

Administering the Attach Manager under UNIX

EntireX includes an Attach Manager (ATM) for UNIX and Windows. This is used to start servers if a client requests a particular service from the Broker, but a server for that service is not active.

This chapter covers the following topics:

- Prerequisites
 - Setting up the Attach Manager
 - Sample Configuration File
 - Operating the Attach Manager under UNIX
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Prerequisites

The Attach Manager needs the following:

- An active task registered at the Broker. As of EntireX 8.1 SP2, the ATM task is automatically launched on each computer where EntireX is installed (the default ATM). But it is also possible to skip this automatic launch and start the ATM manually.
- A list of services the ATM is responsible for, and information on how to start the corresponding server for a particular service. The Attach Manager can start only processes that are local to where it is running, that is, the process that is attached will be run from the command line. There is no restriction, however, on what the started command-line process does, including starting a remote process on another system that will REGISTER as the server that satisfies the attach request.
- A configuration file that contains the service list the ATM is responsible for, information on how to start the corresponding server and additional configuration parameter to control the ATM functionality.

Setting up the Attach Manager

If you do not need the ATM for your own services, you do not need to perform any configuration for the ATM. A default configuration file *AtmDefault.cfg.txt* comes with the EntireX installation and contains the necessary configuration to start the EntireX sample servers. The file is located in the EntireX *config* directory. In the current version of EntireX, the ATM is not launched automatically by default. If you want to activate an automatic launch, just rename the configuration file *AtmDefault.cfg.txt* to *AtmDefault.cfg*. With the next reboot ATM is then launched automatically.

The Attach Manager is located in the *bin* subdirectory under the installed EntireX directory. The name of the executable is *exxatm.exe*. If you need to start an ATM manually for any reason, start it using this executable. You can start multiple ATMs, for example to run them under different accounts. But all ATM instances should share the same configuration file. The configuration file is organized in so-called sections to support multiple ATM instances. Without further command line arguments, the ATM uses the default section within the default configuration file. See *Operating the Attach Manager* for possible command

line arguments.

The syntax of the text-based configuration file is simple and is very similar to a Windows INI file.

Syntax Element	Description
;	Lines beginning with a semicolon are comment lines.
[]	Lines that contain text in square brackets are section headers.
Keyword=Value	Lines that are of the form Keyword=Value are keyword lines.

Note:

Any of the values of the keywords in the configuration file can be set as environment variables.

There are three different types of sections in the configuration file:

- The ATM section to configure a particular ATM instance. The ATM section with the name "Default" is the default section. If no section with the name "Default" is found, the first ATM section in the file is the default section. Each ATM section contains the configuration parameters of the corresponding ATM instance and has one related Service List section, which refers to the services that this ATM supports. Each ATM section needs exactly one ATM server attaching the related servers if requested.
- The Service List section contains a list of names of Service sections. The name of the Service List section is the name of the related ATM section appended by "_Services".
- The Service section configures a service, which consists of the service name and how to start the corresponding server.

The general structure of the configuration file is the following:

```
[Default]
; The parameters of the Default ATM
[Default_Services]
SERVICE1=
SERVICE2=
[SERVICE1]
; The parameters for SERVICE1
[SERVICE2]
; The parameters for SERVICE1
```

Parameters of the ATM Section

These sections define the Attach Manager itself and contain the keywords indicated in this table. There can be up to 16 of these sections.

Keyword	Definition and Value	Format	Example	Notes
BrokerID=	The Broker that ATM will communicate with and answer attach requests. Any valid ACI BROKERID value is allowed.	A32	BrokerID=server1:1971:TCP	

Keyword	Definition and Value	Format	Example	Notes
SSLParams=	Secure Sockets Layer Parameters for Brokers that use SSL Transport.	A512	SSLParams=VERIFY_SERVER=N&TRUST_STORE=C:\\Temp\\ExxCACert.pem	
ServerClass= ServerName= Service=	The CLASS/SERVER/SERVICE names that can be used by ATM to send commands to ATM. (See details of this feature.) The CLASS/SERVER/SERVICE name needs to be defined in the <i>Broker Attributes</i> .	A32 [for all keywords]	ServerClass=System ServerName=DefaultMain Service=Command	
UserID=	The User ID of the ATM.	A32	UserID=atman	
Token=	The Token of the ATM (used for unique identification of the User ID). There is a special value of {GeneratedToken} which will generate a unique 32-byte value for the ATM.	A32	Token=atm Token={GeneratedToken}	
Password=	Password for the User ID.	A32	Password=atman	
WaitTime=	During the specified time, the Attach Manager waits for a response. After expiration of the time, the Attach Manager receives a timeout. This is used as the WAIT time on the ATM's RECEIVE call.	A8 [identical to Broker control block WAIT parameter]	WaitTime=5M Default: 60S	
RecvLength=	Size of the buffer that is available for receiving orders.	I4 [identical to Broker control block RECEIVE-LENGTH parameter]	RecvLength=12000 Default: 8000	
HistoryFile=	File name for logging orders that have been received for restarting. If this keyword is not specified, no file is written. This can be any valid file name.	Valid path name for dependent platform. See example.	HistoryFile=%TEMP%\ Default.his	

Keyword	Definition and Value	Format	Example	Notes
HistoryFileMode=	When starting the Attach Manager, you can decide here whether the current file is to be overwritten or not.	w or a+t	HistoryFileMode=w	File is newly opened for writing; the old file is deleted.
			HistoryFileMode=a+t	Writing of the old file is continued.
LogFile=	Log information is logged here about the current status of the Attach Manager. If this keyword is not specified, no file is written.	Valid path name for dependent platform. See example.	LogFile=%TEMP%\Default1.log	
LogFileMode=	When starting the Attach Manager, the administrator can decide whether the current file is to be overwritten or not. The file can get very large.	w or a+t	LogFileMode=w	File is newly opened for writing; the old file is deleted.
			LogFileMode=a+t	Writing of the old file is continued.
Sleep=	If the Attach Manager cannot register successfully during startup, or if a connection is broken, the Attach Manager waits this specified time in seconds and then tries again. You can limit the number of connection attempts, using the keyword Retries= <i>n</i> .	I4	Sleep=120	
Retries=	If registration fails, the number of subsequent registration attempts can be limited. the keyword Sleep determines the wait time before a new registration attempt. Setting Retries=0 deactivates this functionality.	I4	Retries=0	Default value is 0.

Keyword	Definition and Value	Format	Example	Notes
ShutdownByUserRequest=	When set to 1, the ATM can be stopped when a command is sent to it to shut down. If it is set to zero, it will restart automatically.	See example.	Values: 0: Attach Manager restarts. The configuration file is read anew. 1: Attach Manager terminates itself.	

Parameters of the Service List Section

This section names the Service sections that will be used to define the services that will be attached. The prefix of the name of the section must match a specific instance of the AttachManager(n) sections.

Example: Assume there are three services to be attached. They can be logically defined as follows:

```
Default_Services]
payroll=
inventory=
qualitycontrol=
```

Therefore, there will be three optional sections following: [payroll], [inventory], and [qualitycontrol].

Parameters of the Service Section

There can be any number of Service sections attached to an ATM by means of its corresponding Service List section. The Service sections are used to define the actual commands that will be issued by ATM to attach servers to respond to Broker requests

The following are the keywords that can be used:

Keyword	Definition	Format	Example
ServerClass= ServerName= Service=	The CLASS/SERVER/SERVICE name of the service to be attached.	A32	ServerClass=AClass ServerName=ASERVER Service=ASERVICE
Min=	The minimum number of servers that should be active.	I4	Min=3
Max=	The maximum number of servers that should be active.	I4	Max=7
Increment=	The number that should be started when a request is made, up to the number indicated by Max=	I4	Increment=1
Command=	Command-line command to be issued that will start the service.	Specifies (a) the fully qualified path to the location of the executable to be run and (b) the options for that executable. See example.	Command=c:\server\bcos32.exe

Example from table above: If there are no instances of the service ACLASS:ASERVER;ASERVICE REGISTERED, the command indicated in the Command= keyword will be issued three times.

Sample Configuration File

Note:

A sample configuration file is provided in the `/config` directory of EntireX. This sample defines two ATMs: Default and AttachManager2. The default ATM supports only the services related to Default.

```
[Default]
;
; Specify the broker to which the Attach Manager attaches and
; the channel on which the Attach Manager listens for command
; requests.
;
BrokerID=localhost:1971:TCP
ServerClass=System
ServerName=DefaultMain
Service=Command
UserID=%USERNAME%
Token={GeneratedToken}
Password=Hugo
WaitTime=30s
RecvLength=12000

; Activities will be written to the history file (optional)
HistoryFile=%TEMP%\Default.his
HistoryFileMode=a+t
```

```

; Log messages will be written to the log file (optional)
LogFile=%TEMP%\Default.log
; Append to an existing file
;LogFileMode=a+t
; Create a new file
LogFileMode=w

Sleep=10
Retries=0

ShutdownByUserRequest=1

;
;
; Default's services
;
[Default_Services]
AServer=
BServer=
;
[AServer]
ServerClass=AClass
ServerName=ASERVER
Service=ASERVICE
Min=2
Max=3
Increment=1
Command=bcos32 -c<ServerClass> -s<ServerName> -v<Service> -b<BrokerID> -i500
;
[BServer]
ServerClass=BCLASS
ServerName=BSERVER
Service=BSERVICE
Min=1
Max=1
Increment=1
Command=bcos32 -c<ServerClass> -s<ServerName> -v<Service> -b<BrokerID> -i750
[AttachManager2]
;
; Specify the broker to which the Attach Manager attaches and
; the channel on which the Attach Manager listens for command
; requests.
;
BrokerID=localhost:1971:TCP
ServerClass=System
ServerName=AttachManager2Main
Service=Command
UserID=%USERNAME%
Token={GeneratedToken}
Password=Hugo
WaitTime=30s
RecvLength=12000

; Activities will be written to the history file (optional)
HistoryFile=%TEMP%\AttachManager2.his
HistoryFileMode=a+t

; Log messages will be written to the log file (optional)
LogFile=%TEMP%\AttachManager2.log
; Append to an existing file
;LogFileMode=a+t
; Create a new file

```

```

LogFileMode=w

Sleep=10

ShutdownByUserRequest=1
;
; AttachManager2's services
;
[AttachManager2_Services]
CServer=
;
[CServer]
ServerClass=CCLASS
ServerName=CSERVER
Service=CSERVICE
Min=1
Max=1
Increment=1
Command=bcos32 -c<ServerClass> -s<ServerName> -v<Service> -b<BrokerID> -i1000

```

Operating the Attach Manager under UNIX

Under normal circumstances, no manual operation is not necessary if the default ATM satisfies your needs. However, if you need to run multiple ATMs in your environment, this section describes how to perform the necessary operations. This section covers the following topics:

- Starting the Attach Manager
- Stopping the Attach Manager
- Logging the Attach Manager
- Attach Manager Processing

Starting the Attach Manager

➤ To start an Attach Manager

- Either from the *bin* directory of EntireX (or from any directory if the *bin* directory is in the PATH), enter the following command:

```
exxatm -F<full-path of Configuration file> -N<AttachManager1> -N<AttachManager2> ...
```

Notes:

1. With the *-N* argument you specify the ATM section for which the Attach Manager is responsible for. If this argument is omitted the attach manager is responsible for the default section.
2. With the *-F* argument you specify the location of the configuration file. If this argument is omitted, the Attach Manager uses the default configuration file. All ATM instances should use the same configuration file, so we recommend you use the default file for the default ATM.
3. The Attach Manager writes output to stdout. If you start the Attach Manager as a background process, stdout must be redirected to a file.

Stopping the Attach Manager

> To stop an Attach Manager

- Use the System Management Hub to stop any Attach Manager.

Each ATM corresponds to an particular broker and registers a command service defined with the configuration variables `ServerClass/ServerName/Service` in the ATM section. Select the service and press **Deregister** to terminate the ATM.

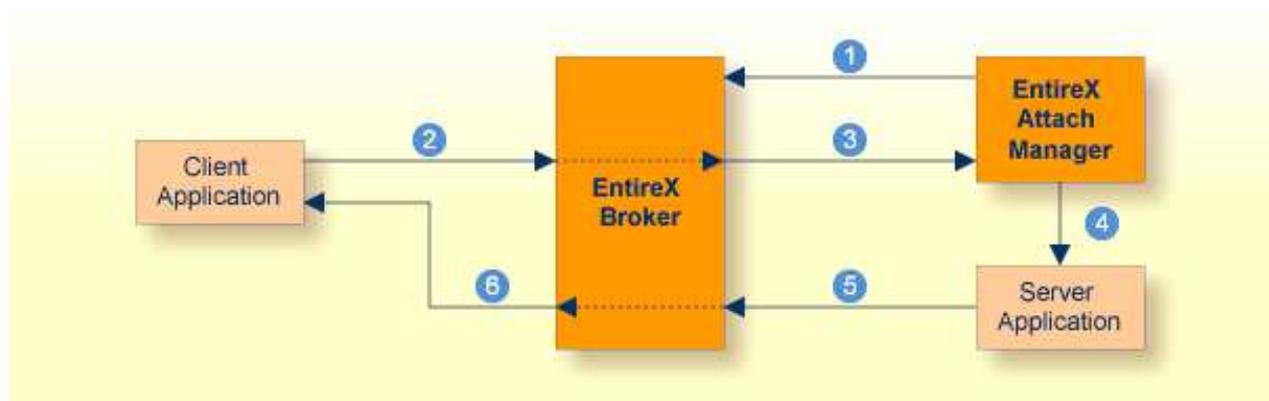
Logging the Attach Manager

The ATM log file is defined by the ATM configuration parameter `LogFile`. If the Attach Manager is launched automatically, it writes additional log information to file `exxatm.out` in the EntireX subdirectory `config\etb\ETBSRV`.

In addition to the ATM log file, a history file is defined by the ATM configuration parameter `HistoryFile`. For each order to launch a service, the ATM writes a record into the history file. The history record has the following format:

- date and time
- the service name as defined in the ATM config file
- server name, server class and service
- number of active replicates (this number is greater than 0 only if all running replicates are busy while a new client requests the service)
- number of server lookups, that is, the number of clients requesting a new replicate of the server; this is greater than 1 only if two clients request a service in parallel
- replicate increment as defined in the ATM config file
- number of replicates actually launched; this differs from the increment only if the high watermark is exceeded

Attach Manager Processing



Key

- Step 1: Attach Manager registers with Broker, indicating that it will attach named services. These are called attach-managed services.
- Step 2: Client requests a service that is attach-managed. Server may or may not be active. If it is not, a server will be started (attached).
- Step 3: Attach request comes from the Broker.
- Step 4: Attach Manager issues command to start the server application.
- Step 5: Server application issues a LOGON to the Broker, then issues REGISTER and RECEIVE. It gets message from client, processes the message, and responds.
- Step 6: Response from server is received by the client application.