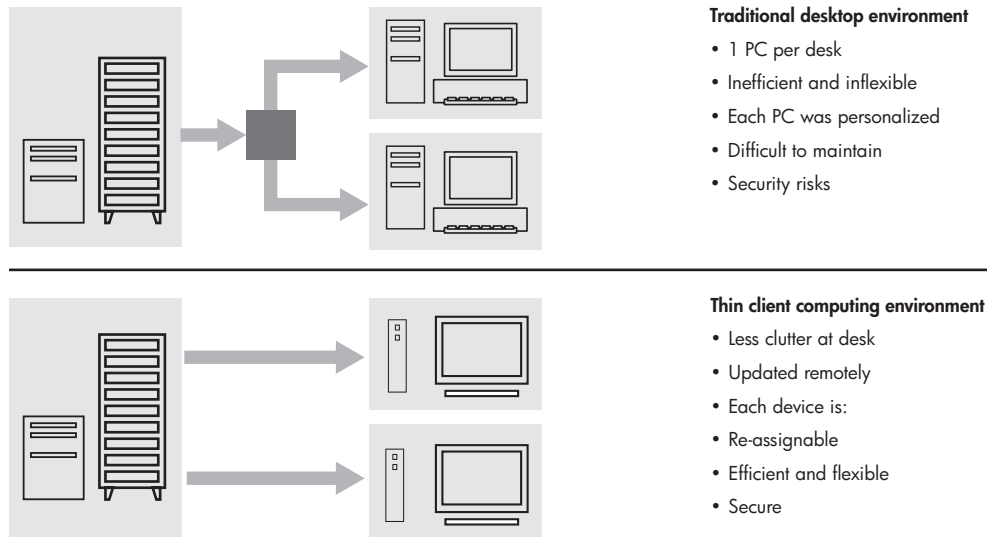
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#### **Who will benefit from thin client computing?**

Thin client computing satisfies the business drivers identified by many financial institutions. There is no ideal profile because the solution is adaptable and flexible. However, institutions that have one or more of the following desires will achieve the benefits of a simplified, scalable environment:

- Standardize the delivery of services across all branches
  - Improve efficiency and productivity
  - Address concerns about regulatory compliance requirements and security threats
  - Optimize operations following a recent merger or acquisition
  - Optimize a branch renewal project
  - Drastically reduce the costs of managing a desktop environment
  - Achieve a highly available, scalable infrastructure as a step towards business flexibility
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Figure 1. Traditional desktop and thin client computing environment comparison



### The situation today

Over many years, financial institutions have based their IT architecture around a distributed model in which branches have become self-contained islands. Each branch houses the infrastructure necessary to carry out its primary tasks, with a great deal of similarity between branches. As the financial services market has developed and brought changes to customer engagements, the number of required applications has risen sharply.

Today, financial institutions can run many hundreds of individual applications. Almost every product offering will have one or more to engage the customer, capture data, distribute and authorize the information, process the request and complete the initial transaction. Applications are, in effect, the services that are delivered to the point of customer engagement and the desktops of the staff that meet, greet, sell, and support.

Many have reached the point where the cost of maintaining and delivering these core business applications to user desktops is unsustainable. And because of the way in which desktop environments have evolved, they have also become complex to consistently manage and administer. Any gains made in operational excellence, efficiency, and customer service in the operation are probably limited.

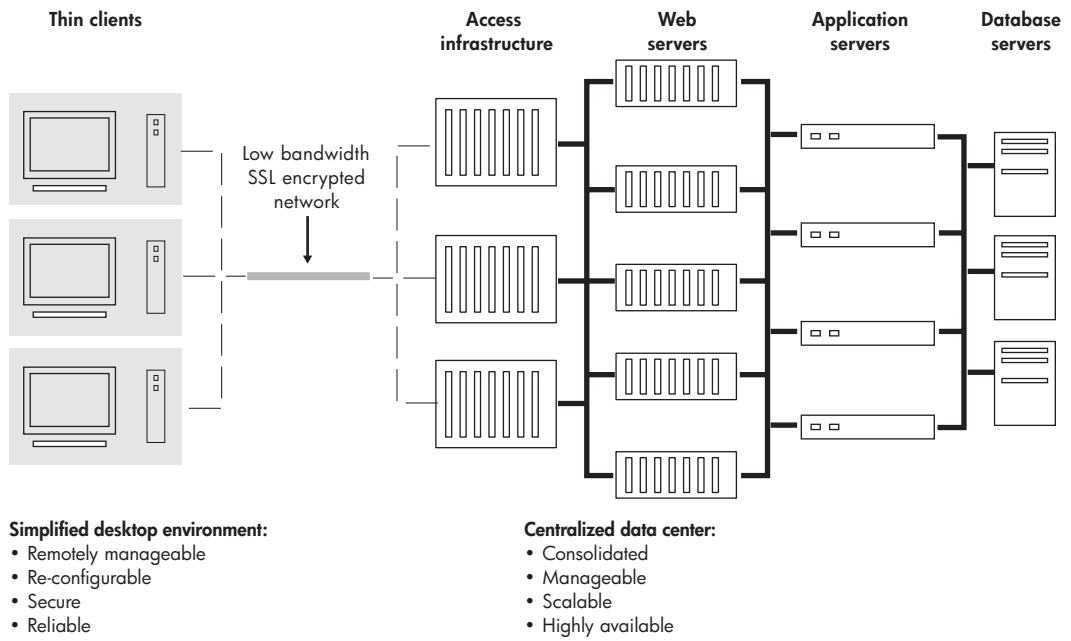
Most financial institutions have made major investment in PC-based desktop environments, sometimes with tens of thousands linked in a number of clusters around the branch/regional office/HQ model in one shape or another, and linked to mainframes that distribute the applications. It's clear that this situation is counter-productive and rapidly moving to obsolescence. The argument now is whether to revisit the overall architectural strategy and seek to redress the decentralization approach in the interests of meeting the major business drivers.

### The case for change

The ubiquitous PC has been responsible for many positive improvements in the way in which financial services are sold and supported. But in a complex infrastructure in which there are many thousands of PCs linked or clustered in nodes, there is a high price to pay. Factors that should be considered include:

- Very high acquisition, management, and maintenance costs
- PCs have to be 'personalized' to suit the user profile and do not easily support adaptability
- The network has more failure points and is not resilient
- All applications have to be loaded and configured individually

Figure 2. Topology of a thin client network



- They offer unnecessary functionality that promotes process by-pass
- They can be a conduit for security attacks, viruses, and worms
- They take excessive desk space and generate heat and noise

Given the business drivers discussed above, these factors seem to contradict a policy of addressing them. The key and central issue surrounds the applications themselves. As long as applications are decentralized and sub-contracted to PCs there will be major limitations to overcome.

## An introduction to thin client computing

In very stark contrast to PC-based networks, thin client computing has none of these limitations. It has become a strong candidate to meet the needs of financial institutions, particularly those operating extensive branch networks.

The essence of thin client computing is that all applications, along with data storage and processing, are run on dedicated servers. The solution offers much improved return on investment (ROI) and reduced total cost of ownership (TCO), while at the same time enabling a highly automated, flexible means of delivering and maintaining core applications.

The premise is that most users in a traditional network rarely, if ever, fully utilize the processing power of a traditional desktop PC. In a thin client computing environment, each user connects to the network via a simple terminal (a thin client) with limited functionality. This is, in effect, a display with input devices, such as keyboard and mouse, connected directly to a server where the intelligence resides—and is maintained.

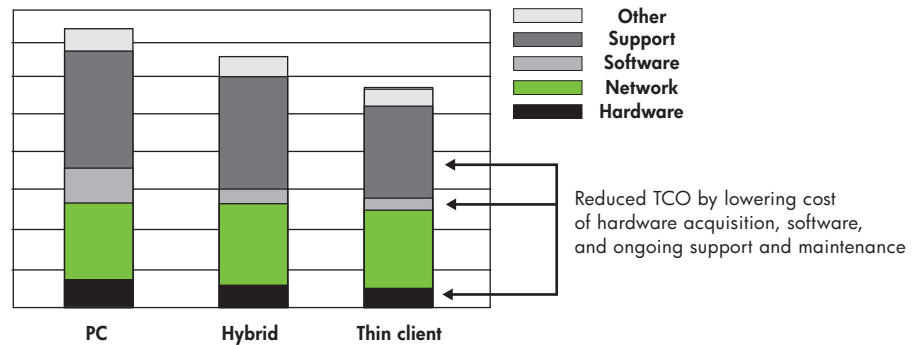
### Mapping benefits to the business drivers

Thin client computing offers significant progress towards meeting the business drivers identified earlier. Deployment is much more than just the desktop devices themselves—even if this is the most obvious and visible indication. The real, and fundamental, difference in approach is that applications are no longer distributed to the desktop PCs of users. In effect, thin client computing is about centralization of applications to offer profound benefits in terms of efficiency, speed of response, and ease of maintenance.

The end result is a simpler and more scalable environment that provides financial institutions with a flexible platform that ultimately meets the needs of those business drivers. Taking each in turn:

- Customer retention—All customer-facing applications are delivered at the latest release, and new products and services are available instantly. The customer experience is more positive, and all sales channels can be integrated to ensure that service standards are consistent wherever they are accessed.

Figure 3. Overall cost of ownership comparison



- Operational excellence—Thin client computing offers profound benefits in terms of operational performance as well as cost and efficiency savings that give significantly improved ROI and reduced TCO. The reasons include:
  - Faster time-to-market for new or updated services
  - Greatly reduced costs throughout the lifecycle of desk top devices
  - Lower energy and space requirements
  - Greatly reduced costs associated with the maintenance, management and distribution of the core applications
- Productivity—Because each thin client device is readily re-assignable, whoever sits at the device and logs-in receives the applications they need and are authorized for. The result is that the problems associated with individual profiles at each desktop are removed, and users can work more productively through enabling hot-desking and role flexibility. New users can be simply added remotely by IT staff without having to visit the desktop or branch.
- Compliance and security—With all network activity centralized, there is far less risk of compromising regulatory compliance and security. Sarbanes-Oxley, for instance, places the onus on institutions to maintain a sustainable audit trail that requires a faithful record of

all internal communications. Relying on data stored on a PC can be dangerous because of user activity, as well as time-consuming to retrieve. Thin clients are far less susceptible to security attacks from viruses and worms, and cannot act as a conduit into the wider network. Security is better managed at the server level, on which all the latest patches are guaranteed to be installed.

#### The TCO perspective

Thin client computing offers a compelling opportunity to reduce the total cost of ownership (TCO). Significant savings are made possible by the reduction in costs associated with hardware acquisition, software, and ongoing support and maintenance. Taking guidance from industry analyst studies conducted by Gartner (2004) and IDC (2005), and focusing on practical deployments for which thin clients (rather than PCs or hybrid devices) are optimized, TCO reductions in excess of 40% can be demonstrated.

#### Benefits of thin client computing

The benefits of thin client computing can be summarized under three headings: cost savings, cost avoidance, and operational.

Figure 4. Benefit summary



## HP thin client computing

Given all the major benefits, advantages and arguments in favor, is there any bad news to deter a widespread migration to thin client computing? The stock answer is 'No'. HP, however, takes a more pragmatic and practical approach to the question. The HP approach is that—provided sufficient care is taken with the planning of the deployment - most financial institutions will realize great benefits. It is in the detail of that level of care that success is most influenced.

It is clear that in a financial institution with many thousands of users in head office, regional centers and branches that are widely distributed, the centralization of applications is a major decision. But tackling proliferation at the branch is more significant than cost saving, compliance and business agility—successful deployment opens up a new competitive arena in which services become the differentiator.

It is also important to note that there is no single solution that satisfies the requirements of all types of users. Given the diversity of overall requirements, user segmentation, legacy systems, integration with specific peripherals such as passbook readers, branch geography, and bandwidth availability, the opportunities and benefits of thin client computing will only be realized when the deployment is carefully and thoroughly considered.

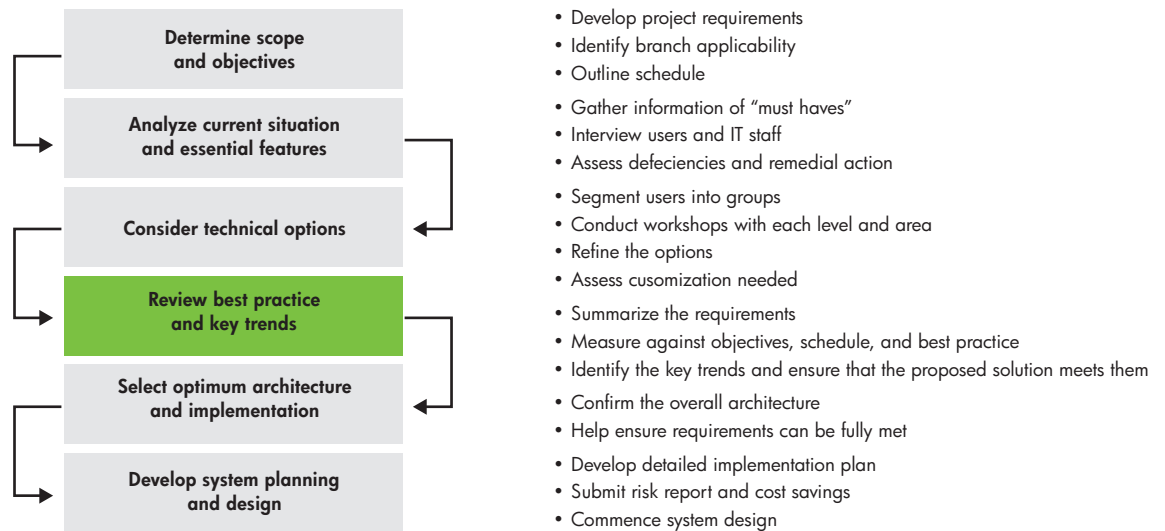
## HP's unique approach

Key to that successful deployment is to work with a partner who understands the issues, who can work with institutions to ensure that the future state not only delivers against requirements but also adapts as they change. This is where HP offers a distinct advantage through its wide portfolio, structured methodology, and experience.

HP has the only end-to-end capability for thin client computing, with products, management software, and services that extend all the way from the branch back to the data center. By recognizing that there is no single solution that will suit all conditions, HP instead advocates a constructive engagement that assists financial institutions to firstly evaluate their needs to determine the extent of customization required.

Given the scale of the changes necessary, HP recognizes that a phased deployment may be appropriate for certain projects. This can, for instance, take the form of migrating to centralized applications and storage hosting while retaining the PCs (or 'fat clients') as an interim stage on route to full thin client implementation. It may also be necessary to consider hybrids—user devices that can individually host and store certain applications—to take account of local conditions in which users need to access specialist facilities such as passbook printers, check readers, or ATMs.

Figure 5. Typical project flow



This unique approach allows HP to weigh up the issues that determine the cost-effectiveness, risks and specific capabilities required, and particularly considers all aspects of the current- and future-state architecture. HP experts understand the demands of the OS environment, the options for virtualization, the importance of security, integration with existing and legacy systems, and, as a matter of course, only offer solutions that consider the lifecycle aspects and future support. With a commitment to open standards and strong third-party relationships, HP is not tied to rigid implementations that restrict future options.

### Components

The HP portfolio contains all components that, together, form the basis of a thin client computing network. These include:

- Thin client devices—The correct desktop environment is crucial to achieving both operational performance and cost savings. This, ultimately, defines all aspects of thin client computing—from the user perspective all the way through to delivery and automated management of the applications. HP segments users into four groups:
- Standard—Users who carry out routine, often repetitive applications. This segment includes front-office branch staff, data-entry workers, and call-center operators.
- Knowledge—Users who work with more demanding applications. This segment includes HQ system managers, software developers, and executives.
- Power—Users who work with intensive, time-critical applications. This segment includes exchange and transaction traders.

- Mobile—Users who, typically, work away from a branch or HQ. For these, notebooks can be configured as thin clients that access applications and storage remotely.

The HP range of thin clients covers all of the above, and they can be successfully mixed in all environments to suit the specific functionality required. Additionally, HP has developed a fully-customized mobile thin client package that includes notebook, printer and a range of connectivity options that’s optimized for sales staff that visit customers.

- Servers—Through the HP ProLiant product range, HP offers the ultimate in server performance for all environments. Incorporating many advanced features, these servers form the backbone of many financial institution networks. Offering unsurpassed reliability and manageability, these platforms provide data-center efficiency with low cost of ownership and high availability. Many thin client deployments will want to use the specific advantages of the space and performance capabilities of HP ProLiant blade servers that incorporate virtualization, dynamic load allocation, and built-in management.
- Storage—In recent years, HP has pioneered a major industry shift by transforming data storage from a server peripheral to a shared networked resource upon which utility-like services could be built. Thru its HP StorageWorks product range, HP has built a leading portfolio of network storage solutions that has revolutionized IT environments worldwide and provided the foundation for business agility and flexibility.

### **Management software**

HP offers a wide range of software that allows tighter control of all environments and improves the management of change and configuration, workload, and performance. The optimum choice for each environment is made depending on specific requirements. These include:

- HP Systems Insight Manager—A cross-platform solution that runs on Microsoft® Windows®, Linux, or HP-UX. This is a flexible tool that is easily integrated to manage mixed environments to achieve better control over partitioning, deployment, performance, and system upgrades.
- HP Virtual Machine Management—Integrated within HP Systems Insight Manager, this tool provides access to monitoring and control functions both locally and also remotely via industry-standard web browsers.
- RADIA—Part of the HP OpenView portfolio, this tool provides change and configuration management across multiple platforms through extensive features such as patch management, OS deployment, usage metering, inventory management, and personality migration.
- Altiris—An enterprise-level solution that provides OS and software deployment, configuration, and personality migration across hardware platforms and OS types.

### **Partnerships**

To ensure that each HP thin client computing solution fully meets the requirements, HP has established relationships with a number of independent software vendors (ISVs) and integration with their products. Amongst these are:

- Microsoft—Thru its widely deployed systems management platform, SMS, Microsoft delivers end-to-end capabilities to distribute applications to every device in the network.
- Citrix—A global leader in virtual workplace software and services, this ISV uses HP ProLiant as a reference platform.
- Softricity—With software that turns applications into centrally managed virtual services, this ISV is a member of the HP Partner Program.
- VMWare—This company has a strong product offering in virtualization of industry-standard servers and desktop environments.
- Red Hat—Red Hat is a recognized leader in enterprise-level solutions that take advantage of open source architectures.

### **HP Consolidated Client Infrastructure**

The HP Consolidated Client Infrastructure (CCI) solution enables financial institutions to enjoy the benefits of thin client computing, rapidly. CCI centralizes desktop compute and storage resources into easily managed, highly secure data centers, while providing end users with the convenience and familiarity of a traditional desktop environment.

CCI dynamically allocates a one-to-one connection between each user and an individual blade PC. In this strategy, each user has a dedicated compute resource running a single instance of the operating system, providing an enhanced, personalized desktop that can be remotely accessed through enterprise networks or the Internet.

Users access the network using HP thin clients. On login, they are allocated a blade server that supports the applications they need, as well as holds the personal profiles appropriate to the user. No data is stored on the thin client; instead the allocated blade routes data onto a storage network such as a SAN. Dynamic allocation automatically assigns the blade, and in the unlikely event of a failure, automatically re-assigns to a new blade. CCI is inherently secure, easy to manage, and fully supports remote operation.

The advantages of CCI include:

- Greater integrity and security for end-user data
- Lower desktop TCO
- Improved remote access to data and applications for end users

- Faster response to changing customer and market demands
- Continuous availability and predictable user experience
- Enhanced service levels
- Reduced risks associated with traditional desktop computing

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## **Success stories**

### **Branch renewal project**

A leading European bank with over 1,200 distributed branches had established a project to identify their IT requirements for the future. They wanted to implement a centralized infrastructure to improve resilience, standardize their offerings to customers, and reduce the costs associated with managing applications. Basing their solution around a cluster of 250 HP blade servers in a Citrix farm, the bank has purchased 6,500 HP 5720c Thin Clients to be rolled out to branch staff. HP customized its solution to take account of specific requirements in desktop features, future additions, and server virtualization.

### **HQ consolidation project**

A UK-based international bank wanted to consolidate 14 individual offices into a single new building and, at the same time, streamline their IT operations to improve agility and manageability. Crucial requirements were for higher levels of security and application efficiency, and reductions in cost and complexity. HP migrated the traditional PC environment to a thin client network and a consolidated Citrix-based server farm. The result was dramatic cost reductions, improved performance, greater flexibility in desktop allocation, and faster response to critical deadlines.

## The HP advantage

HP has a rich heritage in the financial services industry that goes back more than three decades. We have a strong presence in all the top 200 banks, all the top 50 brokerages, all 100 of the major stock and commodity exchanges, and all of the top 25 insurance carriers.

We have particular strengths in system architectures, compliance and security, application development and modernization, management software, and the desktop environment—all of which are represented in our approach to HP thin client computing. Through our Consulting and Integration services, we have expertise that will assist in the planning, deployment, management, and support of new thin client-based networks that deliver the promised benefits of agility, simplicity, scalability, and reduced cost of ownership.

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For more information, go to [www.hp.com/go/fsi](http://www.hp.com/go/fsi)

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4AA0-6686ENW, July 2006

