



Version 3

*Scalable Message Oriented Middleware for
Distributed Computing*

Getting Started

(read this first)



Envoy Technologies Inc.

WELCOME . . .

We are pleased to provide you with the accompanying software and documentation for X/PC Version 3.3.0. In order to make most effective use of these, we recommend that you read this Getting Started Guide as your first step with the product.

X/PC Version 3 is a multifaceted software tool for building distributed computer applications. The range of applications that fall under the heading of “distributed computing applications” is large and growing. These applications can be categorized in many different ways, such as by function (e.g., real-time communications, high message throughput, inquiry-response, client/server, guaranteed message delivery) or by industry (e.g., telecommunications, financial services, military systems, independent software vendors).

With its diverse set of IPC capabilities, X/PC provides the means for building such applications. To be successful with the product, however, you must be oriented and attuned to it, especially if you are a new user. We have developed this document to streamline that process. Knowing up front what to read, what to install and what to test will help you to move more effectively towards optimized use of X/PC.

That is the purpose of this document.

After reading this brief guide, you should understand:

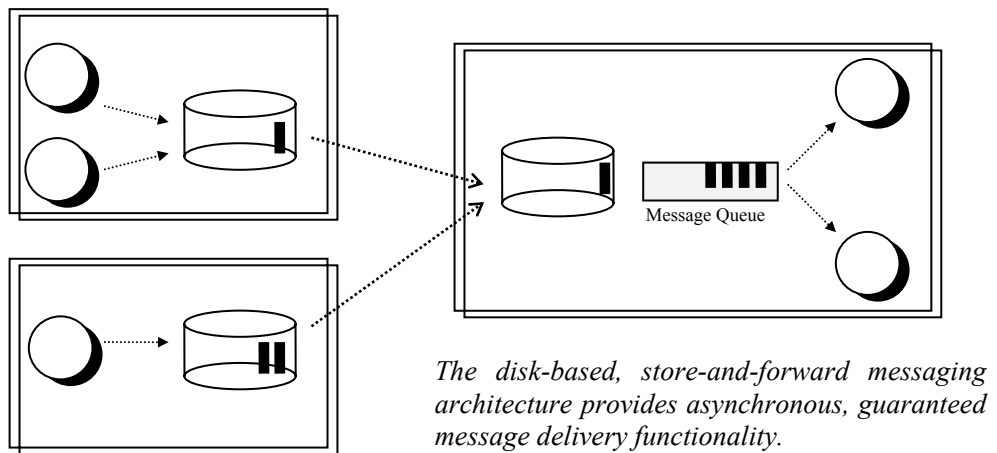
- ◆ Which areas of X/PC documentation are *required* reading, which are *useful* reading and which are *not relevant* for your particular application(s)
- ◆ Where to find installation instructions for your platform(s)
- ◆ Where to find sample programs for getting started to program with X/PC

Please feel free to call our Technical Support Desk’s number – (732) 549-6500 –with any questions or comments regarding the installation or use of X/PC. We are eager to assist you in realizing maximum benefit from X/PC in your environment.

A BRIEF OVERVIEW OF X/PC

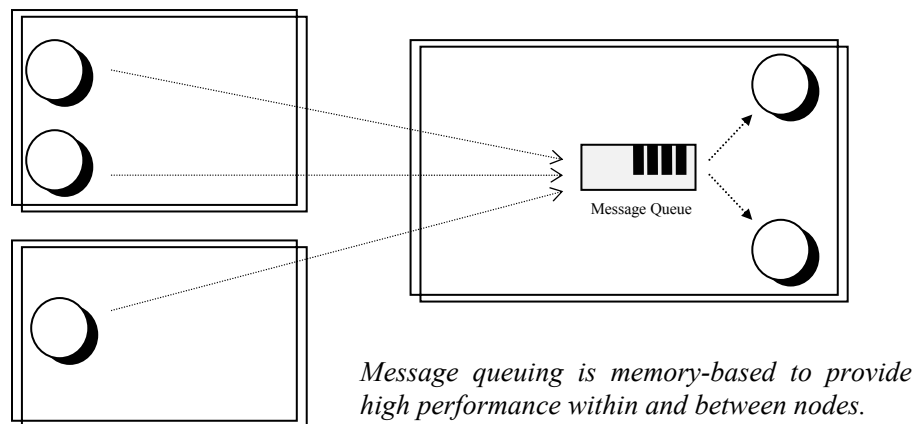
X/PC Version 3 is comprised of four subsystems for supporting a wide range of interprocess communication activities. They are:

MomSys, the Message-Oriented Middleware Subsystem: This subsystem provides a broad range of network transparent, program-to-program messaging functionality with a primary emphasis on **guaranteed message delivery** of application messages. Among the subsystem's many features are: dynamic system scalability, continuous message-tracking and asynchronous "fire-and-forget" application messaging.



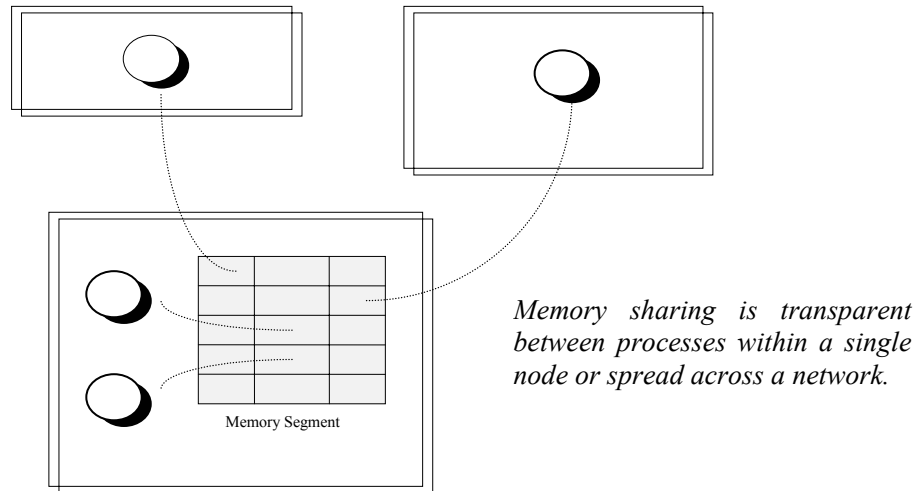
The MomSys Programming Model

QueSys, the Queue Subsystem: This subsystem supports network transparent memory-based message queuing with a major emphasis on **very high performance** application message queuing within network and stand-alone settings. Other features include message multi-casting, queue overflow spooling, asynchronous message backlog monitoring, etc.



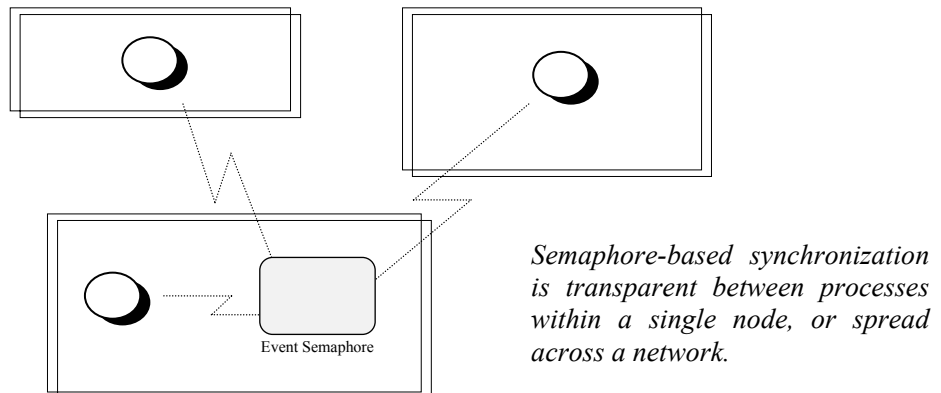
The QueSys Programming Model

MemSys - the Memory Subsystem: This subsystem supports **network-transparent memory sharing** between disparate application processes. Besides providing virtual access to shared memory segments, MemSys also supports the ability to dynamically lock, unlock and asynchronously monitor changes to regions of shared memory, with the granularity of a single byte.



The MemSys Programming Model

SemSys, the Semaphore Subsystem: This subsystem supports network-transparent semaphore synchronization between processes spread over a network. The primary focus of SemSys is support of **network-transparent asynchronous event synchronization**. SemSys additionally supports resource-contention management facilities.



The SemSys Programming Model

Programs written using X/PC may employ one or more of the four subsystems for achieving their application objectives.

PRODUCT ROAD MAPS

X/PC Version 3 has two sets of components: *documentation* and *software*. The following sections are intended to provide easily understood guidelines for navigating within these two sets of product materials.

Documentation Road Map

- ◆ X/PC Version 3 includes the following documentation:
- ◆ Getting Started Guide (*this document*)
- ◆ X/PC User Guide and Reference Manual
- ◆ MomSys Subsystem User Guide and Reference Manual
- ◆ QueSys / MemSys / SemSys User Guide and Reference Manual
- ◆ Platform Notes

User Guides present material in a narrative form. Examples are presented where necessary, for the purpose of concept clarification. User Guides are *not* used for presenting fully qualified feature definitions, but rather are for learning how to use the product.

Reference Manuals presents precise product usage instructions. As an example, API Manual Pages fully defining the various X/PC function calls, parameters, return-codes and possible errors, are found within the respective Reference Manuals.

It is **not** necessary to read all of the above documentation to become productive with X/PC. The areas of documentation that need reading depend on the kinds of IPC functionality required by your application.

Read the following brief descriptions of the various documentation components, and then select the one(s) that address your application needs.

THE X/PC USER GUIDE AND REFERENCE MANUAL

The X/PC User Guide and X/PC Reference Manual are delivered in a single binder and introduce the user to the X/PC programming environment. Any usage of X/PC's various subsystems requires an understanding of the basic concepts found within these documents.

The most important sections of the X/PC User Guide are Sections 3, 4 and 5; they are required reading. Other sections, providing background and advanced usage information, can be referred to at a later time. Special issues and features are addressed in the Technical Notes provided in the User Guide's Appendix. The X/PC Reference Manual provides accompanying reference information for the concepts described in the X/PC User Guide.

THE MOMSYS USER GUIDE AND REFERENCE MANUAL

The MomSys User Guide and MomSys Reference Manual are delivered in a single binder and introduce the user to the MomSys programming model. Any usage of this subsystem's facilities requires an understanding of the basic concepts found within these documents.

The most important sections within the MomSys User Guide are Sections 2, 3, 4 and 5; they are required reading. Other sections and appendices provide background and advanced usage information and can be referred to as needed. The MomSys Reference Manual provides accompanying subsystem reference information for the concepts described in the MomSys User Guide (e.g., the MomSys API man-pages).

THE QUESYS / MEMSYS / SEMSYS USER GUIDE AND REFERENCE MANUAL

The QueSys/MemSys/SemSys User Guide and QueSys/MemSys/SemSys Reference Manual are delivered in a single binder and introduce the user to the programming model employed when programming with these three X/PC subsystems. Any usage of these subsystem requires an understanding of the basic concepts found within these documents.

Because of their similarity in programming approach, these three subsystems are presented as a single unit. Identifying which sections are most important to be read depends on which of the subsystems will be utilized. Scanning the Table of Contents of the QueSys/MemSys/SemSys User Guide is a good way to identify the relevant sections. The accompanying QueSys/MemSys/SemSys Reference Manual provides reference information for the concepts described in the User Guide (e.g., the API man-pages).

PLATFORM NOTES

The “Platform Notes” binder contains brief guides describing how X/PC is installed and used on each of the available platforms. For example, when the X/PC product is shipped for usage with the Windows NT, HP and Sun Solaris operating systems, this binder contains a Platform Notes document for each of those three platforms.

These Notes contain information that is essential for starting application development work with the product, including: X/PC product installation instructions, application program compilation and linking guidelines, and other similar topics.

It is generally better to turn to the Platform Notes and the actual X/PC Software *after* you've begun to read one or more of the above-mentioned User Guide documents.

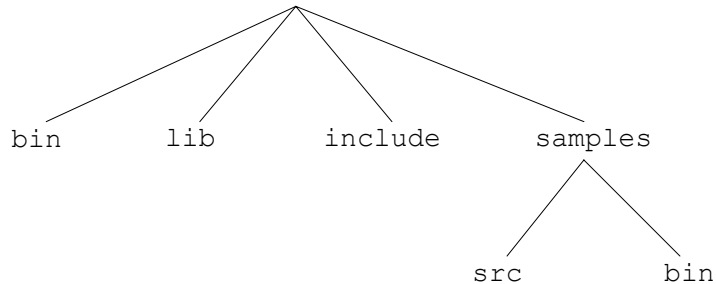
Software Road Map

The X/PC Version 3 software is provided with a separate set of magnetic media for each platform shipped. For example, a product shipment for usage on Windows NT, HP and Sun Solaris will include separate software media for each of those three platforms.

Following successful installation of the software product (installation is discussed below), one will notice that the X/PC software has a fairly consistent presentation on each of the installed platforms. This section outlines that general structure.

THE BASIC INSTALLATION DIRECTORY STRUCTURE

Once installed, X/PC creates a basic directory structure for dividing its software elements. The general names of these directories are: “bin”, “lib”, “include” and “samples”.



- ◆ The `bin` directory holds all executables provided as part of the product (excluding sample programs, described below). It is important to have this directory inserted within the `PATH` of users who are to work with the product.
- ◆ The `lib` directory holds all libraries, archives, DLLs, etc., provided as part of the product. In certain cases additional subdirectories are included for holding shared-library forms of product libraries.
- ◆ The `include` directory holds all ‘C’ language “include” files needed for application development.
- ◆ The `samples` directory contains two subdirectories, `src` and `bin`, that hold sample programs (source code and executables, respectively), for usage by programmers getting started with the product.

While all platforms have the above general structure, certain platforms have additional installation directories that are created for supporting platform-specific aspects of the product. These are described within the respective [Platform Notes](#).

GETTING STARTED

As stated earlier, your first task as a new user of X/PC Version 3 is to identify which interprocess communication (IPC) capabilities are needed by your application and, accordingly, which X/PC subsystems are relevant to your project. You should then start reading the X/PC user documentation corresponding to these needs.

Once you have a basic understanding of the appropriate X/PC functionality, it is appropriate to start working with the actual product. The new user of X/PC should approach this “hands-on” initiation to the product in two steps: *Installation* and *Test Drive*.

Installing the Product

Instructions for installing X/PC Version 3 are provided on a platform-by-platform basis, within the respective [Platform Notes](#). These instructions are straight-forward and, when followed carefully, should create the product directory structure outlined above.

Refer to the individual [Platform Notes](#) for performing product installation and for detailed information on what (if any) system-specific configuration is required and/or automatically occurs as part of X/PC product installation on that platform.

Taking a Test Drive

The best way to become comfortable with the X/PC product is to *use it*. X/PC Version 3 bundles a number of complete sample programs for immediate use by the new user. The programs provide ‘C’ coding examples for utilizing each of X/PC’s subsystems.

The ‘C’ source code files for these examples are installed within the `src` subdirectory of the `samples` installation directory. Some of these programs have been pre-built using `makefiles` which are also within the `src` directory. The executables are in the `samples/bin` subdirectory.

Included is a sample X/PC platform configuration file (with the name “`xipc.env`”). This file can be used for starting the X/PC environment on your test platform. Refer to chapter 3 of the [X/PC User Guide](#) for a complete discussion of the X/PC platform environment.

Included, as well, is a sample X/PC instance configuration file (with the name “`test.cfg`”). This file can be used for running the test programs and as a starting point for creating future instance configuration files. The file is installed within the `samples/bin` directory.

Another sample program, `parms.cfg`, is an instance configuration file which lists every configurable parameter. It can be edited to fit specific resource needs.

Any testing of X/PC “namespaces” will require that you edit the `NAMESPACE` statements within these two files before using them. The MomSys subsystem is the only subsystem currently enabled to use X/PC namespaces. Accordingly, the [MomSys Users Guide](#) provides complete details as to how the `NAMESPACE` statements should be coded within the platform and instance configuration files.

Important Reminders - When Getting Started

The new user of X/PC Version 3 may hit upon one or more questions while getting started with the product. The following list of “reminders” addresses the more common issues that arise :

- ◆ Make sure that you have configured your TCP/IP environment correctly, as described within the [Platform Notes](#).
- ◆ Make sure to configure the XIPCROOT environment variable properly before working with the product. The function of this environment variable is described in the [X/PC User Guide](#) and [Reference Manual](#). The proper setting of this variable is critical to using the product successfully.
- ◆ X/PC Version 3 has an `xipc.env` file included within the installation directory. This file is employed by X/PC for starting up the platform-wide X/PC environment. (See the descriptions of the `xipcinit` and `xipcterm` commands within the [X/PC User Guide](#) and [Reference Manuals](#) for details.) While the contents of this file are generally sufficient for initial usage, it should in any event be reviewed.
- ◆ You can install X/PC in a read-only area of your file system (leaving the `xipc.env` file in a writeable area of the file system, however.) See section 3.3.1 of the [X/PC User Guide](#) for further details.
- ◆ As mentioned, X/PC provides a sample instance configuration file to start working with. The name of this file is `test.cfg`. This file is also generally usable “as is,” but, as with the `xipc.env` file, it should be reviewed by the new user.
- ◆ It is very useful to create an XIPC environment variable that is set to the full path name of the instance configuration file that will be used when working with the product, specifically for working with X/PC instances. This variable, which is defined in the [X/PC User Guide](#) and [Reference Manual](#), is referenced by most X/PC utilities that manipulate instances (e.g., `xipcstart` and `xipcstop` to start and stop instances), as well as many of the sample programs.
- ◆ Become familiar with the X/PC Interactive Command Monitor. This command has the simple name “`xipc`”. It allows *all* of X/PC’s functions to be invoked from a command line without having to write any ‘C’ code. **This is an extremely useful tool for the new user of the product.** Details of this utility are found in the [X/PC User Guide](#) and [Reference Manual](#). Semantics for interactive programming are provided for each API on the respective man-pages, as are samples of such usage.
- ◆ Become familiar with the four subsystem monitor programs: `momview`, `queview`, `semview` and `memview`. Currently implemented as character-based monitors, **these monitors can provided a wealth of information as to what is occurring within an X/PC instance when an application is running.**

MOVING ON . . .

The above instructions should ease one's entry into distributed application development using X/PC . From this point forward the learning process occurs quickly. Many users have become productive with X/PC just by reading through the documentation and then letting their creative juices flow. Others have used Envoy Technologies's technical support engineers on an occasional basis for sounding out their ideas. Both approaches work.

In either case, your growing knowledge of X/PC will assist you and your organization in developing effective and timely solutions to distributed computing applications, now and into the future.