

# *Compaq Work Expeditor 2000*

## *Introduction*



**COMPAQ**



# **Compaq Work Expeditor 2000**

---

Introduction

## ACKNOWLEDGEMENTS

Compaq and the names of Compaq products referenced herein are either trademarks and/or service marks or registered trademarks and/or service marks of Compaq.

Microsoft Exchange, Outlook, SQL Server, Windows, and Windows NT are trademarks of Microsoft Corporation.

A publication of:

Compaq Conmputer B.V.  
P.O.Box 9064  
3506 GB Utrecht  
The Netherlands

Printed in Europe

© 1998, 2000 Compaq  
Computer Corporation.

Possession, use, or copying of the software described in this publication is authorized only pursuant to a valid written license from Compaq or an authorized sublicensor.

Compaq Computer Corporation makes no representation that the use of its products in the manner described in this publication will not infringe on existing or future patent rights, nor do the descriptions contained in this publication imply the granting of licenses to make, use, or sell equipment or software in accordance with the description.

Compaq conducts its business in a manner that conserves the environment and protects the safety and health of its employees, customers, suppliers, partners and the community.

Part Number: Not orderable

Doc. Number: E60D

Published: March 2000

# Preface

This guide is intended for anybody who is interested in the fundamentals of Compaq Work Expeditor 2000. It can be used as a guide for users that are new to the product, to help them understand the basic concepts. It can also be used by people with a more technical background, to become familiar with the overall system architecture.

## ***Related manuals***

*Compaq Work Expeditor 2000, Solution Development Guide*



# Table of contents

**Preface** *i*

**Table of contents** *iii*

**About this book** *v*

<b>1</b>	<b>Introduction</b>	<b>1</b>
	About Electronic Documents and Forms	1
	From Vision to Implementation	2
<b>2</b>	<b>What is Expeditor 2000?</b>	<b>5</b>
	Microsoft Outlook	6
	Web Browsers	7
<b>3</b>	<b>The Expeditor 2000 Repository</b>	<b>9</b>
<b>4</b>	<b>Expeditor 2000 Work Items</b>	<b>13</b>
	Access Control	13
	Data Control	14
	Process Control	16
	Reporting	18
	Solution Development Facilities	19
<b>5</b>	<b>The User Interface</b>	<b>23</b>
	The Outlook interface	24
	The Web Browser interface	25

**6 Platform Information 27**

**Glossary 29**



# About this book

This book consists of six chapters and a Glossary of Terms.

- Chapter 1 provides a brief introduction to Work Expeditor 2000.
- Chapter 2 introduces Expeditor 2000 in some more detail.
- Chapter 3 describes the Expeditor 2000 Repository.
- Chapter 4 describes the Expeditor 2000 Work Items.
- Chapter 5 describes the Expeditor 2000 User Interface.
- Chapter 6 describes the system components required to install and activate Work Expeditor 2000.



# 1 Introduction

Compaq Work Expeditor 2000 (Expeditor 2000) provides a technology that enables the implementation of a new type of collaborative solution. Solutions of this nature could not previously be implemented, either because the proper technology was not available, or because the development costs involved would have been outside the scope of any reasonable budget.

All solutions based on Expeditor 2000 have one thing in common: the implementation of a clear vision of how to automate common document and form-based tasks to support knowledge workers. The vision implemented in Expeditor 2000 is the result of many years' experience gained by Compaq in building collaborative solutions. This document explains how Compaq developed the thinking behind the vision, and how to approach the concept of collaborative applications based on Expeditor 2000.

## About Electronic Documents and Forms

Electronic documents have become increasingly important in the last decade. The IT industry has devoted substantial time and effort in building tools that help to eliminate paperwork and therefore move towards a paperless office. While it is unlikely that the goal of a purely paperless office will ever be attained, great progress has been made to automate many business processes that had previously been purely paper-based.

The World Wide Web makes a huge collection of 'hyperlinked' documents available to desktops. This explosion in 'knowledge at your fingertips' is associated with other advances such as a much broader acceptance of e-mail as a suitable method for conducting business discussions and a growing acceptance of Internet-based e-commerce. In many cases, because it is generally much easier to manipulate the information contained in electronic documents, users prefer to work with the electronic version of a document instead of its paper counterpart.

In effect, the electronic document has become the active version of information, and paper copies are now used purely for archiving or filing. Companies have deployed desktop applications to improve user productivity, and e-mail systems to allow people to communicate more freely, but often the

resulting documents are loosely filed and maximum advantage cannot be gained from either the knowledge the documents contain or the speed in which they can be manipulated. As a result many organizations are searching for new types of solutions that enable electronic business documents to be the center point for business information systems.

System-based control of the contents and consistency of documents is traditionally provided by Document Management systems. After the creation of a document, users can 'check in' this document in a system-controlled store. But as soon as the document is checked out again, for example to make an update, the document is outside the control of the centralized system. The traditional Document Management systems offer no means to control the progress and status of a business process.

The control and tracking of business processes is traditionally the claim of workflow systems. But these systems only deal with the structured part of the problem: the process definition and control. That is why many of them use database technologies where items can be precisely tracked according to their current state. The traditional workflow systems offer no functionality to protect the contents and consistency of documents and forms. In a best case scenario, documents can be attachments of the activity sheets that are delivered to the desktops of the participants in the process.

In many business processes, the documents and forms that are involved have a 'record' status meaning that they potentially could be used as a piece of evidence or accountability. Documents of this type must be protected and controlled according to predefined business procedures in order to ensure that their contents are consistent. This means that their entire lifecycle, from inception to completion, should be controlled by an electronic version of the policies and procedures that govern how the business operates. An optimal solution to these issues combines the best of secure document management and database-driven workflow. And that is exactly what Expedito 2000 is about.

## **From Vision to Implementation**

Expedito 2000 organizes the documents and forms used in business processes in the well-known folder paradigm. A folder may contain the complete set of documents and forms associated with a piece of work, or just a single item. A folder can also contain subfolders. Folders can be circulated to users in a workflow process and secured from unauthorized access. Best

of all, Expeditor 2000 is able to associate business logic with folders and individual items in order to implement policies and procedures. This advance gives a certain degree of intelligence to the documents held in an Expeditor 2000 environment. As intelligent items, documents contain the details necessary to control access to their content as well as how they can be used by different individuals within an organization. Documents can also report on their current status as they are worked on, so that everyone who needs to deal with a document knows its current state. In Expeditor 2000 these intelligent folders, documents and forms are called Work Items.

Work Items make an entry in their logbooks for every single action they are subjected to. Before they react to a request generated by a user or an external program, Work Items inspect the credentials of the originator to evaluate whether the action is permitted or whether special processing is required. Work Items constantly monitor their relative status in business processes and warn users when deadlines approach or expire. Work Items are the implementation of the end-user aspect of the vision.

Work Items 'know' why they are on the desk of an office worker. They also know what the next step in the process should be, and the steps that have already been taken. This makes it possible to inform participants in the process not only about their current work-in-progress, but also about what is to be expected in the short term. Project managers can now also be provided with automatic updates regarding the workload and possible bottlenecks of the teams they manage. The powerful Query and Reporting facilities of Expeditor 2000 enable work to be tracked no matter where it is in a business process.

The Query and Reporting facilities are the implementation of the business-view aspect of the vision.

Expeditor 2000 includes a graphical Configuration Tool that uses object-oriented technologies to define the structure and basic behavior of Work Items. The tool is simple and easily mastered. All the fundamental building blocks of a specific solution, ranging from the definition of simple elements such as icons and error messages, to scripted Microsoft Office templates, can be packaged into one single Software Component. The new Software Component can then be deployed to user desktops without any user intervention. Distribution occurs automatically the next time a user desktop connects to the Expeditor 2000 server.

Additional business logic can be introduced by using the Expeditor 2000 Object Library. When this library is included in a development tool such as

Visual Basic, each single Expeditor 2000 option can be driven programmatically. Prefab 'building blocks', including the handling of the User Interface, are made available in a Control Library, facilitating the building of custom Expeditor 2000 solutions from re-usable components. The Software Component concept, the Object Library, and the Control Library are the implementation of the deployment aspect of the vision.

Expeditor 2000 provides two user interfaces: a Microsoft Outlook based user interface and a Web Browser based user interface. Users can use either depending on their personal preferences, professional requirements, and the nature of the application involved.

Microsoft Office is the de-facto standard for document handling in today's electronic office. Microsoft Exchange Server and Microsoft SQL Server provide the necessary server components for directory, e-mail, and structured storage. Expeditor 2000 unifies all these components into a seamless whole that makes it easy for users to work with business data in a document centric way.

*"We are convinced that Expeditor 2000 offers many new opportunities to any organization that wants to take the next step in the automation of document-centric business processes."*

***The Collaborative Software Products Group***

## 2 What is Expeditor 2000?

Expeditor 2000 offers a collaborative Work Management environment for Microsoft Outlook and the Internet. Expeditor 2000 enables enterprises of any size to execute document-based business processes efficiently and effectively by managing activities, documents, and business data as they move through an organization, from initial creation to final archiving.

The purpose of Expeditor 2000 is to speed up the execution, reduce the cost, and enhance the quality of work.

Good examples of the type of work that can be managed through Expeditor 2000 are:

- **Inbound and Outbound correspondence handling** in any organization.
- **Management of customer correspondence** in Customer Call Centers.
- **Procurement correspondence handling** in a manufacturing organization.
- **Handling of qualified documentation records** as a component in a manufacturing quality control system.
- **Project centric 'Knowledge Management'** in an R&D organization, or a services organization.
- **Case file handling** in a legal department, a police organization, local government, a ministry, and similar organizations.
- **Warranty claim record handling** in a purchasing department.
- **Handling of medical records** in a hospital.

These are just some examples of how Expeditor 2000 can help an enterprise to organize its work more efficiently. Once someone is familiar with the features of Expeditor 2000 it will be easy to identify many other opportunities appropriate to their organization.

The concept behind Expeditor 2000 is to allow the Expeditor business logic to control a standard piece of administrative information, such as a document, a form, or a complete folder. In Expeditor 2000, such a controlled item is called a Work Item.

The additional business logic that is provided by Expeditor 2000 can be grouped as follows:

### **1 Access Control**

Access to classified business information is controlled by an easy to maintain access labeling system.

### **2 Data Control**

The contents of documents and forms can only be updated in a transaction-oriented way, guaranteeing that the contents will stay consistent and can be audited later.

### **3 Process Control**

Work Items can move through the organization in accordance with ad-hoc or predefined business procedures.

### **4 Reporting**

The actual business data of Work Items is made available in a Microsoft SQL Server database and can as such be included in any report that supports ODBC access.

### **5 Solution Development Facilities**

Enterprise-specific implementations can be created out of re-usable solution components and can be deployed in a centrally managed way.

## **Microsoft Outlook**

Microsoft Outlook is the preferred client system for Microsoft Exchange. Outlook is a full-featured e-mail client that also includes many groupware features, including calendaring, task lists, contacts, and the ability to access public folders stored on an Exchange server. These features can be exploited to support collaborative working within an enterprise.

Outlook accesses data on servers through what is called a MAPI Information Service Provider. Such an information service provider specifies the set of features available on the server and makes those features available to the client in a consistent manner. Services provided by the Microsoft Exchange server include messaging, calendaring, and the global address list.



Expeditor 2000 contains such a MAPI information service provider. This means that all of the functionality in Expeditor 2000 is made available to Outlook clients in exactly the same way as the other services the users are accustomed to. As a result, Expeditor 2000 items are manipulated and structured in exactly the same way as messages and documents are used within Exchange based private and public folders.

## Web Browsers

In a relatively short period of time, Web Browsers have become an important component in the standard desktop environment. What began as a viewing tool for the World Wide Web, has evolved to a universal platform for many types of interactive applications. Critical success factors were the simple 'click-and-run' type of commands and the absence of the need to install any additional software at the client side.

Expeditor 2000 can offer its Work Management Services via a Web Browser as an alternative to the Outlook interface. Instead of a predefined folder-centric environment, as in Outlook, the browser-based implementation works with dedicated 'Work Management Dashboards'.

- The dashboards for knowledge workers give an at-a-glance overview of the work-in-progress of the individual.
- A management control dashboard presents the workload per workgroup and enables delegation of work from one individual to another.
- A search and knowledge management dashboard provides the means to search for Work Items in the Expeditor 2000 repository.

All dashboards have been designed in such a way that there is no need to install any additional software on the client system. Their implementation is based on ActiveServer Pages which can be adapted and extended easily to reflect the needs of a specific solution.



# 3 The Expeditor 2000 Repository

Expeditor 2000 uses a client-server architecture. The client component provides the Work Management functions to Outlook clients or, via a Web Server, to Web Browsers. The server component controls a centralized Repository that holds all the data elements of an Expeditor 2000 application.

The Expeditor 2000 server contains:

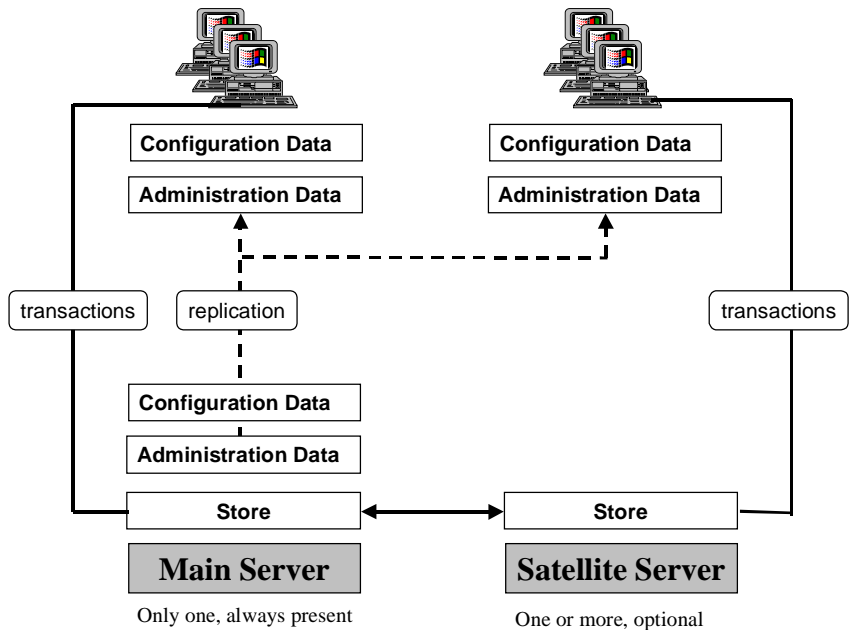
- **The Configuration Data**  
The definitions of the structure and behavior of all work folders that are used in a specific application. This information is usually maintained by an application developer or third-party Solution Provider.
- **The System Administration Data**  
Runtime information such as user definitions, roles and access control lists. This information is usually maintained by a local System Administrator.
- **The Store**  
The Store contains the contents and status of the Expeditor folders and their items for all users, just as the Exchange Information Store holds the data for user mailboxes and folders. This information is fully controlled by the Expeditor 2000 application functions.

The Repository can be installed on a single server but the Store may be distributed across multiple servers. Stores are often distributed when Expeditor 2000 users are geographically dispersed.

The Configuration Data and the System Administration Data are always present on the Expeditor Main Server. If an additional Store is installed on a separate server, this server is referred to as an Expeditor Satellite Server.

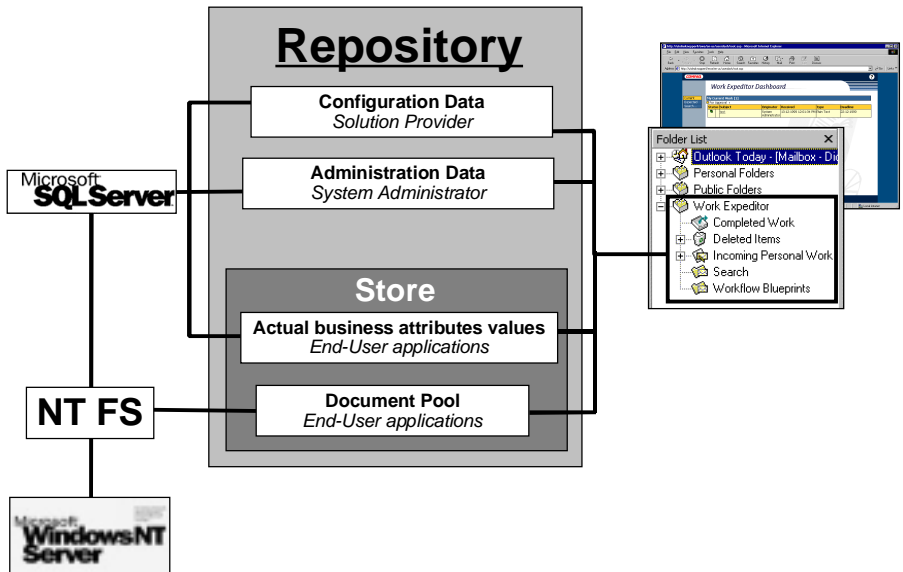
The Configuration Data and the System Administration Data on the Main Server is replicated to local cache files on all client systems, including those connected to Satellite Servers. Every time a client system logs in, the cache status is checked to decide whether it should be refreshed because configuration data has been changed. When the Main Server is not available for one reason or another, the client systems can continue using the existing data. This implementation avoids the risk that the Main Server becomes a single point of failure.

An Expedito Store that is distributed across multiple servers is presented to users as a single data source. When a user requires access to data that is physically located in a Store component that resides on another server, the user is unaware that the Expedito 2000 server fetches the data from the other server. To facilitate the transparent nature of this activity, it is recommended that Expedito 2000 satellite servers are connected to the main server using a bandwidth that can support the expected volume of 'inter-store traffic'.



The Expedito Repository is physically implemented as a SQL Server database that has been extended to use a set of NTFS directories. The NTFS directory structure is referred to as the document pool, and is used to hold the files that physically represent Work Items, such as documents and forms. The SQL Server database holds all structured information related to Work Items, including details of the access control that is enforced for folders and individual items. Access to the Repository is restricted through the Expedito 2000 functions in Outlook, the Web browser, and the programming interfaces. For reporting purposes, the database holds a business oriented sub-schema

based on a set of database views. Direct access to the core database tables and the document pool is protected. Predefined procedures guarantee the systematic and consistent backup of all information on the main server and on all satellite servers, including the SQL databases and Document Pools, which are treated as one logical database.





## 4 Expeditor 2000 Work Items

The Expeditor Store contains the Expeditor Work Items. A Work Item can be any type of information that could also be stored in an Exchange folder, for example, folders, documents and forms. End users never have direct control over Work Items. What they see on the user interface are 'Views'. A view is a kind of a shortcut to the Work Item data in the store. It is important to understand this concept because all the collaborative options in Expeditor 2000 are based on it. A Work Item is 'shared' when more than one user has a corresponding view. The Expeditor Workflow can be defined as the controlled distribution of views; either manually or controlled by a blueprint.

The added value of the Expeditor Work Item concept is in the support for advanced Work Management functionality, which can be grouped as follows:

- Access Control
- Data Control
- Process Control
- Reporting
- Solution Development Facilities

The related functions can be activated either through Microsoft Outlook or through a Web browser.

### **Access Control**

Expeditor Work Items are protected by a security framework that can be applied to the business information in the Store at the most detailed level. This means that access can be controlled not only to a folder but also to individual documents and forms contained in the folder. It is even possible to set a separate security definition on a single item or on a single instance of a form.

Furthermore, the security definitions are not restricted to basic system actions such as 'read' or 'write', but also include typical work management functions such as 'share' and 'archive'.

The concept of the data protection is based on the classification of the information. Each Work Item is attached to an Access Control Profile. This Access Control Profile, which can be seen as a kind of 'label', refers to an Access Control List that holds a detailed description of the permissions. A specific permission can refer to the position in the organizational hierarchy. It can also refer to a business role. The assignment of a new role to a specific user is sufficient to give this user access to all the relevant business information that is needed to do his or her new job. And by changing a definition line in an Access Control List, all Work Items that have been classified as corresponding to the same profile, will implement this new set of rules.

The security framework protects the information not only when it is accessed by the end user, but also when it is accessed via the programming interfaces. This makes Expeditor 2000 an ideal tool for environments where high-level information protection is critical.

## Data Control

An important premise behind the Expeditor 2000 concept is that documents and forms should be the elementary components in transaction-oriented business processes. This means that the same type of functions that usually exist in database-centric systems, such as transaction logging and the registration of enterprise-specific data-attributes, should be supported.

To facilitate this requirement, Expeditor Work Items support the following specific Document Management functions:

- **Check in/Check out**

When a document is edited in Outlook it is automatically checked out from the Store and delivered to the desktop system. During editing, the document is locked for other users. They can only get a read-only copy. When the editor session is closed, the document is automatically checked in and the lock is released. This is an 'implicit' check in/check out mechanism. It happens automatically, behind the scenes. If a user wants to make a major update that is going to take a longer period of time, and will therefore take several editor sessions, he can 'reserve' the document by activating an 'explicit' check out. This means that the document is locked to other users, whether it is being edited or not. Users who prefer to update the document off-line, for example on a notebook, can do a special check out that includes the delivery of an off-line copy. When the document is checked in again by



the user, the system releases the reservation, if necessary, preceded by a request to supply an updated version of the off-line copy. When using a Web Browser, the 'check-out-and bring-off-line' option is the only way to edit the document contents.

- **Version Control**

Historical versions can be stored for every document. New versions can be created explicitly to save a specific status. Others will be created automatically, for example when the Expeditor 2000 system detects that the current user has updated information that was previously created or updated by a co-worker.

- **Transaction Logging**

Every action on every Work Item is logged by the system to make every single piece of information traceable and auditable. A dedicated history report function is available that can produce historical transaction overviews on demand.

- **Archiving**

Users with the proper permissions can decide that the processing of a Work Item has finished and that the Work Item is ready for archiving. When a Work Item is archived, all views are automatically removed from all desktop environments. The Work Item will also be brought into "final form" state, which means that the contents can no longer be changed. Archived Work Items can be accessed by fetching a related view using the Expeditor Search Facilities.

- **Custom properties and behavior**

The Solution Provider can define specific Work Item structures using the System Configuration tool. Every Work Item, including folders, can have custom properties. These new data fields can be maintained by end users. If required, they can be protected from manual input and can be updated exclusively from an application. In the structure definition of an Expeditor Work Folder, the Solution Provider may define the type of information the folder must contain when it is created and the type of information that may be stored in it.

- **Server-based control**

The Work Items in the Expeditor Store always stay under control of Expeditor 2000. This control is usually hidden from end users, just like with the access-control checks. However, there are some circumstances when this 'active control' becomes visible, for instance, when editing of a document in Outlook

has been interrupted in an abnormal way. In this case, after the user logs in to the system again, Expeditor 2000 can activate a safety copy of the document, which was automatically produced on the server at regular intervals. The length of the intervals can be set by the Expeditor System Administrator. The activation of this service is independent of the capabilities of the editor that was used.

## Process Control

The collection of the Expeditor 2000 views in a user's desktop environment gives a detailed overview of the 'work-in-progress' of the individual. This work-in-progress can be controlled manually, using the Expeditor command 'share'. Sharing is done when there is a need for parallel co-working (collaboration) and the result is that one or more co-workers will receive a view of the same Work Item, which can be accessed concurrently. At the end of the process, the Work Item can be archived, which means that the views are removed from the desktop environments of the users and the Work Item is marked 'final form' in the Store. This is an example of a manually controlled collaborative process.

Aside from the manual control explained above, there is also the option to let the system fully control the process. Workflow blueprints can be designed for this purpose and can be connected to any Work Item. An end user who is working on a Work Item that is controlled by such a predefined workflow only needs to mark the Work Item as 'completed'. The required sequence of 'sharing' and 'continuing' actions are now executed automatically. In such an automated process, it is still possible to include steps that are manually controlled, making Expeditor 2000 an ideal tool for knowledge workers.

The following specific features are supported:

- **Collaborative Sharing**

Many documents are created in a non-procedural 'creative' way. To support these types of dynamic processes, Expeditor 2000 contains a 'Collaborative Sharing' mechanism, which allows the initiator of a document to build "a virtual work team 'on-the-fly'. Each team member will be informed about the type of work he is expected to execute, such as 'produce data', 'approve data' or 'comment on data'. Optionally a deadline can be supplied. The Work Items will automatically be displayed in the Work Management dashboards of the team members, grouped per work category. Team members will also receive a notification message via the e-mail system.

It is important to be aware that because of the architecture of Expeditor 2000, in this 'multi-level-work-sharing' example, all team workers will get shared access to the same up-to-date data.

- **Graphical workflow blueprint editor**

For those processes that do have a predefined nature it is possible to design workflow blueprints. These can simply be attached to folders or documents. Blueprints can be designed with an easy-to-use graphical editor. The business nodes in the workflow designs can be assigned to roles instead of individual users, making the blueprints easier to maintain. Once a blueprint has been attached, the Collaborative Sharing mechanism will now be executed automatically by 'continuing' the workflow. However, if permitted, the workflow can still also be extended manually.

- **Content-based routing**

Workflow blueprints can monitor the work-in-progress. Workflows can split into parallel streams that eventually join. Workflow steps can be made dependent on an extensive set of pre- and post-conditions using all available business attributes, such as the presence of a certain type of approval or the value of a specific data attribute. The workflow monitor is based on the database transaction paradigm, allowing for the robust implementation of mission-critical processes in which all parallel workflow streams still get access to the same (shared) business data.

- **Electronic Approvals**

Users can electronically approve folders or documents to give them a specific status. This status can be used as a routing condition in a workflow process or to bring a document to a final state to disable any further changes. The following approval types are supported: initial, approve, disapprove, and sign-off. Work Items that have been signed-off can no longer be modified.

- **Event Notification**

Users can register interest in specific folders. After registering interest, the user is automatically notified when a specific event occurs for the folder or for work items contained in the folder, for example, the creation of a new version.

- **Deadlines**

Every stage in the process can have a deadline. When a deadline expires, the individual that is responsible will automatically be notified.

- **Status Tracking**

For every active workflow, an extensive status-sheet is maintained. This sheet contains information about where the Work Item has been, where it is

now, and where it still needs to go to. This status-sheet is in fact a special presentation of the workflow-blueprint. The status of a Work Item is identified using colors. In ad-hoc (manually controlled) workflows, which are not based on a pre-defined blueprint, this status sheet, including the blueprint information, is created dynamically afterwards.

## Reporting

Work Items are stored in a SQL Server database. This means that the contents of their attributes can be incorporated in those types of reporting tools that can use SQL Server (ODBC) based information as the input source. To allow Solution Providers or Power Users to define enterprise specific reports, the Expeditor 2000 database contains an extensive set of predefined database views. Each database view is connected to one or more database tables. All views together form a business oriented sub-schema of the database. The local System Administrator can use a View Manager Tool to define which users should have access to which views. The View Manager Tool can be used to group sets of database views together and assign them to 'reporting roles'. A user connected to one or more reporting roles, who then activates a reporting tool such as Microsoft Query, will only see the views that are related to his or her business background.

The following types of database views will be provided:

- **System Administration Views**

This set of views enables the definition of reports about users, roles and workgroups.

- **Basic Views**

This set of views enables the definition of reports containing the actual contents of Work Items. A general view displays the data of all the Work Items, independent of the Work Item Class. For every Work Item Class that has custom attributes, a specific view can be selected.

- **Business Oriented Views**

This set of views gives a business centric view on the Work Items in a specific business context. Examples of a business context are 'Work Items in-progress', 'Work Items with an expired deadline' and 'completed Work Items'. Just as with the Basic Views, there will be general views and views that are associated with a specific Work Item Class .

## Solution Development Facilities

The solution building and deployment services of Expeditor 2000 are targeted at reducing the complications that may occur during the development of complex client-server based collaboration applications. Without Expeditor 2000, functionality such as an access classification mechanism, a transaction concept, and a state-driven workflow implementation has to be developed individually.

Expeditor 2000 contains advanced features that support the easy development and deployment of such solutions. First of all there is a System Configuration Tool with which the Work Item definitions can be maintained. Work Item definitions contain elements such as the document type that is associated with it, the data attributes that are involved, and the workflow blueprint that will control the processing. All Work Item descriptions together contain the fundamentals of a specific solution and can be extracted on the development platform into an Expeditor Software Component, which can subsequently be installed on the production systems.

Another feature is a COM based Object Library that can be accessed in the Microsoft development tools. Using this Object Library, every single Expeditor function, including all workflow options, can be driven programmatically.

The automation server that is behind the Object Library typically offers elementary functionality, without any user interface component. To avoid solutions containing large amounts of code to handle the end-user interactions, Expeditor 2000 offers a set of ActiveX controls that supply the corresponding business-oriented implementations, including the user-interface handling. To offer maximum flexibility these controls are broken down to the most detailed level. A 'hidden' Interface Control takes care of the central coordination necessary to preserve the transaction concept.

The main components of the Solution Development Facilities are:

- **The System Configuration Tool**

This tool is used to define extensions to the System Repository that constitute a specific Expeditor 2000 solution. The solution is usually related to the requirements of a specific workgroup, customer, or line of business. The collection of these extensions is called a Software Component. The definition of a Software Component starts with the registration of general information such as a unique identifier, a short description and the copyright notice. Then the basic components of the solution such as icons, error messages, and

data attributes are defined. Specific access right structures and workflow modes are also defined in this phase. Finally, the structure, contents, and behavior of the Work Items can be defined using an object-oriented class-editor. Microsoft Office templates that are associated with Work Items can also be stored.

- **The Software Component Extractor & Installer**

The Software Component Extractor & Installer enables the controlled distribution of a (tested) solution to different Expeditor systems. Solution Providers use this tool to extract a Software Component into a Software Component File. Expeditor 2000 Software Component Files contain the definitions of the solution in a system-neutral format, so that they can be distributed to production systems using a medium of choice, such as the (Exchange) mail infrastructure. A software installer enables the controlled import and activation of the solution in the System Repository of the production system. Software Components have a unique identifier that makes it possible to mix and match components from different sources without the risk of technical conflicts. The installer function has a version-control mechanism that ensures that an update of a software component does not conflict with the version that is currently installed.

Software Components can be protected against updates on the target systems. This may be a requirement from an IT department that wants to maintain updates centrally. This also helps commercial suppliers of Software Components to protect their intellectual property.

- **The Object Library**

All individual Expeditor 2000 functions, including the workflow options, can be driven programmatically using the Expeditor Object Library that can be accessed in any COM supporting development tool. The corresponding Automation Server supports a MAPI and CDO compliant syntax.

- **The Control Library**

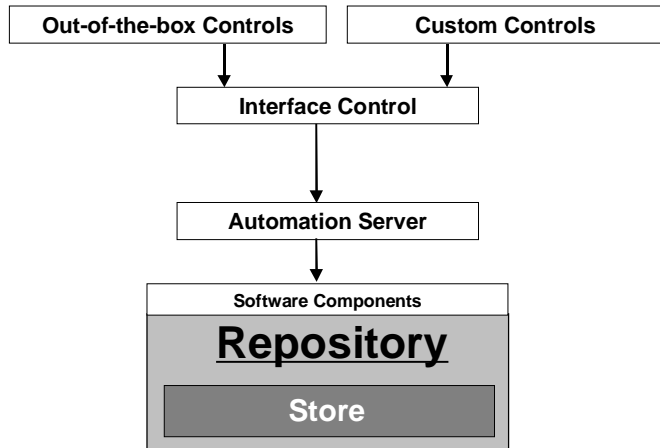
For every business-oriented function in Expeditor 2000, such as 'share' or 'view workflow status' there is an ActiveX control available. These can be used to create custom implementations. A 'hidden' Interface Control ensures that in solutions that may consist of many small controls, the transaction concept, which is a critical requirement in business solutions, is preserved.

The services of the Interface Control are:

- Provision of a Common Data Channel
- Synchronization

- Sequencing of Initialization
  - Just-in-time locking
  - Inter Control Communications
- **The Expeditor 2000 Solution Development Guide** describes how custom controls should be built to fit in this concept. Controls that are intended to work in a Web based environment can use an HTML rendering library that supports the easy presentation of Work Item related information in a Web Browser.

More detailed information about the Solution Development facilities of Expeditor 2000 can be found in the *Compaq Work Expeditor 2000, Solution Development Guide*.







# 5 The User Interface

All Work Items are stored centrally in the Expeditor Store, part of the Expeditor Repository. The end-user community only has access to the Work Items indirectly by a kind of a short-cut called a view. At the level of the user interface, views behave like 'normal' items.

A view may appear in the Expeditor 2000 environment of a user for the following reasons:

**1 The Work Item was created by the current user.**

An end user who creates new information becomes by default the 'owner' of that information. As soon as the Work Item is created in the Store, the first view of that item normally appears in the desktop environment of the originator.

**2 Another user decides to collaborate with the current user on the same Work Item.**

The owner of a Work Item may decide to teamwork on that item with a co-worker. This can be done by using the Expeditor 'share' function. The user with whom the Work Item is shared will be notified and receives a view that connects to the same Work Item.

**3 Another user has completed his work on a Work Item and the current user is the executor of the next phase in a predesigned business process.**

Work Items can have a workflow definition attached. This workflow definition is a graphical representation of a business process. It contains a detailed description of the phases and the associated work that needs to be done. It can also contain the conditions that need to be evaluated during the process. In Expeditor 2000, the special item that contains such a workflow definition is called a Workflow Blueprint.

**4 The Work Item View was returned after a 'search' performed by the current user.**

Users who want to have access to one or more Work Items can collect the corresponding views with the Expeditor Search facilities.

A Work Item may disappear from a user's Expeditor 2000 environment for the following reasons:

**1 The view was deleted by the current user.**

The difference with 'normal' items is that the view is deleted but the associated information in the Store is not. If the information must also be removed from the Store, the Expeditor 'shred' function should be used. The shred function must be used with discretion because all associated views on other Expeditor client systems will also be removed. If there is no predefined workflow, a view may always be deleted. If there is a predefined workflow, the view may only be deleted by activating the 'continue workflow' option. The shredding of a work item can only be done by users with a dedicated permission.

**2 The Work Item was 'shredded' by the owner of the Work Item.**

When a Work Item is shredded it is physically removed from the Store. As a result, all views are removed as well, both in the environment of the current user as well as in the environment of his co-workers.

**3 The Work Item has a workflow definition attached and the current user is a participant in this process and has completed the task assigned.**

Work items that have a workflow blueprint attached can be marked as completed by activating the 'continue workflow' option. This will result in the automatic removal of the view from the Expeditor 2000 environment of the current user and the appearance of it in the Expeditor 2000 environment of the user(s) who are responsible for the next phase in the process. Users who want to continue to access their completed Work Items may do so via the dedicated system folder called 'Completed Work'.

## The Outlook interface

When the Expeditor 2000 Service is added to an Outlook profile, the Outlook folder tree is expanded with a new section. This section is called 'Work Expeditor' by default but can be changed by the user. Folders and items managed by Expeditor 2000 behave in the same manner as folders and items that are stored in other parts of Outlook, such as the Public or Personal Folders. Every type of object that can be stored in an Outlook folder, such as subfolders, documents and forms, can also be stored in the Expeditor 2000 Store. Folders and items that are created or moved into the Expeditor 2000 folder section, are automatically brought under the control of the Expeditor 2000 server. They have become Expeditor Work Items.

The Folder section contains some predefined folders; the most important one being the 'Incoming Work' Folders. This folder contains the individual work-to-be-done of a specific user. Optionally there also can be an 'Incoming Group Work' folder that contains the collection of work to be executed by the members of a specific workgroup. The contents of both folders are controlled by the Expeditor workflow system. To get a more work-oriented view on the contents of these folders, Expeditor 2000 contains a 'Digital Dashboard Nugget' that the Solution Provider can include in the user's Digital Dashboard.

Editing the contents of a Work Item, which is usually a Microsoft Office document or an Outlook Form, can be done in the same way as with other Outlook items: by using the 'Open' command or by double-clicking on it. During editing, the Work Item information in the Store is locked and can only be opened by other users in 'read-only' mode. If a user expects to work on a document for a longer period of time an explicit check out option can be used to 'reserve' it. Optionally, a reserved Work Item can be worked with off-line.

Searching for items can be done using the standard search facilities of Outlook. For more complex searches that address Expeditor specific elements, such as the identification of a specific property in a specific type of Work Item, there is a dedicated Expeditor Search Facility. Searching can be done using any combination of properties, including the document contents.

## **The Web Browser interface**

The previous section described how Work Items are presented in Outlook as an extension to the Outlook folder tree and that a more work-centric view on the information can be obtained by a Digital Dashboard component. Because of the nature of a Web browser, this work-centric dashboard-based presentation is the standard way of handling Work Items for the web environment.

For the Knowledge Worker, there is a Work Management Dashboard. This presents the active Work Item of the knowledge worker in a structured way, grouped per workflow mode. The workflow mode identifies the type of work the recipient is expected to execute. Work Items that have an expired deadline, or a deadline that will expire in the near future, are highlighted. In addition to the active work, the knowledge worker can also be informed about expected work. The expected work overview is based on the collection of active workflows where the user is a future participant in the process. For

users who have an extensive amount of work, a facility is provided to enable them to search for a specific work item in their overall work-in-progress.

For the Workgroup Manager, there is a Management Control Dashboard. This dashboard presents a structured overview of the workload in the workgroups that are managed by this user. Deadlines that have expired or impending deadline expirations are reported. A delegate option enables the delegation of an active Work Item from one user to the other.

Searching is supported through a Search Dashboard. Searching can be done using any combination of properties of a Work Item, including the document contents (full-text search). The Search dialogue contains two separate sections, one about the items that should be searched for including the search criteria, and another one in which the properties can be defined that should be displayed in the report. The complete dialogue can be stored in what is called a Search Profile. If the same query has to be executed again, the user can simply activate a predefined profile is.

# 6 Platform Information

The installation and activation of Compaq Work Expeditor 2000 requires the presence of the following system components:

## **Outlook Client**

- Windows 95, Windows 98, Windows NT WS 4.0 or Windows 2000 Professional
- Outlook 98 or Outlook 2000
- Access to an Exchange Server 5.5 or higher.

## **Browser Client**

- Internet Explorer 5, Netscape 4 or higher
- Access to an SMTP compliant mail system

By default, the corresponding Microsoft Office suite should also be available on the client systems.

## **Server**

- Windows NT 4.0 or Windows 2000 Server  
Expeditor 2000 supports the Windows NT clustering services
- SQL Server 7.
- Microsoft Index Server (optional)
- Internet Information Server (optional)

For a more detailed overview of the prerequisites, see the Software Product Description (SPD) of Work Expeditor 2000.

Extensive information for Compaq Work Expeditor 2000 is available at:  
<http://www.compaq.com/expeditor>.



# Glossary

## **Cache File**

A file that is present on all client systems that have the Expeditor client software installed and that holds a copy of the configuration and administration data. This information is periodically replicated from the Main Server.

*See also Main Server.*

## **CDO**

A Microsoft controlled application-to-application protocol which manipulates work management data.

*See also MAPI*

## **Check in/Check out**

A mechanism to take document-based business information from a Repository (check out) and to restore it as soon as the updated version meets the right conditions. (check- in). Expeditor 2000 contains both an implicit and an explicit check in/check out option. The implicit option is used by the system itself when documents are edited directly in Outlook. The system automatically checks out the document and delivers it ready for editing on the client system as soon as the document is activated. Documents are automatically checked in as soon as the editor session is closed. During a check out, documents are

locked for other updates. Users may also use an explicit check out option to reserve and lock a document for a longer period of time. If necessary, such a checkout can include the delivery of an off-line copy of the document.

*See also Repository, Work Item*

## **Client-Server**

An implementation of a software solution in which one or more of the main components, such as the presentation logic, the business logic, and the data-handling is executed on more than one system platform.

## **Configuration Data**

The part of the Repository that holds a definition of the fundamentals of a specific Expeditor solution. All elements of the solution are grouped together into one or more Software Components.

*See also Repository, Software Components.*

## **Database View**

Database Views are a means to customize the user's perception of a database. Expeditor 2000 uses views to present a business-oriented database design that can be used for reporting purposes.

*See also Microsoft SQL Server.*

**Digital Dashboard**

A digital dashboard is a customized Outlook 2000 based solution for knowledge workers that consolidates personal, team, corporate, and external information with single-click access to analytical and collaborative tools. It is designed to integrate well with existing business systems. One of the business systems it can be integrated with is Expeditor 2000.

*See also Microsoft Outlook.*

**Document Pool**

The part of the Store that holds the documents and forms.

*See also Store.*

**Knowledge Worker**

An office worker who is able to create new business information as a result of his or her knowledge and experience in a specific area.

*See also Digital Dashboard.*

**Main Server**

A server system on which the Expeditor 2000 server software is installed and that holds the Configuration Data, the System Administration Data, and (a part of) the Store.

*See also Satellite Server, Configuration Data, Administration Data, Store.*

**MAPI**

A Microsoft controlled application-to-application protocol to manipulate e-mail messages.

*See also CDO.*

**Microsoft Exchange**

A server based application for the handling of e-mail messages and other collaborative services.

Expeditor 2000 uses Exchange as the basic communication infrastructure, for example to send notification messages.

*See also Microsoft Outlook*

**Microsoft Outlook**

A client-based application that combines the handling of e-mail with a rich set of collaborative features.

The information that can be manipulated is displayed in a folder tree. This tree is populated with folders that can hold items.

Examples of items are e-mail messages, notes and forms. Forms can be both standard Outlook forms and 'encapsulated' versions of Microsoft Office documents.

Expeditor 2000 can use Outlook as the front-end application to manipulate Work Items.

*See also Microsoft Exchange, Work Item, Digital Dashboard*

**Microsoft SQL Server**

A server-based application that offers relational database services to applications.

Expeditor 2000 uses SQL Server to store and maintain the structured part of the Repository data.

*See also Repository, Database Views.*



**NTFS**

The standard file system of the Windows NT operating system.

**Repository**

The collection of data that is controlled by an Expeditor 2000 implementation. It contains both a definition of the solution, the administrative run-time information and the actual business information. The last part is called the Store. The structured part of the Repository is stored in a SQL Server database. The non-structured part, containing for example documents and forms, is stored directly in the Windows NT file system. This last part is called the Document Pool.

*See also Configuration Data, Administration Data, Store, Document Pool, Microsoft SQL Server.*

**Satellite Server**

A server system on which the Expeditor 2000 server software is installed and that only controls a section of the Store.

*See also Main Server, Store.*

**Store**

The part of the Repository that holds the business data.

*See also Main Server, Satellite Server.*

**Software Component**

A collection of Configuration Data that offers a consistent piece of functionality. Software Components can be extracted from development

systems and installed on target systems.

*See also Configuration Data.*

**Software Component File**

The intermediate format of a Software Component. A Software Component File is the result of a Software Component extraction and can be used as input for the Software Component installer on another Expeditor system.

*See also Software Component.*

**View**

The presentation of a Work Item at the level of the user interface. Views can be manipulated in the same way as any other item. The main difference is that their removal from the desktop does not automatically mean that the associated Work Item is removed from the Store as well. If that is necessary, the View must be 'shredded'.

*See also Work Item, Outlook, Web Browser.*

**Web Browser**

Software designed to present documents in HTML format. The HTML format is used as a standard on the Internet. The overall collection of all HTML based documents that have been made available on the Internet is called the World Wide Web. The most important Web Browsers that are available today are Internet Explorer and Netscape Navigator.

### **Work Expeditor 2000**

A collaborative Work Management System for Microsoft Outlook and the Internet.

*See also Microsoft Outlook, Web Browser.*

### **Work Item**

A folder or item for which the data is stored in and controlled by the Expeditor 2000 Store. A Work Item is presented to the end users as a 'normal' item. In Expeditor 2000 this visible presentation of the Work Item is called a view. An important quality of a view compared with other items on the desktop, is that their removal from the desktop does not automatically mean that the corresponding Work Item is removed from the Store as well. If that is required, the view must be 'shredded'. In administrative environments, the most significant Work Items are normally folders, documents and forms.

*See also Outlook, View.*

### **Workflow**

The way documents, activities and business information should flow through an organization so that business cases are handled in line with the associated procedures.

*See also Workflow Blueprint.*

### **Workflow Blueprint**

A graphical presentation of a business process. The blueprint describes the steps in the process, the activities that need to be

executed, and the conditions that need to be evaluated.

*See also Workflow.*