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16 et 17 mai

IBM Client Center Paris

Session S08 – IBM Cloud Storage for i - Lab

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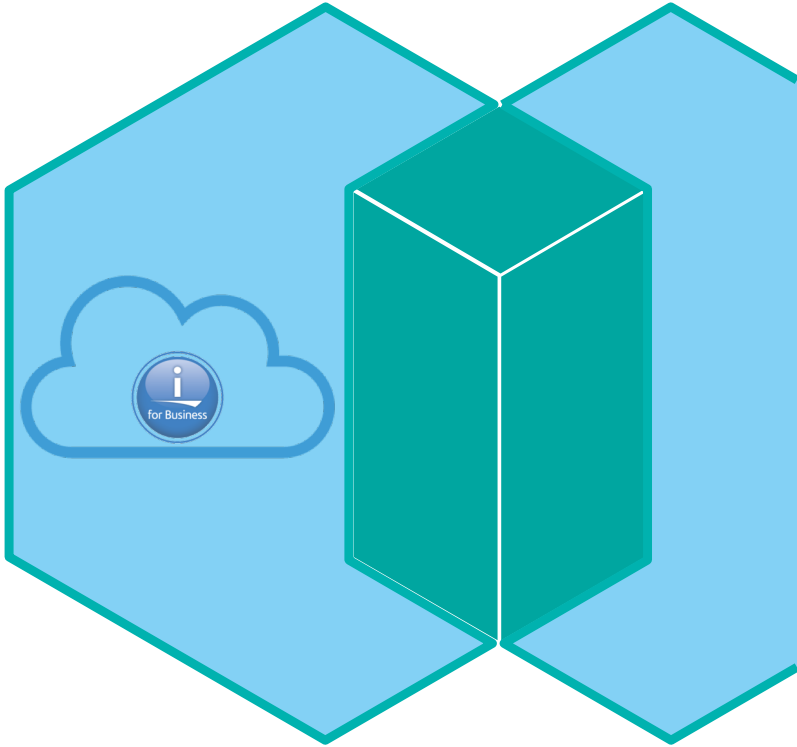
IBM Cloud Storage Solutions for i



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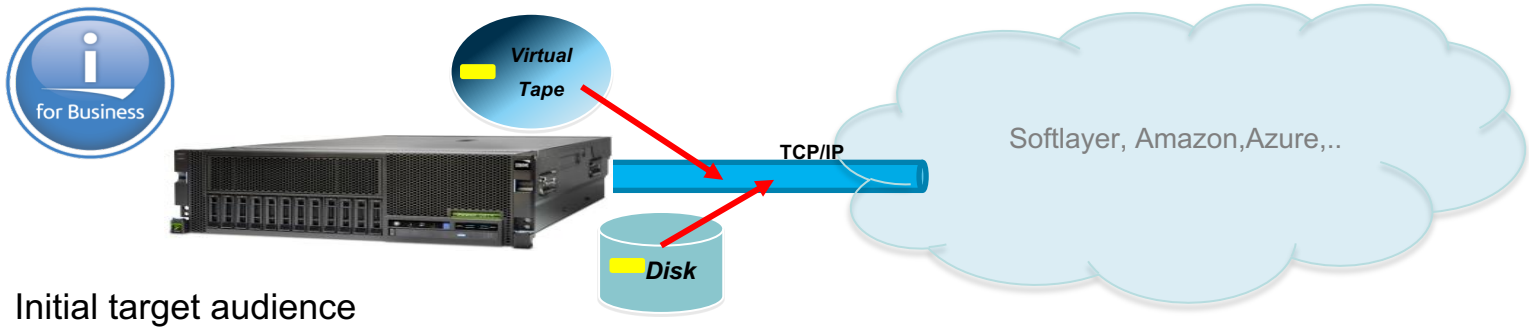
IBM Cloud Storage Solutions for i



- Initial target audience
  - 1 or 2 core systems with < 1TB of data to back up
- Features
  - Use standard Cloud Object Storage
  - GUI Management
  - Integrates with BRMS for virtual tape
  - Secure connection with compression
- Value Proposition
  - Eliminate need for local tape device
  - Easy-to-use recovery operations for data
  - Do-it-yourself backup and recovery operations to a public cloud

V1R2M0

IBM Cloud Storage Solutions for i V1R2M0

- A job monitor enhancements
- The ability to compress files that are copied to a Cloud storage provider
- Ability to encrypt files that are copied to a Cloud storage provider
  - ✓ Encryption requires the definition of a keystore file, the library where it is stored and the key label
  - ✓ Note: both compression & encryption will require an advanced option license after the expiration of the trial period
- SSL Support for connections to Cloud storage providers
- Web GUI interface that supports these actions:
  - ✓ Add, change, display and delete resources
  - ✓ Copy to Cloud
  - ✓ Copy from Cloud
  - ✓ Delete cloud file
  - ✓ History for copy actions
- National language support for 15 languages
  - ✓ Translated languages will display on the IBM i for all command text, panel text and help text
  - ✓ Translated languages will display in the Web GUI interface for the panel text and help text

IBM Cloud Storage Solutions for i concepts

Object sharing among multiple systems

- PTFs
- ISOs
- Files
- Others

Local hardware or Cloud provider

Enables moving to physical tape in the cloud

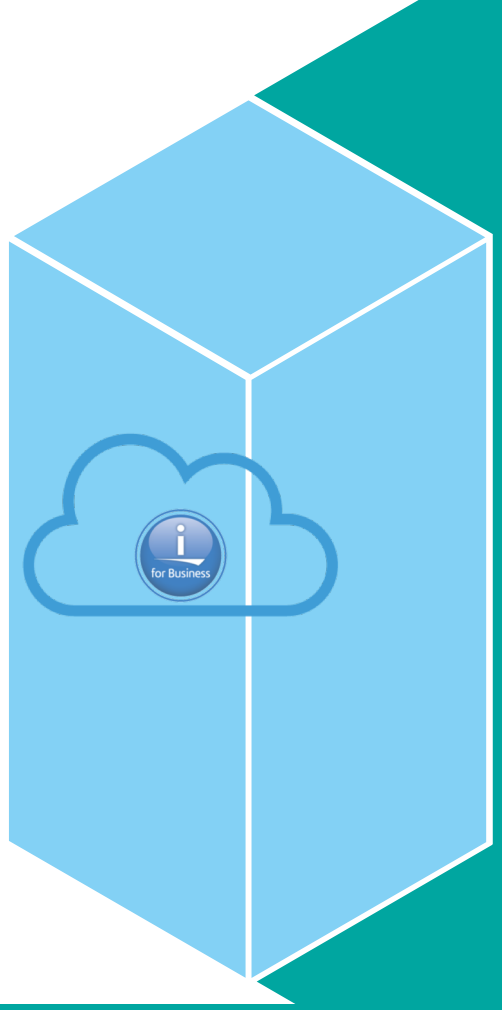
Enables recovery testing offsite

Initial Offering

Backup – Archive

BRMS manages data backup operations automatically

Infrastructure



Infrastructure

5733-ICC

SI66900 : BRMS
SI66393 : ICC

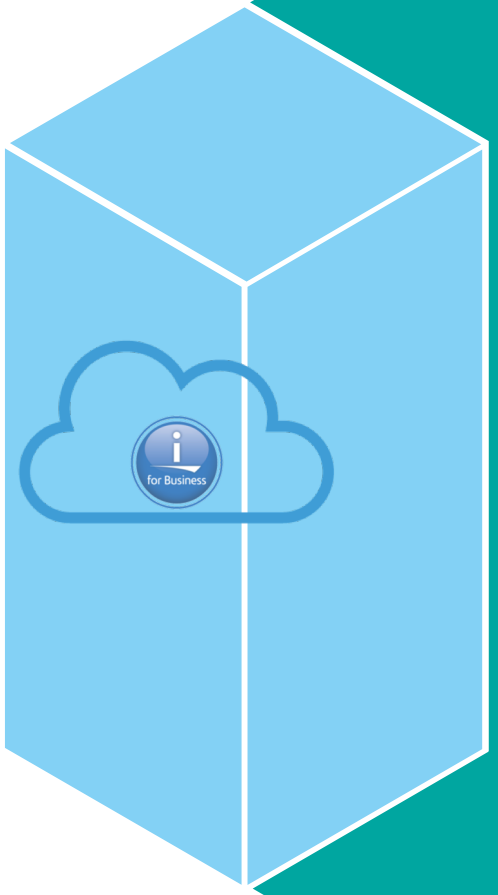
Softlayer

IBM COS

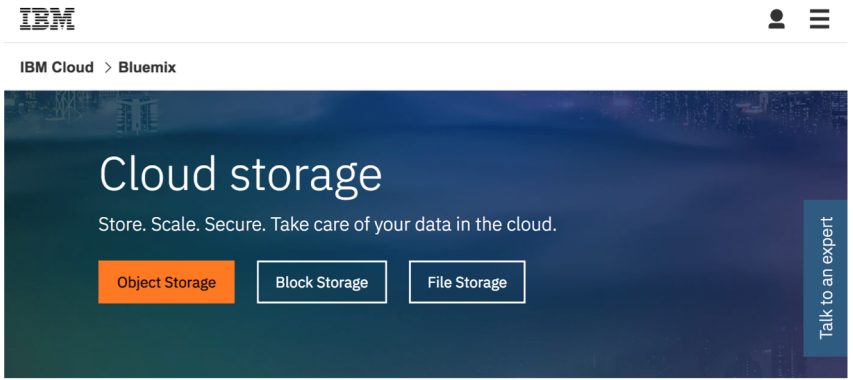
Licenced product

Using Cloud Storage Solutions for i with BRMS ← PTFS

ICC Configuration



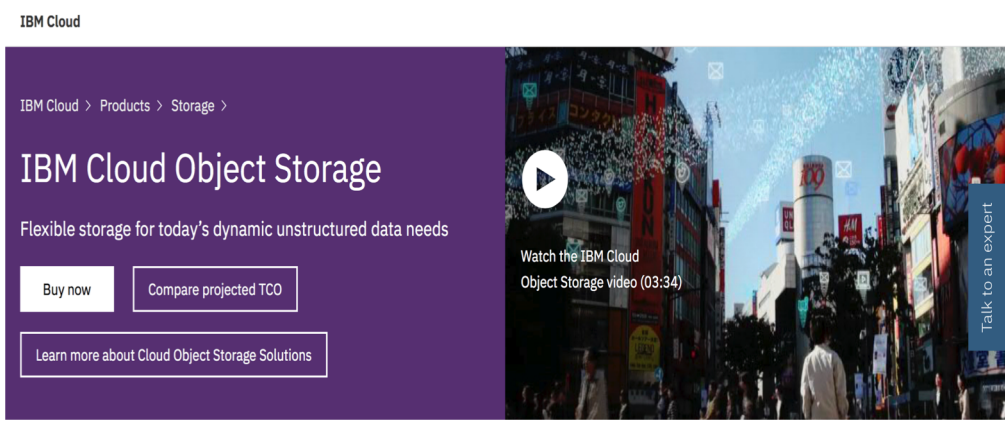
SOFTLAYER



Focus on new ideas.
Not cloud storage.

https://www.ibm.com/cloud-computing/bluemix/cloud-storage

IBM Cloud Object Storage



https://www.ibm.com/cloud-computing/products/storage/object-storage/?lnk=mn

Credentials

SOFTLAYER

- **Container**
  ICC for example
- **Authentication Endpoint**
  Public: https://par01.objectstorage.softlayer.net/auth/v1.0/
  Private: xxxxxxxxxxxxx
- **Username**
  IBMOS311896-2:xxxxxxxxx
- **API Key (Password)**
  xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

IBM Cloud Object Storage

- «**vault**» or «**bucket**» : ibmiVault
- **Vault owner**
  user : **ibmiuser**
  password : **xxxxxxxx**
- **Access Key ID**
  yyyyyyyyyyyyyyyyyyyy
- **Secret Access Key**
  zzzzzzzzzzzzzzzzzzzzzzzzzzzzzzzz
- **Resource URL**
  http://hostname.domain

SOFTLAYER® an IBM Company

IBM Cloud Object Storage

ICC resource

CRTSLRICC

Softlayer

- Resource name : **SOFTLAYER**
- Resource description
- Authorized user: This is the **Username** in previous chart
- Authorization Key: This is the **API Key** from previous chart
- Container: This will be the Softlayer container you created (can have multiple)
- Resource URI: This will be the endpoint from previous chart

CRTS3RICC

Amazone or IBM Cloud Object Storage

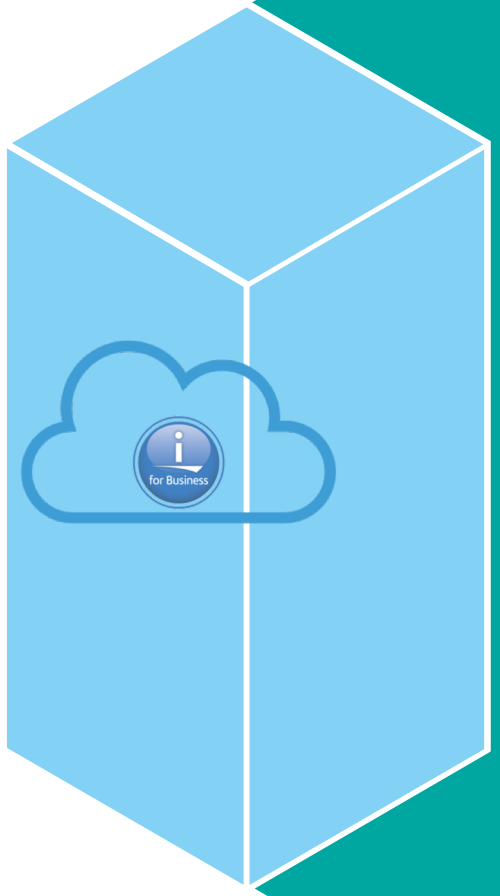
- Resource name : **IBMCOS**
- Resource description
- Access key id :This is the **KEY** in previous chart
- Secret access aey: This is the **API Key** from previous chart
- Bucket: or Vault
- Resource URI: This will be the resource URL

WRKCFGICC

SOFTLAYER® an IBM Company

IBM Cloud Object Storage

CPYTOCLD
CPYFRMCLD



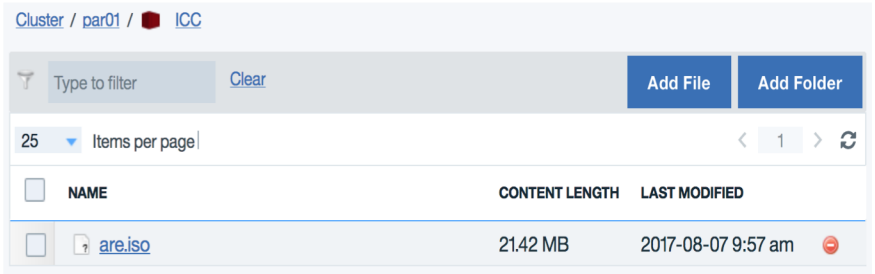
CPYTOCLD

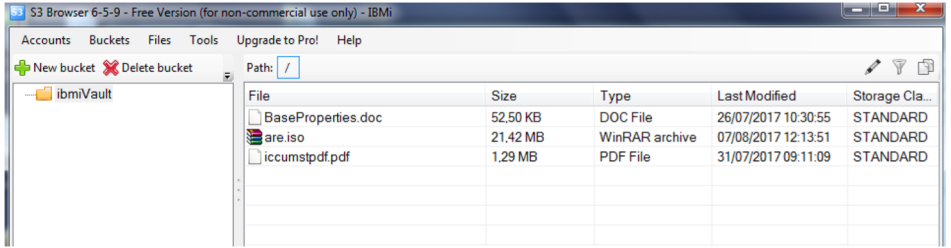
```
                        Copy ICC File to Cloud (CPYTOCLD)

Type choices, press Enter.

Resource name  . . . . . .  SOFTLAYER or IBMCOS  Name
Submit to batch  . . . . . .  *YES               *NO, *YES
Local file name  . . . . . .  /home/are.iso

Cloud file name  . . . . . .  are.iso
```





SOFTLAYER® an IBM Company

IBM Cloud Object Storage

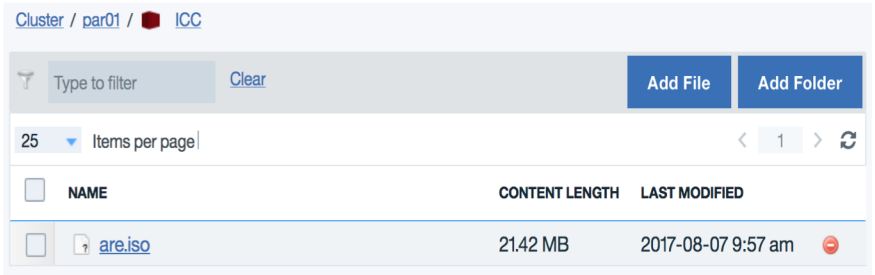
CPYFRMCLD

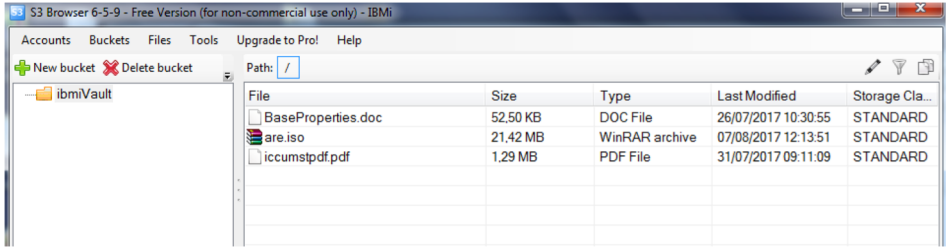
```
                    Copy ICC File from Cloud (CPYFRMCLD)

Type choices, press Enter.

Resource name  . . . . . .  SOFTLAYER or IBMCOS  Name
Submit to batch  . . . . . .  *YES               *NO, *YES
Cloud file name  . . . . . .  are.iso

Local file name  . . . . . .  /home/are.iso
```





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IBM Cloud Object Storage

LOGS

Logs QICC in Batch mode ASYNC(*yes)

- CRTDTAARA DTAARA(QICC/**QICCTRCLVL**) TYPE(*CHAR) LEN(1) VALUE('**6**') TEXT('Trace Level')
- CRTDTAARA DTAARA(QICC/**QICCDBGLOG**) TYPE(*CHAR) LEN(256) VALUE('/tmp/qicclog.log') TEXT('Location of Log File')

```
  ************Beginning of data**************
---STARTING COPY TO CLOUD---
Local filename:
Path: /home/are.iso
Cloud filename:
Path: are.iso
host: par01.objectstorage.softlayer.net
Sent 0265 bytes.
Sent 032608 bytes.
Sent 032608 bytes.
```

```
 ************Beginning of data**************
---STARTING COPY TO CLOUD---
Local filename:
Path: /home/are.iso
Cloud filename:
Path: are.iso
host: ibmcos.icc.local
addS3Header is adding header: Host

addS3Header is adding header: x-amz-date

addS3Header is adding header: x-amz-content-sha256
```

```
Sent 032608 bytes.
Sent 029576 bytes.
Sent 05 bytes.
Received 0254 bytes.
ICC0033: Calling exit program Q1ACLDEXIT in library QBRM.
---COPY TO CLOUD REQUEST SUCCESSFUL ---
```

```
getS3Response: read bytesRead = 661
freeS3ETagList: Freeing S3 ETag struct: "6b2a2fb138c8e29dad98ad0f9520d738"

freeS3ETagList: Freeing S3 ETag struct: "5d9856a87936076a3c1644ead9503aac"

freeS3ETagList: Freeing S3 ETag struct: "9e749878223290d1ee3e1f397f2877e9"

freeS3ETagList: Freeing S3 ETag struct: "a6a3adaf9854ad0a83aef6c50ffc7394"

freeS3ETagList: Freeing S3 ETag struct: "45879fac4ad3b2dca983797170c744c9"

ICC0033: Calling exit program Q1ACLDEXIT in library QBRM.
---COPY TO CLOUD REQUEST SUCCESSFUL ---
 ************End of Data**********************
```

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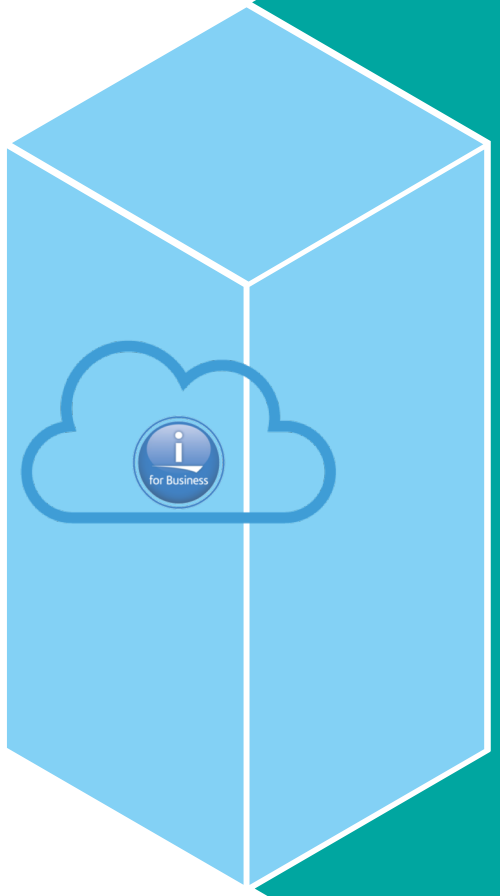
IBM Cloud Object Storage

BRMS Turn-key



BRMS Configuration

INZBRM (*DATA) or STRMNTBRM RUNCLNUP(*YES)

- **Storage locations** : WRKLOCBRM
  - ✓ based on resource name
  - ✓ the Media slotting field will be set to *CLD
- **Media class** : WRKCLSBRM TYPE(*MED)
  - ✓ QCLDVRTTAP : virtual tape media
  - ✓ QCLDVRTOPT : virtual optical media
- **Media policy** : WRKPCYBRM TYPE(*MED)
  - ✓ define what is done with media after the media has been used for a backup
  - ✓ based on resource name
- **Move policy**
  - ✓ based on resource name
  - ✓ Used to indicate to move to cloud during backup if possible
- **Control groups** : WRKCTLGBRM
  - ✓ define how objects should be saved during backups
  - ✓ QCLDBGRPxx : Backs up what is minimally needed for a recovery to get to the cloud and user data.
  - ✓ QCLDBIPLxx : Backs up what is minimally needed for a system D-IPL. This will need to be burned to a DVD
  - ✓ QCLDBSYSxx : Backs up all system data except *SAVSYS
  - ✓ QCLDBUSRxx : Backs up all user data incrementally.

BRMS

WRKCTLGBRM TYPE(*BKU)

```
                        Work with Backup Control Groups            MENARD73

Position to . . . . . _________   Starting characters

Type options, press Enter
  1=Create    2=Edit entries    3=Copy      4=Delete    5=Display
  6=Add to schedule   8=Change attributes   9=Subsystems to process ...
                 Full        Incr        Weekly
    Control      Media       Media       Activity
Opt Group        Policy      Policy      SMTWTFS  Text
__  _________
__  QCLDBUSR04   BLUEMIX     BLUEMIX     *BKUPCY  Entry created by BRM configura
__  QCLDBUSR05   FTP         FTP         *BKUPCY  Entry created by BRM configura
__  QCLDBUSR06   IBMCOS1     IBMCOS1     *BKUPCY  Entry created by BRM configura
__  QCLDBUSR07   OBJECT      OBJECT      *BKUPCY  Entry created by BRM configura
__  QCLDBUSR08   IBMCOS      IBMCOS      *BKUPCY  Entry created by BRM configura
__  QCLDIBMCOS   IBMCOS      IBMCOS      *BKUPCY  Entry created by BRM configura
__  QCLDSOFTLH   SOFTLAYER   SOFTLAYER   *BKUPCY  Entry created by BRM configura
__  QCLDUUSR01   SOFTLAYER   SOFTLAYER   *BKUPCY  Entry created by BRM configura
```

IBM Cloud Object Storage

OPTION 5 Display Control group

```
                    Display Backup Control Group Entries           MENARD73
_
Group . . . . . . . . . . . . : QCLDIBMCOS
Default activity  . . . . . . : *BKUPCY
Text  . . . . . . . . . . . . : Entry created by BRM configuration

                                          Weekly    Retain Save      SWA
     Backup      List ASP                 Activity  Object While     Message     Sync
Seq  Items       Type Device              SMTWTFS   Detail Active    Queue       ID
  10 ICCIBMCOS        *SYSBAS             *DFTACT   *ERR   *NO
```

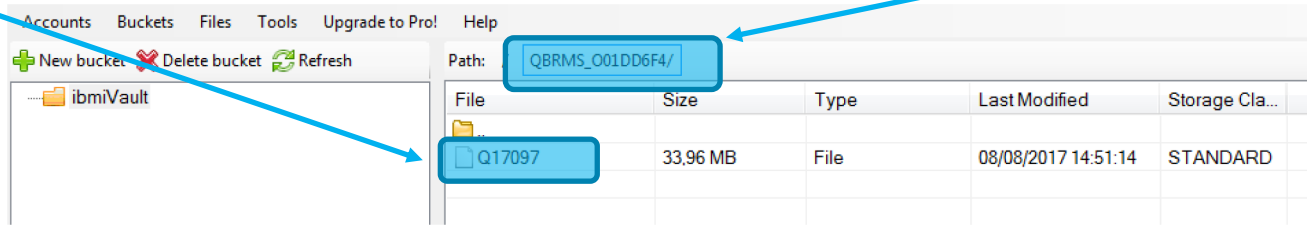
BRMS

STRBKUBRM CTLGRP(QCLDIBMCOS) SBMJOB(*NO)

WRKMEDBRM

```
                              Work With Media
                                                              System:    MENARD73
Position to  . . . . .  ______          Starting characters

Type options, press Enter.
  1=Add    2=Change    4=Remove    5=Display    6=Work with serial set    7=Expire
  8=Move    9=Remove volume error status      10=Reinitialize ...

     Volume                Creation Expiration                Move      Media      Dup
Opt  Serial     Status       Date       Date      Location     Date      Class      Sts

__   Q17097     *TRF      08/08/17   08/29/17    IBMCOS      08/08/17 QCLDVRTTAP
```

QBRMS_Location_Name



BRMS

WRKCTLGBRM TYPE(*BKU)

```
                        Work with Backup Control Groups              MENARD73

Position to . . . . . _____________   Starting characters

Type options, press Enter
  1=Create    2=Edit entries    3=Copy      4=Delete    5=Display
  6=Add to schedule   8=Change attributes   9=Subsystems to process ...
                Full        Incr        Weekly
    Control     Media       Media       Activity
Opt Group       Policy      Policy      SMTWTFS  Text

__ __________
__ QCLDBUSR04  BLUEMIX     BLUEMIX     *BKUPCY  Entry created by BRM configura
__ QCLDBUSR05  FTP         FTP         *BKUPCY  Entry created by BRM configura
__ QCLDBUSR06  IBMCOS1     IBMCOS1     *BKUPCY  Entry created by BRM configura
__ QCLDBUSR07  OBJECT      OBJECT      *BKUPCY  Entry created by BRM configura
__ QCLDBUSR08  IBMCOS      IBMCOS      *BKUPCY  Entry created by BRM configura
__ QCLDIBMCOS  IBMCOS      IBMCOS      *BKUPCY  Entry created by BRM configura
__ QCLDSOFTLA  SOFTLAYER   SOFTLAYER   *BKUPCY  Entry created by BRM configura
__ QCLDUUSR01  SOFTLAYER   SOFTLAYER   *BKUPCY  Entry created by BRM configura
```

SOFTLAYER

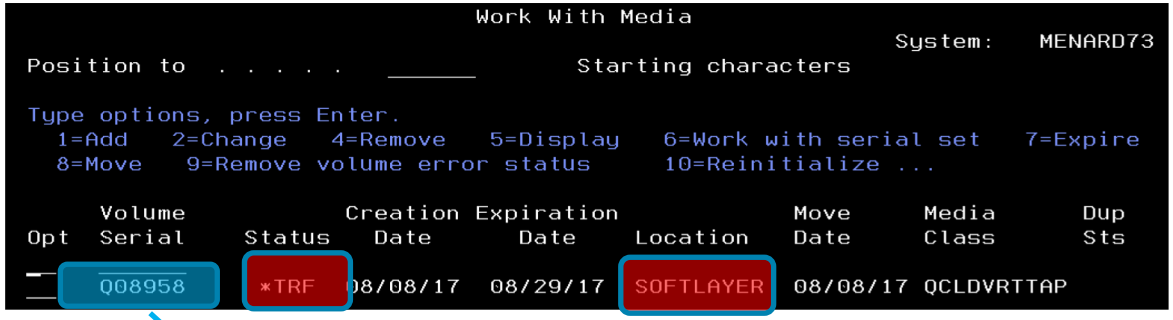
OPTION 5 Display Control group

```
                     Display Backup Control Group Entries            MENARD73

Group . . . . . . . . . . . : QCLDSOFTLA
Default activity  . . . . . : *BKUPCY
Text  . . . . . . . . . . . : Entry created by BRM configuration

                                          Weekly    Retain Save      SWA
     Backup      List ASP                 Activity  Object While     Message     Sync
Seq  Items       Type Device              SMTWTFS   Detail Active    Queue       ID
  10 ICCSOFTLAY       *SYSBAS            *DFTACT   *ERR   *NO
```

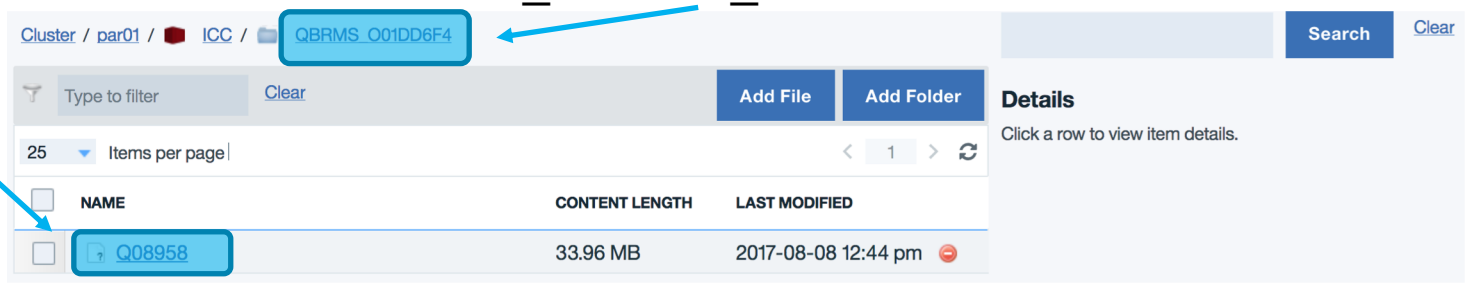
BRMS

STRBKUBRM CTLGRP(QCLDSOFTLA) SBMJOB(*NO)

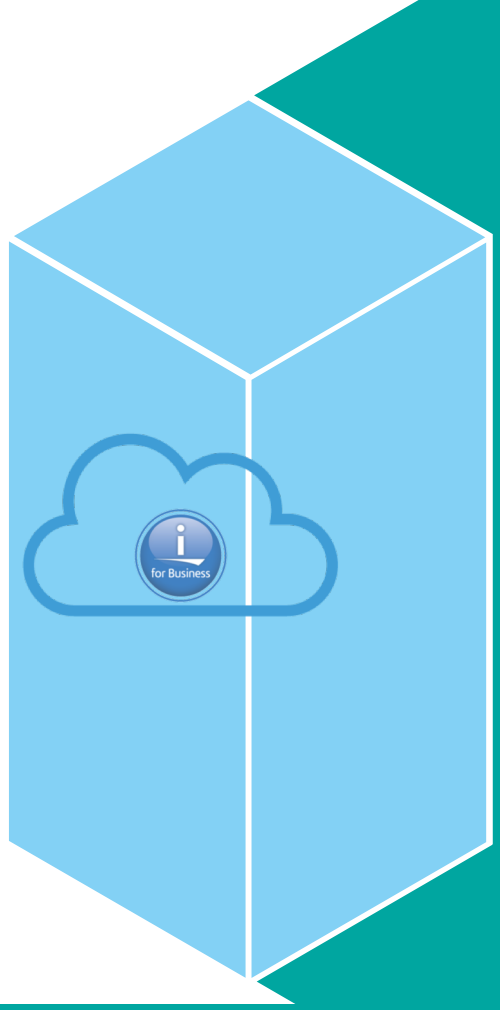
WRKMEDBRM



QBRMS_Location_Name



Documentations



User initiated transfers of media to cloud storage

1.Create a cloud resource named BRMSCLD by running one of the following commands:
   1. CRTFPRICC
   2. CRTSLRICC
2.Configure BRMS objects required to use the cloud resource:
   2. INZBRM OPTION(*DATA)
3.Create a virtual tape device:
   2. CRTDEVTAP DEVD(BRMSCLDTAP) RSRCNAME(*VRT)
4.Vary on the virtual tape device:
   2. VRYCFG CFGOBJ(BRMSCLDTAP) CFGTYPE(*DEV) STATUS(*ON)
5.Create an image catalog:
   2. CRTIMGCLG IMGCLG(BRMSCLDTAP) TYPE(*TAP) DIR('/tmp/BRMSCLDTAP') CRTDIR(*YES)
6.Add a volume to the image catalog:
   2. ADDIMGCLGE IMGCLG(BRMSCLDTAP) FROMFILE(*NEW) TOFILE(*GEN) VOLNAM(BRMCLD)
7.Load the image catalog on the device:
   2. LODIMGCLG IMGCLG(BRMSCLDTAP) DEV(BRMSCLDTAP)
8.Configure the virtual tape device in BRMS:
   2. WRKDEVBRM
      2. specify 1=Create for the Opt field
      3. specify BRMSCLDTAP for the Device field
      4. specify *VRTTAP for the Category field
9.Add a media class for the virtual tape media:
   2. WRKCLSBRM TYPE(*MED)
      2. specify 1=Create for the Opt field
      3. specify BRMSCLDTAP for the Class field
         2. specify *VRT256K for the Density field
         3. specify *NO for the Shared media field

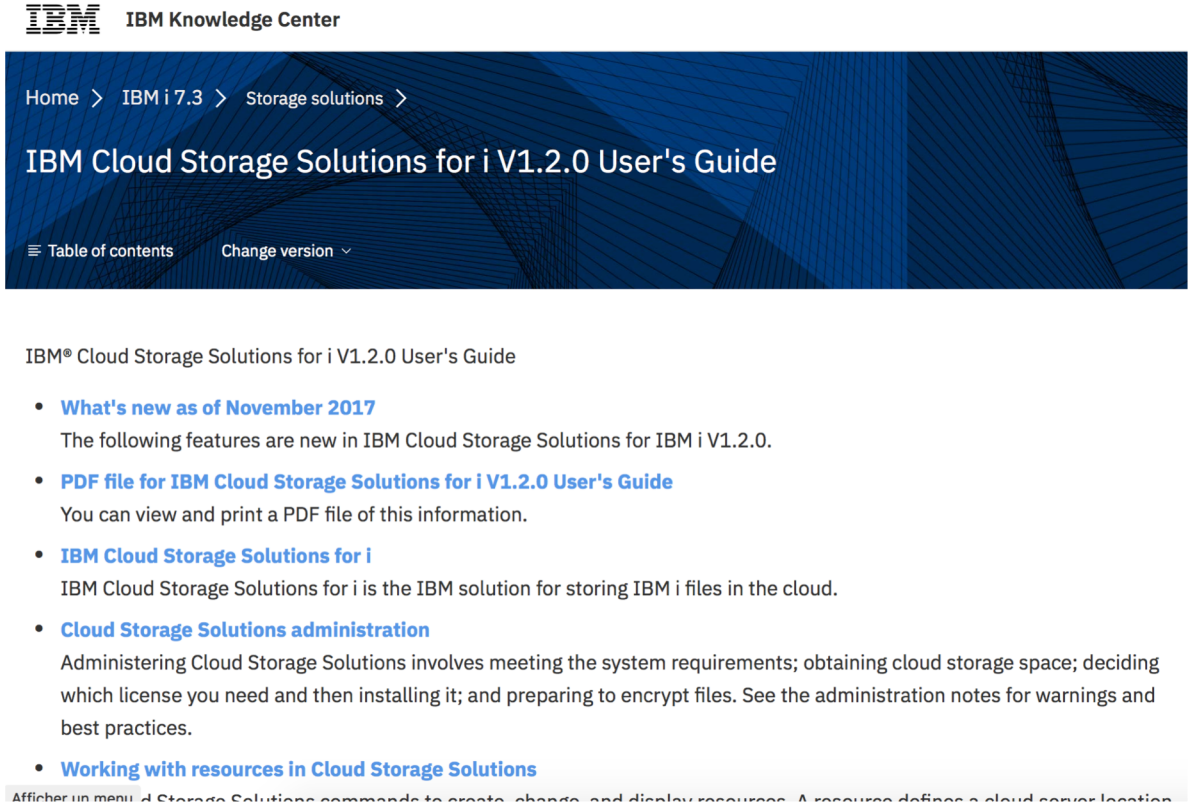
2.Add volume BRMCLD to the BRMS media inventory:
   2. ADDMEDBRM VOL(BRMCLD) MEDCLS(BRMSCLDTAP) IMGCLG(BRMSCLDTAP)
3.Add a media policy for the virtual tape media:
   2. WRKPCYBRM TYPE(*MED)
      2. specify 1=Create for the Opt field
      3. specify BRMSCLDTAP for the Policy field
      4. specify BRMSCLDTAP for the Media class field
4.Create a library to save to the cloud:
   2. CRTLIB LIB(CLDLIB)
5.Save the library to the virtual tape volume:
   2. SAVLIBBRM LIB(CLDLIB) DEV(BRMSCLDTAP) MEDPCY(BRMSCLDTAP)
6.Move volume BRMCLD to the cloud location:
   2. WRKMEDBRM VOL(BRMCLD)
      2. verify the volume is in *ACT status
      3. verify location *HOME
      4. specify 8=Move for the Opt field
         2. specify BRMSCLD for the Storage location field
      5. verify the volume is in *ACT status
      6. verify location BRMSCLD
7.Delete the library:
   2. DLTLIB LIB(CLDLIB)
8.Restore the library:
   2. RSTLIBBRM SAVLIB(CLDLIB) DEV(BRMSCLDTAP)
9.Verify that the library was restored:
   2. DSPLIB LIB(CLDLIB)

Automatic transfers of media to cloud storage

1.Create a cloud resource by running one of the following commands:
    1. CRTFPRICC
    2. CRTSLRICC
2.Configure BRMS objects required to use the cloud resource:
    2. INZBRM OPTION(*DATA)
3.The pre-defined cloud control groups that BRMS created for the cloud resource should be setup to work as defined. To simplify this example, copy one of the pre-defined control groups:
    2. WRKCTLGBRM TYPE(*BKU)
        2. specify 3=Copy next to QCLDBUSR01
            2. specify QCLDUUSR01 for the New Name field
4.Create a library to save to the cloud:
    2. CRTLIB LIB(CLDLIB)
5.Change the entries in the control group to save the library created in the previous step:
    2. WRKCTLGBRM TYPE(*BKU)
        2. specify 2=Change entries next to QCLDUUSR01
            2. clear all entries from the control group by removing all the numbers from the Seq column
            3. add and entry for library CLDLIB:
                2. Seq - 10
                3. Backup Items - CLDLIB
                4. Let the remaining fields use default values.
    3. WRKCTLGBRM TYPE(*BKU)
        2. specify 8=Change attributes next to QCLDUUSR01
            2. specify *NONE for the Automatically backup media information field

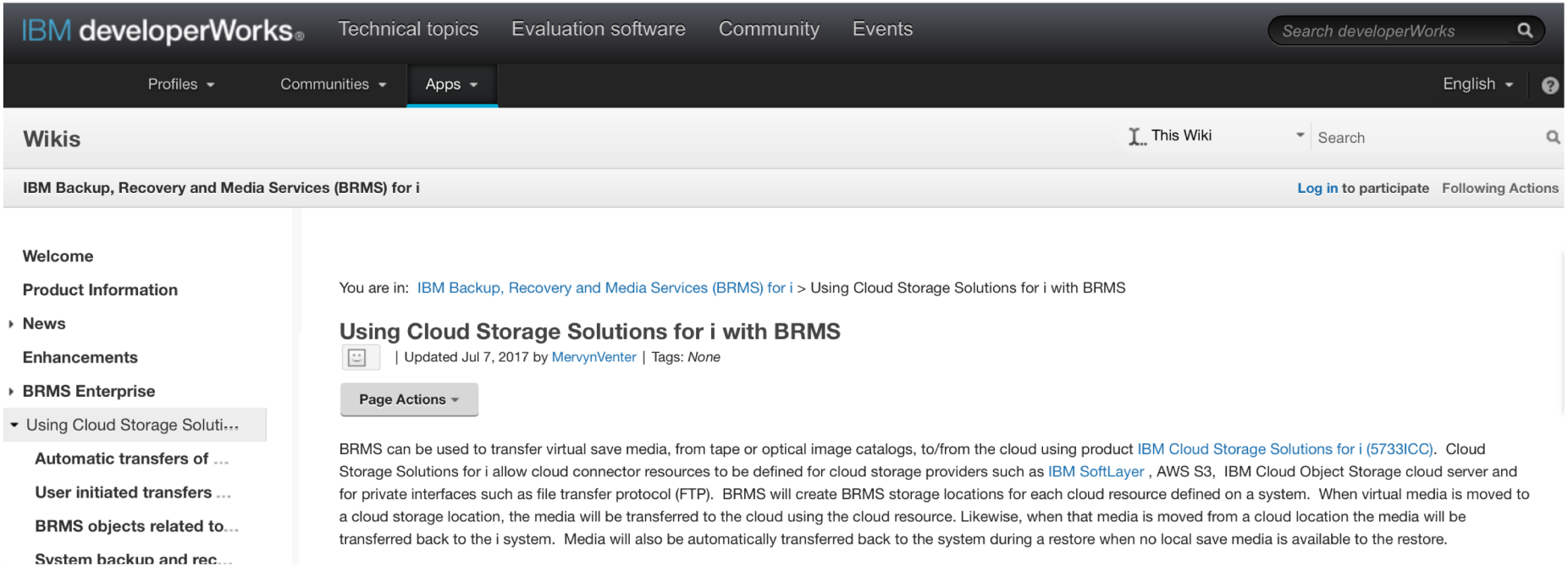
2.Run the control group:
    2. STRBKUBRM CTLGRP(QCLDUUSR01) SBMJOB(*NO)
3.View the media to verify that it is at the cloud location:
    2. WRKMEDBRM FILEGRP(QCLDUUSR01)
        2. verify the volume is in *ACT status
        3. verify the location is the cloud resource created in step 2
4.Delete the library:
    2. DLTLIB LIB(CLDLIB)
5.Restore the library:
    2. WRKMEDIBRM CTLGRP(QCLDUUSR01)
        2. specify 7=Restore next to the saved item
            2. specify 1=Select next to the saved item
6.Verify that the library was restored:
    2. DSPLIB LIB(CLDLIB)
7.View the media to verify that it is at the home location:
    2. WRKMEDBRM FILEGRP(QCLDUUSR01)
        2. verify the volume is in *ACT status
        3. verify the location is *HOME

IBM Cloud Storage Solutions for i documentation



https://www.ibm.com/support/knowledgecenter/en/ssw_ibm_i_73/icc/topics/iccuoverview.htm

IBM Cloud Storage Solutions for i documentation



Using Cloud Storage for i with BRMS

Merci de votre attention

N’oubliez pas de remplir
le questionnaire
de satisfaction !

Questions ?

thirty years