Active Circle

Release Notes

Active Circle V5.5.0.7

August 2022

∞drive

Active Circle

INDEX OF FEATURES

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1. Update Process

1.1. Version 4.0.2pX

A specific procedure is implemented to update 4.0.2 versions to version 4.6. This is available on the Active Circle help site: https://activecircle-help.com.

Since the VFS catalog format has changed, **all** VFS catalog objects must be upgraded before proceeding to upgrade the next node.

1.2. Version 4.5 up to 5.3.x

The procedure for updating from versions 4.5 up to 5.3.x is straightforward and requires no special preparation. It involves updating the binary files on all the nodes in your Circle and restarting the updated nodes.
The procedure is as follows:

1. Copy the **ac-5.5.0.X.bin** binary file for the new version to all the nodes in the Circle (X is the patch number).
2. Stop the activecircle service on all the nodes in the Circle.
3. On each node, run the setup program with the command: ./ac-5.5.0.X.bin –r
4. Start the activecircle service on the first node (the necessary updates are applied during the start-up).
5. Verify that the first node has started correctly.
6. Start the activecircle service on the remaining nodes in the Circle, one at a time.
   Verify that the node has started correctly before proceeding to the next one. Synchronization will update the metadata for all the nodes.

1.3. Version 5.5.x

This version is compatible with every 5.5.x, a single node in a 5.5.x circle can be upgraded without stopping all the nodes of the circle.
On the node to upgrade the procedure is the following:

1. Copy the **ac-5.5.0.X.bin** binary file for the new version to the node to upgrade (X is the patch number).
2. Stop the activecircle service on the node.
3. Run the setup program with the command: ./ac-5.5.0.X.bin –r
4. Start the activecircle service on the node.
5. Verify that the node has started correctly.

2. Active Circle V5.5.0.7 HOTFIX – August 2022

SHA256 FOOTPRINT

```
e4c2313e8f6213c2cec11f1d861bcf2c4d6c1568d2529ba203eab85b89700b75
```

HOT FIX

Fix corruption on node entries indexed by modulo by reintroducing deprecated class with class code 14379

Upgrade OpenJDK 11 license file

3. Previous Versions

3.1. Active Circle V5.5.0.6 HOTFIX – august 2021

SHA256 FOOTPRINT

```
3387f96900ebe4d700710a1c9daf777e003a4cf21b25d9e87a32497febc52d44
```

HOT FIX

Fix failed local copy with Active Circle explorer.

3.2. Active Circle V5.5.0.5 HOTFIX – august 2021

SHA256 FOOTPRINT

```
54bb8b98db09362724e5d1cad138fefe764adb4bbd1103901a6e53914d36db30
```

HOT FIX

The fix missing pack mechanism is now available for shared partition.

3.3. Active Circle V5.5.0.4 HOTFIX – june 2020

SHA256 FOOTPRINT

```
1129e5c8b80a031ea5591ca476f43078be5cfa263e33207ee4c6a4cde7b8fff2
```

HOT FIX

Fix potential infinite loop in RPC packets reading.

3.4. Active Circle V5.5.0.3 HOTFIX – may 2020

SHA256 FOOTPRINT

```
d51744548a752fc80601b109c432b135dea053aa8466f4dc68e8d6944eeb3837
```

HOT FIX

Fix wrong size of data when editing an office file.

Fix SMB session disconnection when both NTLM & LM hashes are empty

3.5. Active Circle V5.5.0.2 HOTFIX – april 2020

SHA256 FOOTPRINT

```
3c48539e8d2275667d8010358558e5245f36325f412ba3ad34582fc8e519a147
```

HOT FIX

Fix slow “ls” command on shares where ACLs contains deleted users.

3.6. Active Circle V5.5.0.1 HOTFIX – april 2020

SHA256 FOOTPRINT

```
cf3bffdc3cf3b6016ee3903ed575f0f3edfa6ee2f8fef71f5b755d31f2e9df03
```

HOT FIX

Fix wrong file size calculation when writing a block in a file.

3.7. Active Circle V5.5.0.0 - march 2020

This new major version of Active Circle provides new features to enhance data security such as data encryption. It allows to enforce the access control to the data, and defines a new application date of the constraints in the strategies (storage and archiving).
It is now possible to download and install a graphical bundle from the Active Circle WEB interface of the nodes that allows to launch the GUIs without installing Java on the client host.
This version fixes the authentication issues introduced by the AD patches that fix the vulnerability CVE-2019-1040.
The embedded java version of Active Circle V5.5.0.0 is now openjdk 11.0.5 (AdoptOpenJDK).
G1 garbage collector is now used by default.

SHA256 FOOTPRINT

```
6182571b2d67f182522832fc5f83b6f7cc169999cb43fbb67d9ec66ffd895426
```

3.7.1. Compatibility matrix

This new version of Active Circle 5.5.0.0 is compatible with the following version of the options:

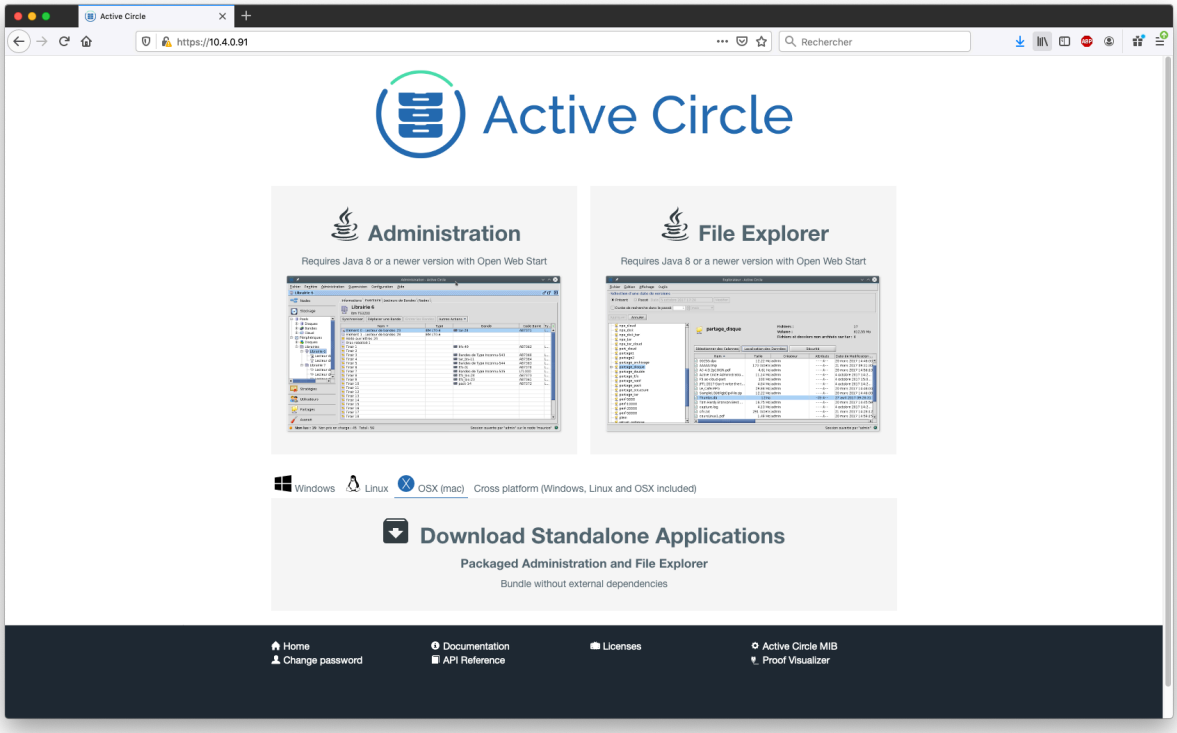
- AMC 5.5
- ADM 1.4.0 in HTTP
- AME 2.3

3.7.2. New features and enhancements

3.7.2.1. GUI Bundle

Description

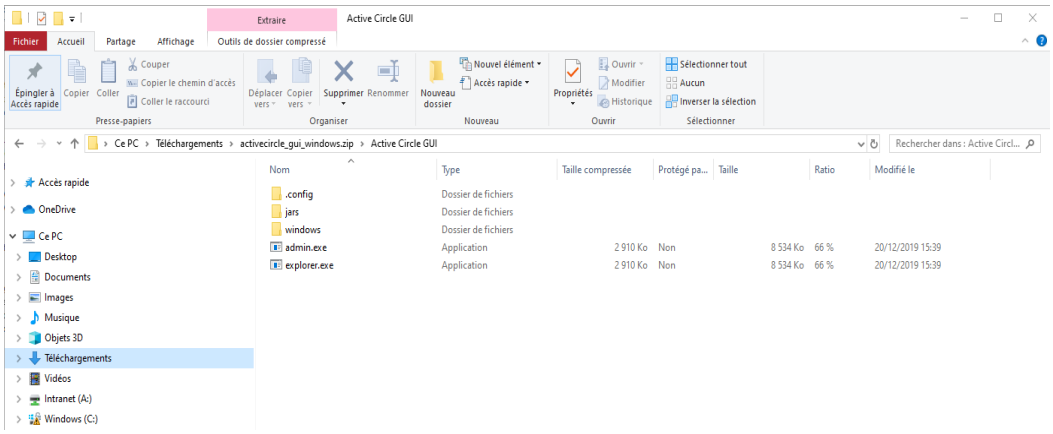
The new web interface of the nodes offers to download a graphical bundle that can be deployed on the client host.



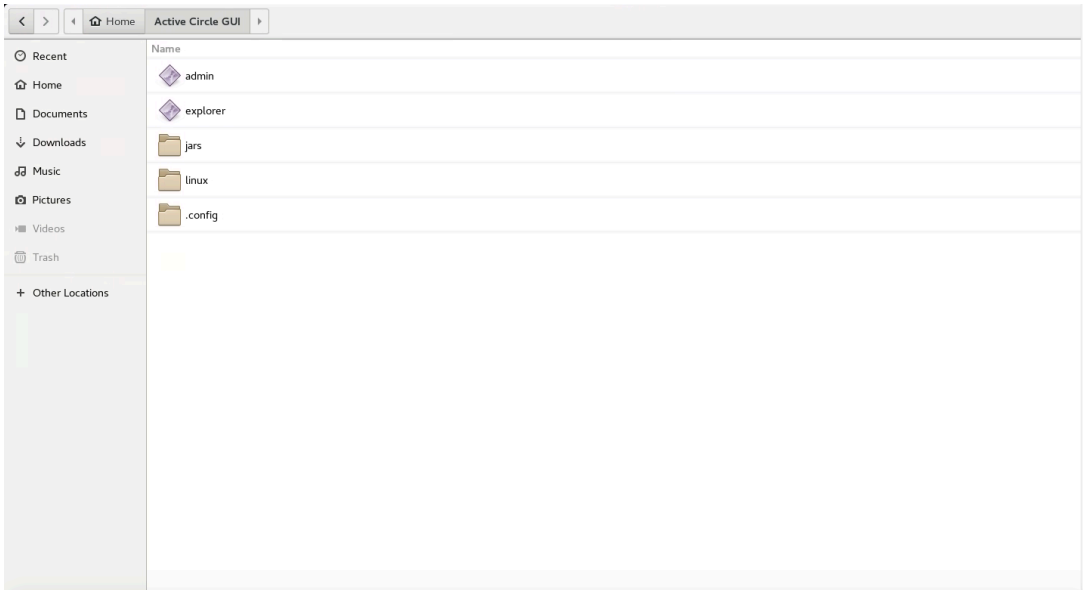
This standalone graphical bundle doesn't rely on any other component and gives access to the administration interface and the active circle explorer.
It is available for Linux, windows and macOS. The client OS is auto selected in the web interface.
Note: Under macOS the bundle must be downloaded with safari to be executable.

The bundle is the zip file of the ***Active Circle GUI*** folder. The ***Active Circle GUI*** folder contents the Active Circle administration interface (***admin***), the Active Circle explorer (***explorer***), the required jars, the required openJDK runtime and a configuration folder ***(.config***).
The configuration files are dynamically built upon download by the server, if the server configuration changes, the bundle should be refetched from the server.

Windows bundle content

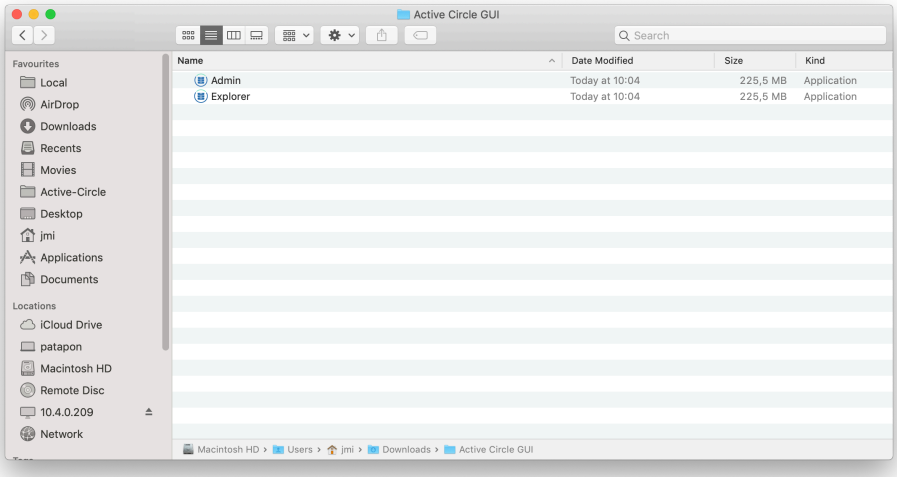


Linux bundle content



macOS bundle content

Under macOS all of the above is wrapped into the 2 macOS bundles ***admin*** and ***explorer***



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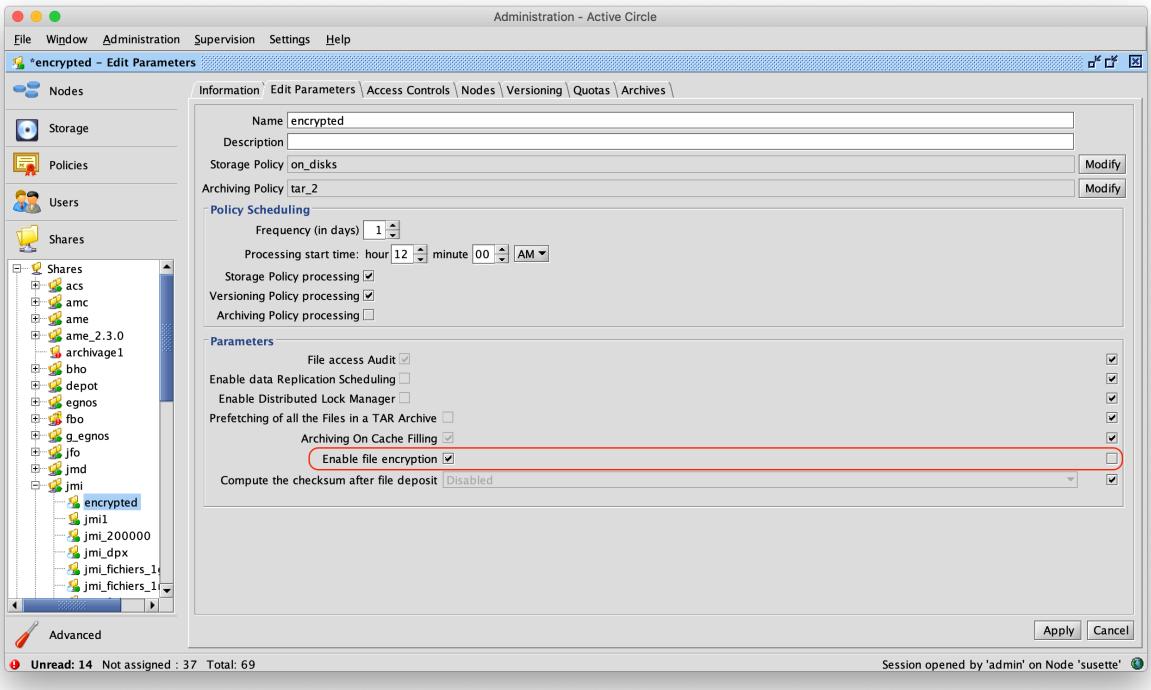
3.7.2.2. Data Encryption

Description

The files written in an active circle share can now be AES256 in CR mode encrypted as soon as they enter the system either in the cache or directly in the disk pools when the cache is bypassed (FTP directIO). The encryption keys are different for each share. They can be managed automatically be the system or defined by the end user.
The files are decrypted each time they are read from the system, either by a NAS access, during TAR or LTFS export, or with an optimized withdrawal.
During checksum computing or verification, the files are decrypted on the fly.
This option is part of the “Archive Secured Pack”.

Configuration

The encryption of the files is activated at the share or share group level with the following form by checking the corresponding box and is inherited from the circle parameter **vfs.encryption.enable** whose default is false (checkbox on the right of the form).



Key management

The encryption keys are declared at the share level and are kept in a KeyStore with the metadata of the share and is synchronized among the nodes that serves the share.
The keys can be renewed, only the current key is used to encrypt the new files, the older keys are kept in the KeyStore for decryption purposes.
A reference to the key used to encrypt a file version is kept into the metadata of this version.
Upon decryption, the key is retrieved from the share KeyStore and is used to read the file.
If not given by the end user, the keys are renewed on a regular basis. The key renewal frequency is defined by the circle parameter: **vfs.encryption.renewalDelay** whose default value is 12 months.

The encryption key of a share can be given by the end user using the CLI **acadmin –keyStore**.

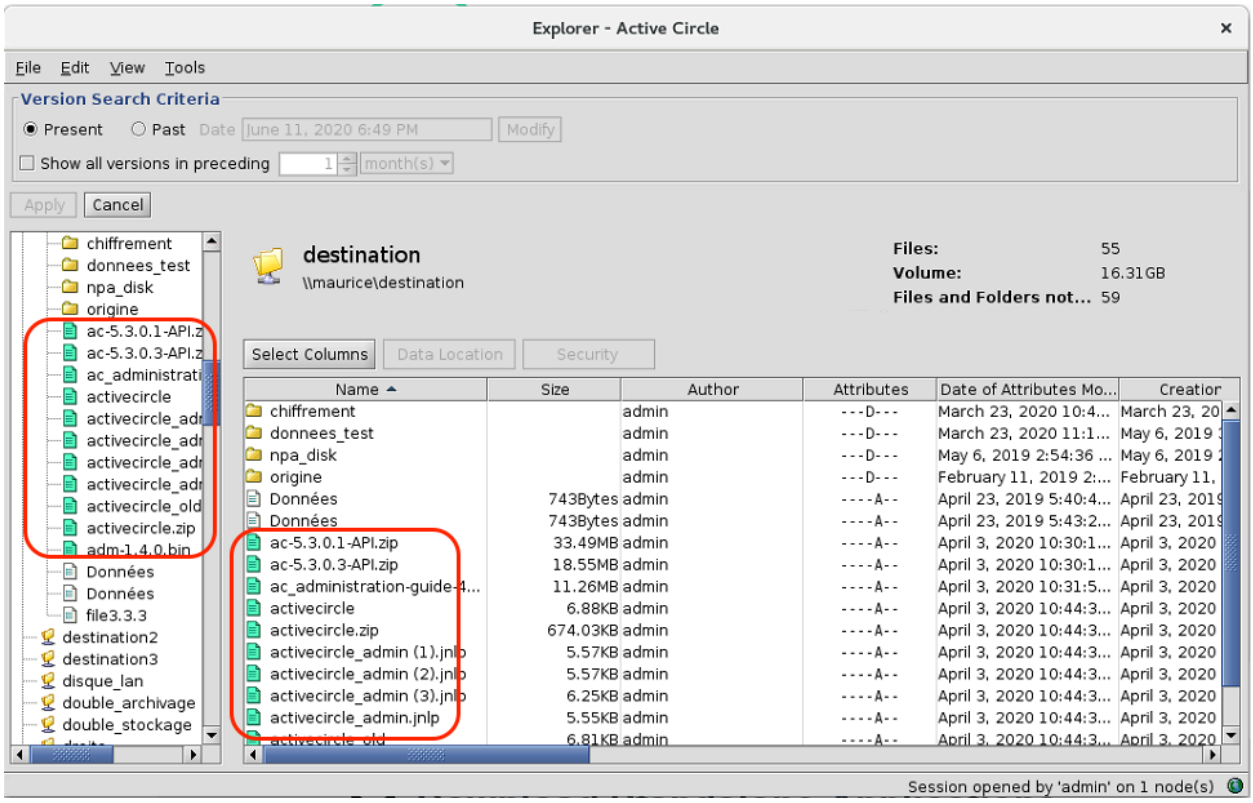
To define the encryption key for the given share, where `<key>` is a 256 bits word given in hexadecimal without the leading “0x”:
`acadmin --keyStore -shareKey <key> -S <share>`

To define the encryption key seed for the given share, where `<seed>` is an ASCII 7 bits string:
`acadmin --keyStore -shareKeySeed <seed> -S <share>`

To renew the encryption key:
`acadmin --keyStore --renewShareKey -S <share>`
Note: The renewal of the key is based on the seed if any, but if a key has been defined by the end user, it is invalidated and the automatic key management mode is re-activated for the share.

Explorer

The encrypted files appear with a green icon in the active circle explorer as shown below:



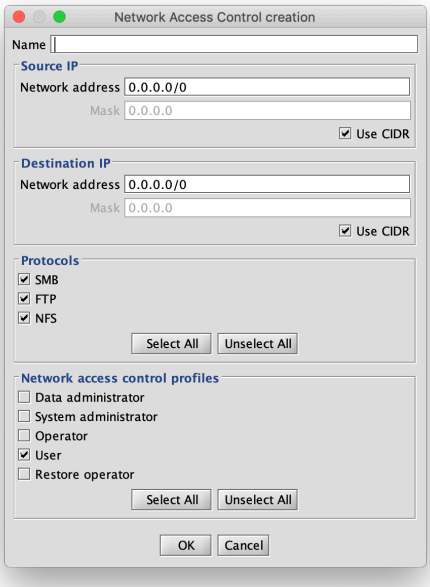
3.7.2.3. Access control enhancement

Up to now, when a share is activated on a node, it can be accessed with every protocol (FTP/FTPS, NFS, CIFS) that is available on the given node, by any client (host, subnet) that an access has been granted to.
The Network Access Controls (NAC) have been enforced to be able to check the full access path, not only the source (i.e. the client). On top on the former source description (i.e. the client: host, subnet) it contains the allowed protocols and the destination description, i.e. the endpoint where the access is granted (node, VIP).
The NAC “Default control” allows any protocol from any client to any node.

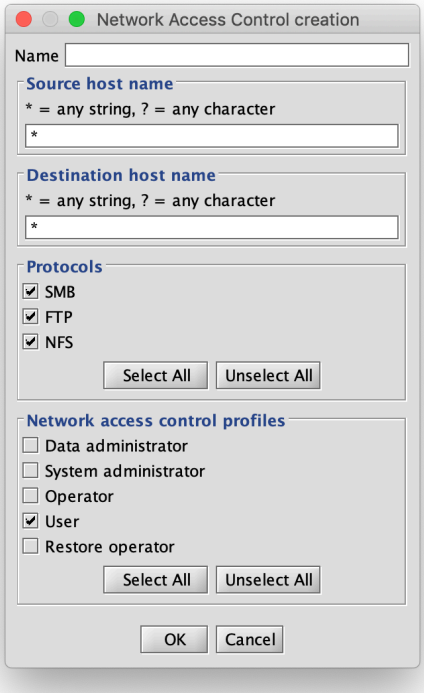
configuration

The following forms are used to defined a NAC (Network Access Control).

USING IP



USING NAMES



Note: when a NAC is associated to a share, only the access given by the NAC are allowed.

CLI

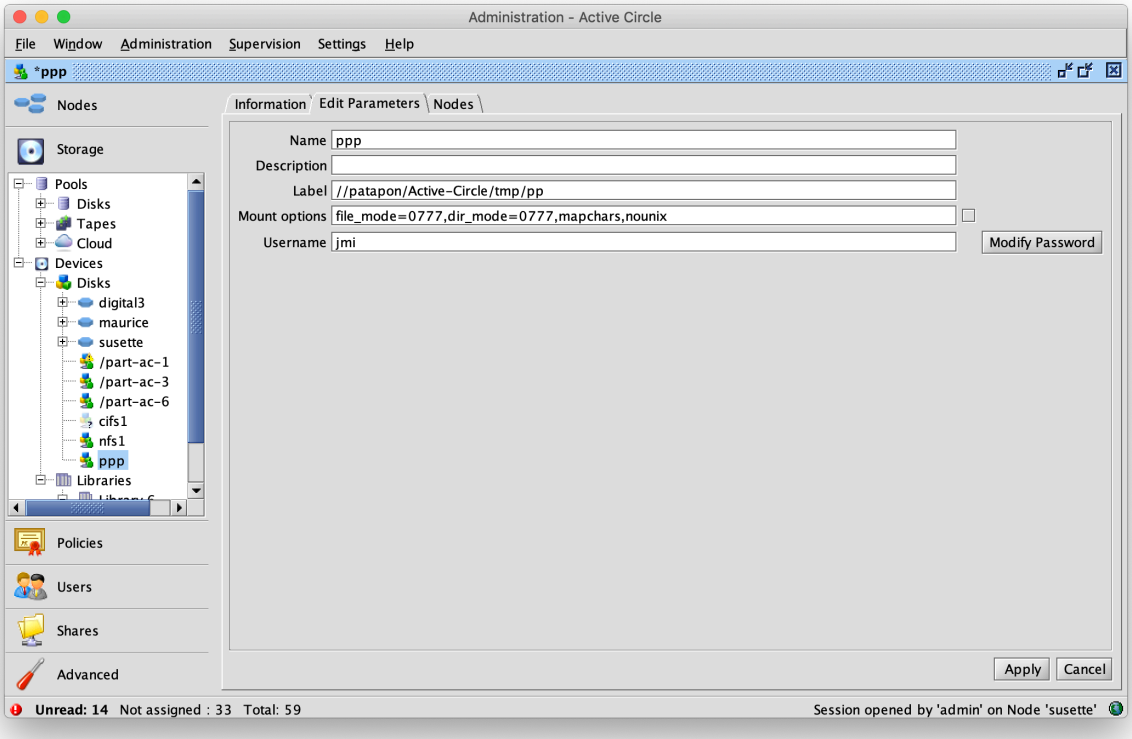
`acinfo --nac` Shows the Network access controls

`acadmin --nac` is used to edit the Network access controls

3.7.2.4. CIFS shared disk partition

Description

It is now possible to create a CIFS shared disk partition that can be added to a shared disk pool. The type of shared partition is given by the syntax of its label. For CIFS partition, the syntax of the label must be ***//server/path/to/partition***
The following form is used to edit the CIFS shared partitions. It allows to set the credential to access the partition and to define the mount options:



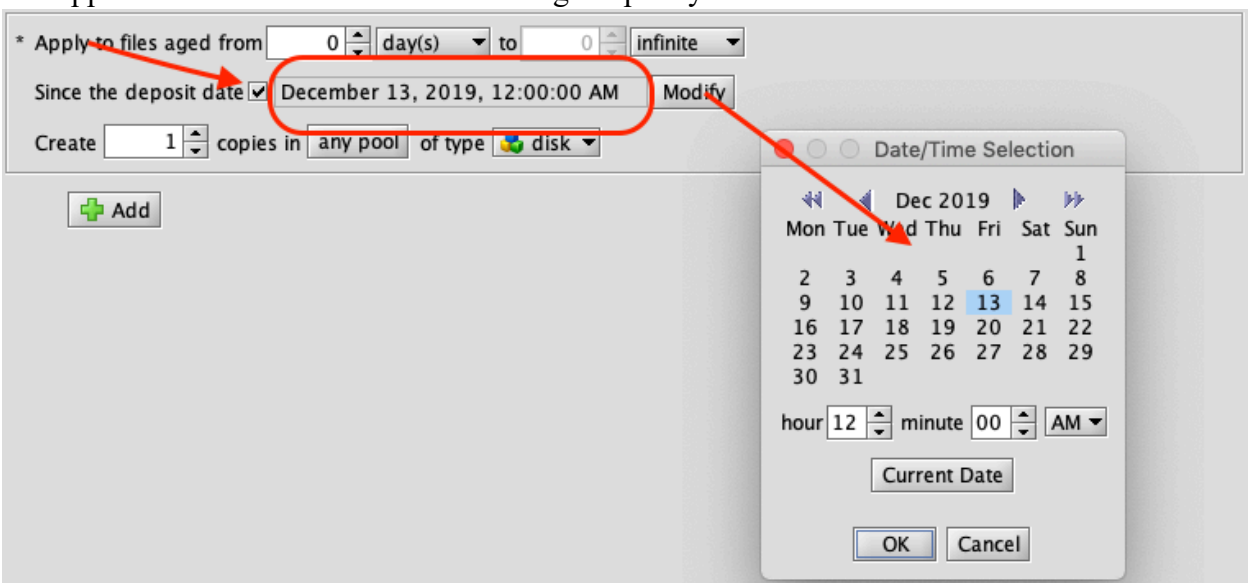
The credentials (user, password) are only when mounting the partition to build the credential file given as an option of the mount command. The credential file is deleted as soon as the partition if mounted.
The default values of the mount options (inherited) are given by the following circle parameters depending of the type of the shared partition:

- Local FS: **activecircle.diskPool.sharedPartition.mountOptions.localFS**
  no option by default (empty)
- NFS: **activecircle.diskPool.sharedPartition.mountOptions.NFS**
  default value : intr,hard,nolock
- CIFS: **activecircle.diskPool.sharedPartition.mountOptions.CIFS**
  default value : file_mode=0777,dir_mode=0777,mapchars

3.7.2.5. Storage and archiving constraint starting date

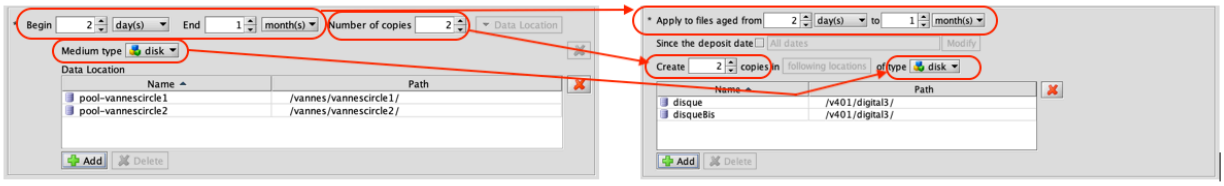
Description

It is now possible to define an application date for the storage and archiving policy's constraints, i.e. the constraint is only applied to the files newer that the application date. By default, this date is null, then the constraint is applied to every file.
The application date can be set when editing the policy:



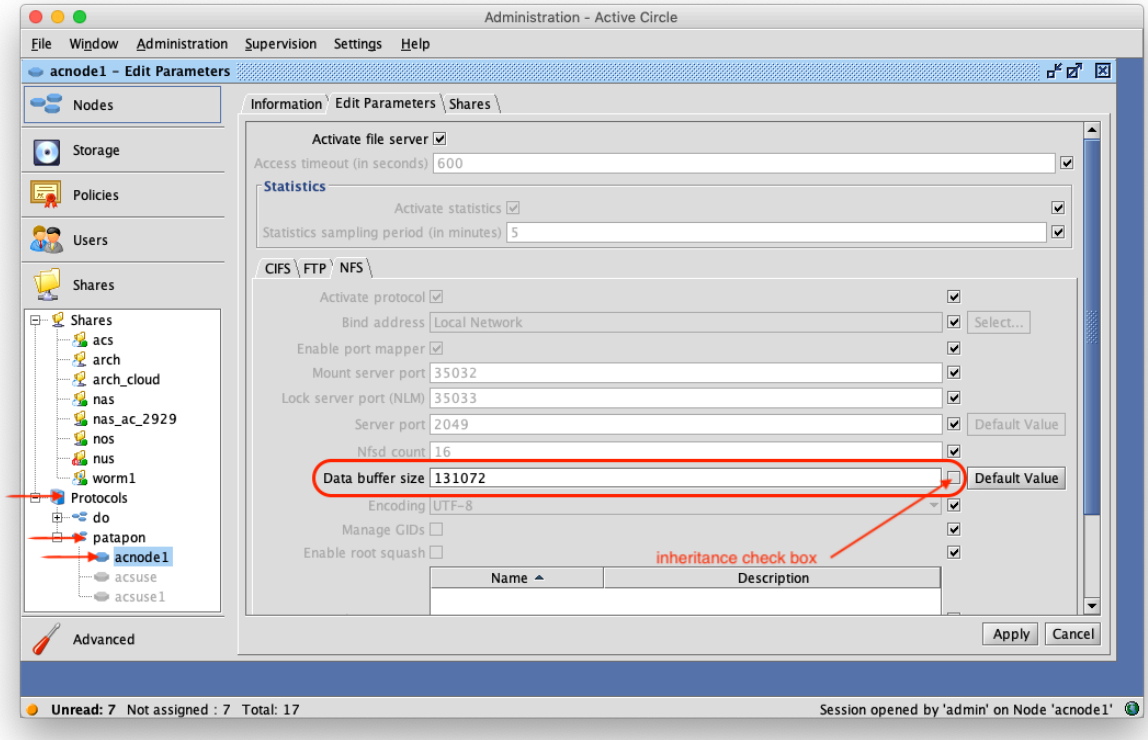
Note: The validity period of the storage policy must cover the complete life time of every file, then every policy must have a constraint starting from the origin (1-1-70) and no interruption is allowed up to the end of the retention.

The information and edition forms of the constraints have been modified as following:



3.7.2.6. NFS performance enhancement

Increasing the NFS buffer size can improve the NFS write and right throughput.
The NFS buffer size can now be defined in the administration interface, in the “Shares” view. It can be defined at the protocol, domain or node level (as shown below by the red arrows). If checked, the inheritance check box shown in the below figure force the buffer size to the upper level value. The default value of the NFS buffer size is still 64 KB (65536 B).



The most consuming parts of the NFS server, such as the session control, have been optimized

3.7.2.7. New command *acps*

`acps` displays the list of active Active Circle threads and the CPU load of each of these threads.

3.7.2.8. Checksum reference file for on deposit checksum computing

When the checksum computing upon file deposit is activated, it is now possible to define a reference file containing the awaited checksum for each file. This file must be present with the proper name in the parent directory of the written file prior to file deposit.
The circle parameter **activecircle.vfs.depositChecksumReferenceFile** defines the name of the reference file. If this parameter is empty (default value), no reference file will be checked.

The circle parameter **activecircle.vfs.depositChecksumNoReferenceMode** defines the behaviour of the checksum mechanism when the checksum of a file is not found in the reference

file or if the reference file does not exist but has been defined.
The values can be:

- Ignore: Ignores the checksum computing. The file will not have a checksum. The checksum could be computed later on, during archiving for instance. This mode cannot be used for proven shares as the initial checksum is required to prove the file.
- Compute: Computes the checksum, as if there were no reference file defined. The computed checksum is considered valid, and the file will archived in case of "archiving with valid checksum".
- Invalidate: The file is considered as invalid, then the file will not be archived in case of "archiving with valid checksum".

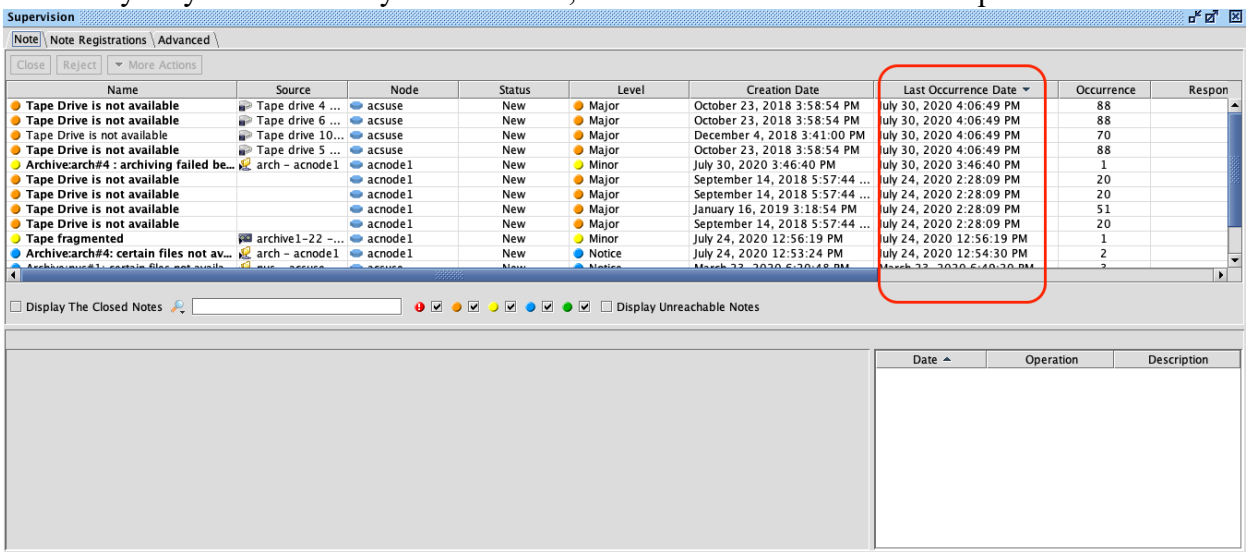
3.7.2.9. Force tape duplication/defragmentation

Add the new option `--force` to the `acadmin --tape --duplicate` or to `acadmin --tape --defrag` CLI to make the best effort to continue the tape duplication/defragmentation in case of error.

If an error occurs with the "force mode" when reading the tape being duplicated/defragmented, the current tape fragment is ignored and the duplication/defragmentation continue with the next fragment. At the end, the tape is in the new "partially defragmented" state and a supervision note is sent to notify this state.
Such a tape can then be moved into the "Excluded Tapes" list and then deleted.
Warning!: When moving a partially defragmented tape to the "Excluded Tapes" list the data lying on the ignored tape fragment are lost.

3.7.2.10. Sort the supervision notes by last occurrence

Previously they were sorted by creation date, not the last sent note was on top of the list.

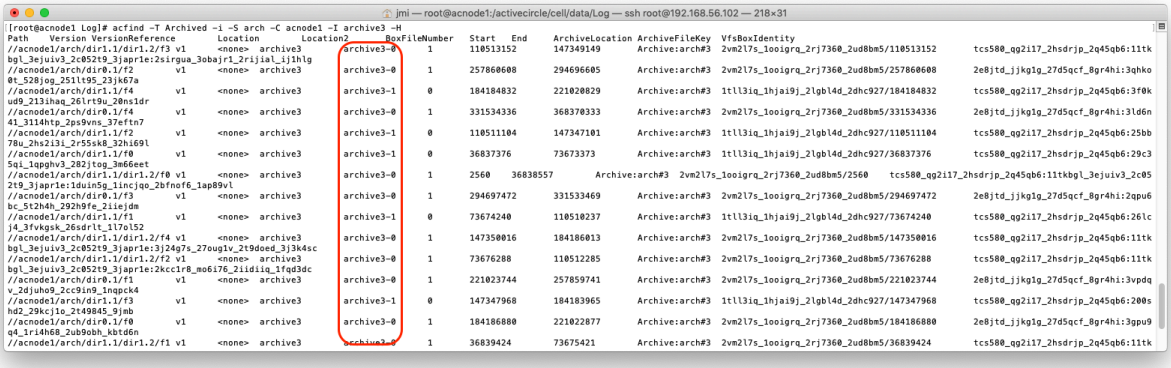


3.7.2.11. Add a new supervision not when a plugin cannot be loaded

3.7.2.12. Enforce the control of the creation of the active circle cache

When the active circle cache is created the hidden file */activecircle/.cacheCreated* is also created. Next startups of the service fail if this file exists but the active circle cache directory is empty.

3.7.2.13. acfind –i now displays the tape name in archive location



3.7.3. Fixes

AC-3925

It is now possible to access via FTP to node if the SSL/TLS mode is deactivated but the checkbox « Allow only secured connections » checked.

AC-3853

Ctrl-S is no more used to save user preferences.

AC-3841

Fix JVM crash in case of concurrent access to a BitSet

AC-3834

Fix catalog corruption due to concurrent access to huge “pode files” (internal blobs that store directory content in the catalog)

AC-3827

Fix “CWD” FTP request without argument that previously blocked the client until timeout.

AC-3647 AC-3693 AC-3826 AC-3845

Fix different freeze of the administration interface, amongst others when restarting a node.

AC-3819
Explorer : Fix sorting of attributes modification time column.

AC-3817
Prevent pode file from being corrupted under specific conditions (concurrent load/save and pode expansion)

AC-3800
Fix Active Circle service restart on SLES.

AC-3772 AC-3665
Fix contention if concurrent access occurs during NFS file deposit.

AC-3754
Improve performance when building the share list in the Active Circle explorer.

AC-3742
Fix inconsistency in quotas between the information shown in the administration GUI and the values returned by the SNMP agent.

AC-3721
Fix deadlock when accessing a folder from several nodes.

AC-3612
Fix deadlock when updating counters on a share (data & archive) under rare and specific circumstances.

AC-3564
Fix temporary files creation management to prevent regular files to be seen as temporary in case of concurrent deposits of temporary and not temporary files.

AC-3527
Fix NPE in the administration interface when first displaying the share view.

AC-3519
Fixes the authentication issues introduced by the AD patches that fix the vulnerability CVE-2019-1040.

AC-3253
Fix deadlock if a tape drive is reset in service during an SCSI error management.

AC-2909

Improve the signal handler to avoid multiple “SIGTERM handler” thread when stopping Active Circle service.

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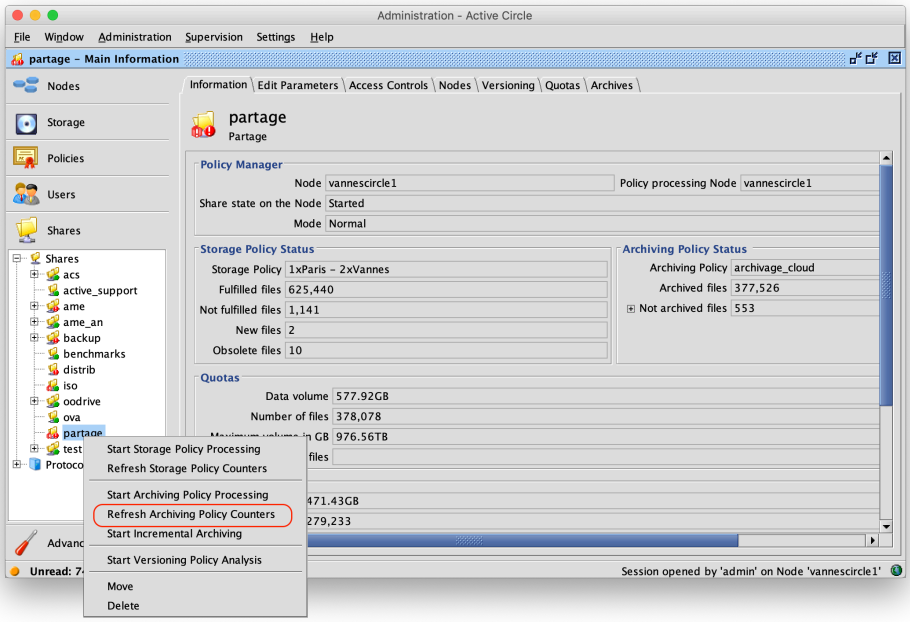
AC-2903

Verify accuracy of the Archiving Policy Counters during archiving counter refresh (formerly the counters where only republished but not checked).



AC-2233

Fix writing a huge file with NFS.

3.8. Active Circle V5.3.1.0 - November 2019

This new version of active circle provides mainly fixes from the previous versions of Active Circle.

SHA256 FOOTPRINT

76972affdf36cc0be5ad53604f1326fee70b735307fd5fb27b084aec37e17609

3.8.1. Compatibility matrix

This new version of Active Circle 5.3.1.0 is compatible with the following version of the options:

- AMC 5.3.1 in HTTP/HTTPS
- ADM 1.4.0 in HTTP
- AME 2.2.4 in HTTP

3.8.2. New features and enhancements

AC-3500

"Change password" and "API Reference" entries on the Active Circle main WEB page are no more shown when SSL is deactivated in the HTTP server of the node.

3.8.3. Fixes

AC-3629

The system property **activecircle.system.device.sub.scsi.maxSG** defines the max number of the /dev/sg device to probe. its default value is 256.

AC-3605

SNMP server is no more activated by default while installing a new node, though a new node is automatically added to the SNMP cluster.

AC-3576

Do not select anymore the files with invalid checksum during an archiving with "Archive only files with valid checksum" option on. Previously such files where selected for archiving but did always fail as their checksum is invalid, with the consequence of potentially reaching the maximum number of objects in the selection with invalid files.
Such files are still listed in the excluded files of the archive and the final status of the archive is "partial".

AC-3567

Suppress polluting logs in the SNMP server when retrieving undefined cluster resources.

AC-3549
During a drive cleaning, the MAM_READ_ERROR [SK=0x3,ASC=0x11,ASCQ=0x12] and the MAM_NOT_ACCESSIBLE [SK=0x3, ASC=0x04, ASCQ=0x10] SCSI error are no more fatal when checking the tape type while loading the cleaning tape.

AC-3548
Allow deletion of a share even if it is still activated on deleted node because of previous synchronization problems.

AC-3527
Fix NPE seen in the Administration Tool when displaying the share list.

AC-3402
Fix erroneous lock mechanism in the temporary file versioning policy management.

AC-2504
Disable management federation tasks while the node is stopping, to prevent perturbation in the federation mechanism on the other nodes.

3.9. Active Circle V5.3.0.5 HOTFIX – October 2019

SHA256 FOOTPRINT
238b8cece9275e37495ad202762b5fb8a4c66e2332c55e48c1bd1d778c2fae64

3.9.1. Fixes

AC-3626
Fix lack of commit of last written file in case of continuous deposit (issue introduced in V5.3.0.2 AC-3419).

AC-3618
Add a warning log when an unknown failure occurs during directory synchronization.

AC-3606
Enhancement in memory management of the NFS server that could lead to server blocking (deadlock).

AC-3577

Enhancement in RPC packet management to prevent excessive memory use.
The following system properties can be used to tune the RPC package pools:

com.starla.oncrpc.packetPool.smallPacketSize
Defines the size of the small RPC packets: default value 512 Bytes.

com.starla.oncrpc.packetPool.largePacketSize
Defines the size of the large RPC packets: default value 32 Kbytes.

com.starla.oncrpc.packetPool.poolSize
Defines the maximum number of allocated RPC packets allowed (small or large) before waiting for a packet to be released before allocating a new one, with -1 meaning unlimited: default value 50.

com.starla.oncrpc.packetPool.waitTimeout
Defines the timeout in ms to wait for during a RPC packet allocation if the maximum number of allocated package allowed has been reached: default value 20000 ms.

3.10. Active Circle V5.3.0.4 HOTFIX – September 2019

SHA256 FOOTPRINT

6c376138629f9844ca6bce2ad03056c31f30659bd0b8ac83e24b065353516bcc

3.10.1. Fixes

AC-3575

Fix upgrade procedure of signature config files.

AC-3564

Security fix for temporary file management.

3.11. Active Circle V5.3.0.3 HOTFIX – August 2019

SHA256 FOOTPRINT

12ed298b895d2ee7100a26114e01ec5cbcba7699dea782413ab4b5217569b9ac

3.11.1. Fixes

AC-3547

Checks the netmask of the physical interface when setting a VIP to a HA cluster leader.

3.12. Active Circle V5.3.0.2 – June 2019

This new version of active circle enforces the security and traceability capabilities of the system by providing a new option called “Archive Secured Pack”, that completes the WORM features (share and pool) provided by previous version with a sealing/proof mechanism of the files dropped into a WORM share.
The version provides an SNMP agent embedded in each node that allows to monitor a circle as a whole.

SHA256 FOOTPRINT

3a2876cad28e8b58771542d4e506ab034c32aaecbcdf2840cd0a3721617adaed

3.12.1. Compatibility matrix

This new version of Active Circle 5.3.0.2 is compatible with the following version of the options:

- AMC 5.3.0 in HTTP/HTTPS
- ADM 1.4.0 in HTTP
- AME 2.2.4 in HTTP

3.12.2. New features and enhancements

3.12.2.1. File proof management

Description

A new feature has been added to the WORM shares to regularly generate proof file. This file contents
the list of the files that have been added or deleted since the last proof generation, along with their SHA256 signature and some other meta data (see format of the proof file below). The format of the file is structured (XML) and documented, and the proof file is signed using the XAdES format to be compliant with the European eIDAS regulation.
This new feature is part of the new "Archive secured pack" option and requires a license update.

Format of the proof file

The proof file is an XML file, that contains, on top of the file list,

- A unique ID of the current proof
- The unique ID of the previous proof (except for the first one)
- The hash of the previous proof file (except for the first one)

For each file in the list,

- Its full path (share/path/to/file/name.ext)
- Its size in byte
- Its SHA256 hash
- mtime in case of creation
- dtime (deletion time) in case of deletion.

The proof file schema is defined by the following XSD:

```
<?xml version="1.0" encoding="UTF-8"?>

   <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"  xmlns:ds="http://www.w3.org/2000/09/xmldsig#" elementFormDefault="qualified"
attributeFormDefault="unqualified">
         <xs:element name="digest">
               <xs:complexType>
                     <xs:simpleContent>
                           <xs:extension base="xs:string">
                                 <xs:attribute name="type" type="xs:string" use="required"/>
                           </xs:extension>
                     </xs:simpleContent>
               </xs:complexType>
         </xs:element>
         <xs:element name="record">
               <xs:complexType>
                     <xs:sequence>
                           <xs:element name="previous" minOccurs="0" maxOccurs="1">
                                 <xs:complexType>
                                       <xs:sequence>
                                             <xs:element name="ctime" type="xs:dateTime"/>
                                             <xs:element ref="digest"/>
                                       </xs:sequence>
                                       <xs:attribute name="identifier" type="xs:string" use="required"/>
                                 </xs:complexType>
                           </xs:element>
                           <xs:element name="file" minOccurs="0" maxOccurs="unbounded">
                                 <xs:complexType>
                                       <xs:sequence>
                                             <xs:element name="path" type="xs:string"/>
                                             <xs:element name="size" type="xs:int"/>
                                             <xs:element name="mtime" type="xs:dateTime" minOccurs="0" maxOccurs="1"/>

                                             <xs:element name="dtime" type="xs:dateTime" minOccurs="0" maxOccurs="1"/>
                                             <xs:element ref="digest"/>
                                       </xs:sequence>
                                       <xs:attribute name="id" type="xs:string" use="required"/>
                                 </xs:complexType>
                           </xs:element>
                     </xs:sequence>
                     <xs:attribute name="identifier" type="xs:string" use="required"/>
               </xs:complexType>
         </xs:element>
   </xs:schema>
```

Certificates management

The certificates to sign the proof files must have the key usages : Digital Signature, Non Repudiation.
It should be delivered by a certification authority that is RGS and eIDAS certified.
The certificates must be delivered at the PKSC12 format.

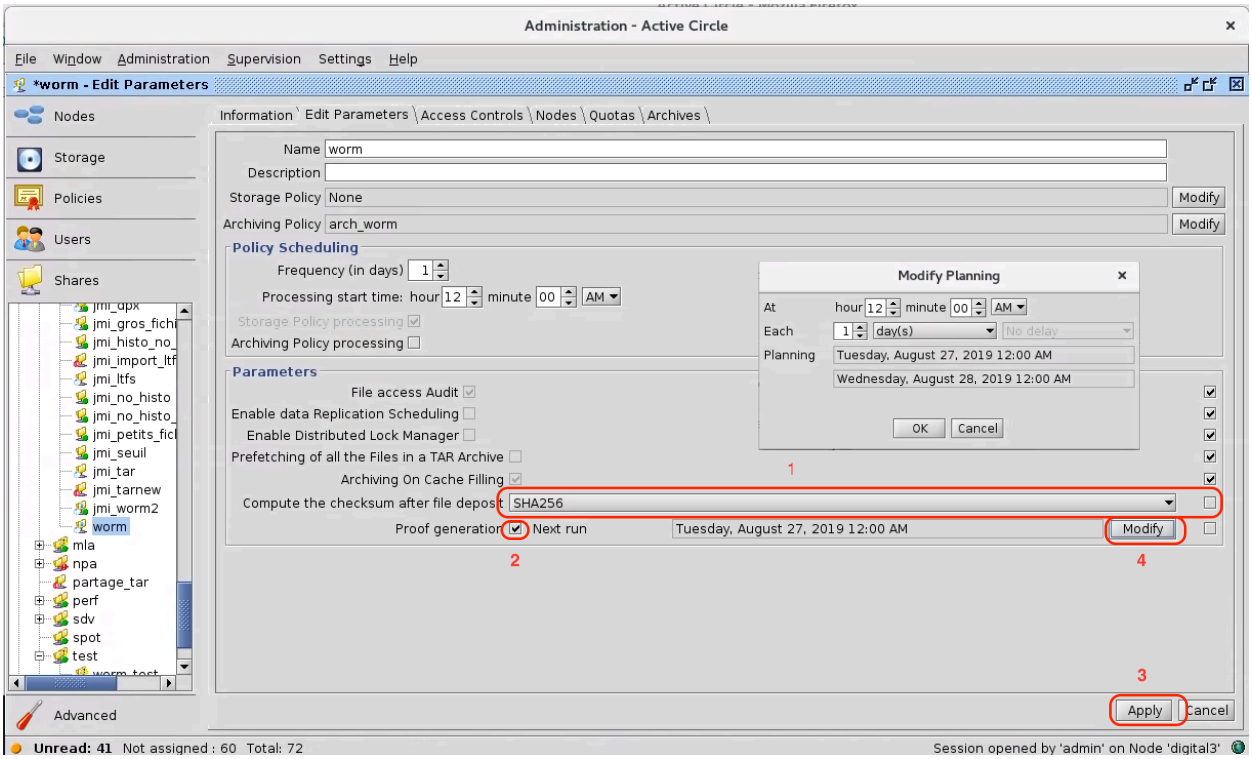
It is possible to use its own CA to deliver the signing certificates, as long as they have the right key usages. The Root CA and the intermediate CA must be published (.cer) along with the up to date CRL (.crl) in the **/activecircle/cell/config/sign** directory. The system properties **vfs.proof.caDirectory** and **vfs.proof.crlDirectory** allow overriding this location of the .cer files and .crl respectively.
The CA must keep track of every certificate it has delivered.

Configuration

- Set up the security environment as described above (CAs and CRLs)
- Using the CLI **acdamin --keyStore**, register the signing certificate in the keystore for the given WORM share:

```
acadmin --keyStore -a -f <path to the .p12> -i <alias to import from the
.p12> -s proof (or -s proof-<share name>)
```

- Activate the proof generation on a WORM share as shown below:



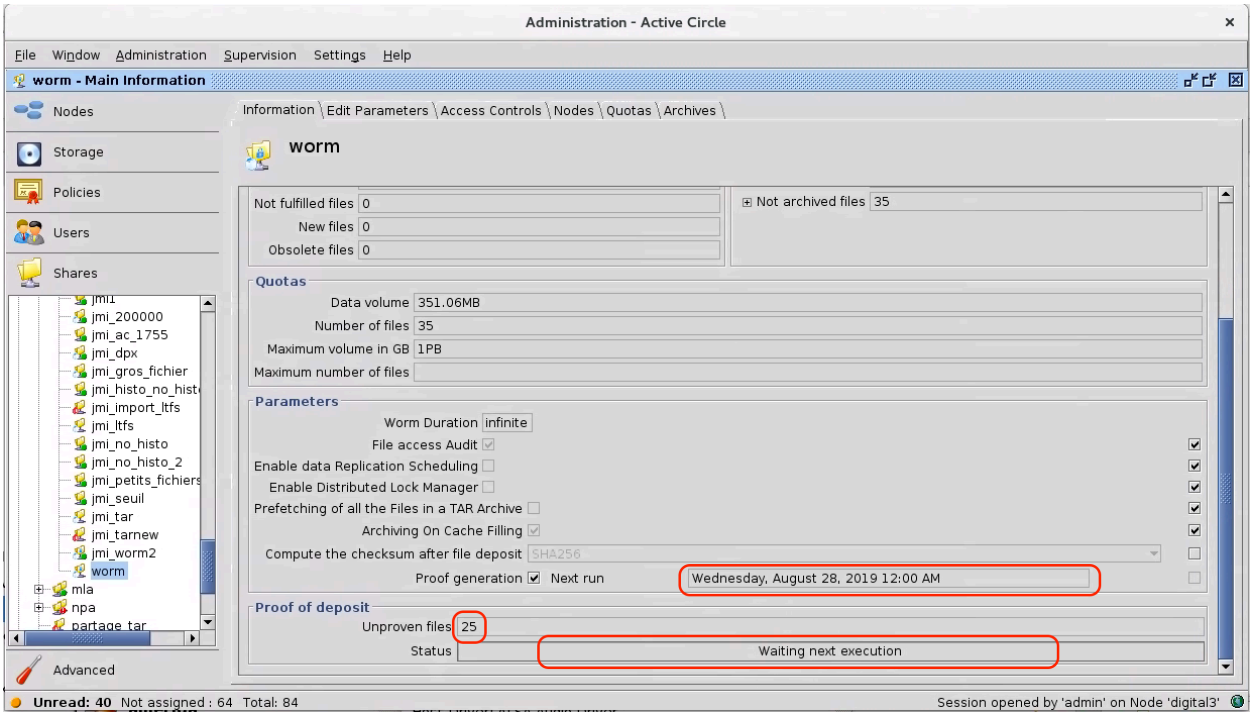
1- Activate the SHA256 hash calculation on deposit
2- Activate the proof generation
3- Apply
4- Modify the proof generation scheduling

Note: The proof generation runs on the policy manager of the share. The proof must run only once a time, then to prevent multiple proof runs in case of split of the circle, the policy manager must be explicitly defined.

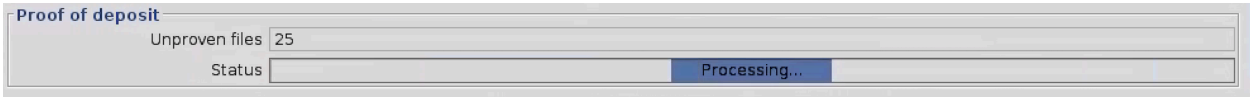
Information about proof

The information panel of the share view of the Admin tools shows the proof management status:

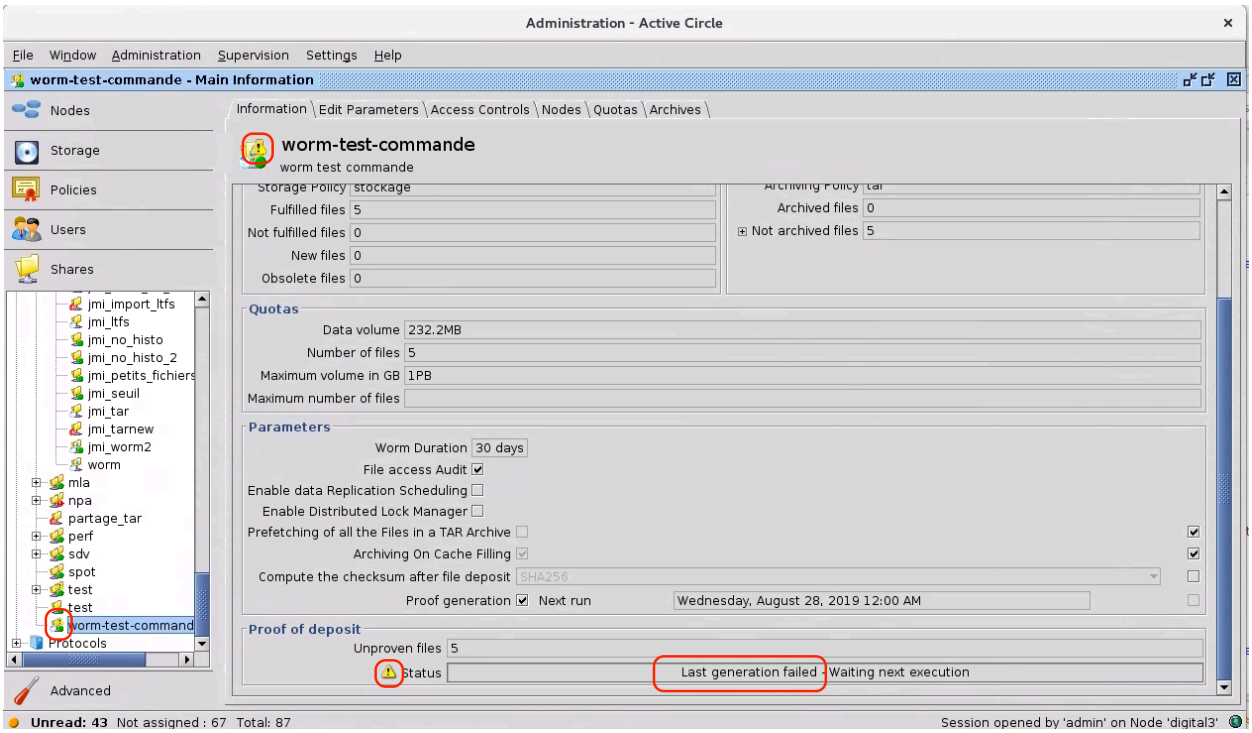
- Execution pending



- Proof being processed

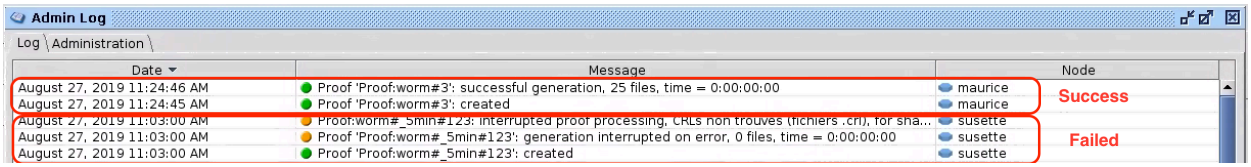


- Last execution Failed

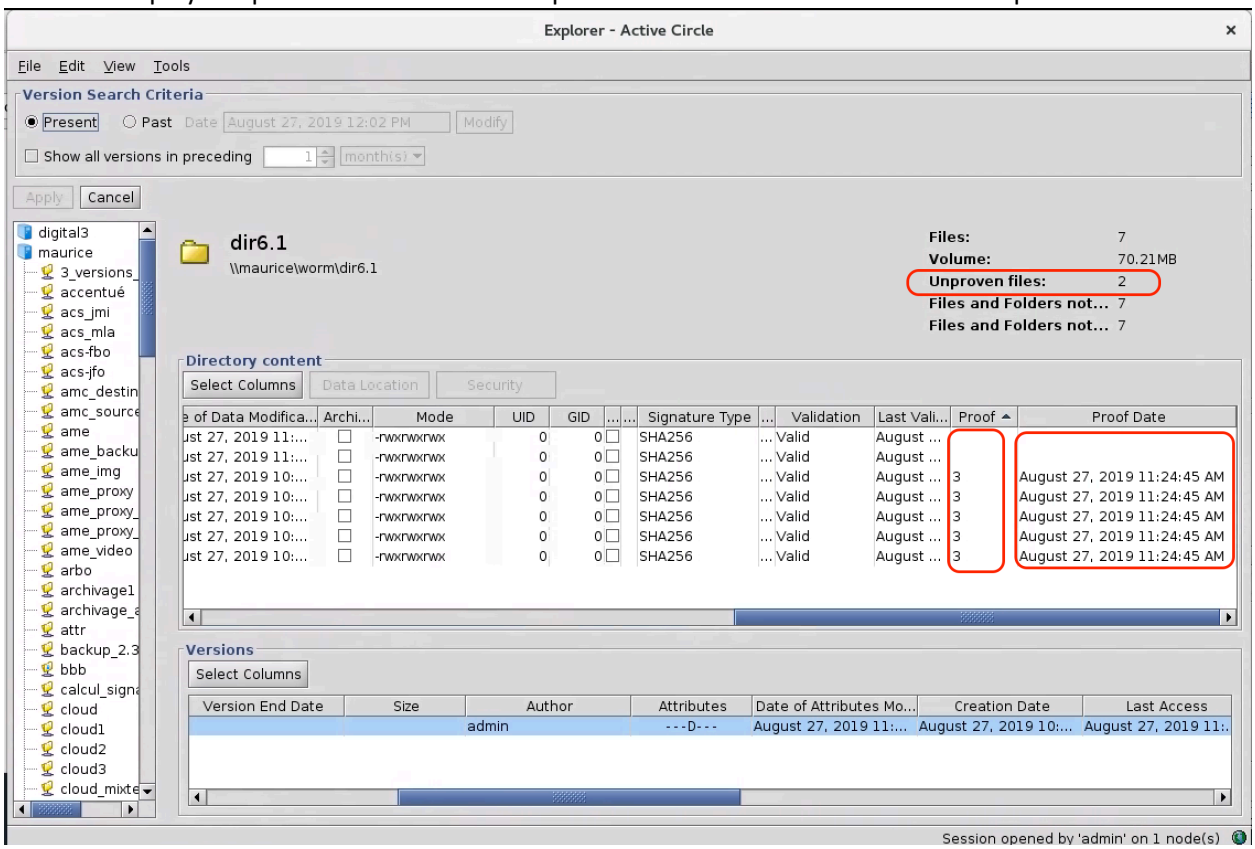


In case of failure a supervision note is sent to describe the encountered problem.

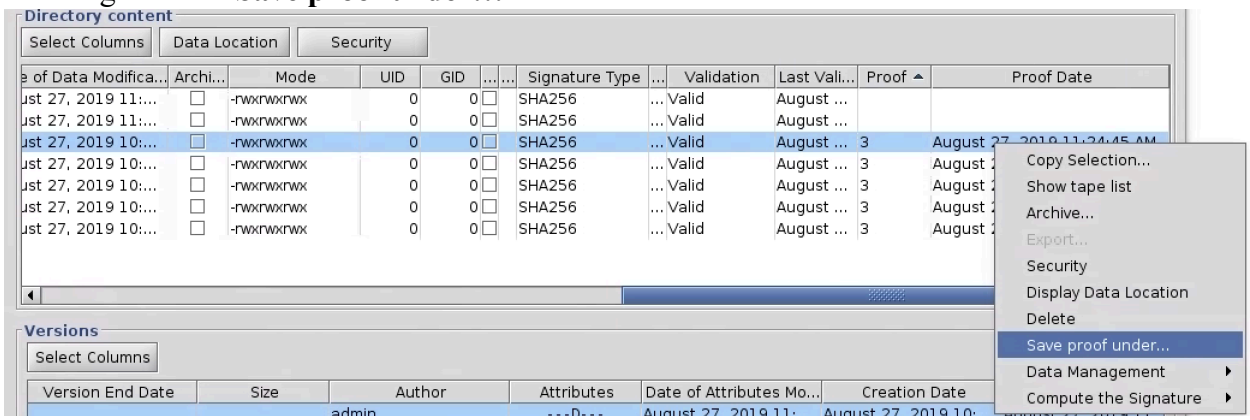
- New administration logs to trace proof generation process



- Explorer
  The number of unproven files is displayed in the folder information, and 2 columns have been added to display the proof number in which a proven file has been recorded and the proof date.



In is also possible to download the proof file (XML) that contains the selected file by selecting the item **Save proof under…** in the context menu



CLI enhancement

- `acinfo --proof` : displays the proof informations of the WORM shares

`-S, --shareName <share names>`
Displays the proof informations of the specified shares. One or several share names (separated by comma) or 'all' for all the shares (may be very time consuming) can be specified.

`-n, --name <proof names>`
Specifies the name(s) of proof(s) to show. One or several names (separated by comma) or 'all' for all proofs (may be very time consuming) can be specified.
If both `-S` and `-n` are specified the chosen proofs must be related to the specified shares.

`--status <proof status>`
Specifies the status of the proofs to show. One or several status (separated by comma) among `empty, complete, incomplete` can be specified.

`--state <proof state>`
Specifies the state of the proofs to show. One or several states (separated by comma) among `scheduled, in progress, successful, interrupted on demand, interrupted on error, interrupted on service stop, aborted time over, interrupting or one condition among running (processing), interrupted, aborted, done` can be specified.

`-P, --pattern <file path pattern>`
Displays the proofs that contains the files matching the given pattern (very time consuming)

It is possible to display the proof file or the file list in a proof by using the `-s/--show` et `-f/--files` option along with the `-n/--name` option.

- `acinfo --account`

`--proofInfo` Displays the proof status of the shares.

- `acproof` : New command to manage the proofs of the shares

`-p, --prove` Starts proof generation
`-u, --interrupt` Interrupts proof generation
`-i, --integrity` Checks the consistency of the block chain
`-m, --monitor` Waits until proof processing stops or until the defined timeout (`-t` option) is reached
`-d, --delete` Deletes the last proof, if empty

- `acfind --sumStatus <proven|not_proven>`

This new criteria looks for the proven or not proven files. When this option is combined with other criteria, a logical « or » is applied.

- `accksum --check -x SHA256`

The check of the SHA256 hash of files, also check the value of the hash in the proof file if any.

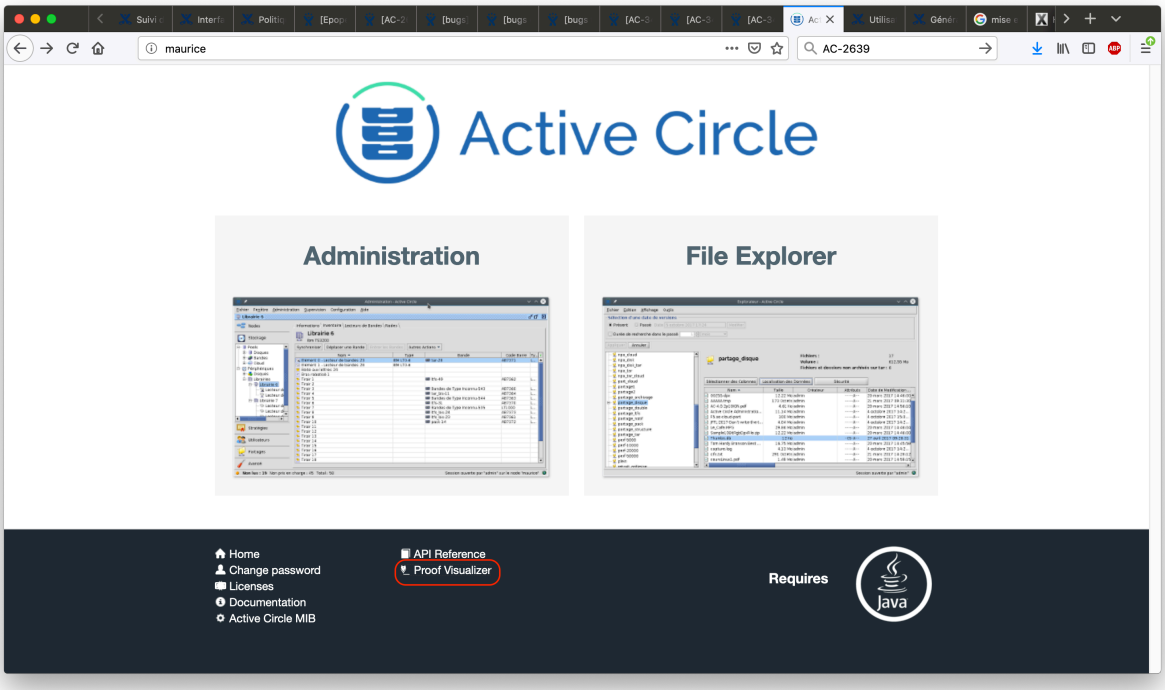
AUDIT enhancement

New audit events have been added to trace the proof processing of each file:

- `F.PROOF` **`(PROVEN_FILE)`** : The event is recorded when a new file is being proved.
- `F.DPROOF` (**`PROVEN_DELETED_FILE`**) : The event is recorded when a proven file is deleted.

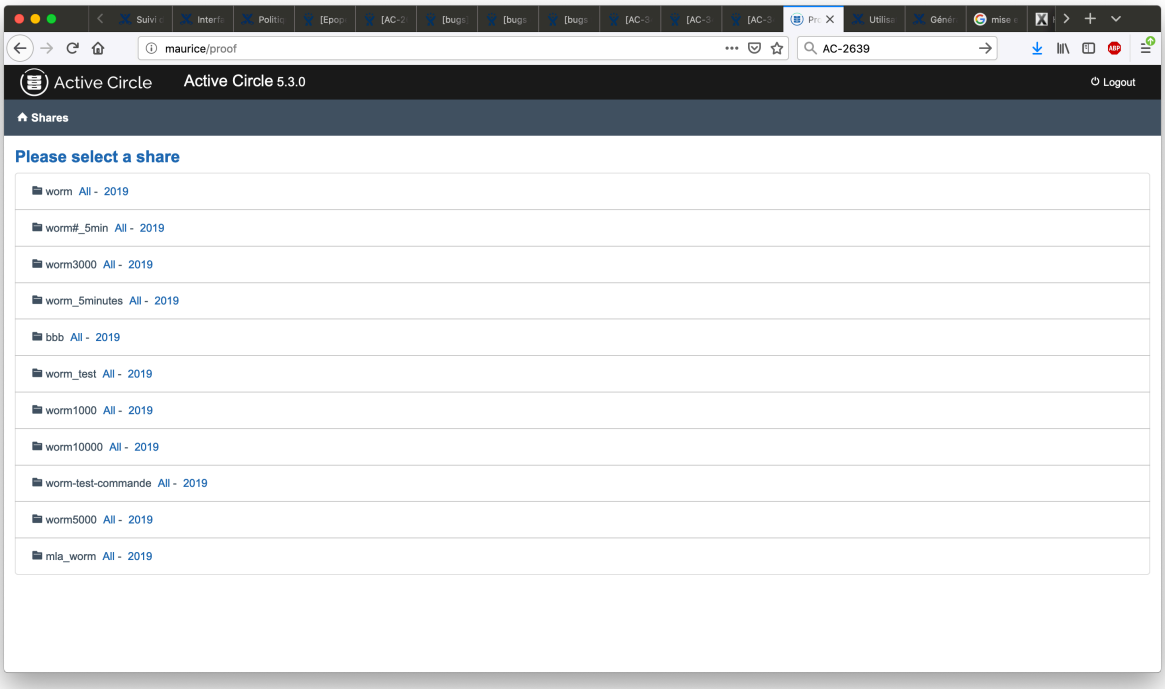
3.12.2.2. Proof visualizer

A web app has been added to display the proofs of the worm share. It is accessible from the main page of the http server of the nodes

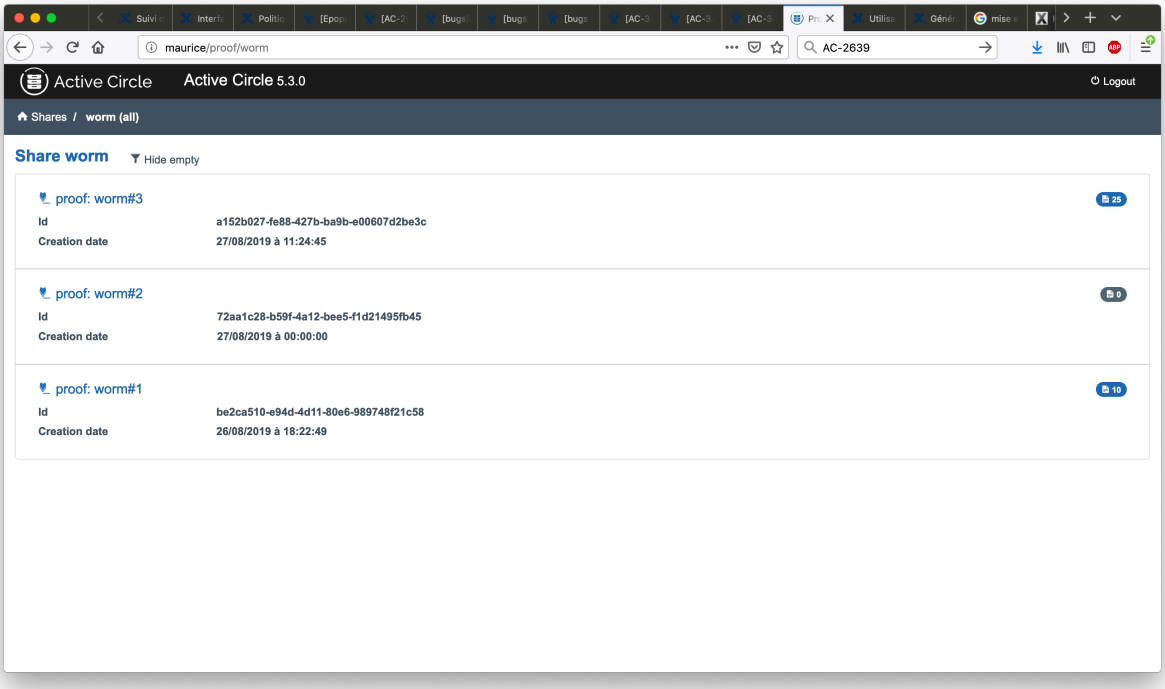


This tool shows:

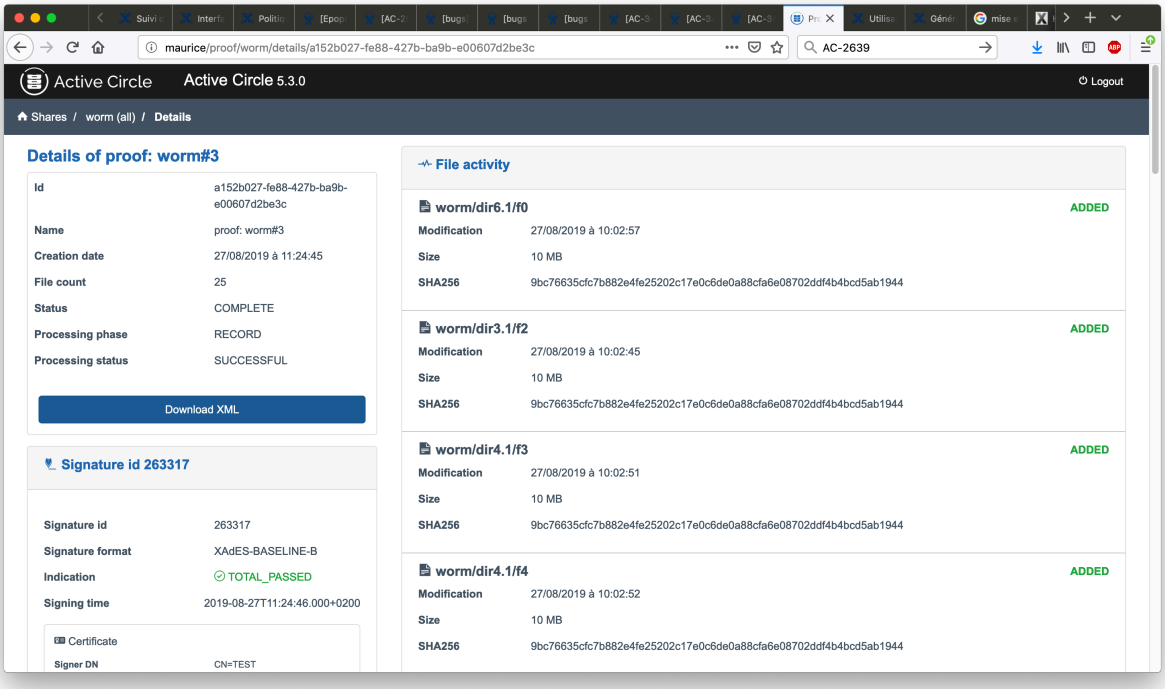
The shares that have at list one proof



The list of the proofs of a share



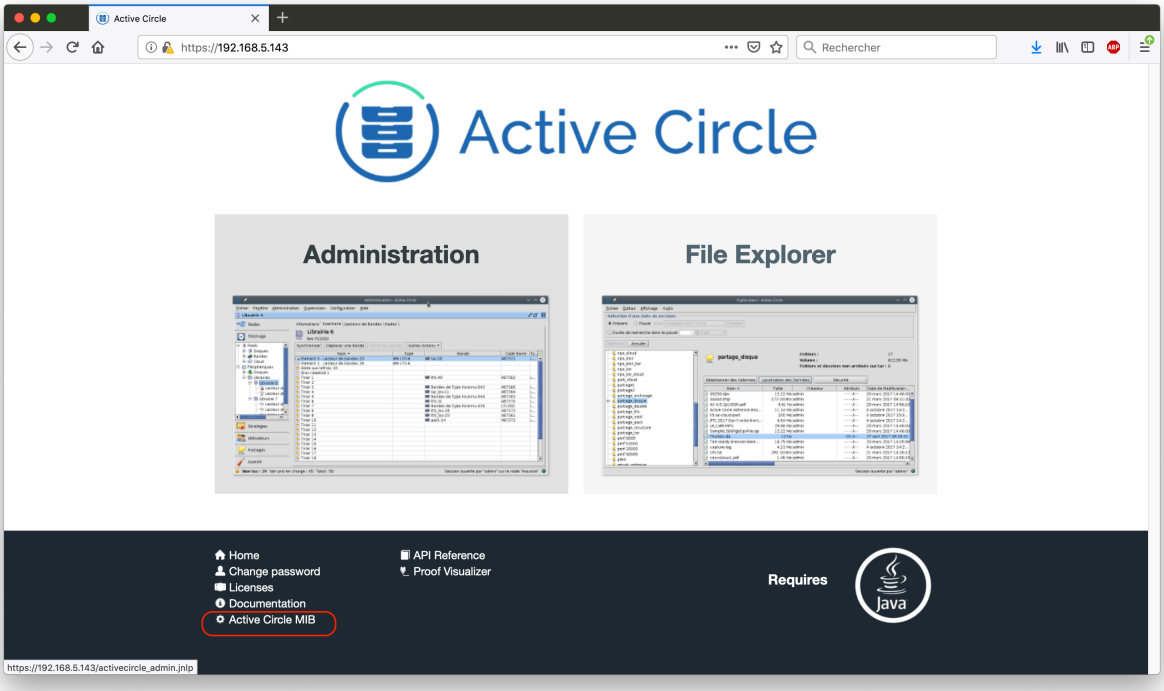
The detail of a proof (the XML file can be downloaded from the page)



3.12.2.3. SNMP Agent

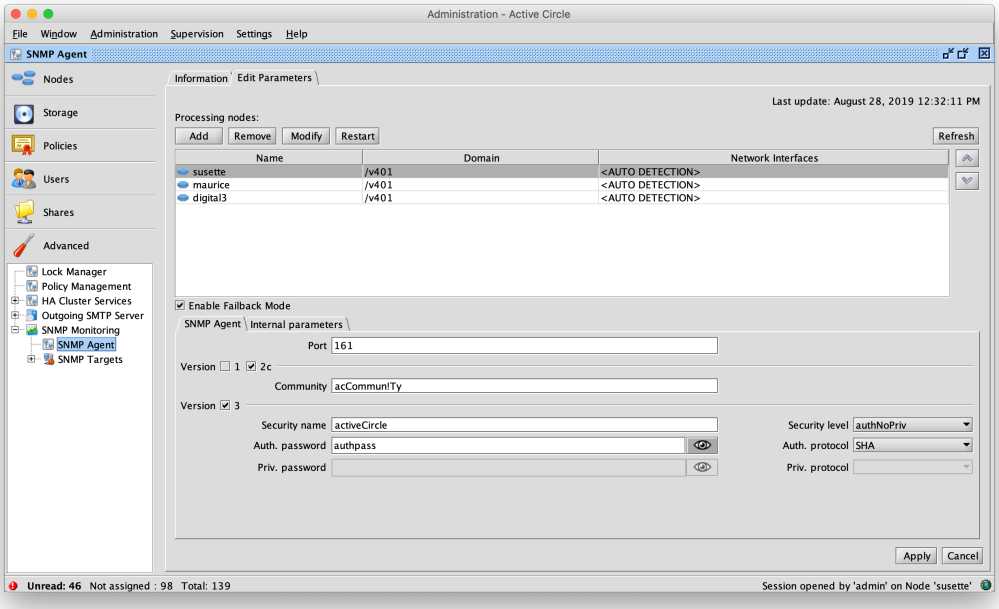
Description

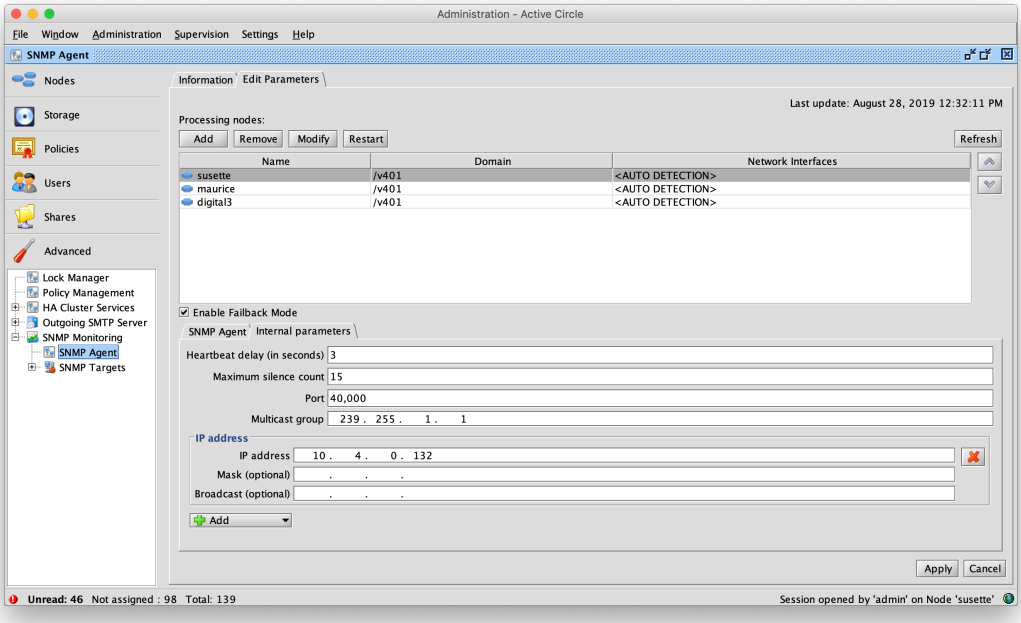
A whole circle can be seen as a unique SNMP agent, i.e. there is a unique MIB to describe the monitored values of a complete circle.
This new SNMP agent can be configured in version 1, 2c and 3. The 3 security levels of the version 3 are supported : **authPriv**, **authNoPriv** and **noAuthNoPriv**.
The agent SNMP agent is highly available; it is accessible from a specific cluster that must be set up along with the agent. The agent is started on each member of the cluster, and stopped as soon as a member is removed from the cluster, then if every member of the cluster are removed or stopped, the SNMP agent is no more available. If the agent is joined from the cluster resource (VIP for example) the leader will answer the request, but the agent can be also joined from every member of the cluster.
The MIB of this agent SNMP is accessible from the main page of the http server of the nodes.



Admin GUI

The new **SNMP Monitoring** node in the advanced view of the admin GUI is used to set up the SNMP agent (the former **SNMP targets** node has been moved under the **SNMP Monitoring** node).
The parameters of the SNMP agent (version, security level, community etc…) and the parameters for the cluster (member list, VIP …) can be defined in this form.



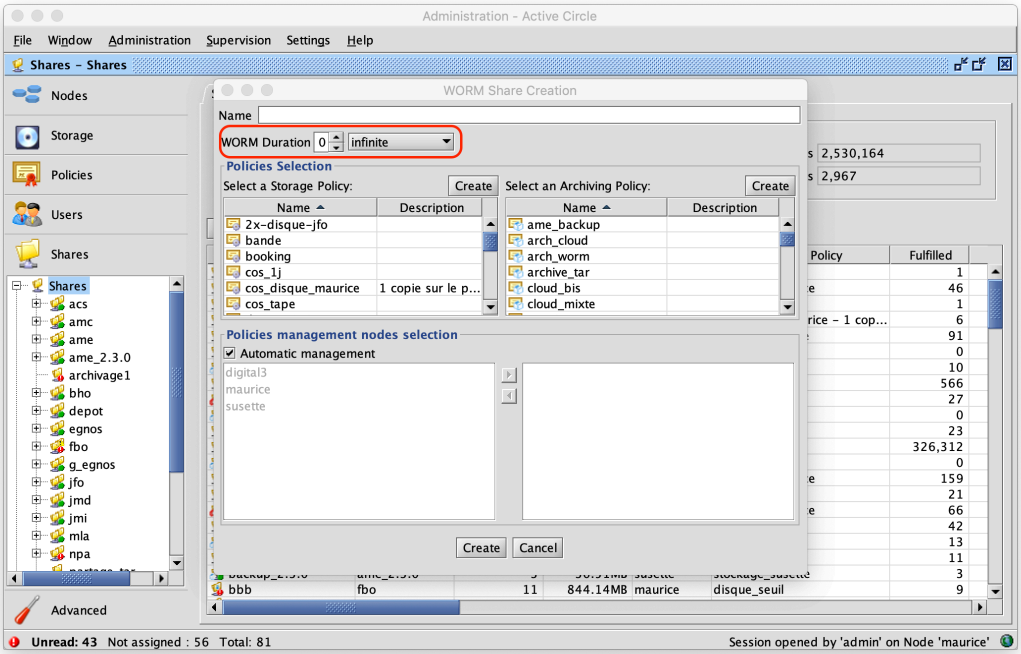


CLI

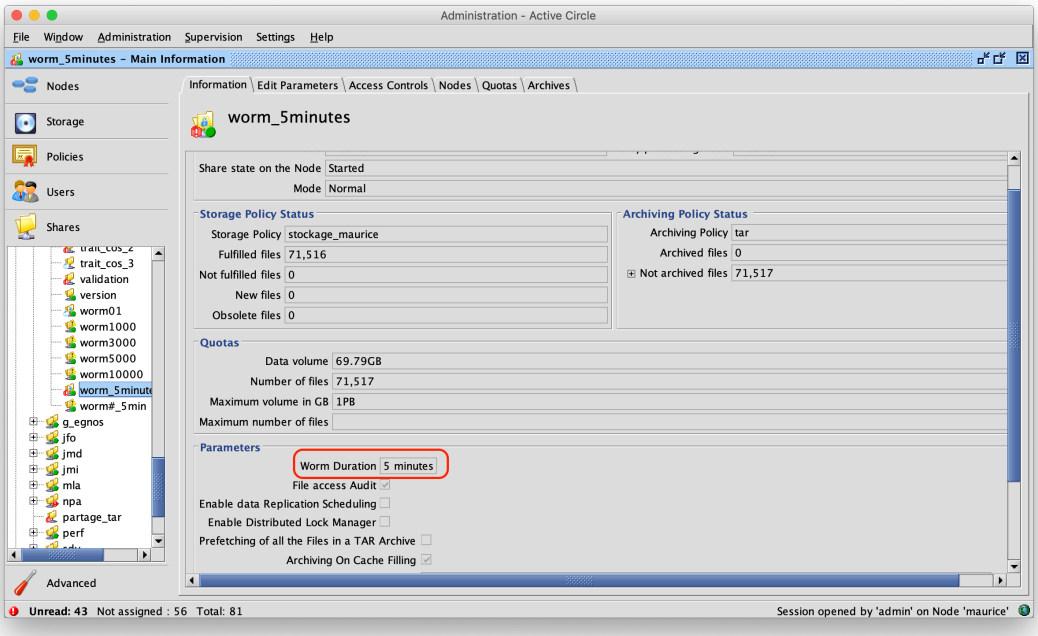
- `acinfo --snmp` : Displays the informations about the SNMP entity (agent and targets)
- `acinfo --cluster` : Takes into account the SNMP Agent cluster.

3.12.2.4. WORM duration of a WORM share

It is now possible to delete a file or an archive in a WORM share after a period of time called the "WORM duration". This period is set only at the creation of the share and cannot be changed. Its default value is infinite.



The WORM duration is displayed in the information tab of the share

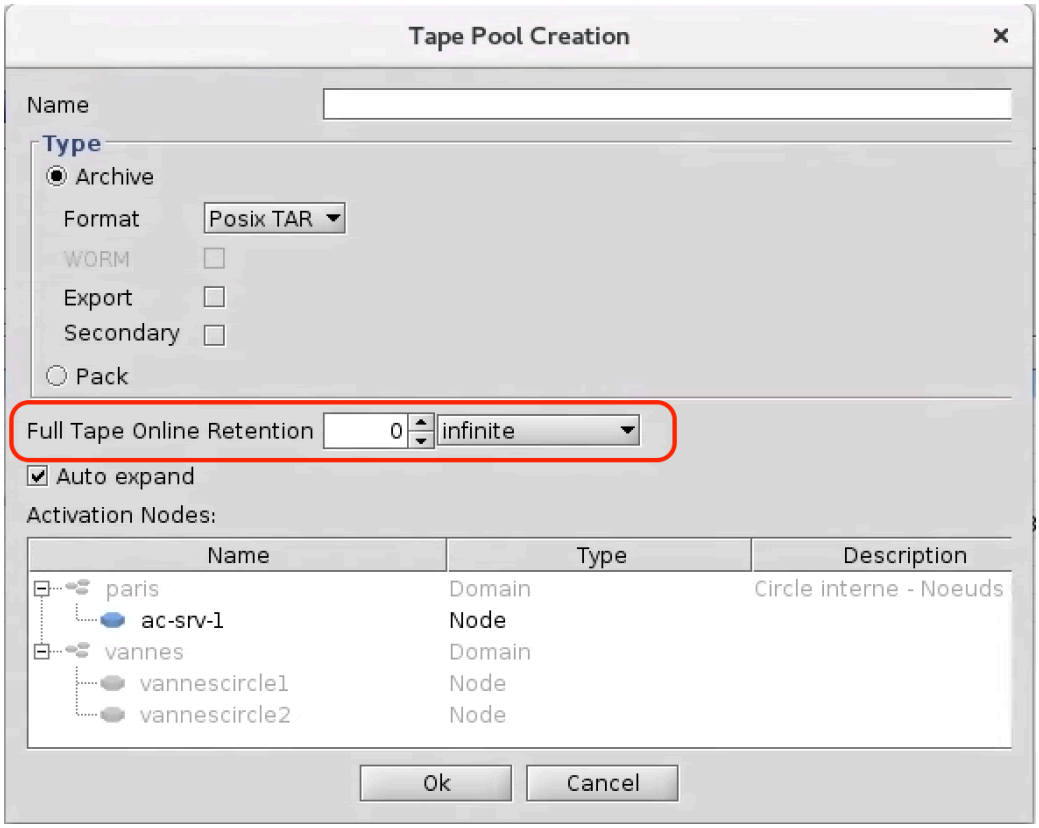


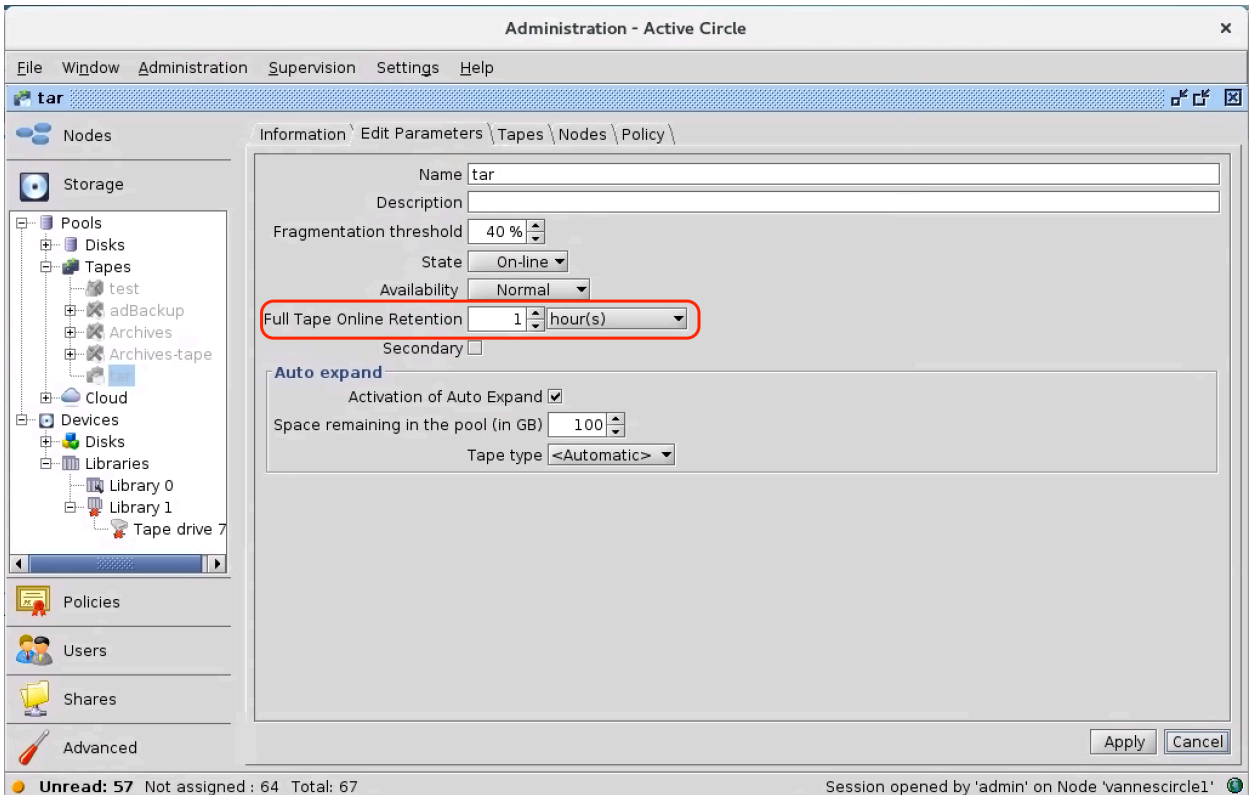
The WORM duration can also be defined when creating a WORM share pool with the CLI

`acadmin --account` by using the options `--wormDuration` that defines the value of the retention, and `--wormDurationUnit` that defines the unit among **Infinite**, **Year**, **Month**, **Week**, **Day**, **Hour**, **Minute**, **Second** and **Millisecond**. The default value of the unit is **Day**. If the WORM duration is not given it is set to **Infinite**.

3.12.2.5. Full tapes online retention management enhancement

The retention period of the full tapes is now defined in the tape pool. It can be defined at the pool creation and can be modified afterward.




Administration - Active Circle
File Window Administration Supervision Settings Help
tar
Nodes
Storage
Pools
Disks
Tapes
test
adBackup
Archives
Archives-tape
Cloud
Devices
Disks
Libraries
Library 0
Library 1
Tape drive 7
Policies
Users
Shares
Advanced
Information Edit Parameters Tapes Nodes Policy
Name tar
Description
Fragmentation threshold 40 %
State On-line
Availability Normal
Full Tape Online Retention 1 hour(s)
Secondary
Auto expand
Activation of Auto Expand
Space remaining in the pool (in GB) 100
Tape type <Automatic>
Apply
Cancel
Unread: 57 Not assigned : 64 Total: 67
Session opened by 'admin' on Node 'vannescircle1'

The circle parameter **medias.fullTapeOnlineRetention**, formerly used to define the retention period, has become obsolete and has been suppressed.

The retention period can also be defined when creating a tape pool with the CLI `acadmin --pool` by using the options `--onlineRetention` that defines the value of the retention, and `--onlineRetentionUnit` that defines the unit among **Infinite**, **Year**, **Month**, **Week**, **Day**, **Hour**, **Minute**, **Second** and **Millisecond**. The default value of the unit is **Day**. If the retention period is not given it is set to **Infinite**.

3.12.2.6. Trap SNMP enhancement

The additional content of the supervision notes are added to the cause of the corresponding trap. The content is split to respect the 255 characters limit of the length of a trap.
The concerned alerts (notes) are:
- MediaPoolNoteMediumLoadableUnitOnlineRequest contains the list of the tapes to put online.
- MediumLoadableUnitOfflineRequestNote contains the list of the tapes to put offline.
- ArchiveVfsNoteFileNotAvailable contains the list of the unreachable files during archiving.
- ArchiveVfsNoteFileSelectionKO contains the list of the not selected or invalid files during archiving.
- CatalogVfsManagerInvalidCheckSumNote contains the list of the files with invalid checksum
- CloudArchiveLostNote contains the list of orphan “cloud” archives.

A trap is now sent each time a note is merged.

3.12.3. Fixes

AC-3518

Fix FcUnSupportedOperationException during remote tape duplication

AC-3419

Enhancements of the file commit process (publish) during deposit to prevent some files to be published after a long time in case of continuous deposit.

AC-3327

Fix dead lock during node stop under heavy deposit activity.

AC-3295

Accessibility of empty files is *online* instead of formerly *unreachable*. Destaging and signature calculation (MD5 SHA256 or SHA1) are now allowed on empty files.

AC-3274

Admin tool: correctly remove selected users from a group

AC-3264

The new system property **activecircle.vfs.history.mergeTimeModification**, if set to *true* (default value is *false*) prevents "rsync" linux command (version >= 3.1.2) from creating new version of each file even if it is not transferred by merging the time modification (atime, mtime and ctime) in the current version.

AC-3258

Abort the ongoing client connections when a share is deactivated; open files are closed, sockets are closed, subsequent access will fail depending on the protocol as follow:

- NFS under linux (nfs-utils 1.3)

If the share is mounted, access to the root of the share will report a *Stale file handle`*, any access to another object will report *Remote I/O erro*.

- FTP(S)

If already connected to the share, each command will return *421 Share "XXX" no longer activated on this node! Disconnecting...*
Any further connection will not show the deactivated share.

- SMB1 (NTLM 0.12)

If connected every action will return *Network name was deleted* and every new connection attend will return *Network name cannot be found*

AC-3180

Improve VFS policy processing performance when the empty office file detector is off.
The empty office file detector is now off by default, to reactivate set the system property **activecircle.vfs.history.enableEmptyFileDetection** to true

AC-2664
Fix file integrity verification (transfer checksum computation) in some remote cases.

AC-218
Prevent concurrent access to the file */activecircle/cell/cluster/scripts/sharedStorage/lastblkid* in the shared pool management script to avoid unexpected management node changes.

3.13. Active Circle V5.1.0.1 – March 2019

This new version of active circle provides mainly backend functionalities required for new AMC 5.1.0 highly available, enhancement for multi criteria research with acfind and fixes.

SHA256 FOOTPRINT
9a182a5ca3e2351e53dd8eb112d96d4c5cd5a767d22a5b1b153df7a00eaddc03

3.13.1. Compatibility Matrix

This new version of Active Circle 5.0 is compatible with the following option versions:

- AMC 5.1.0 in HTTP/HTTPS
- ADM 1.4.0 in HTTP
- AME 2.2.4 in HTTP

A new version of the ADM and AME will be published at a later date, to implement the HTTPS protocol across the entire solution.

3.13.2. New features and enhancements

3.13.2.1. **acfind** performance enhancement

The object selection is now based on predicate computed on the server side. Previously every file was transfered on the command side to be filtered afterward.
The legacy command is still accessible with the name « **acfindlegacy** »

new search criteria for **acfind**
acfind --archiveStatus <status>: This option can now be used without --onlyInArchive.

acfind --sumStatus <status list>: Selects the files whose checksum status is in the given comma separated
status list. Valid values for status: **not_validated**, **valid**, **invalid**, **failed**, **canceled** or **none**.

acfind --unixMode <mode>: Selects the files whose Unix mode matches the given **mode** wildcard expression (e.g. "rwxrw-???")

acfind --ntAttr <attr>: Selects the files whose NT attributes matches the given **attr** wildcard expression (e.g. "---R???"). The complete sequence is **LCSRACO**, with (**L**=ReadOnly, **C**=Hidden, **S**=System. **R**=Directory. **A**=Archived, **C**=Compressed, **O**=Offline)

Add-on for high availability AMC

Add a new kind of cluster : « Scriptable cluster », it publishes a VIP and it executes a specific scripts upon Take over, release and split brain recovery. These clusters are dedicated to the use of the AMC in HA mode and are configured and deployed during AMC deployment.

Full tapes online retention management.

The circle parameter **media.fullTapeOnlineRetention** defines the online retention period of the full tapes. It defines the minimum period of time a full tape will stay online. A periodic task compares the last writing date of each full tapes with the retention period, the tapes should be put offline if its last writing date is older that the retention period. Then the task sends a supervision note requesting to put offline the tapes that have reached their retention period. The default value of the retention period is “infinite”.
The frequency of the above task can be set by the system properties :
activecircle.media.full.check.period and **activecircle.media.full.check.period.unit**. The default value is 7 days.
Note that as the online retention is checked only every week, a full tape can be requested to be put offline only one week after being full event if the retention period is shorter. To reduce this side effect, the checking period should be set to the average time to fill up a tape.

3.13.3. Fixes

AC-2598

Allow to modify the Unix mode of the root of a share. (It was prohibited in version 4.6.0 to preserve access to the share in any case, as anyone with W access to the share could change the mode. This has been fixed : See AC-2964)

AC-2761

A critical supervision note is sent on a share if at least one COS keeper could not start as it has been cancelled.

AC-2913

Checks the **.locators** syntax when starting the active circle service. Add an explicit trace in the system logs if the syntax is not correct.

AC-2964

Only the owner or root can change the Unix mode of any file. Previously, the W access to the object slows t change the mode.

AC-3041

Blacklist the handle used to retrieve files from the Oodrive cloud in any case of error to prevent reusing this handle during 2 hours.

AC-3077

Fix synchronization of tape metadata (some fields where not synchronized at startup)

AC-3255

Prevent the periodic check of the filling rate of the installation directory (/activecircle) from saturating the internal task manager.

3.14. Active Circle V5.0.0.1 HOTFIX – October 2018

SHA256 FOOTPRINT

ee1b432f921d33f7cf6ffeb1a8d121f4e8e9309f337f77023cfd8bece6d45020

3.14.1. Fixes

Fixed a regression on the management of non-multi-channel partitions that was no longer detected.

Correction of incorrect references in the MIB.

3.15. Active Circle V5.0.0 – September 2018

We are proud to release a new major version of Active Circle—with version 5.0. This version is focused on security and managing pools and WORM shares, data protection via SHA256, https access, ensuring the security of the local directory, etc.

SHA256 FOOTPRINT

c3686a00de3d35671df53fac1d49c711a1eff7de7e8b45acbdd3b09e57be0f96

3.15.1. Compatibility Matrix

This new version of Active Circle 5.0 is compatible with the following option versions:

- AMC 5.0.0 in HTTP/HTTPS
- ADM 1.4.0 in HTTP
- AME 2.2.4 in HTTP

A new version of the ADM and AME will be published at a later date, to implement the HTTPS protocol across the entire solution.

3.15.2. New features and enhancements

3.15.2.1. LTO8 support

The 8th generation of LTO drives and tapes are now supported. The capacity of one LTO8 tape is 12 TB.

M8-type LTOs, or new LTO7 tapes managed by an LTO8 drive, are also supported; this increases the tape capacity to 9 TB.

Remember, LTO8 drives are read- and write-compatible with LTO7 tapes only.

3.15.2.2. WORM pool

LTO WORM (Write Once Read Many) tapes are now handled in version 5.0 of Active Circle using the new type of tape pool: "WORM pool". This type guarantees that the data archived on tapes cannot be overwritten or edited.

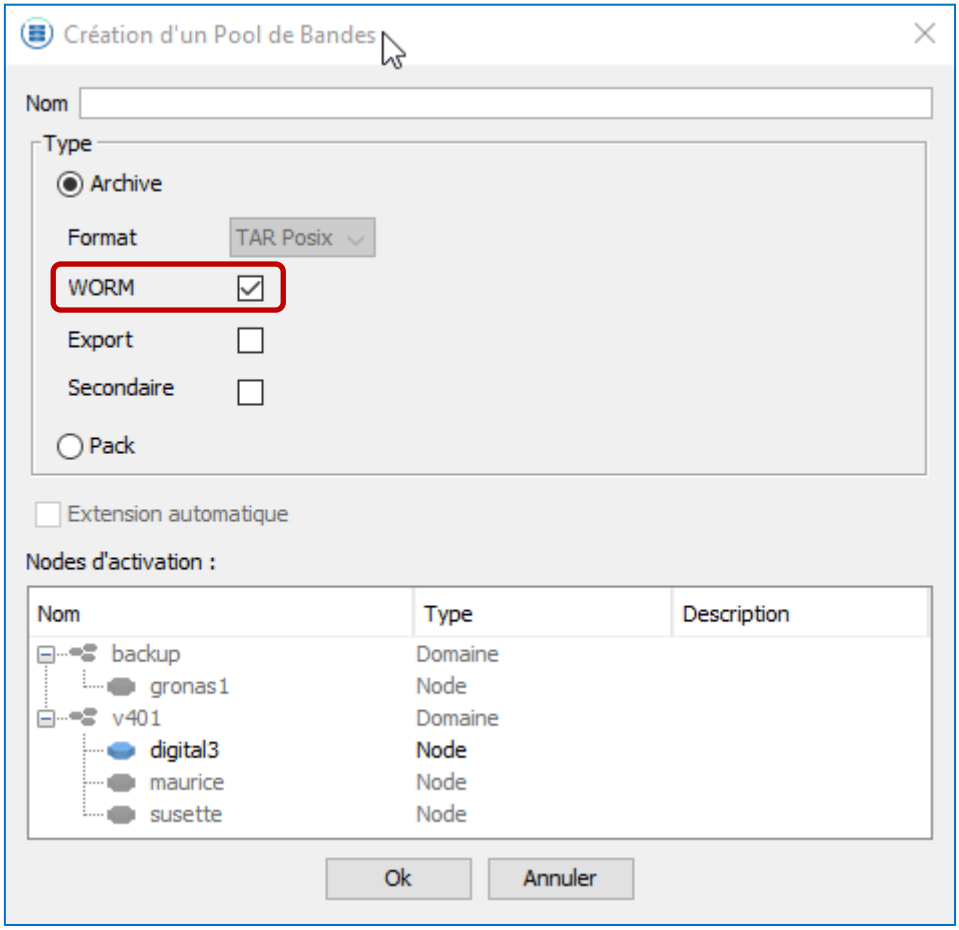
Characteristics

- A WORM pool:
  - is identified by the following icon: 
  - An export WORM pool is identified by the following icon: 
  - only accepts WORM-type LTO tapes
  - only handles TAR format
  - does not support auto-expansion
  - cannot be deleted while it contains tapes
  - can be used in the same way as any archive pool in archiving strategies

- WORM-type LTO tapes:
  - Are supported from LTO6 generation onwards
  - Cannot be allocated to the Blank Tapes pool
  - Cannot be recycled, deleted or removed from a pool
  - Can be duplicated after data copy onto another tape in the pool; the tape is placed in quarantine in the "Non-Allocated Tapes pool" and cannot be reallocated. A supervision note is sent to provide notification that the tape must be deleted and removed from the library.
  - With regards to the archives from a share, prevents the deletion of archives, except for empty archives.

Creating WORM Pool

From the Storage area of the administration interface, through the specific pop-up menu "Create a Tape Pool" or the "Create" button, by checking the WORM option:



From the command mode, using the command: `acadmin --pool --worm`

Note:
As long as the label is not written on the tape, the tape type can still be modified to one of the types compatible with the pool and library.

Verifying the tape type

The definition of the tape type is declarative to allow tapes to be allocated per batch.

To avoid any errors, a verification is performed between the type declared and the type read by the drive when the tape is assembled and before anything is written onto it.

If the type declared is correct:

- The label is written. The tape type is then frozen and can no longer be modified.

If the type is incorrect:

- A supervision note is sent to the administrator to notify them of their error in declaring the tape type. This uses a tooltip to display the values of the density code, and the type of media read on the tape.
- The LTO tape is fenced and ejected from the drive. It is therefore impossible to write on it.
  The tape will be automatically unfenced when it is next assembled, after the tape type is corrected by the administrator.

There are several possible scenarios:

- If the error relates to the density code only, the tape type can simply be changed in the tape's "Edit Settings" tab.
- If the error relates to the type of media, the following must be performed:
  - Remove the tape.
  - Synchronize the library to relocate the tape that will be allocated to the "Tapes of Unknown Type" pool, with a generic type.
  - Allocate the tape with the correct type to a pool in the compatible format.

CLI

`acadmin --pool`

The --worm option, in combination with the -c option, creates a WORM pool. The --format and --autoExpand options are not compatible with the --worm option.

`acadmin --tape`

In the event of type incompatibility when a tape is allocated, an error message is displayed and the request is not processed. The same applies for the unfencing of an unauthorized tape, if the fencing is due to an error on the media type, and for the deletion of a WORM tape labeled with the --delete option.
The --load drive option for a WORM tape is forbidden: the manual assembly of a WORM tape can only be performed via the administration interface.

`acarchive --delete`

An error is generated when there is an attempt to delete a non-empty archive, located in a WORM pool; empty archives are deleted.

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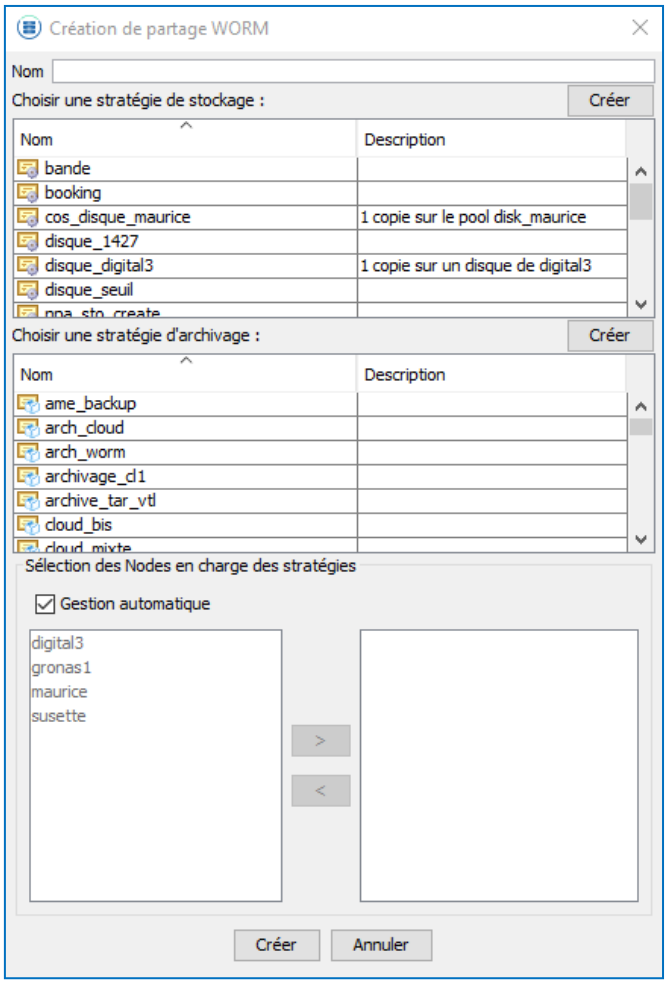
3.15.2.3. WORM share

The WORM share feature has been implemented with the same principle as WORM pools. This provides enhanced data protection in that any files successfully dropped cannot be edited, deleted, moved or renamed. More specifically, the name, mtime and data of files are protected.

WORM shares are identified from other shares thanks to this icon: 

Creating a WORM share

From the "Share" area of the administration interface, via the specific pop-up menu "Create a WORM share" or the "Create WORM" button. A new share is configured as per usual.



From the command mode, using the command: `acadmin --account -c --worm`

Note:
A WORM share cannot be deleted once files have been uploaded there.

Policies

As with other shares, it is possible to link a storage and/or archiving strategy. These can define time-limited constraints, and a copy of the files will be stored in all cases. In fact, a time-defined storage constraint only results in the deletion of disk copies when the file has been archived (if an archiving strategy is defined).

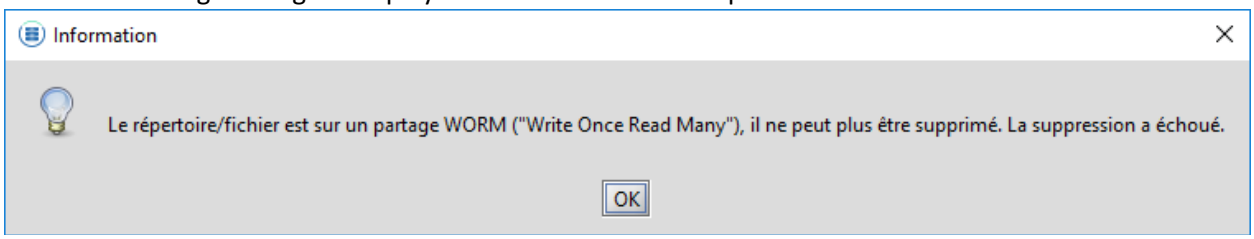
Historization

Historization is disabled.
A file only has one single data version and is stored indefinitely. As a result, the handling of the historization strategy is also disabled and cannot be manually launched.

Behavior

For all attempts to edit or delete a protected file:

- A "Read-Only File System" error is sent by the NAS server.
- The following message is displayed in the Active Circle Explorer:



Remember: only editing of the name and mtime are not allowed; all other attribute changes are authorized.

Specific cases:

- Symbolic links (available via NFS only) with no data; the editing restrictions are applied immediately after creation. In other words, a symbolic link cannot be renamed or deleted.
- Exceptions:
  - Temporary files are not affected by editing constraints.
  - Neither are empty files and directories. In other words, the deletion and renaming of temporary or empty files, and of directories is authorized, as long as they are empty.

The deletion of WORM share archives is not authorized, except for empty archives (with 0 files selected).

CLI

`acinfo --account --wormInfo`

The --wormInfo option makes a new "WORM" column appear, which displays:

- "Y" for a WORM share
- "N" for a classic share
- "<n/a>" for an account

`acadmin --account`

The --worm option, in combination with the -c option, creates a WORM share.
The --startVersioningPurgeProcessing option on a WORM share displays a warning and the option is ignored.

`acrestore`

An error is generated when attempting to restore an entry to a WORM share. Likewise, an error is generated when attempting to delete an entry from a WORM share via one of the following commands: `acrm / acfind -exec "rm"/"rm-version"`.

`acarchive --delete`

An error is also generated when attempting to delete a non-empty archive from a WORM share; empty archives are deleted.

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3.15.2.4. Calculation of a file's signature after upload

This new feature allows the signature of a file to be calculated automatically when it is uploaded to Active Circle:

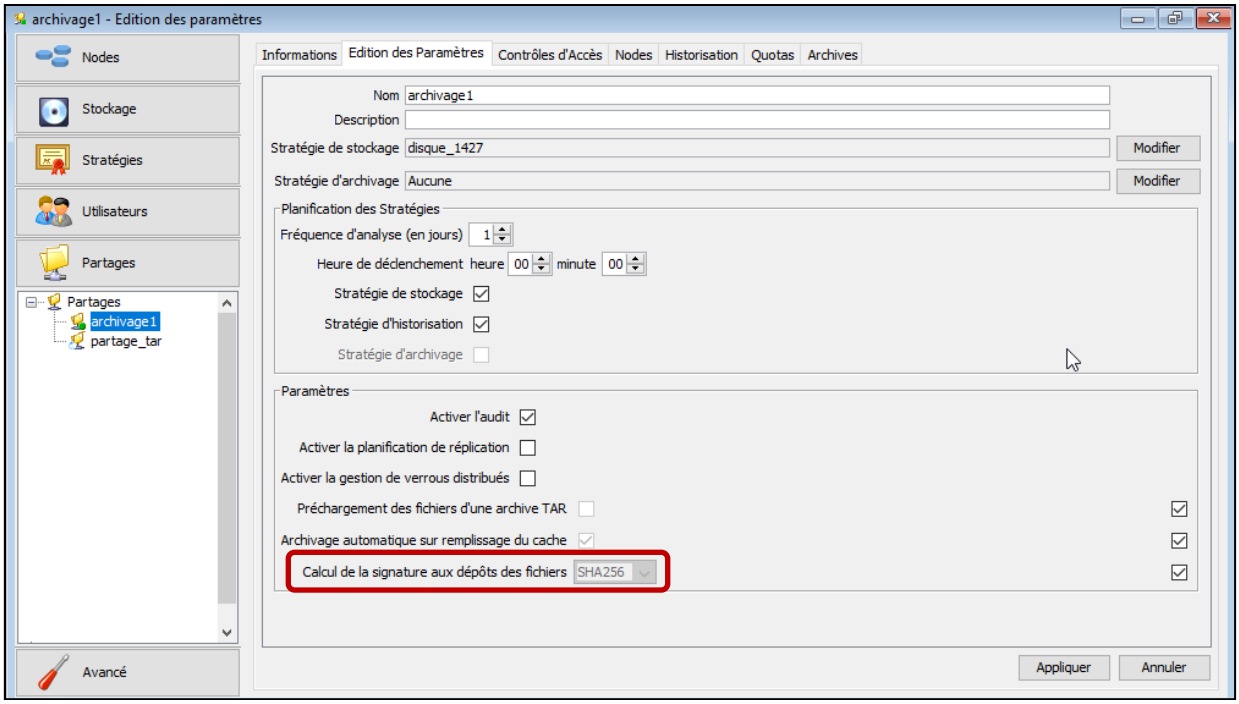
- By default, the feature is not enabled.
- Messages are generated in the audit.
- A supervision note is also generated or updated in the event of an invalid signature.

The algorithm used can be defined globally using the circle property "activecircle.vfs.depositChecksumAlgorithm", or individually for each share. Possible values are as follows:

- SHA256
- SHA1
- MD5
- Disabled

Administration interface

Automatic calculation must be enabled in the share or share group, using the "Calculate signature upon file drop" option:



AC Explorer

It is now possible to request the calculation or validation of a file's signature directly via the Active Circle explorer, for the 3 algorithms:

- If no signature has been saved or calculated in advance, the 3 algorithms are suggested.
- However, if a signature is already saved to the file, only the algorithm for the signature is authorized.

CLI

`accksum`

Now authorizes the SHA256 algorithm, in addition to MD5 and SHA1.

`accksum -r`
Allows the signature to be reset, for example: algorithm change, etc.

audit

In order to be able to track the status of a file's signature, the following events may appear in the audit:

- `F.CSSUM` (CHECKSUM_SUM)
  Starts the signature calculation; the expected reference or desired algorithm is added in the event.
- `F.CSVAL` (CHECKSUM_VALID)
  Signature valid; the signature calculated and the expected reference are added in the event.
- `F.CSINV` (CHECKSUM_INVALID)
  Signature invalid; the signature calculated and expected reference are added in the event.
- `F.CSRES` (CHECKSUM_RESET)
  Deletion of the signature from the file.

Below is an example of results in the audit file (/activecircle/cell/data/Stats/NAS/shares/nas-audit_*.csv*):

```
2018-05-23,15:47:10,1527083230145,n0,s0,-,F.CSSUM,admin,10.4.0.96,"/20180214_154710.jpg",-,SHA256
2018-05-23,15:47:19,1527083239409,n0,s0,-
      ,F.CSVAL,admin,10.4.0.96,"/20180214_154710.jpg",SHA256:ab725b8b57856f819589ace473cf01737177
      0610af2b6d24621299b9389ff24a,SHA256
2018-05-28,18:11:07,1527523867073,n0,s0,-,F.CSSUM,admin,10.4.0.96,"/Erreur2.jpg",-
      ,SHA256:00000000
2018-05-28,18:11:07,1527523867079,n0,s0,-
      ,F.CSINV,admin,10.4.0.96,"/Erreur2.jpg",SHA256:16480a11b9aab0fb53eb5a5c17580b4e4c6267ddbfb0
      583b0144f7911c1eecfa,SHA256:00000000
2018-05-22,15:46:20,1526996780026,n0,s0,-,F.CSRST,admin,10.4.0.96,"/20180214_154643.jpg",-,-
```

Supervision note

A major supervision note is opened when one or more files have an invalid signature. The note is updated, to add new invalid files or remove valid files. Actions to rename, move, delete and restore a version are also taken into account in order to update the supervision note.

When the supervision note no longer has an invalid file, its criticality changes from "Major" to "Normal".

When automatic calculation is enabled, there is little chance that the signatures are invalid because there is no reference signature. The calculation result therefore becomes the reference and the file is valid.

Note:
The Direct IO FTP is not currently handled.

3.15.2.5. Extended attributes

Extended attributes management This new feature allows the notion of extended attributes to be added to files and directories.

These attributes are defined by the name=value pair stored in a dictionary associated with each file and directory. These dictionaries are backed up with the file metadata, therefore in the VFS catalog.

Three circle properties have been added in order to limit the volume used by the attributes:

- activecircle.xattribute.maxEntryCount: maximum number of attributes, 16 attributes by default.
- activecircle.xattribute.maxNameLength: maximum size of attribute name, 256 characters, by default.
- activecircle.xattribute.maxValueLength: maximum size of attribute value, 4096 characters by default.

CLI

`acxattr`

This new command allows the extended attributes of one or more files to be read and edited.
Options: the last arguments in a command are the files to which the command applies.

- `acxattr -w <attribute_name> <attribute_value> <file>...`
  Add/edit an attribute.
- `acxattr -p <attribute_name> <file>...`
  Read an attribute.
- `acxattr -d <attribute_name> <file>...`
  Delete an attribute.
- `acxattr -c <file>...`
  Delete all attributes.
- `acxattr <file>...`
  Displays all attributes.
- The "-f, --filepath" option can also be used to give the path for a list of files.

`acfind -xattr PATTERN`

Now allows searches to be performed on extended attributes.
The regular expression is applied to the "name=value" concatenation. This syntax requires the use of the "=" operator, which allows both the attribute name and its value to be filtered, and also works with attributes containing "=" in their name and/or in their value. To do this, simply enter the necessary number of "=", taking into account the "name=value" concatenation. In order to make the option easier to use, it can be simplified by automatically adding the suffix "=.* " when there is no "=" operator in the expression, to filter the attribute names. For example, to list the files linked to OODRIVE email addresses: `--xattr .*=.*@oodrive\.(com|fr)`

AMC

The AMC also allows extended attributes to be read and edited. For more information, refer to the relevant documentation.

3.15.2.6. Archiving audit

The audit mechanism on shares saves accessing file and directory information via the NAS, such as the date of creation, editing or deletion, reading or writing, and changes to size, attributes, mode or UID/GID.

From now on, in addition to these events, the audit log may contain new events related to the archiving of files and directories, as well as their permanent deletion (known as purge):

- `F.ARCH` (ARCHIVE_FILE) & `D.ARCH` (ARCHIVE_DIR): archiving of a file or directory.
- `F.UARCH` (UNARCHIVE_FILE) & `D.UARCH` (UNARCHIVE_DIR): deletion of an archive location for a file or directory.
- `F.PURGE` (PURGE_FILE) & `D.PURGE` (PURGE_DIR): permanent deletion of a file or directory.

Examples of audit file results (/activecircle/cell/data/Stats/NAS/shares/nas-audit_*.csv*) after having activated the archiving events:

Archiving

As the archiving operation is an internal operation, the "FROM" and "PATH" information is not entered.

Archiving in a pool of archive tapes:

```
37,2018-06-20,14:59:51,1529499591523,gaia0,p1,-,D.ARCH,-,-
      ,"/12_petits_fichiers",Archive:p1#1/386tui7_15r0jjt_2lmd60t_tcrtf1/512,PoolArchive1/B00350200/1
38,2018-06-20,14:59:51,1529499591532,gaia0,p1,-,F.ARCH,-,-
      ,"/12_petits_fichiers/DomainManager.class",Archive:p1#1/386tui7_15r0jjt_2lmd60t_tcrtf1/1024,PoolArchive1/B00350200/1
39,2018-06-20,14:59:51,1529499591540,gaia0,p1,-,F.ARCH,-,-
      ,"/12_petits_fichiers/DomainManager.class.restored",Archive:p1#1/386tui7_15r0jjt_2lmd60t_tcrtf1/3584,PoolArchive1/B00350200/1
```

Importing to a pool of archive tapes in TAR format:

```
93,2018-06-20,16:51:28,1529506288068,gaia0,p1,-,D.ARCH,-,-,"/imported-B00350201-TAR0-2018-06-20-16-51-
      27/p1/12_petits_fichiers",Archive:p1#8/3srgnng_eo2gvi_24ef9qg_4pm41h/512,PoolArchive1/B00350201/0
94,2018-06-20,16:51:28,1529506288104,gaia0,p1,-,F.ARCH,-,-,"/imported-B00350201-TAR0-2018-06-20-16-51-
      27/p1/12_petits_fichiers/DomainManager.class",Archive:p1#8/3srgnng_eo2gvi_24ef9qg_4pm41h/1024,PoolArchive1/B00350201/0
```

Archiving in the cloud:

```
159,2018-06-20,17:21:10,1529508070496,gaia0,p1,-,D.ARCH,-,-
      ,"/10_fichiers_de_100_ko",Archive:p1#10/1ekdam9_24duj5f_26ln16n_3ooo39p/512,OnCloud/OnCloud-cont/2
160,2018-06-20,17:21:10,1529508070510,gaia0,p1,-,F.ARCH,-,-,"/10_fichiers_de_100_ko/Copie (10) de
      dbnetlib.dll",Archive:p1#10/1ekdam9_24duj5f_26ln16n_3ooo39p/1024,OnCloud/OnCloud-cont/2
```

Deleting archives

The same applies for deleting an archive location for a file or directory.

After deleting the archive :

```
1,2018-06-21,14:48:19,1529585299697,gaia0,p1,-,D.UARCH,-,-,"/3_petits_fichiers",-,CatalogVfsReference
      [2ru37gv_rfmjqc_2ka9p12_35rj2bo]:Archives:31h5u4u_2ee4iug_252teg7_2tl53u7/37gk0nn_1i5sgan_2i9nut8_r7383q/512
2,2018-06-21,14:48:19,1529585299718,gaia0,p1,-,F.UARCH,-,-,"/3_petits_fichiers/Nouveau Document Microsoft Office Publisher.pub",-
      ,CatalogVfsReference [2ru37gv_rfmjqc_2ka9p12_35rj2bo]:Archives:31h5u4u_2ee4iug_252teg7_2tl53u7/37gk0nn_1i5sgan_2i9nut8_r7383q/4096
3,2018-06-21,14:48:19,1529585299739,gaia0,p1,-,F.UARCH,-,-,"/3_petits_fichiers/Nouveau Présentation Microsoft Office PowerPoint.pptx",-
      ,CatalogVfsReference [2ru37gv_rfmjqc_2ka9p12_35rj2bo]:Archives:31h5u4u_2ee4iug_252teg7_2tl53u7/37gk0nn_1i5sgan_2i9nut8_r7383q/65536
4,2018-06-21,14:48:19,1529585299764,gaia0,p1,-,F.UARCH,-,-,"/3_petits_fichiers/Nouveau Classeur Open Office.ods",-,CatalogVfsReference
      [2ru37gv_rfmjqc_2ka9p12_35rj2bo]:Archives:31h5u4u_2ee4iug_252teg7_2tl53u7/37gk0nn_1i5sgan_2i9nut8_r7383q/1024
```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Or if the archive still exists (after removal/deletion of the tape from the archive pool):

```
18,2018-06-21,16:04:50,1529589890517,gaia0,p1,-,D.UARCH,-,-,"/3_petits_fichiers",-,Archive:p1#13/13871u4_3sc6hlj_2pjjv5c_13kdum5/512
19,2018-06-21,16:04:50,1529589890522,gaia0,p1,-,F.UARCH,-,-,"/3_petits_fichiers/Nouveau Document Microsoft Office Publisher.pub",-
      ,Archive:p1#13/13871u4_3sc6hlj_2pjjv5c_13kdum5/4096
20,2018-06-21,16:04:50,1529589890527,gaia0,p1,-,F.UARCH,-,-,"/3_petits_fichiers/Nouveau Présentation Microsoft Office PowerPoint.pptx",-
      ,Archive:p1#13/13871u4_3sc6hlj_2pjjv5c_13kdum5/65536
21,2018-06-21,16:04:50,1529589890532,gaia0,p1,-,F.UARCH,-,-,"/3_petits_fichiers/Nouveau Classeur Open Office.ods",-
      ,Archive:p1#13/13871u4_3sc6hlj_2pjjv5c_13kdum5/1024
```

Permanently deleting the file or directory

The "FROM" and "PATH" information is entered through the connection information linked to the exploration session through which the deletion is requested, and only the file path in the VFS is displayed.

Deleting through the explorer:

```
6,2018-06-21,14:54:20,1529585660930,gaia0,p2,-
      ,F.PURGE,admin,10.4.0.106,"/12_petits_fichiers/StreamIdentityPrimaryDeprecatedPreV3_0.class",-,-
7,2018-06-21,14:56:26,1529585786082,gaia0,p2,-,F.PURGE,admin,10.4.0.106,"/12_petits_fichiers/Stream.class",-,-
8,2018-06-21,14:56:26,1529585786135,gaia0,p2,-,F.PURGE,admin,10.4.0.106,"/12_petits_fichiers/StreamFormatCheckSumException.class",-,-
9,2018-06-21,14:56:26,1529585786163,gaia0,p2,-,F.PURGE,admin,10.4.0.106,"/12_petits_fichiers/StreamIdentityPrimaryImpl.class",-,-
```

And through historization processing following a deletion of the file via the NAS, for a retention period of 2 min:

```
1,2018-06-22,08:52:49,1529650369402,gaia0,p2,-,F.DELE,admin,127.0.0.1,"/12_petits_fichiers/DomainManagerIdentityPrimary.class",-,-
2,2018-06-22,08:59:34,1529650774140,gaia0,p2,-,F.PURGE,-,-,"/12_petits_fichiers/DomainManagerIdentityPrimary.class",-,-
```

And for a share with no historization, the purge follows deletion via the NAS:

```
1,2018-08-30,17:36:35,1535643395173,gaia0,psanshistory,-,F.DELE,admin,127.0.0.1,"/Niveau0/0_alldiffs_index_additions.html",-,-
2,2018-08-30,17:36:35,1535643395188,gaia0,psanshistory,-,F.PURGE,admin,127.0.0.1,"/Niveau0/0_alldiffs_index_additions.html",-,-
```

Note:

Deleting a directory produces events for all its files and directories.

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3.15.2.7. Configuration of SNMPv3 traps

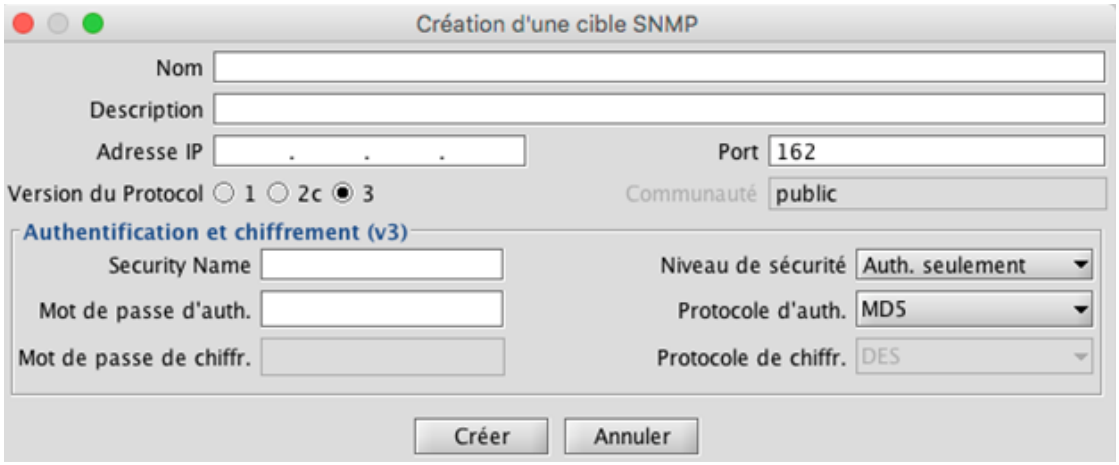
Active Circle adds support for SNMPv3 traps in addition to the SNMPv1 & SNMPv2c versions previously handled. This new version of the protocol implements security features.

For SNMPv3, define the security level to be used, and according to this:

- Level without authentication or encryption: define a security name only.
- Level with authentication only: define the security name, an algorithm and an authentication password.
- Level with authentication and encryption: define the security name, an algorithm and an authentication password, an algorithm and an encryption password.

To add a new target:

- Go to the "Advanced" view and select "SNMP Target", then right-click to create a new target.
- Choose the version of the target.
- Define the settings specific to v3.



Once the targets are created, the principle remains the same as before, regardless of the version of SNMP indicated in the target:

- Open a supervision window and select the "Registrations note" tab.
- Next, click the "Add" button under the "Registrations" list, and select the "SNMP target" type.

Note:
Regarding the engine id. concept, also specific to SNMPv3, it normally identifies a device likely to send traps. In the case of Active Circle, the engine id. is derived from the Circle's identity, and is therefore identical to all the nodes of the Circle in question. The SNMP supervisor therefore views the Circle as a single device. This ID is unique and constant for a given Circle. It can be obtained via the command mode: `acinfo --node --engineId`.

3.15.2.8. Publication of logs in syslog

In order to centralize the logs from different nodes into a monitoring system, it is now possible to configure the publication of these in syslog.

Principle:

- Copy the file /activecircle/cell/data/Log/syslog.properties.sample under /activecircle/cell/data/Log/syslog.properties
- Adapt /activecircle/cell/data/Log/syslog.properties to your requirements.
- Remember to define the issuer name, i.e. the name of the node with the property "activecircle.log.syslog.messagehostname=myNode".
- Restart the Active Circle service for the publication to be handled in syslog.
- Verify that it is working correctly in syslog.
- Deploy the file across the circle's other nodes by adapting the issuer's name for each, then by restarting the corresponding services one after the other.

Notes:

- Only the logs publication medium based on UDP is supported.
- The logs format has been reviewed as part of this project. If necessary, in the time it takes to update f youreventual scripts that parse logs, you can return to the old format using the Circle property "-Dactivecircle.log.publish.formatter.old=true" placed at the end of the file "/activecircle/.localvars" for each node; this requires the service to be restarted for it to be handled.

3.15.2.9. Local directory security

Local directory security has been enhanced to address various issues:

- Define a security policy for passwords (length, number of characters, etc.), expiration period
- Manage password reuse
- Define an authentication error management policy
- Allow passwords to be changed simply by an administrator or by users themselves through the usual tools: admin, explorer, CLI as well as the following URL: **Error! Hyperlink reference not valid.**.
- Changes made to interfaces allowing users to be created or modified
- Monitorpassword changes, expiration, etc.

Notes:

These security measures are only valid for the local directory, i.e. the users declared locally in Active Circle. For external users imported from an external directory, passwords are to be made secure through the external directory.

Configuration

New settings are configured on the local directory via the administration interface using the circle settings:

Rule	Default value	Minimum value	Maximum value
directory.local.credential.adminRetryDelay	0 ms	0 ms	5 minutes
directory.local.credential.expiry	infinite (no expiry)	1 week	infinite
directory.local.credential.expiry.notification	3 days	0 day (disabled)	6 days
directory.local.credential.history	0	0	50
directory.local.credential.length	8	1	128
directory.local.credential.letters	0	0	10
directory.local.credential.lockoutThreshold	0 (disabled)	0	50
directory.local.credential.numbers	0	0	4
directory.local.credential.specialchars	0	0	4

Password security policy

Default behavior changes:

- Passwords now need to be at least 8 characters.
- The admin user is still created with the default password "1234", but the password is marked as expired. This must be updated to allow for the session to be opened.
- Updating passwords is subject to the password security policy.

Password complexity

This is controlled when it is defined, by verifying a set of rules. The only rule applicable by default is the presence of at least 8 characters. If the rules are modified, they will only by applied the next time the password is changed. When a password entered does not adhere to the minimum complexity expected, an explanatory error message is displayed.

Rule	Property	Role
Password historization	directory.local.credential.history	The aim of this rule is to prevent users from reusing passwords. The password history is updated when a password is changed. Users cannot reuse a password which is in their password history.
Password length	directory.local.credential.length	This rule allows a minimum password length to be defined. By default, this limit is set to 8 characters.
Number of letters	directory.local.credential.letters	This constraint allows a minimum number of letters to be requested in a password. The characters handled are: “abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ”
Number of numbers	directory.local.credential.numbers	This constraint allows a minimum number of numbers to be requested in a password. The characters handled are: “0123456789”
Number of special characters	directory.local.credential.specialchars	This constraint allows a minimum number of special characters to be requested. The list of characters handled is as follows: “!"#$%&'()*+,-./:;<=>?@[\]^_`{|}~¡¢£¤¥¦§¨©ª«¬®¯°±²³´µ¶·¸¹º»¼½¾¿×÷—— —_‘’,‘“”„†‡•…‰′″‹›‼⁻₹₡₢₣₤₥₦₧₨₩₪₫€₭₮₰₱₲₳₴₵₶₷₸₹₺₻₼₽₾₿”

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Password security policy

A password expiration system has been put in place. There are two reasons for which a password is considered to be expired:

- The password has been explicitly marked as expired: this occurs when the "admin" account is created in order to request that the default "1324" password be changed. It is also the case when users are created in the administration interface: by default, passwords are marked expired and users must change their password.
- Password validity period has been exceeded.

Rule	Property	Role
Password validity period	directory.local.credential.expiry	To allow a password validity period to be defined Once this period is exceeded, the password will expire and must be changed. The default validity period for passwords is infinite. The minimum value is one week.

When a password is due to expire, a notification is sent to the user to allow them to change their password. This email is sent once a day to one of the user's addresses. A final message is sent when this user's password expires. Both of these messages contain a link to the password change tool. The following property allows one to control how far in advance this message is sent.

Rule	Property	Role
Notification period before expiration	directory.local.credential.expiry.notification	To allow users to change their password before expiration becomes effective.

Authentication error management policy

By default, authentication errors have no consequences. It is possible to put in place a policy for managing these errors. There are two scenarios considered: users and administrators.

Users

It is possible to define a number of successive authentication errors that will lead to the account being locked. In the case of access by SMB, a specific error message is returned. In FTP, a comment is returned by the server (depending on the customer, this message is not necessarily visible). This status is also taken into account by the password change interface.

The following property allows this behavior to be defined:

Rule	Property	Role
Locking of accounts upon authentication error	directory.local.credential.lockoutThreshold	Allows an account to be locked after a number of successive authentication errors

When an account is locked, a note is added to the administration log.
An email is sent to the user (if the email address for the account has been entered correctly).

Only an administrator can unlock an account, in the administration tool which allows the error number to be displayed. The administrator can then reset this counter to 0 via the GUI or CLI.

Administrators

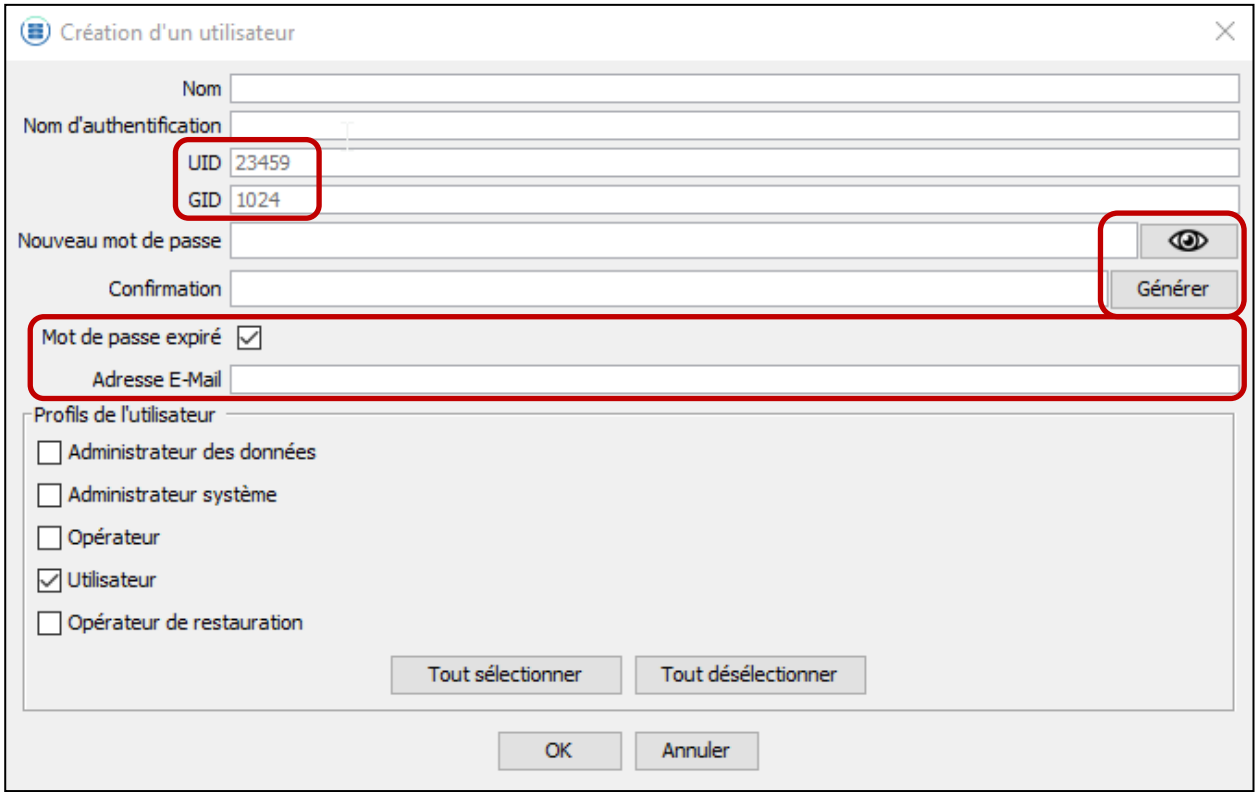
A property can be defined that defines a slow-down factor when a session is opened, depending on the authentication error number.

Rule	Property	Role
Slow-down of administration session opening	directory.local.credential.adminRetryDelay	To add a delay to the opening of administration sessions, in the event of successive failures. The formula used is as follows: adminRetryDelay x $2^{(nbEchec\ -1)}$

GUI

Creating a user

- It is no longer necessary to manually define user UIDs/GID . If the fields are not completed, the node will automatically choose the value. The value chosen corresponds to the greatest value, in increments of 1. The interface indicates the probable values that will be chosen by the node.
- The interface suggests password generation. The password generated adheres to the password complexity policy. If special characters are required, the character set used by the generator is limited to: "!"#$%&'()*+,-./:;<=>?@[\]^_`{|}~",to make it easier to send the password to the user.
- The interface only allows the password to be displayed when the user is created, which allows it to be copied/pasted.
- By default, users are created with an expired password: if the box remains checked, the user must change this password to open a session.
- An email address can be entered for the user, and this will be used for notifications related to the password.



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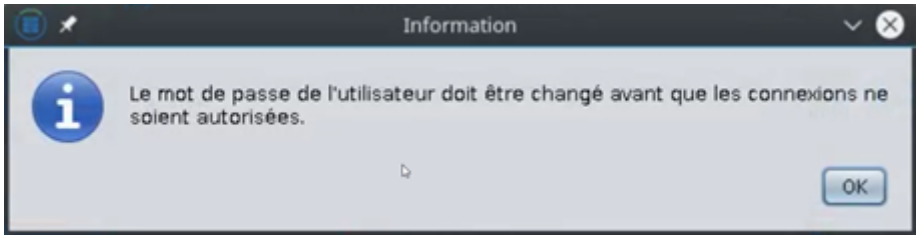
Changing a password (by an administrator)
As seen previously, an administrator may change a user's password in the administration interface. By default, this new password is considered expired. The password can be generated in adherence to the security policy. If the account was locked, it will also be unlocked.

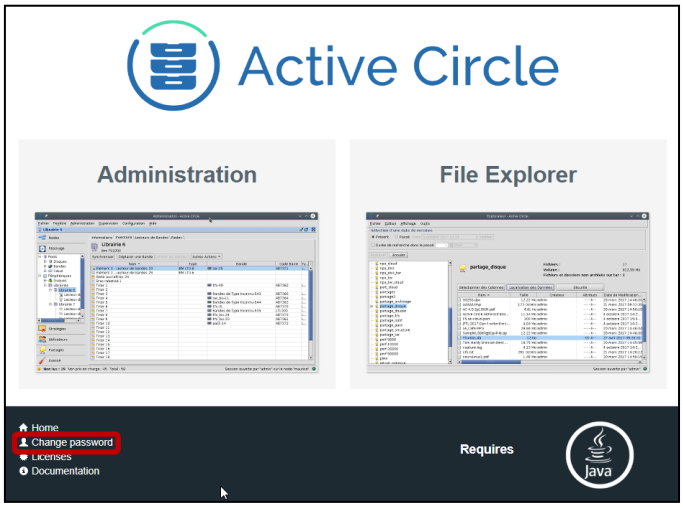
Authentication with an expired password
The administration interface and exploration interface authentication windows have been modified to handle expired passwords (this is notably the case when opening a first session as an the admin user). If the password has expired, the interface displays two new fields allowing a new password to be re-entered. This password must adhere to the security policy.

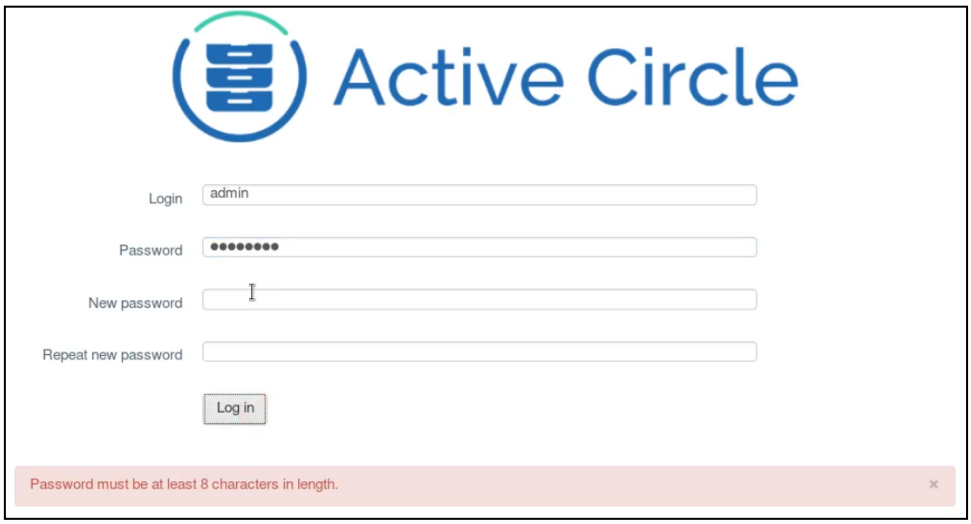


Unlocking user accounts
When a user account is locked following authentication errors, it appears with a padlock beside it in the administration tool. It can be unlocked by right-clicking the user list or the directory "users/groups" view. In the latter case, you may select multiple users to unlock all selected accounts.

Password change tool

A tool allowing for password change has been added to the interface. It allows for the user's username to be reenter, as well as their current password and new password (twice). This interface can be used even when the password has expired. A link has been added to the home page of the web server for the nodes, and is only accessible at https:





CLI

`acpasswd`

This new command is to be used as an equivalent to the "passwd" command in Unix and offers the following functionalities:

- For users to change their password
- For an administratorto
    - change the password of another user
    - expire a user's password
    - unlock a user account (following too many authentication errors)

Monitoring

The following events are monitored in the administration log:

- Authentication errors.
- Password changes (with the possibility of distinguishing whether the password has been changed by users themselves or by an administrator).
- Password expirations.
- User account locking.
- User account unlocking.

Emails are sent to relevant users regarding the following events:

- A password is going to expire (one email per day, periods can be configured).
- A password has expired (the task controlling email deliveries is the directory synchronization task).
- A password has been changed.
- An account has been locked.

This requires the existence of a valid email address linked to the account, and the configuration of an SMTP server in the node configuration.

3.15.2.10. Secure access to interfaces

Starting with version 5.0, the web server loaded in the nodes switches from HTTP to HTTPS, both on new and existing installations.

The HTTP server remains active, but all requests are re-sent to the HTTPS server by means of a "301 (Moved Permanently)" error. Browsers manage the redirection transparently.

Different circle properties allow the activation of HTTP and HTTPS servers to be controlled, and the ports used have been re-added. Any modification requires the Active Circle service to be restarted for it to be taken into account.

Role	Property	Value
Activation of http server	httpd.activate	"yes" by default. If the https server is active, redirects to it. If not, the web interface is used. The server is not activated if the value is set to "no".
http server port	httpd.port	80 by default.
Activation of https server	httpd.ssl.activate	"yes" by default. the web interface is used via SSL. Requried for the password change tool.
https server port	httpd.httpsPort	443 by default.

SSL certificate

By default, the SSL certificate used is a self-signed certificate, which is the same on each node. The certificate must be stored in the Active Circle keyStore, which can be edited with the command:

```
acadmin --keyStore
```

When the server is restarted, the node searches for a specific alias using the name of the node followed by a dash and the "https" chain (e.g. "node01-https"). If this alias does not exist, it searches for the "https" alias. If this "https" alias is not found, the default "https" certificate is added in the keyStore.

Note:

The use of a self-signed certificate does not allow one to benefit from all SSL advantages. If is not possible to purchase a certificate, openssl could be used to create a "root CA" certificate, and it can be used to generate the node's certificates. By importing the root certificate to the browser, there would no longer be any need to add exceptions for different nodes.

3.15.2.11. Administration interface

Optimizing of the list of nodes available in a context with a large number of nodes. This is now only updated each time it is displayed. It is therefore no longer updated while it remains open.

Strategies can be processed by batch via the shares root in the Shares section. From now on, the archiving and historization strategies are no longer checked by default. This allows users to more precisely select which to process, for each share.

AC-2621
Fixed the action of the historization strategy create button which until now launched the creation of a storage strategy.

AC-2629
When a user and group are created, if the UID and GID fields are left empty, a value will be determined by the node handling the request. In the interface, the probable value is displayed as a grayed-out suggestion.

3.15.2.12. NAS

AC-1963
*.amc temporary files handled so that they are ignored by the strategies processing. Once the *.amc file is renamed, its history is merged with the old file previously deleted. Finally, its signature can now be calculated.

AC-2232
A file is now considered "stable" if at least one of the following conditions is true:

- The file is sealed.
- The drop job is defined.
- The file is saved in the warehouse.

AC-2248
*.swp temporary files generated by the "vi" editor are handed so that they are ignored by the strategies processing.

3.15.2.13. Storage Management

Improved management of the allocation table of a data partition to make it easier to switch over shared partitions by preventing the non-closure of said file that was blocking the partition from being disassembled.

Improved pack-packing wait by adding the new system property: "activecircle.depository.stream.packPackerNbJoinersBlockingLevel" positioned at 10,000 by default and defined the maximum number of packs authorized to join a group.
The group filling rate (no. of packs pending) linearly alters the timeout of the pack-packing. The wait is therefore now not relaunched each time a pack joins the group, but is unique and starts at the first grouping.

Improved the verification of XFS partitions shared, which was systematically returning an error until now.

AC-2636
Added the system property "diskPool.PartitionUseMode", which can take the values:

- sequential: default value, fills the pool partitions one after the other.
- parallel: allows the IOs to be made parallel and optimized in case of mass duplication.

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3.15.2.14. Archiving

Support for LTO NEC T30A and T60A libraries.

AC-653
The "media.lifeTime" circle property defining the default life span of tapes has been extended from 5 to 10 years. For information, the value given by the manufacturers is 30 years, for around 5,000 assemblies.

AC-1661
Added the following circle properties:

- activecircle.media.old.check.period
- activecircle.media.old.check.period.unit

These control the frequency with which the obsolescence of tapes is verified, and the frequency with which corresponding notes are sent. The default values of these properties are "7" and "day", respectively. The age is now verified once a week by default.

AC-2165
Improved tape removal from a pool and the deletion of tapes. The following system properties are no longer active:

- activecircle.mediapool.forcePartitionRemoval
- activecircle.appli.consumer.catalog.element.mediapool.activablebycell.safeable.forcePartitionRemoval

AC-2264
LTFS archiving of files containing the character ": "are handled.

AC-2475
In the event of an LTFS archiving error in the index synchronization phase, the name of the first 50 files archived not found in the index are logged.

AC-2819
The default value of the circle parameter "archive.maxFilesCount" set at 1 million by default also becomes the maximum value authorized for this parameter.

3.15.2.15. CLI

`acadmin --tape --force`

Allows a tape to be forcefully deleted or removed from a pool. Therefore only to be used with caution.

AC-2063

`acdestage`

The full list of files is now displayed by default with the –showFile option. The command help has been reviewed for more clarity for the following options:

- --fileState Specify the state of files to display
  <file states> one or several (separated by comma) file status among UNDEFINED, FOUND, ONLINE, RETRIEVING, ERROR, DESTAGED
- --fileLimit Specify the file limit to show (default is 1000)
  <file limit> limit of files list to display
- --showFile Show file processes files (see the 'fileState' and 'fileLimit' options)

AC-2139

`acinfo --account --archiveDetailedInfo`
`acinfo --account --storageDetailedInfo`

The detailed information for storage and archiving strategies has been consolidated within the share, and is therefore now available from any of the circle's nodes.

AC-2628

`acadmin --share -w -u`

Allows an unversioned pool to be created with the "-u" or "-unversioned" option. This option is exclusive of the "-w" (worm) option.

3.15.3. Fixes and enhancements

AC-1957

Changed the compression algorithm for PACK data and catalog metadata from LZO to LZ4. This fix provides a better compression rate as well as better reading performance. Crashes related to the LZO compression on certain systems are therefore avoided.
LZO is still present in order to ensure the reading of data previously compressed.

AC-2216

The main administrator with a UID different to 0 may now perform re-caching without access rights to the files.

AC-2503

All exceptions captured during the resolution of an RLM service in order to authorize future resolutions.

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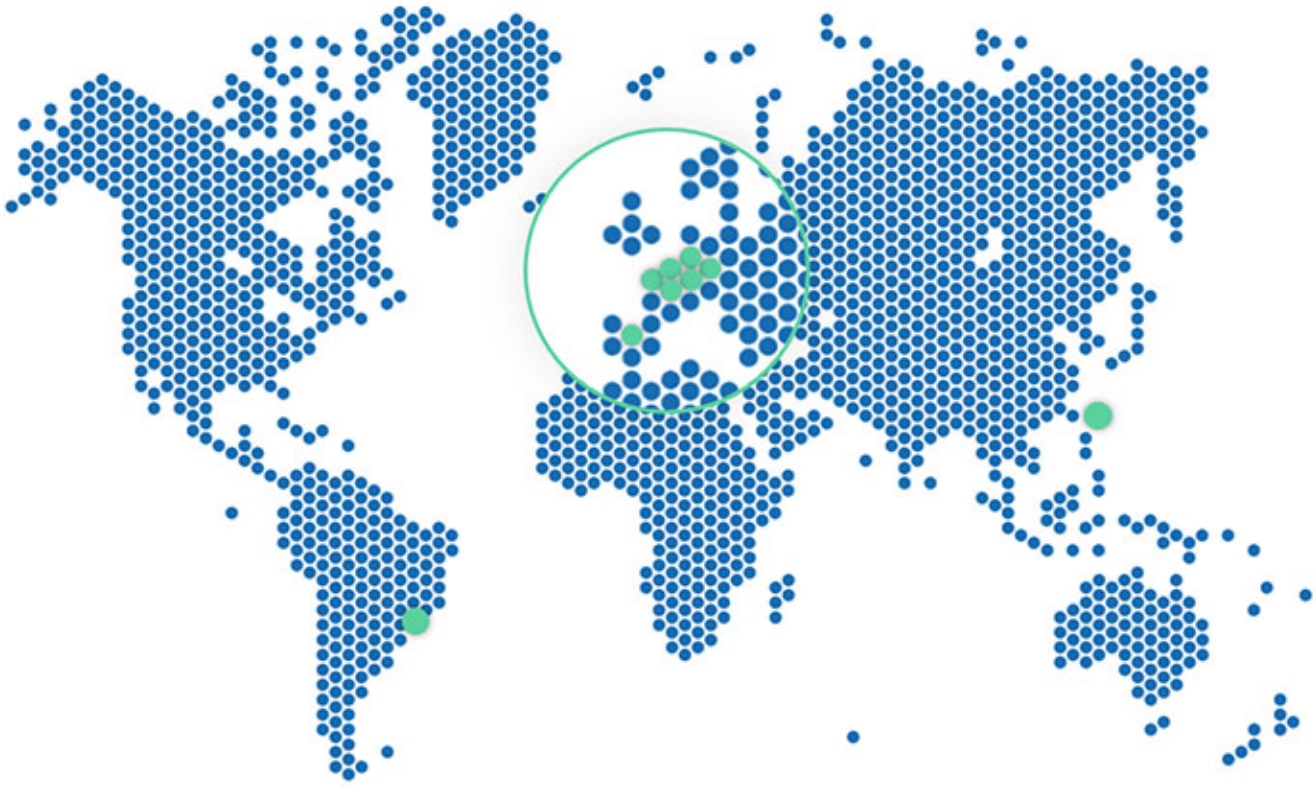

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