2 System Environment

The AppTransaction Xpert directory structure allows for files of different types to be stored separately, which allows for smooth upgrades.

AppTransaction Xpert files are organized into the following directories:

- Installation Directory (<install_dir>) contains system software:
  - System Directory (sys)
  - Documentation Directory (doc)

- User Home Directories include configuration and by-product files:
  - Administration Directory (op_admin)
  - Model Directory (op_models)
  - User Report Directory (op_reports)

Additionally, this section includes the following topics for customizing the user interface:

- Editing Keyboard Shortcuts
- Adding Optional Operations

Note—Visit the Riverbed Support Website (https://support.riverbed.com) for the latest system requirements.

Installation Directory (<install_dir>)

The installation directory (<install_dir>) is the directory where the release media contents are downloaded. The installation directory is an important reference location on the disk. It is usually represented by the symbol <install_dir>, especially when it appears as part of a path name, as in <reldir>/sys/include.

The symbol <install_dir> represents an actual directory located somewhere in the file system. The user (or system administrator) has the freedom to select the location of <install_dir> and create the directory there; no hardwired location is required. One of the typical locations for <install_dir> is in the /usr directory (for example, /usr/opnet). This location is beneficial when several users with different accounts need access to the AppTransaction Xpert software. In this case, <install_dir> is owned by the root or system administrator account, with read and execute permissions set up for other accounts.

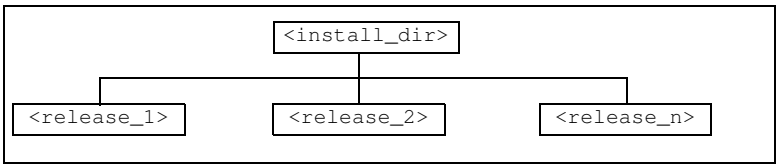
Another common location for <install_dir> is within a user's home directory. This location is useful when only one user requires access to AppTransaction Xpert software and it is preferred to handle all system administration tasks locally. In this case, <install_dir> should not be given the name <HOME>/atx, because this name may conflict with execution of the atx program in the home directory. Instead, choose a neutral name such as <HOME>/opnet.

Because the installation directory stores the AppTransaction Xpert system software (including software for different releases or different workstation architectures), there typically is only one installation directory per site. Even when several workstations are used to execute AppTransaction Xpert, all the workstations can share one <install_dir> located on a file server (via the Network File System, NFS, or a similar system).

The installation directory contains only one type of subdirectory: <release>. The release directory contains the system software and standard models for a particular release of AppTransaction Xpert. There is always at least one release directory.

When installed, new releases replace the existing files within the subdirectory, but the top-level organization remains unchanged. The following figure shows this organization.

Figure 2-1 Installation Directory Organization



Release Directory (<reldir>)

The release directory (<install_dir>/<release>, or simply <reldir>) contains the complete software and model files for a specific release. A *release* is a distinct version of AppTransaction Xpert that typically incorporates new features or major bug fixes. A release directory is identified by a name such as 17.0.T.

Each release directory contains two subdirectories, as listed in the following table.

Table 2-1 Contents of the Release Directory

This subdirectory…	Contains…
sys	system software for the corresponding release
doc	product documentation files

If you download a release or software update into an existing <reldir> directory, it replaces the existing files within these subdirectories, but the top-level organization remains unchanged. Typically, however, a new release goes into a new <reldir> directory, in which case any existing <reldir> directories (and their contents) remain unchanged. The names and locations of subdirectories under each <reldir> directory should not be modified after installation.

System Directory (sys)

The system directory (<reldir>/sys) contains software and support files, including all programs, libraries, and header files. The organization of sys is copied from the release media and remains fixed. The contents of sys subdirectories vary somewhat during installation and software updates, but remain fixed during use of the software (that is, no non-installation programs modify the contents of the sys directory and its subdirectories).

Because sys contains all of the software, it is a resource that can be shared by multiple users. It is also possible that more than one version of AppTransaction Xpert will be present at a site, due to different machine architectures.

The following table lists the subdirectories in the `sys` directory.

Table 2-2 Subdirectories in the System Directory

This subdirectory…	Contains…
configs	Code for the menus called by .ets files
etc	Files related to third party products
examples	Tutorial files
help	HTML help files
hpov	Registry setting for HP OpenView
icons	Icon databases
images	Maps, splash screens, and web images
include	Header files used during the compilation of process models
lib	Python files
pc_amd_win64 pc_intel_win32	Program executables for the specified architecture
reports	Report templates
schemas	Report schemas
utilities	Miscellaneous files that do not fall under any other category
web_reports	Images and code used in web reports

Documentation Directory (doc)

The documentation directory (`<reldir>/doc`) contains files for the product documentation.

User Home Directories

The user home directories contain configuration and by-product files.

On Windows, the user home directories are located under the following directory:

```
C:\Documents and Settings\<user_name>
```

The user home directories include:

- Administration Directory (op_admin)
- Model Directory (op_models)
- User Report Directory (op_reports)

Administration Directory (op_admin)

The administration directory (`<HOME>/op_admin`) contains configuration information and files specific to an individual user, such as:

- program configurations
- model directory paths
- logical key definitions
- model backups

Because the installation directory serves as a centralized resource for all users at a site, it is not an appropriate place to store files that are specific to a particular user. Such files are best stored in the home directory of each user, where they can be easily found and are protected by the user's directory permissions. For this reason AppTransaction Xpert supports individual *administration directories* in which users store their personal files.

The administration directory must be named op_admin so that programs can access it via the shell variable-based path name `<HOME>/op_admin`. This requirement stems from the overall file system organization. Because the installation directory and model directories can be placed anywhere in the file system, AppTransaction Xpert must have a fixed location from which to obtain the locations of these directories. The administration directory serves as a fixed site for this configuration information relative to the current user's home directory.

The initial organization of `op_admin` is established at installation, as follows:

Table 2-3 Initial Contents of the op_admin Directory

Subdirectory	Contents
bk	The backup directory stores user model backups, which are automatically created by the atx program at user-specified intervals. For more information, see Backup Directory (bk).
tmp	The temporary file directory stores any temporary files created by AppTransaction Xpert programs. For more information, see Temporary File Directory (tmp).
atx-<release>.prefs (for example: atx-16-0.prefs)	The preferences (environment database) file specifies user configuration data and preferences for AppTransaction Xpert programs.

Backup Directory (bk)

AppTransaction Xpert creates two types of backup files:

- *time-based backup files* preserve all model files being edited at the time the backup occurs. You can specify the backup interval (by default set at 60 minutes) with the backup_interval preference.

  Note—The backup operation is not performed if AppTransaction Xpert is performing another operation (e.g., a simulation) when it is time to perform a backup.

- *version-based backup files* are created each time you modify and save an existing model file. You can specify the number of versions saved with the backup_max_count preference.

Both types of backups are stored in the backup directory (`<HOME>/op_admin/bk`) with file names based on the name of the corresponding model.

Automatic backup behavior is specified by the following preferences:

- project_backup_disable—Specifies whether to suppress automatic backups of open projects.
- project_backup_query_dialog_disable—Specifies whether to suppress the Project Backup Prompt dialog box before performing automatic backups.

Version-based backups are named following this format:

```
<model_name>_bk.<n><file_type_suffix>
```

— where <n> is a consecutive number that will not exceed backup_max_count.

Time-based backup files are named following this format:

```
<model_name>_bk.<file_type_suffix>
```

If a name has not been assigned to a model when a time-based backup occurs, it has the default name “unnamed”. This file overwrites any older unnamed model backups of that type.

Temporary File Directory (tmp)

The temporary file directory (`<HOME>/op_admin/tmp`) contains temporary files generated by AppTransaction Xpert programs in the course of execution, such as the graphics for packet traces and report files generated by printing operations.

Most of the files stored in `tmp` have value for a limited time only, after which they can be removed. Typically, the only files worth keeping are captured graphics or PostScript files that must be reprinted periodically. You should move such files from `tmp` and store them elsewhere to avoid accidental removal.

Model Directory (op_models)

The models you develop are stored in one or more directories called *user model directories*. The mod_dirs preference is stored in your preference (environment database) file (`<HOME>/op_admin/env_db`17.0) and lists all model directories that are visible to AppTransaction Xpert. The directories listed in mod_dirs generally fall into one of the following categories:

- User model directories—contain the models that you or other users have created.

  As a convenience, AppTransaction Xpert creates a directory named `op_models` in your user home directory and adds this directory to the mod_dirs preference. You can change this after installation.

- Installation directories—contain files that are included in the standard installation. These directories include system and model files (under `<install_dir>\<release>\sys` and `<install_dir>\<release>\models`, respectively).

  These directories are described in Installation Directory (<install_dir>).

When the environment database (preferences) file is created, it generally lists one user model directory as the first entry in the table. Then it lists all the standard directories.

The list of user model directories grows as you continue to create and save models.There are two primary mechanisms for adding a model directory:

- When you save a file in a directory that is not included in your mod_dirs list, AppTransaction Xpert adds the directory automatically.
- You can add a directory manually by choosing File > Model Files > Add Model Directory.

Project Subdirectories

In contrast with other types of models, a project model has multiple associated files: the project file itself, as well as network scenario files, analysis configurations, output files, and so on. For this reason, the behavior when saving projects differs from the behavior for other types of models.

When you save a new project for the first time—or save an old project with a new name—AppTransaction Xpert does not save the project in the current directory. Instead, it creates a subdirectory (<*project_name*>.project) and saves all files associated with that project in the subdirectory. This ensures that all files related to a specific project reside in one directory, and that different projects do not share the same directory.

Note—You cannot save other types of files in a project directory (that is, a directory whose ends with ".project") because project directories are reserved for files created as part of that project.

Guidelines for Organizing Your User Files

You can save files in any non-project directory that is visible to your operating system. It is good practice to organize your user models and other files in a consistent manner; this will make it easier to browse, find, and keep track of all your models and other files.

We suggest the following optional guidelines:

- Keep all files under one parent directory. This makes it easier to keep track of all your files—you know that they are all located in that directory—and to move them if necessary.
- When you save a file in a directory that is not listed in your mod_dirs list, AppTransaction Xpert adds the new directory to mod_dirs automatically. As you add new directories, your models list becomes more complex and potentially harder to navigate. Consider carefully where you want to save a new file. Do you want to add a new, separate directory for this file, or store it with similar files in an existing models directory?
- Organize files into separate directories, based on model type.

Guidelines for Organizing Your Model Directories (mod_dirs) List

The order of directories in the mod_dirs list is very important because it determines the precedence of model searches. When AppTransaction Xpert searches for a model, it reads through the directories listed in mod_dirs (from top to bottom) until it finds the model. If your model directories contain two models that have the same model type and filename, AppTransaction Xpert always uses the model in the directory that is listed first.

Suppose you have two models named “my_node_model” that are stored in two different model directories. For any node based on “my_node_model,” an analysis or design operation (such as a simulation or flow analysis) uses the model in the first directory and ignores the file in the second directory.

Note—It is good practice to specify a unique name for every file of a specific file type. If AppTransaction Xpert notifies you that your model directories contain multiple files with the same file type and name, we recommend that you rename files so that all filenames are unique. This ensures that the wrong model does not get used.

To keep multiple versions of the “same” model in your model directories, you might need to open the mod_dirs preference and edit the order of your user model directories. This might occur, for example, if you want to run discrete event simulations for a scenario using different versions of the same node model.

Observe the following guidelines when organizing model directories (and icon database directories, which are also listed in mod_dirs):

- Do not change the “sys” and “models” sections of the table (that is, the directories beneath `<reldir>/sys` and `<reldir>/models`. Edit only the user model directories at the start of the list.
- Place the directory that takes precedence for new models *first* in the user model directories list. The first directory in the list is the default models directory; in some cases, AppTransaction Xpert saves new files here automatically, without prompting you for a location. For more information, see Default Model Directory.
- Place more actively used model directories, and directories with custom icon databases, before less actively used directories. This ensures that their contents will take precedence in the event of name conflicts.
- If you have duplicate versions of the same model (same model type and same filename), place the directory with the “highest-priority” models before the other directories. This ensures that any simulation, flow analysis, or other process uses the correct version of that model.
- Place the icon directory (`icons`) last in the user model directories section.

Default Model Directory

The *default model directory* is the first model directory in the mod_dirs list. When you save a file, AppTransaction Xpert might simply save the file in the default directory instead of prompting you for a location. If you save a file without getting prompted for a location, and you are not sure where the file got saved, choose Edit > Preferences, open the mod_dirs preference table, and check the first directory listed.

This behavior applies to new models only, not to previously saved models: when you save (File > Save) a previously saved model, AppTransaction Xpert writes the file to its original location when the program started or the last time a Refresh Model Directories operation was invoked.

User Report Directory (op_reports)

When you generate an AppTransaction Xpert report, you are prompted for the location to save the report. By default, reports are organized as follows:

- For web reports, the default directory is a time-stamped subdirectory (under `<reports_dir>/AppTransaction Xpert Reports)` based on the Transaction Analyzer model name and the time the report was generated: `<reports_dir>/AppTransaction Xpert Reports/<Transaction Analyzer_model_name>@<time_stamp>`
- For AppTransaction Xpert comparison and multiple-transaction reports, the default directory is `<reports_dir>/AppTransaction Xpert Reports`
- For all other AppTransaction Xpert reports, the default directory is based on the Transaction Analyzer model name: `<reports_dir>/AppTransaction Xpert Reports/<Transaction Analyzer_model_name>`

The user reports directory is organized as follows:

<reports_dir>/

```
AppTransaction Xpert Reports/ [1]
    <Transaction Analzyer_model_name>@<date><time>/ [2]
    <Transaction Analzyer_model _name>/ [3]
```

Notes

1) This is the default directory for AppTransaction Xpert Multiple Transaction Word reports and AppTransaction Xpert Comparison reports.

2) This is the default directory for AppTransaction Xpert web reports.

3) This is the default directory for all other AppTransaction Xpert reports.

Customizing the User Interface

You can customize the following user interface items:

- Editing Keyboard Shortcuts
- Adding Optional Operations

These changes are made by editing the files that control the interface. These are text files with the file name extension `.ets` (external tool support).

Editing Keyboard Shortcuts

Shortcuts are key combinations that substitute for selecting a particular menu item. For example, pressing F1 has the same effect as choosing Product Documentation from the Help menu. You can change the defined shortcuts or add new ones.

Procedure 2-1 Adding or Changing a Shortcut

1. From the system prompt, move to the `<reldir>/sys/configs` directory.
2. Locate the .ets file that contains the operation definition of the operation you will create a shortcut for. Check each of the following files in turn, until you find the desired operation definition:
   - `std_atx_project_operations.ets`
   - `std_help_operations.ets`
   - `std_edit_operations.ets`
   - `std_shortcut_operations.ets`

   ➥ Each of these files consists of numerous operation definitions, as shown in the following example.

```
# button list for Project Editor
File format: operation list

start_operation
   menu header:   "File"
   menu string:   "Close Project"
   operation:     exec_builtin close_project
   position:      2
   shortcut:      "ctrl-w"
   separator      "yes"
end_operation

start_operation
   menu header:   "File"
   menu string:   "Save Project"
   operation:     exec_builtin save_project
   position:      4
   shortcut:      "ctrl-s"
end_operation
```

3 Use the text editor's search capability to locate the operation you want to modify. The text string shown as "menu string" duplicates the menu item shown in AppTransaction Xpert.

4 Change the shortcut defined, or add a line for a new shortcut. Shortcut keys can be function keys (<F1>, <F2>) or control key combinations (specified as ctrl-<key> in the operation definition).

5 Save the changes to the file, close the text editor, and start AppTransaction Xpert.

6 Test the new shortcut. Ensure that the shortcut

- appears on the menu list next to the operation
- has the intended functionality

End of Procedure 2-1

Adding Optional Operations

AppTransaction Xpert includes code for some optional operations that are not typically included in the menus, such as the Edit Comment Log operation. You can add action buttons or menu items for these operations.

Procedure 2-2 Adding an Optional Operation

1 From a system prompt, move to the `<reldir>/sys/configs` directory.

2 In a text editor, open the `std_ace_operations.ets` file.

3 Add operation definitions for the optional operations to the file.

For example, the definitions below create the following effects:

- User lock and comment log operations are added to the File menu. User lock is the last item in the list; comment log is next to last. The position of the menu item in the list is controlled by the position variable.
- Buttons for both operations appear in the button bar. The position of the button in the button bar is determined by the order of the operation definition in the file (for example, the first operation listed will be the left-most button).

```
start_operation
   menu header:   "File"
   menu string:   "Comment Log"
   operation:     exec_builtin open_comment_log
   position:      9998
   icon:          comments
end_operation

start_operation
   menu header:   "File"
   menu string:   "User Lock"
   operation:     exec_builtin toggle_user_lock
   position:      9999
   icon:          lock_unlock
end_operation
```

4 Save the changes to the file, close the text editor, and start AppTransaction Xpert.

5 Test the new operation. Ensure that the operations

- appears on the menu list in the expected position
- appears in the button bar in the expected position
- functions as intended

End of Procedure 2-2