ATM Client Runtime Controls

- Usage of Client Runtime Controls

- Descriptions of Client Runtime Controls

Usage of Client Runtime Controls

Correct operation of the ATM transaction manager and the Adabas Transaction Manager client proxy depends on the settings of client runtime controls. These are defined and maintained using Online Services. Their settings determine the logic to be used by the proxy during transaction processing. These settings should be determined according to production system requirements, and should be tested before being used in production.

At execution time, the Adabas Transaction Manager client proxy checks the Adabas System Coordinator system file for client runtime controls that match the name of the currently executing job. If no exact match is found, a wild-card match is attempted. Failing this, the control values for job name DEFAULT will be returned. If there is no definition under the name DEFAULT, hard-coded default values in the Adabas Transaction Manager kernel will be used.

It is therefore important to set appropriate values for each job that could load and execute the Adabas Transaction Manager client proxy.

Note:
The `NumberOfLogRecordEntries` control setting requires particular attention. This setting determines the amount of memory, per client session, that is allocated for logging diagnostic information. In a TP system that services many users, a setting of 100, for example, could quickly consume a large amount of memory. In such systems, choose a small value for this setting. See the section Client Sessions for more information.

Descriptions of Client Runtime Controls

This section describes each ATM runtime control:

- ATM ON/OFF: Activate ATM Processing

- System Coordinator Group Name

- Maximum Number of Databases

- Number of Log Record Entries

- Transaction Control

- Emergency Serial ET Commands

- Coordinate Adabas DBs Outside the Group

- Application Controls ET Data

- Generate OP Commands

- Syncpoint Processing Mode

- Transaction Model

- Generate External Syncpoint on BT Command

- Generate External Syncpoint on CL Command

- Generate External Syncpoint on ET Command

- Use Client-Side Transaction Manager

- Use Host System Transaction Manager (z/OS only)

- Extended Hold

ATM ON/OFF: Activate ATM Processing

Parameter Type	Use	Possible Values	Default
Client runtime	Indicates whether or not ATM is to provide transaction coordination for this client session.	ON | OFF	OFF

Possible values:

Value	Description
ON	Users will perform distributed transaction processing, and ATM is to provide transaction coordination.
OFF	ATM is not to be used for coordinating transactions for users in this client session.

System Coordinator Group Name

Parameter Type	Use	Possible Values	Default
Client runtime	Identifies the Adabas System Coordinator group in which the client session or TP system will execute.	Any valid Adabas System Coordinator group name	A valid group name must be provided

Maximum Number of Databases

Parameter Type	Use	Possible Values	Default
Client runtime	Sets the maximum number of databases with which a client session can have an active session at one time.	number	4

The setting should include all databases without regard to their DTP parameter settings.

Number of Log Record Entries

Parameter Type	Use	Possible Values	Default
Client runtime	Indicates whether or not internal logging is to be performed, and if so, how much space, per client session, will be used for this purpose.	0-4096	0

The ATM client proxy is capable of logging internal events for diagnostic purposes. The log buffer area is reused cyclically.

Possible values:

Value	Description
0	The client proxy will not acquire log buffer areas and will not log internal events.
1-4096	The number of entries to be reserved for internal event logging. Each entry requires 96 bytes.

Note:
Do not specify a high value for a TP system that services a large number of users since this may result in memory becoming exhausted.

The NumberLogRecordEntries client control has no effect on the logging that takes place in the transaction manager's address space. Logging by the transaction manager is controlled by the ADARUN parameter TMLOG.

Transaction Control

Parameter Type	Use	Possible Values	Default
Client runtime	Determines the action to be taken whenever an unsolicited syncpoint request is received.	GLOBAL | LOCAL	LOCAL

The setting of this control determines what action is to be taken whenever an unsolicited syncpoint request is received, that is, whether a decision to commit or back out a global transaction is to be made by the application program itself using its local ATM client proxy, or by a software component other than ATM or ATM client proxy.

Unsolicited syncpoint requests can occur if:

- The option `Client-sideTransactionManager` is in effect and ATM could receive a request to commit or back out a global transaction other than through an `ET` or `BT` command; or

- the ATM transaction manager executes with the parameter setting `TMSYNCMGR=RRMS`; or

- an application could cause a participating trigger to execute, causing an `ET` command to be issued, all without the knowledge of the user's local ATM client proxy.

Possible values are:

Value	Description
LOCAL:	Decision to commit or back out a global transaction is to be made by the application program itself using its local ATM client proxy. If unsolicited syncpoints are not valid in your environment, specify LOCAL so that any unsolicited syncpoint request is reported as an error. Specifying `TRNCTL=LOCAL` does not prevent unsolicited syncpoints from being processed; rather, it results in the user's next Adabas command being rejected with a response code 243 indicating that the syncpoint has occurred.
GLOBAL	Decision to commit or back out a global transaction can be made by a software component other than ATM or ATM client proxy. GLOBAL is required if unsolicited syncpoint requests are acceptable. **Note:** Running with GLOBAL in any environment other than CICS/RMI can cause the ATM client proxy to make additional calls to the ATM transaction manager to check transaction status. It is recommended to set `Transaction Control` to LOCAL wherever possible to eliminate these extra calls.

CICS/RMI Considerations

When running with the `Client-side Transaction Manager` option set to YES in a CICS/RMI environment, a decision to commit or back out a global transaction can occur in several ways:

- the application program issues `ET` or `BT`;

- the application program issues `EXEC CICS SYNCPOINT` (or `SYNCPOINT ROLLBACK`);

- the CICS task terminates, normally or abnormally, when updates are pending.

In the first case, the ATM client proxy is aware of the syncpoint decision.

In all other cases, from the client proxy's point of view, the syncpoint is unsolicited. If the client session is at global transaction status, an unsolicited syncpoint has no effect on Adabas databases, other than to cause held ISNs to be released. On the other hand, if an unsolicited syncpoint occurs when Adabas changes are pending, ATM is instructed to commit the changes; in this case also, held ISNs are released.

If such unsolicited syncpoints are acceptable in your CICS system, specify GLOBAL for the `TransactionControl` client control - otherwise, specify LOCAL to treat unsolicited syncpoint requests as errors.

Most CICS applications run in pseudo-conversational mode; that is, the current CICS task terminates when a screen I/Os occurs. If ATM CICS/RMI is installed and active, and client runtime control `TransactionModel` is set to MESSAGE, an application that runs in pseudo-conversational mode cannot keep an Adabas transaction open across screen I/Os because an implied (unsolicited) commit syncpoint occurs at every screen I/O. In this mode, it is not possible for a transaction to remain open across screen I/Os. See the `TransactionModel` control for details of a different way of responding to unsolicited syncpoints.

If the client control `TransactionControl` is set to LOCAL and the syncpoint resulted in Adabas changes being committed, the next Adabas call following a screen I/O returns response code 243.

Various Natural features including some SYSSEC functions maintain open Adabas transactions across screen I/Os. In a CICS/RMI environment operating with the client runtime control `TransactionModel` set to MESSAGE, such functions are likely to

- fail with a NAT3243 error when `TransactionControl` is set to LOCAL; or

- be unable to back out in case of errors when `TransactionControl` is set to GLOBAL; or

- fail with response code 144.

You should therefore execute Natural system functions in one of the following ways:

- execute Natural system functions in a system other than CICS, or in a CICS system using a link module in which the RMI is not active; or

- execute Natural system functions in a client session that operates with the client runtime control `TransactionModel` set to DYNAMIC; or

- execute Natural system functions in conversational mode when using the CICS Resource Manager Interface.

RRMS Considerations

When ATM's RRMS interface is active, a decision to commit or back out a global transaction can occur in several ways:

- the application program issues `ET` or `BT`;

- the application program issues `SRRCMIT` or `SRRBACK`;

- the application or some other agent issues `ATRCMIT` or `ATRBACK`.

In the first case, the ATM's client proxy is aware of the syncpoint decision. In other cases, from ATM's point of view, the syncpoint is unsolicited. If the client session is at global transaction status, an unsolicited syncpoint has no effect on Adabas databases, other than to cause held ISNs to be released. On the other hand, if an unsolicited syncpoint occurs when Adabas changes are pending, ATM is instructed to commit the changes; in this case, also, held ISNs will be released.

If unsolicited syncpoints are acceptable in your system, set the client control `TransactionControl` to GLOBAL - otherwise, set `TransactionControl` to LOCAL to treat unsolicited syncpoint requests as errors. If `TransactionControl` is set to LOCAL and an unsolicited syncpoint causes a client sessions's Adabas changes to be committed, the next Adabas call issued by the user returns response code 243.

If ATM runs with the `HostSystemTransactionManager` option is specified for IMS TM systems whose transactions are coordinated by RRMS, `TransactionControl` must be set to GLOBAL for these IMS systems.

Emergency Serial ET Commands

Parameter Type	Use	Possible Values	Default
Client runtime	Indicates whether or not the ATM client proxy is to switch a client session from DTP to serial `ET/BT` mode if the local ATM transaction manager becomes unavailable.	YES | NO | FORCE	FORCE

Possible values:

Value	Description
YES	The ATM client proxy is to switch a client session from DTP to serial `ET/BT` mode if the local transaction manager becomes unavailable. A response code will be returned to indicate that the local TM is unavailable.
NO	The ATM client proxy is not to switch a client session from DTP to serial `ET/BT` mode if the local TM becomes unavailable.
FORCE	A client session is to be switched to serial mode if necessary. No notification is provided.

For more information regarding DTP and Serial mode processing, refer to the section Processing Modes.

Note:
If ATM automatically switches a client session to serial `ET/BT` mode when the session has a transaction open, the client might receive unexpected response codes, even if the runtime control value for serial processing is set to FORCE. For example, the transaction might be backed out, and response 9 returned to

the client. Other response codes, such as response 240 subcode 88, might be given, depending on how far the transaction had progressed, and there is a possibility that the transaction will remain unresolved until the ATM transaction manager is once again able to carry out its responsibilities. Even so, the setting of value FORCE will ensure minimum disruption when a switch to serial `ET/BT` mode is necessary, and will probably allow most clients to continue processing without noticing the switch.

Coordinate Adabas DBs Outside the Group

From the viewpoint of a client session, an external database is a database that executes outside the scope of the session's System Coordinator group. The session's System Coordinator group is identified by the client control `System Coordinator Group Name`.

Parameter Type	Use	Possible Values	Default
Client runtime	Indicates the extent to which Adabas Transaction Manager will provide transaction coordination if the client session changes external databases.	YES | RM | NO	YES

Possible values:

Value	Description
YES	The client session is permitted to change external RMs and external non-RMs. Adabas Transaction Manager provides DTP coordination of external RMs using a 2-phase commit protocol. Serial `ET/BT` coordination is provided for external non-RMs.
RM	The client session is permitted to change external RM databases, with DTP coordination provided by ATM, as described above. If the client session attempts to change an external non-RM, the command will be rejected with RSP240/544.
NO	If the client session attempts to change an external RM or an external non-RM, the command will be rejected with RSP240/544.

This feature can be used to make it easier to upgrade multi-system environments. Historically it has been difficult to perform software upgrades in sites that deploy Adabas Transaction Manager across several inter-connected systems. This client runtime control makes it possible to upgrade one system at a time. The upgrade can be achieved by creating a new System Coordinator group in one system, replacing the previous software levels. The new client control can then be used to instruct ATM to provide DTP coordination across the System Coordinator groups.

Application Controls ET Data

Parameter Type	Use	Possible Values	Default
Client runtime	Indicates whether or not the Transaction Manager's `TMETDATA` parameter setting should be overridden.	YES | NO	NO

Possible values:

Value	Description
YES	ET data supplied on an `ET` or `CL` command will be stored only in the database to which the command was issued.
NO	ET data supplied on an `ET` or `CL` command will be stored in the location(s) indicated by the Transaction Manager's `TMETDATA` parameter.

For more information, see the `TMETDATA` parameter.

Generate OP Commands

Parameter Type	Use	Possible Values	Default
Client runtime	Indicates whether or not the ATM client proxy is to generate an `OP` command when a session uses a database without having issued an `OP`.	NO | YES	NO

Possible values:

Value	Description
NO	The ATM client proxy will not generate `OP` commands on behalf of clients.
YES	Whenever a client session uses a new database for which no `OP` command has been issued, the ATM client proxy will issue an `OP` command on behalf of the client.

Syncpoint Processing Mode

This parameter has been replaced by the `TransactionModel` runtime control.

Transaction Model

Parameter Type	Use	Possible Values	Default
Client runtime	Transaction model	MESSAGE | DYNAMIC	MESSAGE

Possible values:

Value	Description
MESSAGE	The message-based transaction model will be used. According to this model, a syncpoint always takes place when processing of a message is complete (normally, this means that screen I/O causes a syncpoint). Syncpoints caused by `ET`, `BT`, `OP` and `CL` commands are handled in the normal way. Unsolicited syncpoints cause ATM to commit (or back out) changes made to Adabas databases, and release held ISNs.
DYNAMIC	The dynamic transaction model will be used. According to this model, transactions are delimited by Adabas commands. Unsolicited commit syncpoints are ignored by ATM; `ET` and `CL` commands cause ATM to commit pending Adabas changes. Unsolicited rollback syncpoints cause ATM to back out changes from Adabas databases and release held ISNs.

Note:
Setting `TransactionModel` to MESSAGE is equivalent to `SYNCMODE=FULL` with ATM Version 1.2.

Note:
Setting `TransactionModel` to DYNAMIC is equivalent to `SYNCMODE=ADABAS` with ATM Version 1.2.

Note:
There is no `TransactionModel` setting equivalent to `SYNCMODE=ALL` with ATM Version 1.2. The reason is that there is no distinction between the settings `SYNCMODE=ALL` and `SYNCMODE=FULL` with more recent versions of ATM, since ATM will always cause held ISNs to be released when a syncpoint takes place, unless directed to do otherwise by command options and the `ExtendedHold` client control.

For more information, see also the section Syncpoint Processing Options.

Generate External Syncpoint on BT Command

Parameter Type	Use	Possible Values	Default
Client runtime	Indicates whether or not a `BT` command should cause ATM to request a rollback syncpoint from the external transaction coordinator.	YES | NO	YES

Possible values:

Value	Description
YES	Any `BT` command will cause ATM to request a rollback syncpoint from the external transaction coordinator that controls the current transaction. If there is no external transaction coordinator in use, this setting is ignored.
NO	ATM will not request a rollback syncpoint from any external coordinator when it processes a `BT` command. Furthermore, if ATM itself decides that a backout must be performed, it will not request a rollback from any external coordinator.

Regardless of the setting for this control, a `BT` command causes all Adabas changes to be backed out.

Generate External Syncpoint on CL Command

Parameter Type	Use	Possible Values	Default
Client runtime	Indicates whether or not a `CL` command should cause ATM to request a commit syncpoint from the external transaction coordinator.	YES | NO	YES

Possible values:

Value	Description
YES	Any `CL` command will cause ATM to request a commit syncpoint from the external transaction coordinator that controls the current transaction. If there is no external transaction coordinator in use, this setting is ignored.
NO	ATM will not request a commit syncpoint from any external coordinator when it processes a `CL` command.

For IMS TM systems for which the `HostSystemTransactionManager` option is specified, a setting of YES for the client control `GenerateExternalSyncpointOnCL` will be ignored, and the value NO will take effect.

Generate External Syncpoint on ET Command

Parameter Type	Use	Possible Values	Default
Client runtime	Indicates whether or not an `ET` command should cause ATM to request a commit syncpoint from the external transaction coordinator.	YES | NO	YES

Possible values:

Value	Description
YES	Any `ET` command will cause ATM to request a commit syncpoint from the external transaction coordinator that controls the current transaction. If there is no external transaction coordinator in use, this setting is ignored.
NO	ATM will not request a commit syncpoint from any external coordinator when it processes an `ET` command.

Regardless of the setting for this control, `ET` command causes any pending Adabas changes to be committed.

For IMS TM systems for which the `HostSystemTransactionManager` option is specified, a setting of YES for the client control `GenerateExternalSyncpointOnET` will be ignored, and the value NO will take effect.

Use Client-Side Transaction Manager

Parameter Type	Use	Possible Values	Default
Client runtime	Indicates whether or not transactions in this client environment are to be controlled by the environment's native syncpoint manager.	YES | NO	NO

Possible values:

Value	Description
YES	Transactions in this client environment are to be controlled by the environment's native syncpoint manager.
NO	Transactions in this client environment are not to be controlled by the environment's native syncpoint manager.

Note:
CICS under z/OS or VSE/ESA is the only client environment for which a setting of YES is currently supported for this control.

Note:
The `Client-sideTransactionManager` and `HostSystemTransactionManager` options are mutually exclusive. However, setting `Client-sideTransactionManager` to YES does not preclude the use of RRMS as an external transaction coordinator for client sessions in other jobs or TP systems, since RRMS interfaces directly with the ATM client sessions in other jobs or TP systems and not with the client proxy

CICS/RMI Considerations

When defining client runtime controls for a CICS/RMI environment:

- Setting `Client-sideTransactionManager` to NO means that ATM coordinates transactions in the normal way, but not under the control of the CICS Syncpoint Manager. That is, even when the RMI is enabled, no transaction coordination occurs between Adabas and other RMI-enabled resource managers.

- Setting `Client-sideTransactionManager` to YES activates the RMI so that the CICS Syncpoint Manager coordinates transactions across all resource managers.

Use Host System Transaction Manager (z/OS only)

Parameter Type	Use	Possible Values	Default
Client runtime	Indicates whether or not transactions in this client environment are to be controlled by the host system's native transaction manager.	YES | NO	NO

Possible values:

Value	Description
YES	Transactions in this client environment are to be controlled by the host system's native transaction manager.
NO	Transactions in this client environment are not to be controlled by the host system's native transaction manager.

Caution:
In a z/OS system, if this control is set to YES for an inappropriate type of job or client environment, or for a job or environment which has not been correctly configured to use the host system's transaction manager, sessions executing in that job will experience response code 240, subcode 444, and will not function correctly.

Note:
The setting of this control is effective only in z/OS systems. In other systems, the setting is ignored.

Note:
The setting YES is currently supported only for single-user, single-TCB batch jobs or TSO sessions, and for Com-plete and IMS TM systems, running under z/OS.

Note:
The `HostSystemTransactionManager` and `Client-sideTransactionManager` options are mutually exclusive.

Extended Hold

Parameter Type	Use	Possible Values	Default
Client runtime	Indicates whether P and M options on ET and BT commands will be honored when a distributed transaction is terminated by a series of ET or BT commands.	YES | NO	NO

Possible values:

Value	Description
YES	P and M options on ET and BT commands will be honored. For any application environment in which prefetch or multifetch command options can be used, the setting YES should be used.
NO	P and M options on ET and BT commands will not be honored.

If Adabas Vista is present in an application job or TP environment, the value YES will take effect, regardless of the setting specified for the ExtendedHold client control.

For more information on extended hold processing, see Extended Hold Processing in section Termination Commands: ET and BT.