

This book describes service access modules and their setup and address templates. A service access module (SAM) extends a user's PowerTalk system to provide access to non-AOCE mail and messaging services and catalog services.

The AOCE software comes with a set of application programming interfaces (APIs) that allow you to extend the features provided by PowerTalk, to build collaborative applications, and to create service access modules that integrate external services into a user's PowerTalk environment. This book describes the APIs you can use to create SAMs and tells you how to write and set up a SAM. The AOCE APIs used by application programs are described in the book *Inside Macintosh: AOCE Application Interfaces*.

You should read this chapter if you are interested in developing a service access module for PowerTalk system software. PowerTalk system software is the implementation of the Apple Open Collaboration Environment (AOCE) technology by Apple Computer, Inc. You will find detailed information about service access modules in the remaining chapters of this book.

This chapter gives a brief overview of service access modules and describes how they fit into a PowerTalk system. Then, it briefly describes mail and messaging service access modules, catalog service access modules, and the AOCE setup and address templates needed for the configuration of service access modules.

## Overview

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Service access modules and their setup and address templates provide

- a user interface for non-AOCE mail and messaging services that is consistent with that provided by the PowerTalk system software and PowerShare servers
- a user interface for browsing, searching, and editing information contained in non-AOCE databases and address directories that is consistent with that provided by PowerTalk and PowerShare catalogs
- a consistent programming interface for collaborative application developers, facilitating the development of cross-platform collaborative applications

Through the mechanism of the service access module, the PowerTalk system software architecture simplifies a Macintosh computer user's interaction with existing mail and messaging services and with catalog services. A *service access module* (SAM) is a software component that provides the PowerTalk user with access to external mail and messaging services or catalog services. *External services* are those that are not provided automatically with PowerTalk system software and PowerShare servers. A SAM provides its services to the user through the Catalogs and Mailbox Extensions to the Finder and through AOCE templates. Therefore, the user interface is consistent across different mail and messaging services and catalog services.

Consider the situation prior to the advent of AOCE technology. A Macintosh user with accounts on a variety of electronic mail services, such as AppleLink, the Internet, CompuServe, cc:Mail, and QuickMail, had to log on to each of these services to send and receive mail. With PowerTalk software installed, by contrast, a user can employ a single

## Introduction to Service Access Modules

method to access all electronic mail services, sending and receiving all types of electronic mail through a single mailbox on the desktop. You can provide a PowerTalk user with access to an external mail or messaging system by writing a messaging service access module (MSAM).

Typically, a user needs a repository of addresses and the ability to look up those addresses to make use of a mail service. In a PowerTalk system, addresses are stored in catalogs. Although one of the primary uses of a catalog is to store addresses, the content of catalogs is not limited to address information. In fact, you can provide a catalog service access module (CSAM) and associated AOCE templates to allow a PowerTalk user to browse and read any sort of information stored in any sort of external database, address directory, or catalog, regardless of the structure of the underlying information.

AOCE technology allows two types of MSAMs: server-based and personal. Whereas a server-based MSAM requires a system administrator to set it up and maintain it, any user can install a personal MSAM on his or her computer, becoming both the system administrator and a user of the system (in much the same way that System 7 provided personal file sharing). All CSAMs are personal, installed on an individual user's computer. Personal SAMs require minimal setup by the user and need no intervention by a system administrator.

## Messaging Service Access Modules

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A messaging service access module (MSAM) provides a link or gateway to an external mail or messaging service. A mail service transfers information between people. A messaging service transfers information between processes. An MSAM may provide either mail or messaging services, or both.

An MSAM's basic tasks are to translate addresses and data from AOCE formats to external formats and vice versa, and to transfer messages. Historically, most gateways have been mail gateways, and most mail has consisted of plain text data. However, users can now exchange mail that contains styled text, pictures, sounds, and movies as well. Processes can also exchange data in a variety of formats.

MSAMs come in two basic types—server-based and personal. A server-based MSAM acts much like a traditional store-and-forward mail gateway. It provides a transport-level connection between a PowerShare mail server and one or more external mail or messaging services. The external services may be of different types. For instance, it is possible for a single server-based MSAM to provide a connection to AppleLink and to the Internet. A server-based MSAM must be set up and maintained by a system administrator and typically connects large systems.

A server-based MSAM does not work on behalf of individual users; it does not need individual account or password information. It delivers messages to a system. It is not responsible for delivering the message to the recipient. You implement a server-based MSAM as a foreground application.

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Personal MSAMs represent a major innovation in the use of gateways, unique to the Macintosh computer. A personal MSAM is user-centered; it acts as the user's agent. It provides a user with a personal connection to an external mail or messaging service through the Mailbox Extension to the Finder. A user simply drops the MSAM into the System Folder and provides configuration information through the PowerTalk Key Chain. A personal MSAM does not require the services of a network or system administrator.

Usually, one thinks of a personal MSAM as connecting a user to a mail service, for example, the AppleLink service. A personal MSAM can also provide access to private devices connected to the user's Macintosh computer. For instance, you can write a personal MSAM to connect to a fax modem.

There are many implementation decisions you must make when writing a personal MSAM. For instance, once the user has read a message, you must decide whether to delete the message in the user's account on the external mail service, or to keep a copy of the message. The choice has certain implications for the user. Consider an MSAM that automatically deletes mail once it has been read. Suppose a user opts to have mail automatically downloaded at certain times (a feature all personal MSAMs should offer). In this case, when the user is not at his or her Macintosh computer, he or she may not have access to the mail (because, once the MSAM has downloaded the mail, no copy exists on the external mail service). If, however, the MSAM keeps a copy of previously read mail on the external mail system, then the user must periodically empty the mailbox on the external mail system or the mail server's disk will eventually become full. Your MSAM can deal with such choices in any way you see fit, including offering the user both options in a preferences dialog box.

Another example concerns whether or not to store incoming mail on the user's Macintosh computer. Personal MSAMs create message summaries for incoming mail. A message summary contains important information about the message, such as the sender, the subject, the time it was sent, and so forth. As a result, the user can browse incoming mail without the message itself being physically present on the user's computer. An MSAM can then download the message itself only when the user actually wants to open and read the message. Downloading a message on demand is an advantage if disk space is in short supply on the user's Macintosh. On the other hand, it is a disadvantage if the physical connection over which the message is transferred is slow.

You make these and other implementation decisions by considering the characteristics of the mail system to which you provide access and the needs of your users. PowerTalk system software does not dictate these decisions. You implement a personal MSAM as a background application.

The current implementation of AOCE system software does not fully support the transfer of process-to-process messages by a personal MSAM.

For detailed information about writing an MSAM, see the chapter "Messaging Service Access Modules" in this book.

## Catalog Service Access Modules

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A catalog service access module (CSAM) provides a user with access to one or more catalogs of information and with a consistent way of browsing and searching the information. A CSAM implements the Catalog Manager API for an external catalog or database and translates data between AOCE data formats and those of the external catalogs that the CSAM supports.

AOCE catalog services grew out of the need to provide a way for users to browse and search for the addresses of those they wanted to communicate with. Once an MSAM is available to a user, it is useful only if the user knows one or more addresses reachable through that MSAM. Typically, a user wants to look up addresses in an address directory. For this reason, an MSAM is usually accompanied by a CSAM that gives the user access to a catalog containing addresses available on a given messaging service.

AOCE catalogs can contain any type of information. You can write a CSAM that has no association with an MSAM. The CSAM may provide access to a database containing, for example, a native plant encyclopedia or a reference on human nutrients. A catalog can contain any information that can be stored in AOCE records and attributes and that can be displayed by AOCE templates.

Because not all external catalogs and databases have the same capabilities, a CSAM must provide a set of capability flags to the Catalogs Extension to the Finder. The flags indicate the capabilities of each catalog the CSAM supports. The user interacts directly with the Catalogs Extension (CE) to search a catalog. Therefore, the user is limited to the search capabilities of the CE and cannot use additional search or query capabilities that may exist in the external catalog or database.

A CSAM is not limited to accessing traditional shared databases. You can write a CSAM to access private devices that the user connects to the Macintosh computer. For example, a catalog can reside on a compact disc.

Most users search or browse catalogs in real time. Because the task of retrieving information is performance-sensitive, you implement a CSAM as a driver.

The AOCE software architecture does not prevent the development of server-based CSAMs. However, support for server-based CSAMs is not currently implemented in the AOCE software. If you want to make information available to networked users as a server-based catalog, you can write an application that transfers your external catalog information into a PowerShare catalog.

As is the case with MSAMs, there are numerous implementation decisions that you must make when writing a CSAM. The AOCE system software architecture allows for much flexibility. For example, you can cache information from your external catalog locally or you can retrieve it when the user wants it. You make these decisions based on the characteristics of the catalog services you support and the needs of your users.

For detailed information about writing a CSAM, see the chapter “Catalog Service Access Modules” in this book.

## AOCE Setup and Address Templates

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A special catalog called the *PowerTalk Setup catalog* stores information about all of the mail and messaging and catalog services available to the user of a given Macintosh. The writer of a personal MSAM or CSAM must provide a setup template, which is a set of AOCE templates that work with the PowerTalk Key Chain to allow the user to set up and configure the mail or catalog service. The user enters such information as the account name and password, automatic connection preferences, and so forth.

If you are writing an MSAM, you also need to provide an address template that allows the user to create addresses for the external messaging system.

For detailed information about writing AOCE setup and address templates, see the chapter “Service Access Module Setup” in this book.

