Data Archiving for Adabas Administration

This document describes the functions used for Data Archiving for Adabas administration.

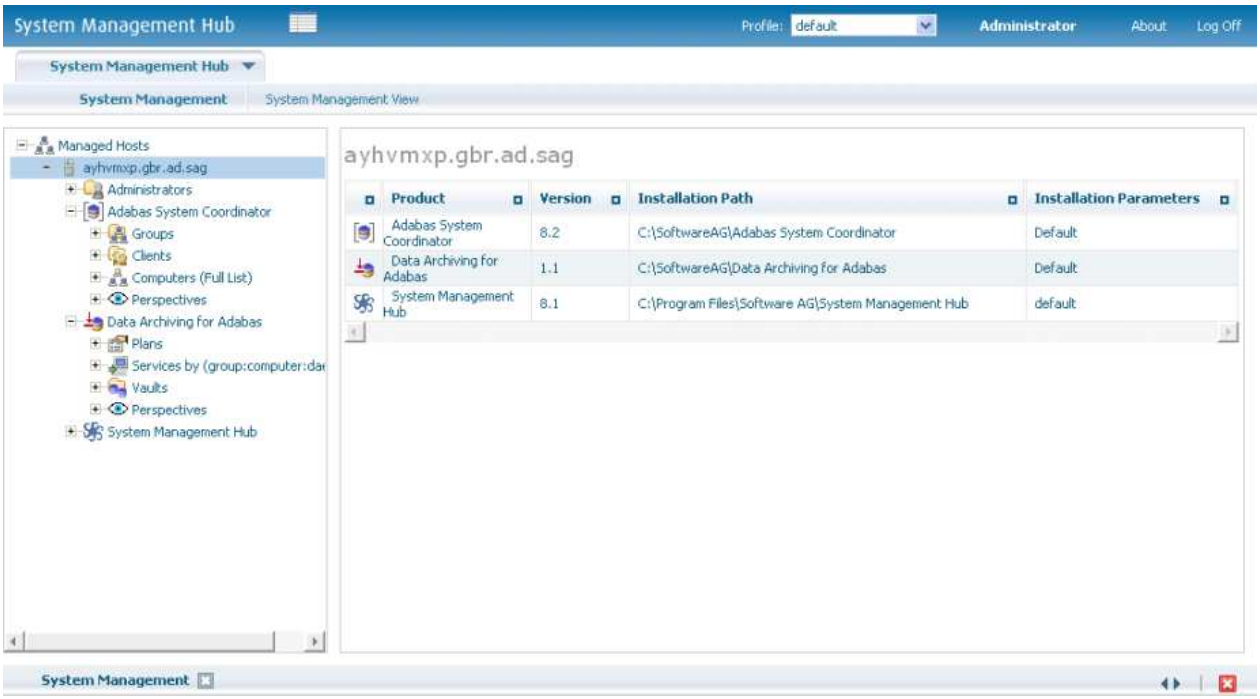
- Using the Browser
- Defining Vaults
- Defining Archiving Plans
- Defining Actions for a Plan
- Search Archived Data
- Recall Archived Data
- Validate Archived Data
- Expiry of Archived Data
- View Archive History
- Monitoring Archiving Services and Activities

Using the Browser

Data Archiving for Adabas services is maintained and monitored using Software AG’s cross-product and cross-platform product management framework System Management Hub (SMH). If you are not familiar with using SMH, please refer to the SMH documentation for further information.

The SMH screen is divided into two frames: the navigation frame on the left; and the content frame on the right. You can navigate within the navigation tree using expand (+) and minimize (-), selecting an object and then left clicking or right clicking on the object depending on the type of operation you wish to perform.

The following is a typical SMH screen:

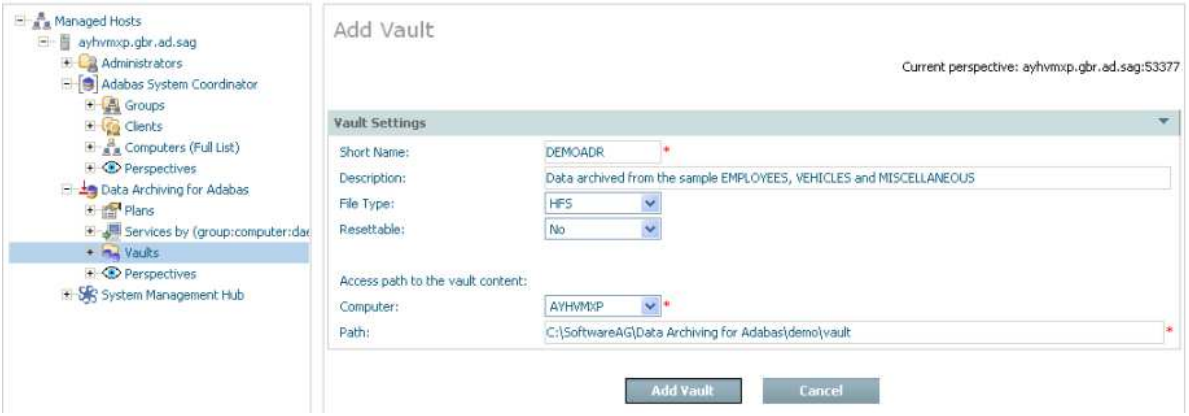


Defining Vaults

A vault is a flat-file store which contains all the accumulated archived data taken since the inception of the archive for the whole of one or more archive Plans. More than one vault can be defined (to keep different business areas separate for example) but all parts of a single Plan must use the same vault. In addition, all the paths (for all different computers) to a vault should lead to the same area of the file system. Different paths for the same vault are not meant to point to separate parts of the vault, all must point to the same vault; the different paths allow different computer type syntax to resolve to the same file system area.

To define a new vault:

1. Using the SMH interface, select and then right click *Vaults* within Data Archiving for Adabas, then select *Add Vault*. The Add Vault window will appear.



2. Enter the following information for the new vault:

Field	Description
Short Name	1-8 characters to be used as the short name for the vault. This is the name that appears in the left-side tree within the browser.
Description	A textual description of the vault.
File Type	Choose the type of file system used for the vault.
Resettable	YES allows the entire vault content to be erased. This is used only in situations where testing is being performed, a real vault would be set to NO.
Access paths to the vault content	**Note:** The vault may be accessed by Archiving components from many computers, of different operating system types. Each of these types will require its own path.
Computer	Choose the computer whose path is to be entered below.
Path	Type the path to be used by the archive software to access the vault in the computer identified above.

3. Select *Add Vault* to add the new vault.

Defining Archiving Plans

- Defining an Archiving Plan
- Adding a New Plan

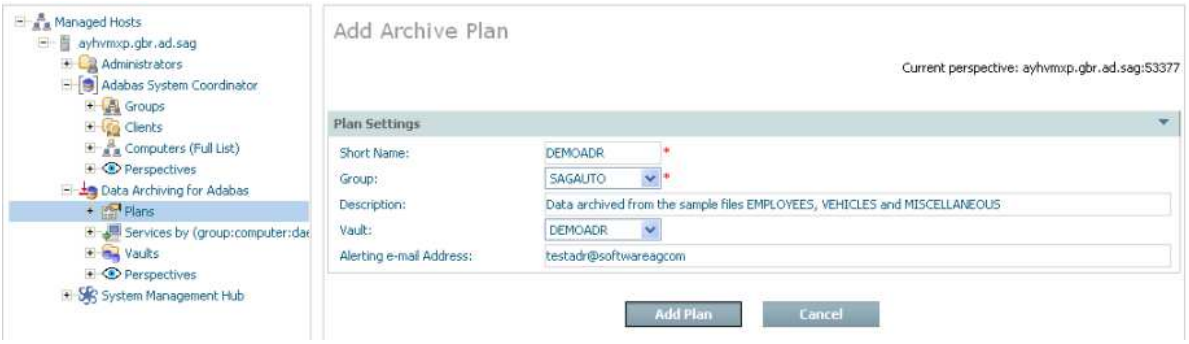
Defining an Archiving Plan

An archiving plan allows you to bring together the archiving rules that you require for one or more related actions. For example, you may use a plan to define all the archiving that is required for a particular business application, or perhaps a whole business division or department, etc. You decide what you want to put together in one plan. For each action within the plan, you define what the data source is, where it is located, how data is to be extracted from it, when, where it is to be archived, how long the data is to be kept, etc.

Adding a New Plan

To add a new plan:

1. Using the SMH browser interface, select and then right click *Plans* within Data Archiving for Adabas, then select *Add Plan*. The Add Plan window will appear.



2. Enter the following information for the new plan:

Field	Description
Short Name	1-8 characters to be used as the short name for the plan. This is the name that appears in the left-side tree within the browser.
Group	The Adabas System Coordinator Group for the plan. The group defines the logical network of computers where all the constituent parts of the plan are found.
Description	A textual description of the plan to help people who use the browser to understand the reasons why the plan exists, etc.
Vault	The vault which is to be used to store archived data for this plan. One or more of the actions in the plan may use the vault as the destination for archive data, if they do this is the vault that is used for this plan.
Alerting e-mail Address	The e-mail address which is to be used to send an alert message in the event that a problem or potential problem has been detected during execution of this plan.

3. Select *Add Plan* to add the new plan.

Defining Actions for a Plan

This section describes how to define the actions for an archive plan:

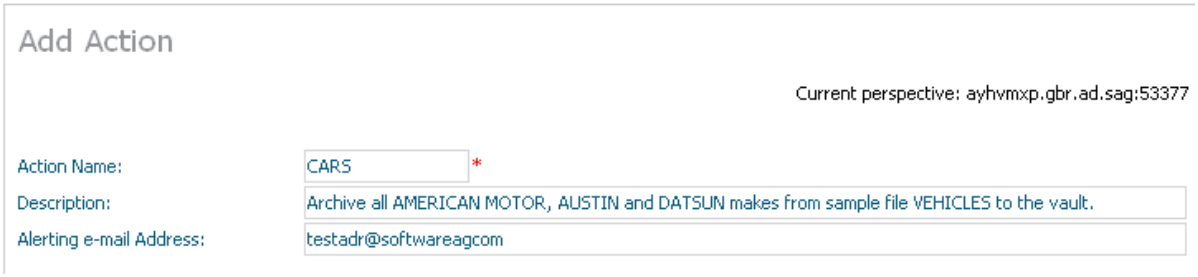
- Defining an Action
- Adding Extraction and Filtering Criteria

Defining an Action

A plan consists of one or more actions. An action identifies where data is to be acquired from, where it is to go and how it is to get there as well as how it is to look when it gets there.

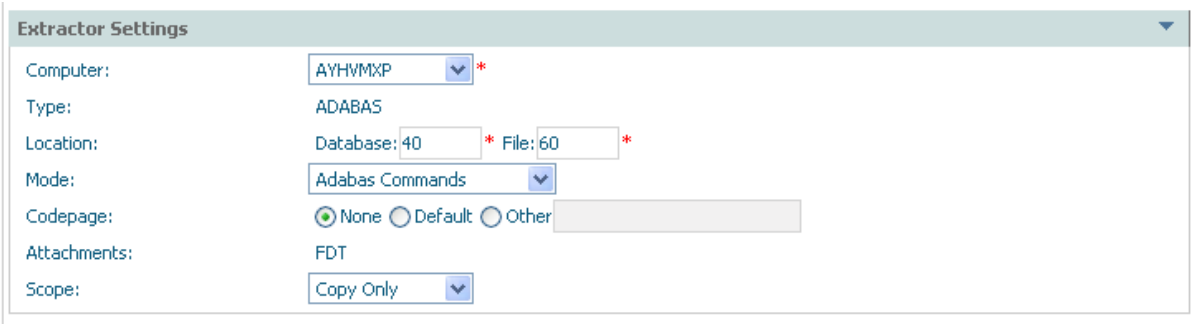
To add a new action:

1. Select and right click on *Actions* for the plan, then select *Add Action*. The Add Action window will appear.
2. Enter the following information for the action:



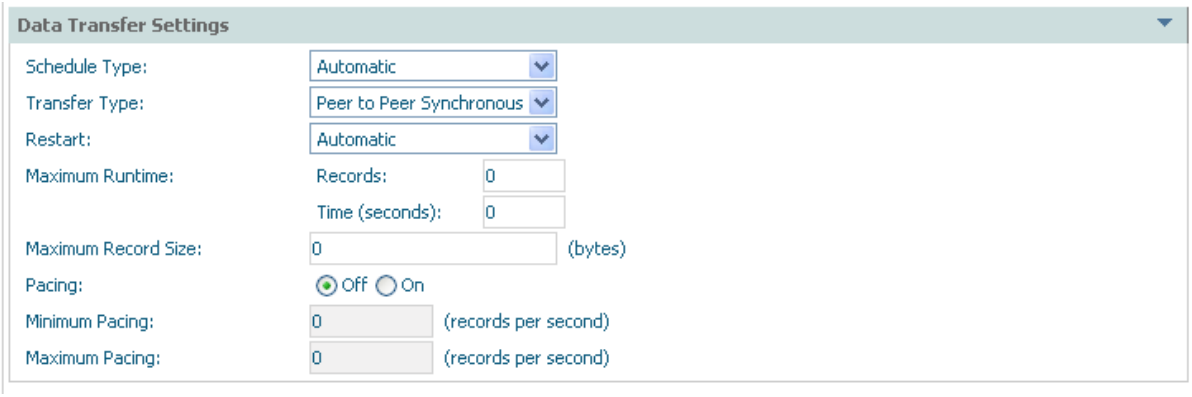
Field	Description
Action Name	1-8 characters to be used as the short name for the action in the left-side tree within the browser. This action name must be unique within the plan.
Description	A textual description of the action.
Alerting e-mail Address	The e-mail address which is to be used to send an alert message in the event that a problem or potential problem has been detected for this action.

Extractor settings describe where the data is to come from…



Field	Description
Extractor Settings:	
Computer	Choose a computer from the list where the Extractor is to run and will find the data. The list of computers comes from the Adabas System Coordinator group (previously defined) that the archive plan uses.
Type	Adabas: The data source is an Adabas file.
Location	Based upon Type (above) this defines the identification of the data source. For Adabas data this requires a database and file number to locate the data.
Codepage	None: The codepage of the extractor process is used at runtime. Default: For mainframe Adabas extraction the `AMODE=` setting is acquired at runtime. For other Adabas extraction this is the same as None above. Other: A specifically defined codepage usually a numeric setting as used in Adabas but any value recognized by ICU is okay.
Mode	Adabas commands: The Extractor acquires the archive data using Adabas commands. **Note:** Other modes are not yet supported.
Attachments	The FDT is taken with the data in order to be able to determine the layout of the data source.
Scope	Full archive: The classic archive scope is to • Remove the data from its current location, and • Place it into the archive destination. Copy only: The data is only copied to the archive destination; it is not removed from its current location. Delete only: The data is only deleted from its current location; nothing is stored in the archive destination. Simulate (with data or without data): Simulation is used to • make sure the definitions are correct • and also (with data) to get a feel for how long an archive operation will take when the scope is finally altered to Full archive, etc.

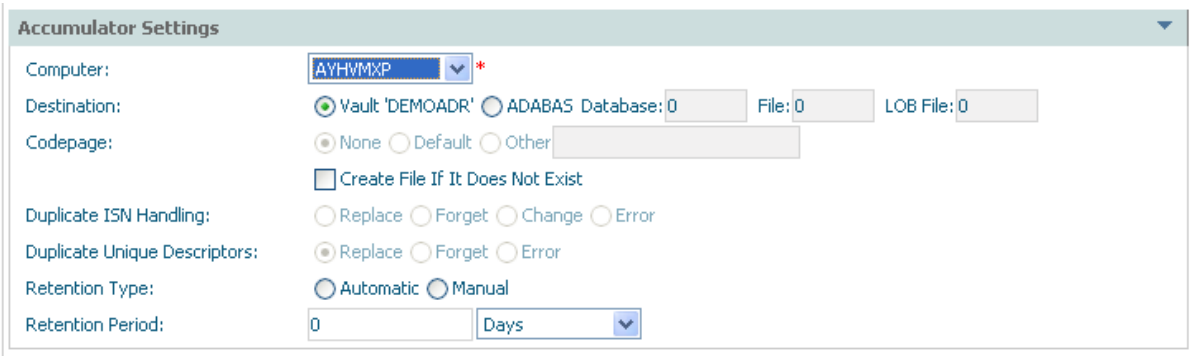
Data transfer settings describe how the data is to be transported…



Field	Description
Data Transfer Settings:	
Schedule Type	Automatic: The archive processing occurs without manual effort, according to the regular schedule you set. When you set this option (and save the changes) a new node appears in the tree called Schedule where you can right-click to modify the details. Manual: You decide when the archive processing takes place by using right-click and choosing run. Ad hoc: The archive processing occurs without manual effort, according to the irregular schedule you set. When you set this option (and save the changes) a new node appears in the tree called Schedule where you can right-click to modify the details.
Transfer Type	Peer to peer synchronous: The Extractor and Accumulator components run at the same time and communicate directly, even across computers. **Note:** The other transfer types are not yet supported. Peer to peer buffered: The Extractor and Accumulator components run at the same time; communicate directly but there is some latency allowed. Queued: The Extractor and Accumulator components run independently. They do not communicate directly; the data is passed by a designated flat-file queue.
Restart	**Note:** This setting is not yet supported. Automatic: Any recoverable failures in the archive process will be handled automatically in order to get to successful completion. Manual: Any recoverable failures in the archive process will cause the operation to stop, pending manual permission to attempt recovery. None: Any failures in the archive process cause the process to stop.

Field	Description
Maximum runtime	When first doing archiving for a particular action there may be many millions of records but not enough time to archive them all. This setting means one archive run can be limited to do as much as it can up to a limit, and no more. Future runs will eventually catch up with what needs to be archived and then eventually the frequency reduced. The runtime can be limited by either time or the number of records processed.
Pacing	ON: indicates the activity level of the Extractor and Accumulator are to be regulated so that a level of service can be maintained according to your requirements. This is accompanied by minimum and/or maximum numbers of records to be processed per second (approximately). Using these settings it is possible to be alerted by e-mail if the level of service cannot be maintained high, or low enough.

Accumulator settings describe where data is to be sent to…



Field	Description
Accumulator Settings:	
Computer	Choose a computer from the list where the Accumulator will find the data source when it runs. The list of computers comes from the Adabas System Coordinator group that the archive plan uses. **Note:** This may be a different computer to the one where the Extractor runs.
Destination	Vault: The Accumulator will place the extracted data into the vault indicated in the definition of the plan. Adabas: The Accumulator will place the extracted data into the nominated Adabas file.
Codepage	Used when destination is a normal Adabas file. Refer to extractor settings for more information.
Create (checkbox)	If the destination is a normal Adabas file you can check this box to dynamically create a new file at runtime if you wish.
Duplicate ISN handling	For a normal Adabas file, you can use this settting to control duplicate ISN handling: Replace: The existing ISN already in the file is replaced. Forget: The existing ISN already in the file remains. Change: Allow a new ISN to be assigned to the record being written. Error: throw an error.
Duplicate unique descriptor handling	For a normal Adabas file, you can use this settting to control duplicate unique descriptor handling: Replace: The existing unique descriptor in the file is replaced. Forget: The existing unique descriptor already in the file remains. Error: throw an error.
Retention Type	Automatic: The archived data will be automatically discarded when the retention period is reached. Manual: Expired archived data must be discarded manually.
Retention Period	Select the length of time archived data is to be kept for Retention Type automatic.

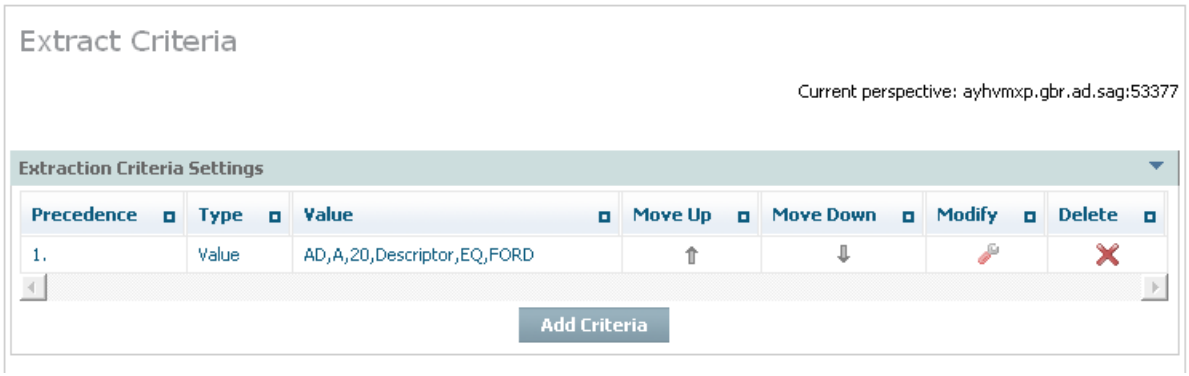
3. Select *Add Action* to add the new action.

Adding Extraction and Filtering Criteria

You must specify extraction criteria in order to identify the data to be acquired by the Extractor when it runs, and any filtering criteria that is to be used when the data is extracted and/or accumulated into the destination.

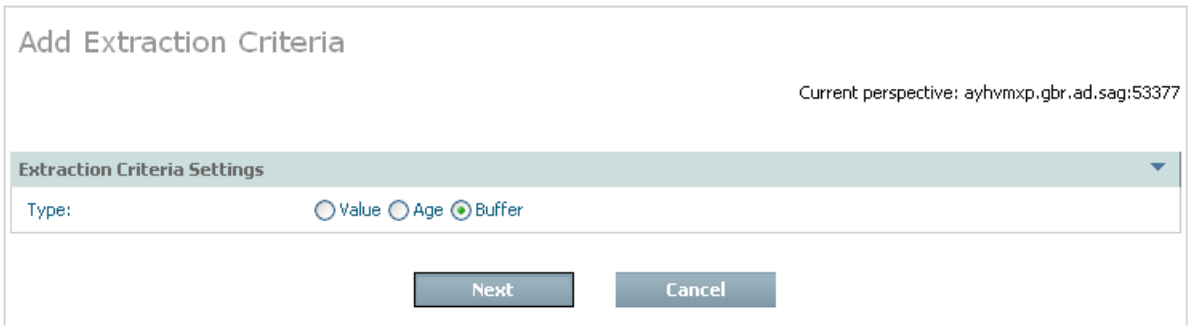
To add extraction and filtering criteria for an action:

1. Select and right click on *Extract Criteria* for the action. A summary list of any criteria already defined so far will be displayed (up to 8 separate criteria can be defined).



Field	Description
Precedence	The rows are listed in order from row 1 to the last, the extraction criteria is resolved in this order of precedence at runtime.
Type	The type of criteria shown in the row.
Value	The value of the criteria (dependent upon type) to be extracted.
Move up	Select and click to alter the position of the criteria in the order of precedence.
Move down	Select and click to alter the position of the criteria in the order of precedence.
Modify	Select and click to modify the criteria.
Delete	Select and click to delete the criteria.

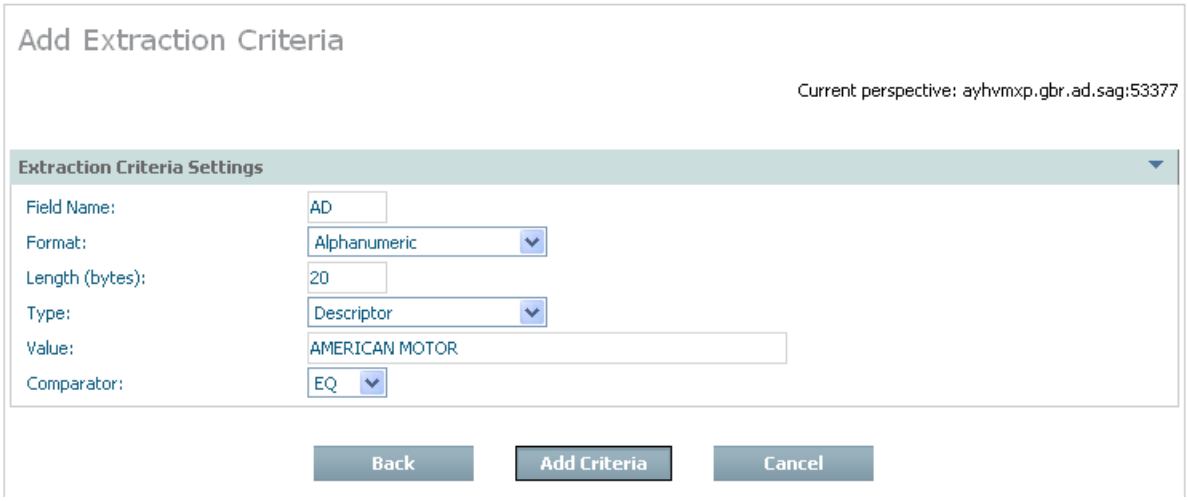
2. To add a new criteria select and click *Add Criteria*. The following window appears:



Field	Description
Value	The criteria identify the Adabas field where a date-based age of the data cannot be automatically derived. The Extractor will select data for the Adabas field that matches the criteria to be stated.
Age	The criteria identify a specific Adabas field where a date-based age of the data can be derived automatically. The Extractor will select data for the Adabas field by the stated age, according to the defined date pattern (etc) below.
Buffer	The criteria identify a Search Buffer and Value Buffer combination. The Extractor will use the criteria as defined.

Choose the type of criteria that is to be added by selecting the appropriate radio button and also select and click *Next*.

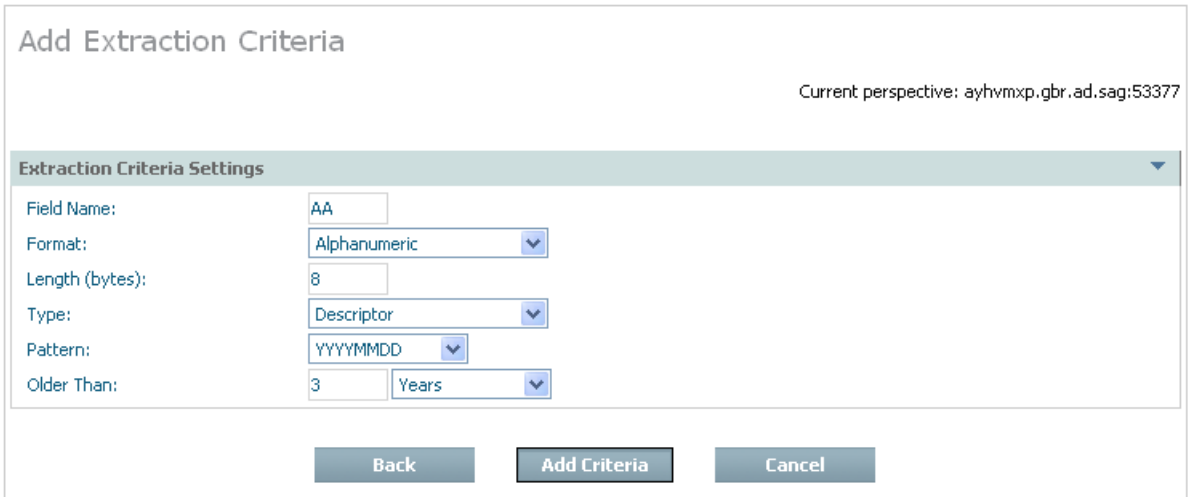
3. If you are adding criteria by *value* the following window appears:



Field	Description
Field name	Identify the short name of the Adabas field.
Format	Select the appropriate field format from the selection list.
Length (bytes)	Select the appropriate number of bytes for the field/format. For packed fields allow for 2 decimal digits for each byte, except the rightmost byte which must contain one decimal digit and the sign.
Type	Choose the appropriate descriptor type for the field.
Value	Identify the value for the data to be extracted.
Comparator	Choose the selection comparator.

Enter the required information then select and click *Add Criteria*.

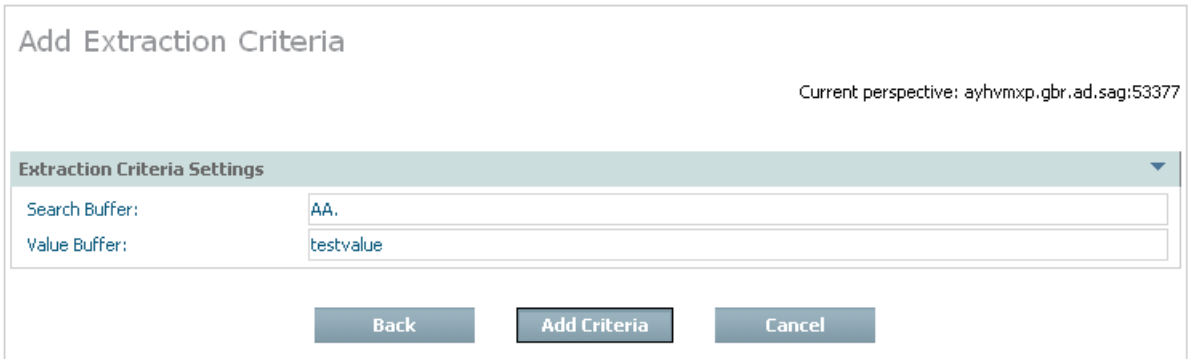
4. If you are adding criteria by *age* the following window appears:



Field	Description
Field name	Identify the short name of the Adabas field.
Format	Select the appropriate field format from the selection list.
Length (bytes)	Select the appropriate number of bytes for the field/format. For packed fields allow for 2 decimal digits for each byte, and the sign (and one digit) in at least one byte.
Type	Choose the appropriate descriptor type for the field.
Pattern	Identify the pattern masking for the date selection to be extracted.
Records older than	Choose the number to represent the age (not a date).
Units (of age)	Choose the units by which the age of the date can be derived.

Enter the required information then select and click *Add Criteria*.

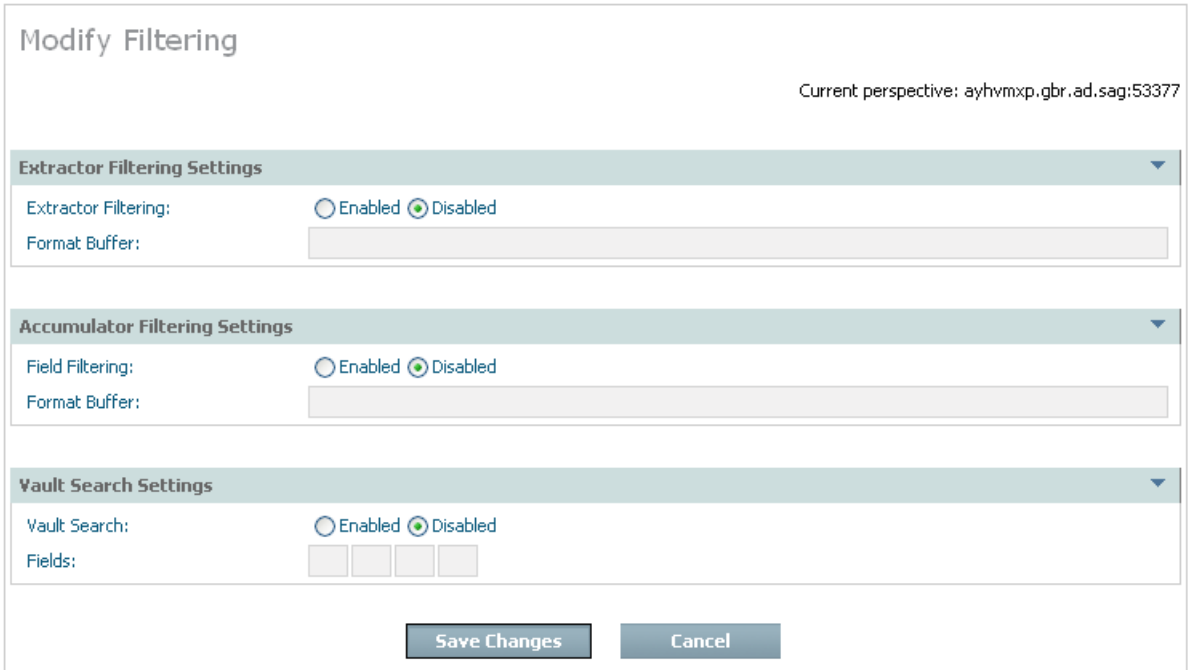
5. If you are adding criteria by *buffer* the following window appears:



Field	Description
Search Buffer	Enter the exact Search Buffer to be used by the Extractor.
Value Buffer	Enter the exact Value Buffer to accompany the Search Buffer, both will be used by the Extractor.

Enter the required information then select and click *Add Criteria*.

6. You can also define filtering that is to take place when the data is extracted and/or accumulated into the destination. The default setting for filtering is disabled. If you wish to enable filtering, select and right click the filtering part of the Actions tree; then select *modify filtering*. The following screen appears:



Field	Description
Extractor filtering settings	
Extractor filtering	*Disabled* is the normal setting which means the Extractor defaults to taking compressed records from Adabas. Filtering is usually disabled in the Extractor to minimize the impact in Adabas and in the computer where Adabas is running. *Enabled* allows you to define a precise Format Buffer the Extractor will use. **Note:** This setting is mutually exclusive with the similar setting for the Accumulator (below) in this window.
Format Buffer	If Extractor filtering settings are enabled (above) then you must provide a precise Format Buffer to be used by the Extractor.

Field	Description
Accumulator filtering settings:	
USERISN	If ISNs are to be preserved (in future recall operations) select the radio button for YES.
Field filtering	*Enabled* is the normal setting which means the Accumulator will perform filtering from the whole (compressed) record. The Accumulator usually does the filtering so the overheads are taken away from where the origin Adabas is running. *Disabled* means the data will be archived in the form it came from the Extractor. **Note:** This setting is mutually exclusive with the similar setting for the Extractor (above) in this window.
Format Buffer	If Accumulator filtering settings are enabled (above) then you must provide a precise Format Buffer to be used by the Extractor.
Vault search fields: **Note:** for destination type *Vault* only	
Vault search	*Enabled* causes the Accumulator to do more filtering to identify the fields that will be made eligible for future searches of the vault content. *Disabled* searching of the vault content is not permitted for this type of data within the Plan.
Fields	Identify up to 8 fields that can be used in searches of the vault content in the future, if necessary.

Enter the required information then select and click *Add Criteria*.

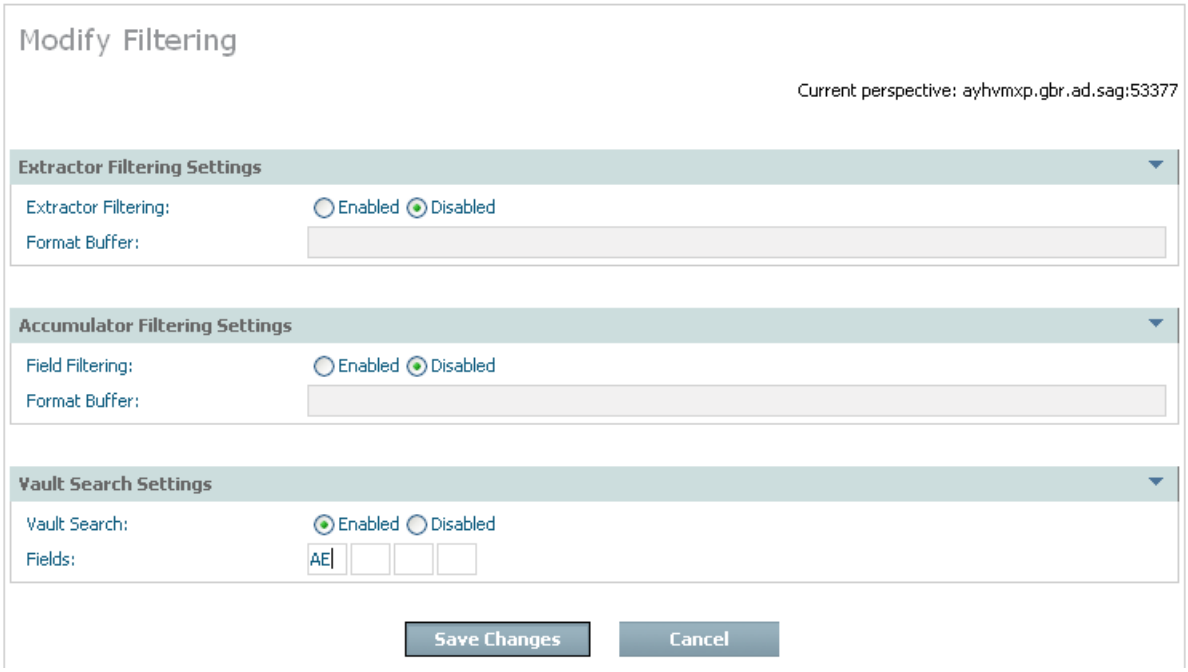
Search Archived Data

When an archive action uses the vault as destination it is possible to search the vault for information. You can also *recall* specific search results too, rather than the whole of a previous archive action.

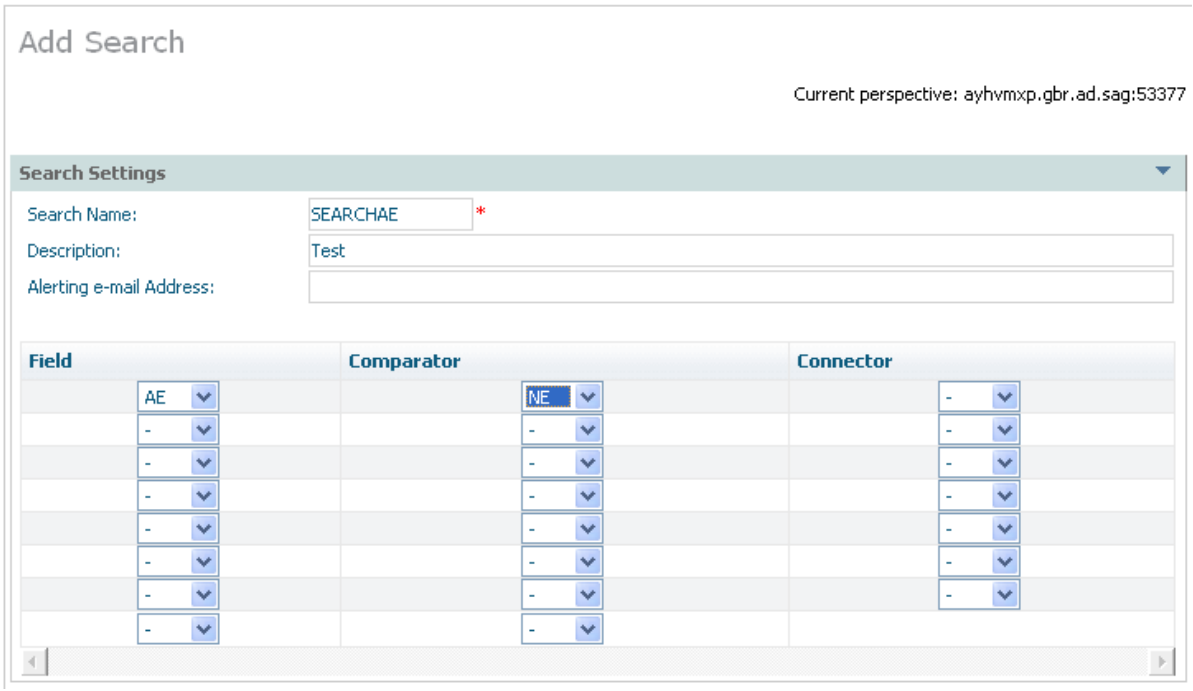
Over time there are vast amounts of data stored in archives, usually because the data is no longer productive in a full function database because there is no need to keep massive database indexes to such data. Therefore searching full archives over long periods is a very intensive process. Consequently it is very important to make sure the search fields are carefully planned, and limited to only the most critical of fields, otherwise overheads of archive searches (and other processing) will be too expensive.

To recall one (or more) complete archiving runs for an Action:

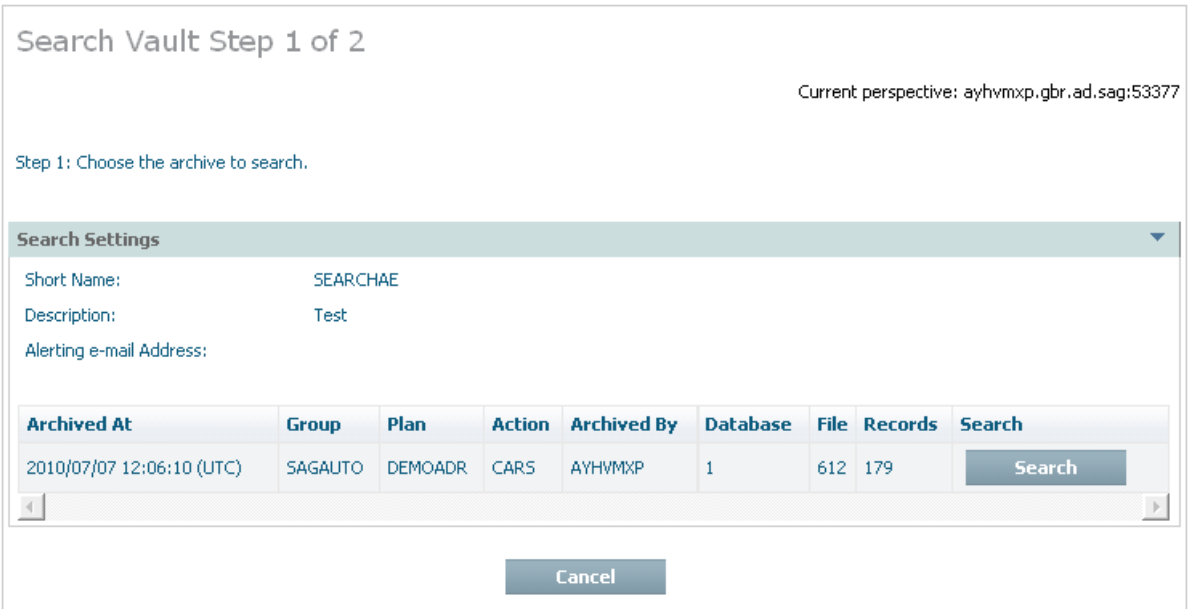
1. When defining the action you must carefully choose which fields can be searched (now and in the future) making sure this is absolutely minimized. Please note that once a minimal search is done through the archive, the results can be recalled back to Adabas for further detailed processing. The following image shows the search field AE being enabled in the *filtering* node (as described earlier):



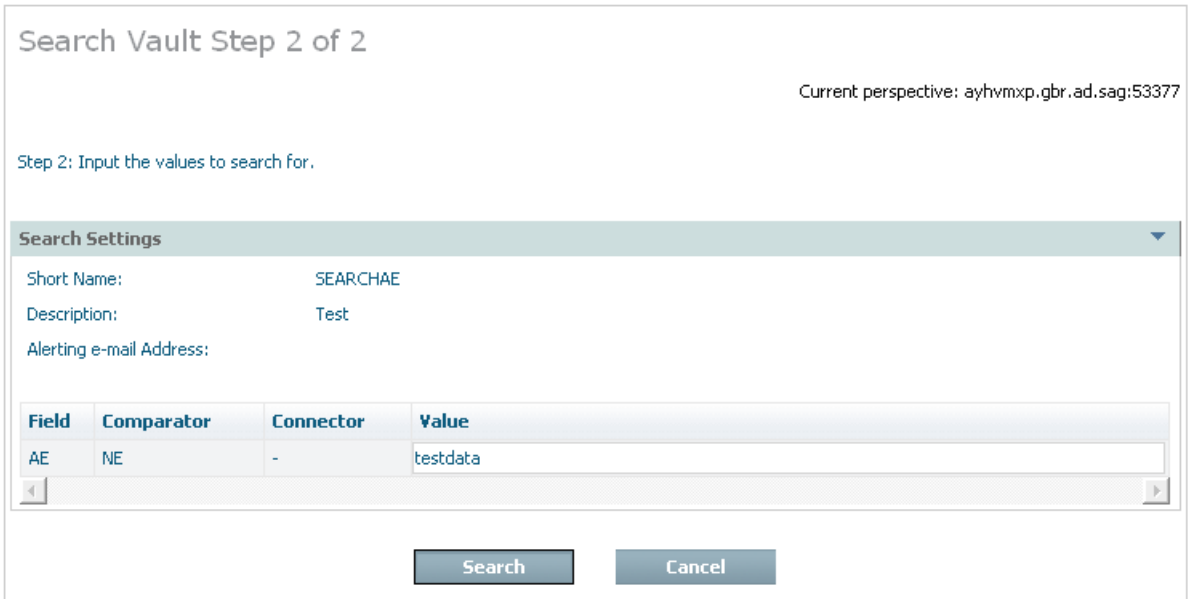
2. A search can be defined via the right click `Add Search` command on the search node. The example below shows a search for AE that is to be for a not equal comparison:



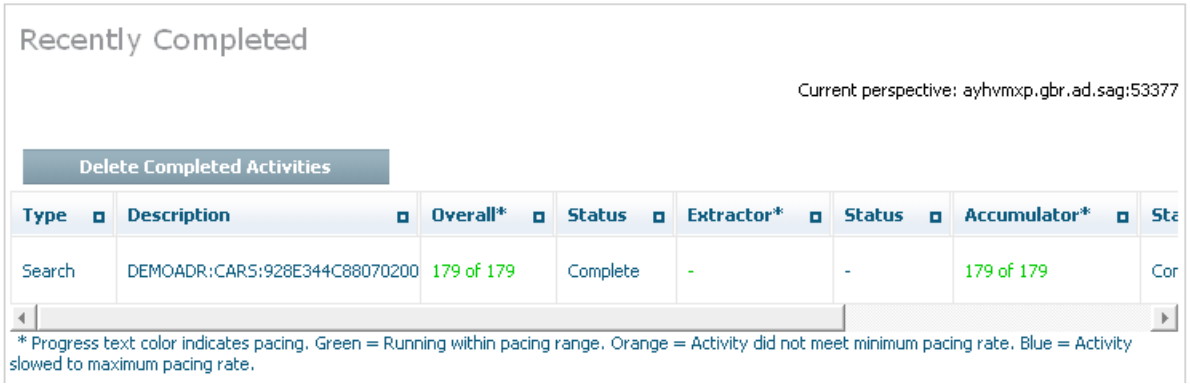
3. Once the action is set up then any time after archive actions have run (manually or automatically) you can *right click on a search* to run it. You will see a list of all the archive actions that have run as stage 1 of 2. Select the one that you wish to search, see below:



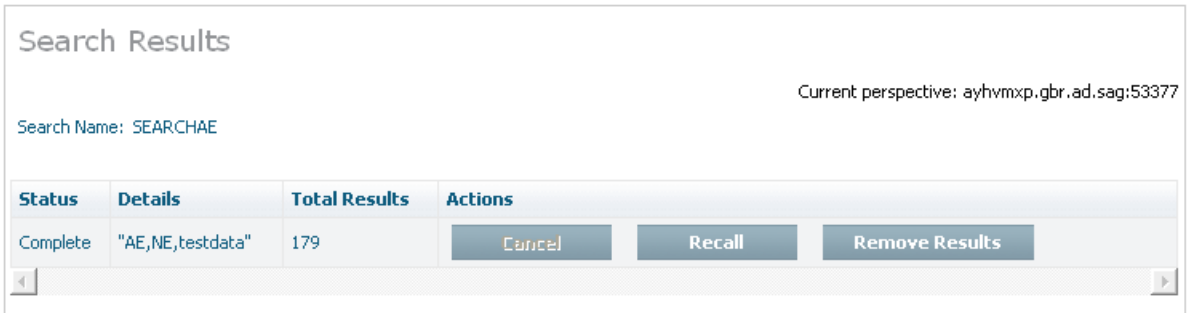
4. Having chosen which archive run you wish to search, you must now enter the values for which you wish to search, and then click *search* to submit the search. See below:



5. When you confirm the search is to run you can then watch the search running in the activity monitor. Below you can see the activity monitor showing a completed search:



6. You can look back at completed searches, and either remove them or choose to recall them back to Adabas. Here is an example:



Recall Archived Data

Note:
Recall is used for data previously archived to the vault destination only. There is no specific recall when the destination for an archive operation is a normal Adabas file. The reason is that when a normal Adabas file is the destination there is no chance for the software to store all the meta-data normally stored into the vault. If you wish to copy data back from an Adabas file where you previously passed data you must define an Action to extract data from the Adabas file where the data was sent, sending it to another destination (potentially back to the original file).

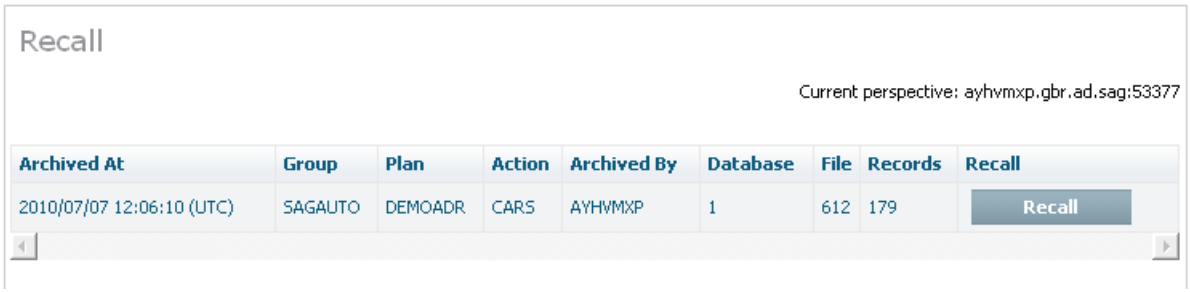
- Recall Whole Archive Runs

Recall Whole Archive Runs

You can recall one or more of the complete archive runs back to an Adabas file at any time.

To recall one (or more) complete archiving runs for an Action:

1. Select and left click a specific *Action* from the plan in order to expose the Action's inner tree. Then select and left click the *Recall* part of the tree. The following window will appear.



The following information is displayed:

Column	Description
Archived at	The occasion when the data operation took place.
Group	The name of the group for the plan.
Plan	The name of the Plan.
Action	The name of the Action.
Archived by	The computer where the accumulation took place.
Database	The Adabas database number.
File	The Adabas file number.
Size	The amount of data involved.
Recall	Check the rows from which you wish to recall the whole runs.

Validate Archived Data

Note:
This feature is not yet implemented.

- Background
- An Early Detection System

Background

Validation of the vault is aimed at protecting information previously stored in the vault over a long period; it operates asynchronously to normal archive operations not directly with them.

There are studies that show the vast majority of archived data is never used again. This does not mean the data doesn’t need to be archived because there are legal reasons, customer care reasons and basic just-in-case reasons why archiving is an important part of the information lifecycle.

If archived data has a tendency to lie unused for very long periods then it is likely to have been migrated out of the main (disk) storage area network into other types of media (tape, CD, DVD, etc.). This is especially likely considering archives are built up over many years, even decades. Consequently, in the end the main system has a catalog of the data it owns without necessarily having immediate access to all of it instantly. What tends to happen is that data that is referenced after a long period is dynamically migrated back into the storage area network so it can then be used (on a delay of varying length).

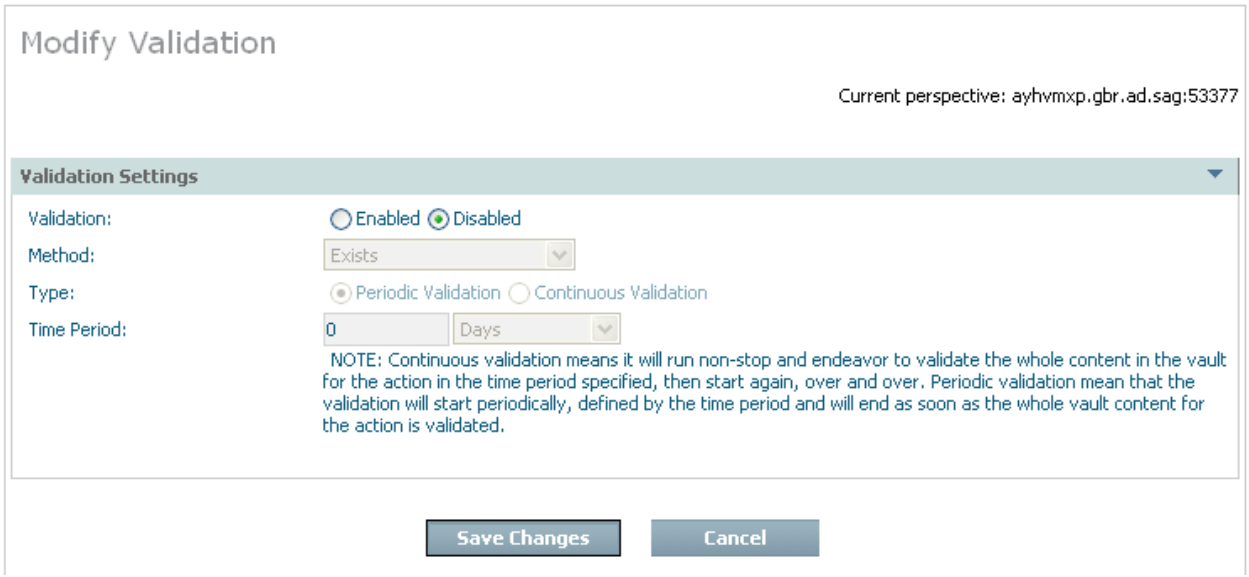
This means it is possible that the media used to store archives that have not been referenced for long periods could be lost, damaged, etc without the main system becoming aware of it. Consequently, if such a loss takes place it may be that several years later that particular part of the archive is needed (for important reasons) but only when it is referenced do you find that it was lost, potentially many years ago and so is unrecoverable.

An Early Detection System

Data Archiving for Adabas provides a way to detect whether archived data becomes unusable for any reason. You decide how often this detection (validation) takes place based upon how far back you feel comfortable trusting the ability of your systems to recover lost media (from alternate back-up sites etc.).

You may choose the validation is to run continuously, constantly scanning the entire archive making sure all the data is reachable. Or, you may choose to run the validation automatically on a regular schedule. And of course you can run the validation manually at anytime.

Validation can only be used for data archived to the vault. For these Actions a validation node appears in the tree, and when you right-click it you are able to modify the settings:



Field	Description
Validation settings	
Validation	*Disabled* is the normal setting which means there is no validation. *Enabled* allows you to define the validation you require…
Method	There are levels of processing overhead that can be undertaken to validate each part of the archive entries. • Exists: This is a basic check that the data can be reached without doing further checks. • Checksum: Internal checksums are validated which means the data has not been tampered with. • Recall simulation: The data can be read and can be prepared all the way to the point where it could be recalled.
Type	*Periodic:* Validation is to run periodically according to a schedule. *Continuous:* Validation is to run continuously, when it gets to the end it starts all over again.
Time period	This setting operates differently depending on whether validation is *periodic* or *continuous* (see above). It basically covers how fast one complete scan of the whole archive should take (approximately). This governs the pace at which it will run based upon the amount of data that is in the archive.

Expiry of Archived Data

Old data can be automatically discarded from the archive vault (see *retention type* and *retention period*). When you choose automatic expiration an expiry process will be automatically launched at various times. You will see these appear in the activity monitor screens from time to time. Most of the time it is likely (in new systems) that there is no data that is old enough to be expired, so nothing will happen apart from

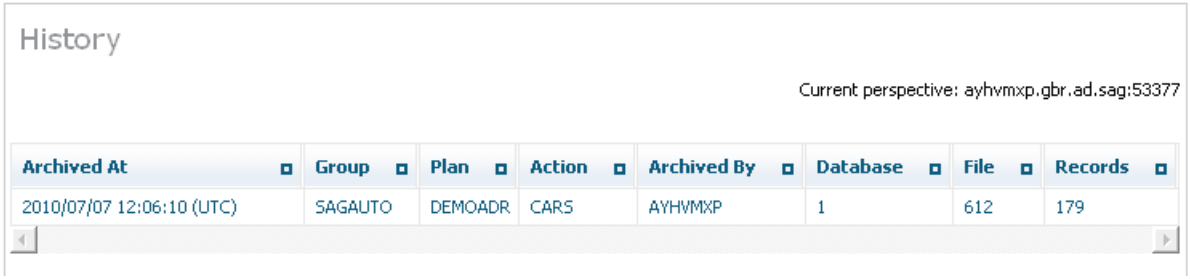
seeing the activity recorded in the activity monitor. But where data is actually discarded a note will be logged in the archive history to record an audit record for the expiry.

View Archive History

This section describes how to view the history of archive activity in the vault.

To view the history for an archiving plan's action:

1. Select and left click a specific *Action* from the plan to expose the inner tree. Then select and left click the *History* part of the tree. The following window will appear.



   The following is displayed:

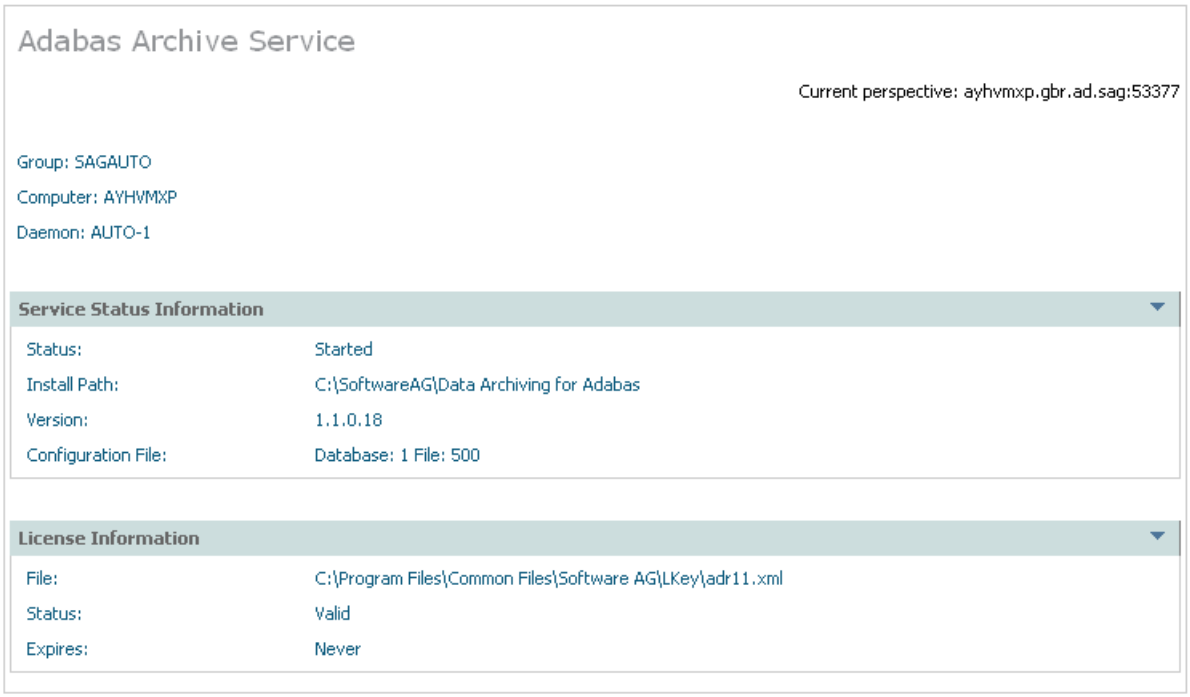
Column	Description
Archived at	The occasion when the data operation took place.
Group	The name of the group for the plan.
Plan	The name of the Plan.
Action	The name of the Action.
Archived by	The computer where the accumulation took place.
Database	The Adabas database number.
File	The Adabas file number.
Size	The amount of data involved.

Monitoring Archiving Services and Activities

The Archiving Services and Activities can be monitored from the browser.

To monitor the archiving services:

1. Using the SMH interface, select and then right click *Services* within Data Archiving for Adabas, then select the Group for which you wish to montior the services. The following window will appear.

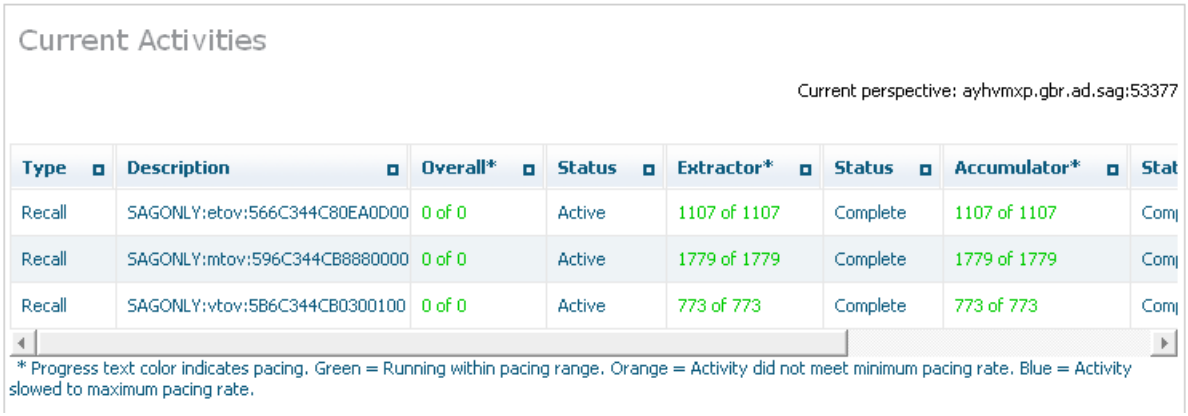


The following information will be displayed:

Field	Description
Group/Computer/Member	The name of the group, computer and member for which status information is being provided.
Service Status Information	
Status	Indicates whether or not the service has been started.
Install Path	The install path used defined for this service.
Version	Version number.
Configuration File	The Adabas data base and file number used for the configuration file for this service.
Service Settings	
Queue Location	Queue location.

To monitor the current activities for a service:

1. Select *Activities* for a service. The following information will be displayed:



Column	Description
Type	The type of activity that is listed. This could be an extractor, accumulator, recall, etc.
Description	The name of the group, plan, action, etc. **Note:** Where a “n of n” is shown it is possible that the “of n” is unknown in some circumstances and so will not appear!
Overall	Overall progress, in the case where there may be more than one component collaborating.
Status	The overall status of the activity.
Extractor	Progress of the first of two components (or the only one).
Status	The status of the activity.
Accumulator	Progress of the second of two components.
Status	The status of the activity.
Started	Time started.
Detail	Click for further information.
Cancel	Kill the operation.