The HP vision for the Adaptive Enterprise: achieving business agility
Synchronizing IT with business to manage change and extend the reach of the enterprise

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Executive summary

On top of pressure for lower costs and greater operational efficiency, IT organizations must juggle the growing scope of change needed to support a variety of business initiatives. Activities such as tightening information security, application integration, and the development and deployment of Web services compete for attention and, in most cases, are launched to support business activities ranging from industry regulatory changes to mergers, acquisitions, and divestitures, in addition to the delivery of new lines of business.

The constant search to increase efficiency and gain a competitive business advantage has seen IT embrace numerous methodologies and technologies during the past decade. Although early successes have yielded measurable benefits delivered through functional business automation and increased business intelligence, the prolific use of technologies to solve individual business problems has frequently yielded a non-integrated, complex, expensive, and inflexible infrastructure that slows the changes demanded by new business strategies and processes.

For many corporations, today’s goal is to transform themselves into adaptive enterprises where IT is a provider of a single set of dynamically scalable resources that enable business users to tap into IT services whenever required. It’s a goal where IT becomes adaptive, enabling the business to become increasingly agile and responsive to the demands of commerce. And, it’s a goal that can help companies realize a greater return on investment for technology.

HP stands ready as a partner from whom enterprise customers can demand more as they build toward an adaptive enterprise—more accountability, more agility, and better return on information technology. As businesses develop an adaptive enterprise, they require a partner who is accountable—one company they can hold responsible for their success. The HP collaborative approach ensures that HP will deliver on the implementation, the service, and the support commitments we make—on behalf of HP and, importantly, our partners. The horizontal approach to IT, experience, and innovation of HP help create a tight link between business and IT—so that businesses can create agility by taking advantage of opportunities and change. Through HP proven practices and experience in architecting and operating complex heterogeneous IT environments, HP can drive a higher return on IT for our customers.

This white paper describes how HP can enable an enterprise to quickly realize the goal of an adaptive enterprise, from assessing the agility requirements of the business through implementing the solutions that lead to adaptability and a better return on information technology. These solutions enable organizations to realize reduced costs, increased business agility, and improved competitive advantage—working with a partner of whom they can demand more.

Every change in the business environment generates hundreds of changes in the IT infrastructure. Today’s fast and furious rate of change has many CIOs wondering if they’re not fighting the same fires over and over again. IT infrastructures that were once successful as business “silos” now appear as deterrents to delivering new services to integrated businesses.
IT today: transforming toward adaptability

The volume and rate of change experienced by IT continues at a staggering pace with little sign of relenting. Independent studies continue to show that the cost of change is the fastest growing component of infrastructure total cost of ownership.

Throughout the years, rapid-fire adjustments and modifications to business systems and the computing infrastructure have been delivered as tactical solutions to pressing corporate requirements. Often, though, these accomplishments increased the rigidity of the enterprise infrastructure, restraining adaptability and limiting agility for new business demands.

Driven by business opportunities, the economic landscape, increased competition, and greater demands for access to information, change is causing a substantial alteration to the technology landscape. Business users and process owners desire IT service levels to match the flow of their increasingly real-time business activities where low-cost, dependable, reliable, and scalable service is available, and dynamically tapped, whenever needed—during peak times, lulls, and anytime in-between. Additionally, they would like an IT infrastructure with the flexibility to easily accommodate business priorities, delivering high-quality, vital services that meet their most immediate business needs.

A new computing model is required to meet these business requirements while simultaneously reducing costs and improving service. In this model:

- IT resources are shared, not isolated as they are in today’s “islands of computing” model.
- Business priorities determine the allocation of IT resources.
- Service levels are predictable and consistent, despite the unpredictable demand for IT services.

Sharing or pooling of IT resources helps eliminate overdeployed and underutilized technology components, reducing hardware and software costs and further reducing management complexity. Sharing IT resources across business functions also helps to increase business agility, enabling the rapid provisioning of new services or resources and scaling of established services. Increased business agility, however, is achieved when shared resources are dynamically allocated as needed by business procedures. The creation of this dynamic link between business processes and the infrastructure is aided by a clear assessment and measurement of the agility that results from transformation of the infrastructure. Such an assessment helps build the criteria to avoid resource contention between applications while ensuring automatic load transfers to support more critical applications when demand becomes unusually high. For example, a business may name its revenue producing e-commerce applications as its most critical application, followed by customer service, human resources, and accounts payable. While normal operating patterns meet peak capacity demands for each application, any unusual spike within an adaptive infrastructure can result in the automatic transfer of computing resources from the lower-priority applications, such as human resources and accounts payable, to the highest-priority systems such as e-commerce and customer service.

By synchronizing infrastructure, application services, and processes with business strategies through automated and intelligent management and provisioning, HP helps corporations reduce the cost of change, reduce total cost of ownership, simplify management complexity, and offer the enterprise the ability to rapidly implement the solutions that provide the corporation with a competitive advantage. HP’s strategy for the Adaptive Enterprise enables IT to put into practice the accelerated rate of change needed to efficiently and accurately accommodate new corporate initiatives.
The business benefits of implementing the HP Darwin Reference Architecture are reduced operational costs, greater deployment options for the delivery of new business systems, and reduced time to market for new business initiatives. Most important, this architecture helps deliver increased agility in the area most needed by the corporation.

Benefits of the HP Darwin Reference Architecture

The HP vision for the Adaptive Enterprise is defined in the HP Darwin Reference Architecture, which includes a portfolio of HP adaptive infrastructure and management offerings comprising solutions, services, products, and technologies. While this architecture tightens the integration and synchronization between IT resources and business processes, it also delivers the interoperability needed to support requirements for ongoing change in a new infrastructure ecosystem.

An adaptive enterprise with integrated and shared computing resources reduces operational costs by simplifying the task of management and by ensuring the greatest level of utilization of those resources. In this new ecosystem, resources are used more efficiently, accessed as needed in a simplified manner that increases the productivity of individuals and the collective enterprise. The flexibility of an adaptive enterprise provides greater deployment options for the delivery of new business systems and helps reduce time to market.

For example, to help a parts manufacturer deliver a new, revenue-producing, customer-facing e-business system, an HP approach can provide an assessment of how to best leverage past investments in diverse technologies to deliver a streamlined, high-performance solution that is secure, simple to manage, and, for customers, simple to operate. Based on business and agility requirements along with IT configurations and capabilities, a combination of approaches can be taken to support the business. For instance, application integration can help blend information and procedures from unique systems such as order entry, shipping, and billing. And, disparate, low-powered application servers can be consolidated into a single high-performance server that simplifies management and ensures the fastest performance possible to the customers.
The HP Darwin Reference Architecture ensures that the solution tightly aligns with the agility requirements of business and IT. The distinct differences in the relationships between IT and business in each corporation require maximum flexibility in the plan that moves them toward an ultimate adaptive enterprise. The HP Darwin Reference Architecture simplifies the infrastructure over time as it develops in a horizontal manner that enables IT to upgrade its response to change while delivering increased agility in the areas most needed by the business. As it expands through the enterprise, the new infrastructure reduces risk and provides measurable results that allow for increased utilization of technologies, systems, and applications that will make the most sense for each business. This approach recognizes that the starting points for organizations will vary widely, because each combination of enterprise business and IT relationships is unique. In response, HP’s assessment, strategy, and architecture services effectively customize solutions for the Adaptive Enterprise.

The benefits delivered by the Adaptive Enterprise include:

- **Improved total cost of ownership**—An adaptive infrastructure optimizes IT resources, reducing the cost of infrastructure management and enabling more choices that can lower cost of ownership.

- **Increased business agility**—With an adaptive infrastructure, organizations will be able to identify and quickly respond to challenges and opportunities and to quickly adapt to changing business models, processes, and market demands, helping them to outperform and assert change on the competition.

- **Reduced risk**—By simplifying and streamlining the technology environment, an adaptive infrastructure enables a more successful deployment of new solutions and supports business changes—more responsively, with less risk.

- **Improved quality of service**—An adaptive infrastructure enables the CIO to confidently establish and meet increasingly aggressive service-level agreements, assuring appropriate levels of availability, response time, and performance.
Applying a methodology for assessing agility and designing in adaptability is instrumental in achieving fast returns.

Measuring business agility

One of the first steps toward improved business agility is an assessment of corporate requirements and capabilities. Key to successful implementation of an adaptive enterprise is the ability to measure in very specific terms how well the infrastructure responds to business change and diagnose the real impediments or barriers—all while maintaining a strict focus on improvements and investments for optimal effect. And, because the business agility context of each organization differs based on industry, business model and strategy, competitive landscape, and IT environment, there is no one-size-fits-all approach to these measurements. The differences between the business and IT requirements in each corporation require a business-specific, company-specific approach to measurement.

With the consultation of the leading international business school, INSEAD, HP has isolated three dimensions of business agility and developed a methodology to measure them:

- **Time** needed to implement or react to a business environment change
- **Range** of implementation across geographies, business processes, or operating units
- **Ease** the breadth and scope of change that the infrastructure can support

The innovative HP assessment methodology evaluates the industry-specific enablement of business change across these three agility dimensions and provides a comprehensive picture of organizational agility “hot spots.” The benefits of this structured self-assessment methodology include:

- Creation of detailed baseline agility measurements, expressed in terms of the time/range/ease dimensions
- Prioritization for planning
- Rapid decision-making regarding investments
- Quantification and measurement of improvements over time
For example, the HP agility assessment services could uncover that an external business process area, such as supply chain management, is the most pressing agility “hot spot”—rated highly important from a business-priority point of view, yet posing the most serious issues in terms of infrastructure response (e.g., time to add a new vendor to the supply chain is measured in months rather than days).

**HP adaptive design principles**

The hallmarks of the HP approach to implementing an adaptive enterprise are four fundamental adaptive design principles that shape the portfolio of solutions, services and technologies.

**Simplification**—Simplified applications and systems are easier to adopt, use, connect, manage, and modify. Simplified architectures with reduced resource requirements are easier to change and provide flexibility for implementation.

One way to achieve simplification is through consolidation, where underutilized, underpowered, and overdeployed resources are identified and streamlined into an updated infrastructure. This is an infrastructure that contains fewer, more easily managed elements and that delivers results of greater speed and ease when changes are made.

Simplification provides a combination of benefits. In addition to reduced management complexity, for example, a reduced number of servers also results in shorter times for backup and restore. In the event of an emergency recovery, a faster time to restore translates into less downtime.

**Standardization**—Standards extend the benefits of simplification across multivendor, multi-OS solutions. They simplify the context in which IT assets are deployed and used. Standardized changes can be applied across different processes, procedures, technologies, or applications. (It is important to note that the adoption of proper standards must contain flexibility, and the best industry standard should be selected for each particular business solution). Standardization of an IT infrastructure can be achieved in several ways:

- Use of industry-standard interfaces, platforms, and software development techniques
- Establishment of common processes and policies for managing change
- Synchronization of expectations between IT staff and the businesses they support
- Ensuring use of off-the-shelf applications, technologies, and components
- Definition of common requirements for manageability, security, version control, configuration management, capacity and performance management, and release-to-production processes. In a standardized environment, the corporation realizes greater flexibility if there is a need to outsource the lower levels of the solutions stack.

The differences between the business and IT requirements in each corporation require a business-specific, company-specific approach to measurement.
Standardization promotes reuse of processes and data models, enabling adaptability for other purposes. For example, if an organization standardizes the way it codes a part number or product code, that standard can be applied in all relevant applications to reduce inventory costs, enable quantity purchasing, and facilitate greater speed, ease, and range of data management.

Modularity—Building a system in modules allows one aspect to be changed without an impact on other components. Modularity increases flexibility when applied to hardware configurations, business needs and opportunities, and requirements for on demand services. With modularity, storage and computing power can be dynamically scaled and redeployed to meet upward or downward processing requirements of individual applications. When designing infrastructure architectures, modularity can be achieved in a number of ways:

- Systems can be grouped based on like business needs
- Systems can be constructed to connect or disconnect in near real time
- Any group, configuration, or component can be modified without changing the others
- Outsourcing can occur easily for all IT functions or for specific functions, such as a call center or billing

In today’s environment that is striving for complete connectivity and interoperability, modularity helps to substantially reduce the time required to integrate (or separate) business systems.

Integration—When systems are composed of modules, they must be well integrated to function effectively. Integration facilitates greater ease and range of change through a uniform system of relationships that is easy to understand, manage, and modify. When complex portions of an IT infrastructure are not optimally connected and when business systems and applications remain disjointed, attempts to move or reconfigure or re-engineer often prove exceedingly difficult and could require the development of costly custom connections. Integration promotes the ability to manage the infrastructure in a holistic manner, with a view of the elements of the infrastructure related back to the services that it provides.
Realizing the vision of the Adaptive Enterprise

Realizing the vision of the Adaptive Enterprise is a step-wise process that progressively builds increased flexibility and adaptability and increases business agility. HP provides a portfolio of solutions consisting of products, services, and technologies. These solution segments, which individually and collectively enable the enterprise to progressively become more agile, include:

- Enterprise integration
- IT consolidation
- Management
- Virtualization
- Business continuity
- Security
- On demand
- Managed services
- Integrated support
- Financing

The ability to predictably anticipate, accommodate, and manage change with reduced costs can be performed with enterprise integration, IT consolidation, and management solutions that enable companies to rationalize, automate, and intelligently manage their infrastructures while delivering increased levels of automated interoperability.

With a stable, simpler, and more easily managed infrastructure, adaptability and cost optimization are taken to the next level with dynamic resource allocation, found with virtualization solutions. Additionally, the foundation for continuous and secure operations can be found with business continuity and security solutions that provide for stability and extensibility.

Equally important, enabling a proactive approach to change that lends itself to implementing new company processes and strategies in dynamic fashion, are on demand, managed services, integrated support, and financing solutions.
Building the Adaptive Enterprise is a process that progressively increases flexibility, adaptability, and business agility.

Adaptive technologies
HP maintains a comprehensive product portfolio that delivers solutions for a multitude of requirements. Additionally, through key adaptive technologies, HP continues to invest in building the core capabilities of adaptability into each infrastructure product:

• **Dynamic resource optimization**—The capacity to flexibly share, assign, and deploy existing or new technology resources based on business or operational requirements. This includes the ability to scale up or down to meet fluctuating demands; automated provisioning and re-use of server and storage assets; and the virtualization of server, storage, and data center environment capability.

• **Automated and intelligent management**—The necessary infrastructure to automatically control, sense, and initiate responses to changing demands based on established service-level agreements or rules. Capabilities include management and monitoring features built into all levels, including element, system, application services, and business process monitoring.

• **Continuous and secure operations**—Ensuring required availability and security at all levels of the infrastructure. These encompass self-aware, self-healing technologies; fault tolerance; and high-availability architectures and range from automated fault detection to NonStop computing.

To effectively function in a utility-like environment, adaptive platforms need to employ technologies built around industry-standard Intel® Itanium® Processor Family CPUs, support all three strategic operating systems (HP-UX, Windows®, and Linux), and leverage the continuing work on:

• Modular standards-based systems, including IA-32 as well as 64-bit processors

• Appliance and blade as well as traditional server architectures

• Mission-critical architectures including redundant and hot-pluggable components, storage area networks, and related fault-resilient and lights-out technologies and services

The critical component of an effective adaptive infrastructure is management. HP adaptive management solutions enable management and control of an adaptive enterprise and application resources as well as their dynamic linkage to business processes. They effectively integrate the management of operations, services, and business processes across an adaptive enterprise. HP OpenView enables management of an IT infrastructure across a heterogeneous environment of systems, storage, and horizontal applications. In addition to monitoring the availability and health of all IT resources, HP OpenView anticipates potential problems to provide notification to operators or, for automated adaptability, to directly address the situation. The ability to directly address situations—as well as the ability to define required resources—is based on prescribed business objectives, user requirements, and preset policy preferences.

HP OpenView ensures that resources are allocated in real time to help avoid overdeployment of resources while ensuring continued high performance for business systems under its control.

A proof point of technology and business collaboration and synchronization is found in the HP Utility Data Center (UDC). It is a wire-once, self-adapting, policy-driven utility controller that aggregates and virtualizes all of the server, network, and storage resources within a data center (or across multiple data centers) and allows these resources to be shared and dynamically re provisioned across applications to accommodate changing workloads.
A collaborative approach

Just as the starting point for achieving business agility differs between corporations, so do the technology resources, skills sets, business partners, and vendors already in place. While the four fundamental adaptive design principles are applied to all HP technology solutions, HP also remains focused on embracing, leveraging, and extending the four most crucial components of an enterprise—people, process, technology, and partners.

People—The HP collaborative approach leverages the knowledge and expertise of the existing IT staff to deliver enhanced solutions, identify technical constraints for agility, cooperatively deliver solutions, and provide knowledge transfer. Instead of seeking to fully displace the critical knowledge of the IT staff, HP integrates with the expertise of the existing corporation team.

Process—HP Agility Assessment services work with IT and business leaders to self-assess and identify the solutions that will improve business processes and ensure continuously improved agility. HP customized solution methodologies are built on a thorough understanding of the business, a continued analysis of business agility, and implementation of a specific, adaptive plan to solve the unique challenges of the corporation.

Technology—The collaborative, open HP approach enables corporations to leverage existing technologies and quickly implement new technology solutions that best meet business requirements. Instead of being forced into technologies that match the requirements of a solution provider, with HP, corporations get the flexibility and adaptability to maintain software, databases, and other technology components that have already proven successful.

Partners—HP’s extensive partnership program enables customers to select business and technology solutions from the companies recognized as worldwide leaders in their respective fields. Through collaboration with partners such as Accenture, BEA, BearingPoint, Cap Gemini Ernst & Young, Cisco Systems, Deloitte Consulting, Microsoft®, Oracle®, PeopleSoft, Siebel Systems, SAP…and many others, HP delivers solutions that provide the highest level of integration and optimization for an adaptive enterprise as well as the greatest business value. Most importantly, collaboration with partners means that HP customers can realize the benefits of best-of-breed solutions.
Evolving toward the HP Adaptive Enterprise vision

As the CIO and IT role transforms to service provider for the enterprise, enterprise IT will be faced with the need to automate key processes that maximize utilization of IT. The ability to automatically scale both up and down and deliver IT service in a utility-like fashion requires that the computing environment have a highly adaptive, integrated infrastructure. Crucial to this next-generation architecture will be the tools that make provisioning of service intelligent, automatic, and highly efficient. The crux of the business model that supports migration to utility computing and systems area networking is high utilization of IT assets.

Evolving toward the HP vision for the Adaptive Enterprise requires a phased approach that:

• Embraces a business agility strategy and continuously assesses agility capabilities
• Ensures that network architectures are adaptive to accommodate inclusion and removal of business systems, applications, lines of business, and any and all supporting hardware and software
• Identifies and eliminates underpowered, underutilized, and overdeployed technologies
• Consolidates assets into a scalable infrastructure where services are managed automatically and delivered on demand

Equally important in view of the financial challenges of today’s economic environment, evolving toward an adaptive enterprise requires financial flexibility that helps the corporation align IT costs with the business benefits achieved from investment.
Faced with a staggering level of requirements for change, many CIOs feel they’ve been solving the same problems over and over again. This key challenge, addressed by HP’s approach to build an adaptive enterprise, enables the enterprise to establish a business agility cycle that dynamically adjusts to the rapidly changing needs of business.

**Business challenges**
- Drive new business models and direction
- Improve business performance and ROI while reducing costs
- Shorten time to market
- Minimize risk associated with change
- Enable mergers, acquisitions, and divestitures

**More agility**
Through dramatic improvements in:
- Time needed to implement change
- Range over which change may be implemented
- Ease and cost of implementation

All measured and assessed for continuous improvement

**IT imperatives**
- Link business and IT
- Reduce costs, ensure stability and flexibility
- Reduce complexity
- Optimize assets today and tomorrow
- Extend value and reach of the enterprise

**HP adaptive infrastructure and management solutions**
Respond with:
- Automated and intelligent management
- Dynamic resource allocation
- Continuous and secure operations

**Greater return on IT**
- Reduced acquisition costs, improved TCO
- Reduced response, flexibility
- Reduced risk
- Improved service levels, quality

The business agility cycle created with HP solutions for the Adaptive Enterprise
Business agility will help reduce costs of change and total cost of ownership—especially crucial as demand for change continues at an unrelenting pace.

The optimized use of dynamically applied available resources results in direct business benefits such as reduced acquisition costs, risks, and operating costs, combined with increased flexibility and agility, improved services levels, and higher application quality.

Equally important, the ability to implement the new business strategies rapidly, with minimal disruptions and at lower cost, gives rise to an agile business. Agility is realized through measurable and significant improvements in:

- Time needed to implement change
- Range over which change may be implemented
- Ease and cost of implementation

This rapid adaptability of business strategies and processes throughout the enterprise enables the business to become agile and to respond to ever-changing business challenges in a cycle.

Business agility, achievable through an adaptive infrastructure, will help reduce costs of change and total cost of ownership—especially crucial as demand for change continues at an unrelenting pace. Adaptability is key, as IT evolves to become a more utilitarian supplier of computing services as it increases its partnership with business. And HP’s strategy for the Adaptive Enterprise enables the corporation to rapidly provide a tactical response to today’s problems—while laying the strategic foundations for future initiatives.

HP is committed to supporting its enterprise customers as they develop increasing adaptability in their enterprise environment. HP is a partner of whom they can demand more: more accountability, more business agility, and a better return on their information technology.

For more information

For more information about the HP Adaptive Enterprise, visit HP on the Web at: www.hp.com/go/adaptive

No longer solving the same challenge

The HP vision for the Adaptive Enterprise enables the corporation to quickly embrace the new business opportunities that result in new strategies and the implementation of new business processes. Yet although it’s important, the ability to pursue new business opportunities represents only a portion of today’s business challenges. There is also the need to improve business performance and return on investment at a reduced cost—as well as the demand to shorten time-to-market cycles for the delivery of new products, services, and solutions. Delivery of new products, as well as revamping of legacy business processes to support mergers, acquisitions, and divestitures, must occur with minimal risk and minimal disruption.

Behind the scenes is always the underlying demand that IT rapidly facilitate the changes to keep the business agile.

Traditionally, the IT response would be to embark on new projects involving new applications, hardware, software, and services that take months or years to complete. With the HP Darwin Reference Architecture, adjustments to the infrastructure are automated and performed dynamically, utilizing available resources. The architecture provides an infrastructure that dynamically reconfigures and transforms to respond to new business strategies and processes.
Extending the reach of the enterprise