Maintaining centralized macros with batch scripts
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Syspertec Communications

CONTENTS

The following newsletter documents how to maintain centralized macros using a batch process. The process uses the "CURL" program, a browser client, to interface with Virtel and to upload the macros from a PC. The benefits of using a batch process is macros can be managed on a PC and uploaded to the relevant Virtel directories as a batch process rather than the default "Drag and Drop".

The following steps are implemented to support this process. A CURL request is made to Virtel to obtain they key for either the GROUP id, USER id or the GLOBAL DDI directory. The key is then in a subsequent HTTP POST to upload a macros.json file to that directory. This is effectively what occurs when you perform the same process using the standard Drag and Drop technique.

The process is driven through batch scripts which are generated and downloaded from the mainframe following a extract from the RACF database. The extract provides the GROUP and USERID relationship required by the upload process.

PRE-REQUISITES

1.1 Virtel Setup

You must be a Virtel administration to perform this procedure and you must have configured Virtel to use centralized DDI. For example, on the default client line, 41002, the macro list icon should be a "Blue" triangle. If it is "Green", then your DDI setup is not correctly configured. See the 'Virtel Users Guide' for further details on setting up the "centralized" macro environment. Alternatively, information can be found in technical newsletter TN201704.

There should also be a local macro facility available so as to be able to modify existing macros or generate new ones. It is suggested that the Admin. Portal, port 41001 by default, be used for this purpose.

1.2 Macro Sub-Directory Organization

You should also have the relevant macros.json file for each of the group/user related directories that you wish to build. The GROUP and USERID names must be valid RACF constructs. The 'ddiMacro.bat' script will upload a macros.json file from the associated PC directories as identified in the output from the LISTUSRS JCL. See "Running LISTUSRS for further details. The associated directories can be any arbitrary name but must exist within the c:\virtel\macros\ddiBatch directory as sub-directories and each sub-directory must contain a relevant macros.json file.

Either organize sub-directories by user or type. For example, a type structure would look something like this:-

```
./global
    macros.json
./adminGroup
    macros.json
./adminUser
    macros.json
./userGroup1
    macros.json
./userGroup2
    macros.json
./users1
    macros.json
./users2
    macros.json
```

The advantage of a "type" structure is that multiple users can upload common files. A user sub-directory structure would look like :-

```
./global
    macros.json
./RACFGRP
    macros.json
./ADM0010
    macros.json
./ADM0020
    macros.json
./SYSPGRP
    macros.json
./SPTHOLT
    macros.json
./SPTBOWL
    macros.json
./USRGRP
    macros.json
./USRPETE
    macros.json
./USRMARY
    macros.json
```

In this structure type, each user has there own "user" macro.json.

1.3 Macro.json files

A macro.json file is a JSON object that represents the macros available to a user, group or global macro entity within Virtel. Here is an example:-

```
{"macros":[{"name":"SDSF","rev":2,"def":["move(435)","ENTER",{"txt":"=M"},"ErEof",
↪"ENTER",{"txt":"5"},"ENTER"]}],"desc":"global macros","fmt":1}
```

Creating these macros is best done through Virtel. Use a local macro environment to create your macros. For example, from within a TSO or a CICS application within the Administration portal. After creating the macros, export them to a file as a JSON structure. Copy the file to the relevant batch sub-directory. In all cases the file must be called macros.json. Alternatively, get you users to create the own "macros.json", and ship them to you.

Note: You cannot export macros from a centralized DDI macro environment.

INSTALLATION

All the modules and scripts to implement this package are available as a zip file on the Syspertec FTP web server.

2.1 Unzip package

Download the zip package "ddimacros.zip" from the Virtel ftp website and unzip into a directory on your PC. In the following examples the zip file has been unzip into a directory called 'c:\virtel\macros'. After unzipping the file you should find a batch sub-directory which will have the the following directory structure and files.

```
\global
     macros.json
\sysgroup
     macros.json
\sysprog
     macros.json
\user
     macros.json
\usergroup
     macros.json
curl.exe
ddiMacro.bat
listuser.rexx
listusr1.jcl
```

2.2 Upload files

Upload files LISTUSER.rexx and LISTUSRS.jcl to your VIRTnnn.CNTL as members LISTUSER and LIS-TUSRS.

2.3 Running LISTUSRS

Modify the LISTUSRS member to your site standards and run this JCL to list RACF groups and associated users. See the comments in the JCL for information on how to set the correct arguments. Running with 'Y' as option 2 will create a 'bat' file in the dataset pointed to by SYSUT1. In the sample LISTUSRS JCL this dataset is called userid.temp. In the JCL example, options are set to create a "bat" job that

will upload "macros.json" files for the users of the RACF GROUP SPGPTEH. The supporting PC directories will be "sysgroup" and "sysprog". These directories will have to be created as sub directories in the C:\virtel\macros\ddiBatch directory. Each directory must contain a relevant macros.json file.

```
//STEP0     EXEC PGM=IEFBR14
//DDA       DD DSN=SPTHOLT.TEMP,DISP=(MOD,DELETE),UNIT=SYSDA,
//          SPACE=(TRK,0)
//STEP1     EXEC PGM=IKJEFT1A,DYNAMNBR=20
//SYSEXEC   DD  DSN=SPTHOLT.RACF.REXX,DISP=SHR
//SYSTSPRT DD  SYSOUT=*
//SYSUT1    DD  DSN=SPTHOLT.TEMP,DISP=(,CATLG),UNIT=SYSDA,SPACE=(TRK,5),
// DCB=(RECFM=VB,LRECL=255,BLKSIZE=10000)
//SYSTSIN  DD  *
%LISTUSER SPGPTECH Y 192.168.170.48 sysgroup sysprog
```

Download the temp file that is created by the LISTUSRS job to the c:\vitel\macros\ddiBatch directory. Call it UPLOAD.BAT. When executed, this file will call the "ddiMacro.bat" file installed from the package. The ddiMacro script will invoke the CURL program, also included with the packaged, to upload a macros.json file to the associated RACF GROUP and USER directory structure within the Virtel DDI centralized TRSF file. This is normally the HTMLTRSF VSAM file.

The UPLOAD.BAT file created by the REXX script will look something like this:-

```
@echo off
rem Upload DDI macros to Virtel via CURL
rem GROUP=%1 USERID=%2 Global=%3 ip address=%4
rem Group Directory=%5 User Directory=%6
set /p u=Enter your userid :
set /p p=Enter your password :
set flag=0
call ddiMacro.bat SPGPTECH CAULIER N 192.168.170.48 sysgroup sysprog %u% %p% %flag%
call ddiMacro.bat SPGPTECH CICDUSER N 192.168.170.48 sysgroup sysprog %u% %p% %flag%
.
.
.
```

The arguments passed to the "ddiMacro" script are :-

1. RACF GROUP
2. RACF USERID
3. Global Option
4. URL address of Virtel
5. Local PC sub-directory for group containing macros.json file.
6. Local PC sub-directory for user containing macros.json file.

By default, the upload.bat job does not upload a macros.json file from the global sub-directory. To alter this behavior modify the first "call" statement and change option '3' to "Y". This will force and upload to the Virtel globals macro directory from the local global sub-directory.

```
@echo off
rem Upload DDI macros to Virtel via CURL
rem GROUP=%1 USERID=%2 Global=%3 ip address=%4
rem Group Directory=%5 User Directory=%6
set /p u=Enter your userid :
set /p p=Enter your password :
```

```
set flag=0
call ddiMacro.bat SPGPTECH CAULIER Y 192.168.170.48 sysgroup sysprog %u% %p% %flag%
call ddiMacro.bat SPGPTECH CICDUSER N 192.168.170.48 sysgroup sysprog %u% %p% %flag%
.
.
.
```

2.4 Uploading the macros

Start virtel. Your Virtel should be running with DDi customized to support centralized macros, i.e. macros maintained on the mainframe and synchronized with users local storage environments as and when they connect to the Vitel server. See technical letter TN201704 for further information on Virtel Macros and DDI or the section "Macros in Virtel Storage in the chapter on "Macros" in the Virtel Users Guide.

Before running the "created" upload.bat job make sure that the macro directory structures are correctly defined and that each directory contains a supporting "macros.json" file.

Run the upload.bat job. This will upload the macros.json files to the customized DDI macro structure supported by Virtel. You will be prompted for your userid and password. If you need to cancel the "upload.bat" script press CTRL-C. After the job has completed check the the Virtel DDI entries have been correctly populated.

The upload job writes the CURL output to output.txt. This can be used for diagnostics if uploads are failing.

2.5 Writing Macros

Unless you have knowledge of JSON constructs and can understand the internal macro.json structure it is not advisable to attempt ot create your own macros. The recommended procedure is to let Virtel create the macros through a local Macros setup - "Green" macro list ICON in the Virtel tool bar. Within this framework you can import and export macros and make any modifications to the macros using the "edit" facility. See technical newsletter TN201704 for more information on writtle Virtel Macros.

APPENDIX A

REXX Procedure LISTUSER

```
/* REXX */
parse arg opt1 opt2 url ugdir udir .
global_opt = 'N'
if (opt1 == '') then
opt1 = 'ALL'
if (opt2 == '') then
opt2 = 'N'
if (url  == '') then
url  = '192.168.0.1'
if (ugdir  == '') then
ugdir = 'usergroup'
if (udir  == '') then
udir = 'user'
x = OUTTRAP('users.')
address tso 'sr class(USER)'
x = OUTTRAP('OFF')
groups.0 = 0
say users.0 'users are present on the system'
call build_bat
do i=1 to users.0
call get_infos users.i
end
do i=1 to groups.0
name = groups.i

if (opt1 <> 'ALL') then do
    if (opt1 == name) then do
        Say "Group = " groups.i
        z = groups.name.0
        do x = 1 to groups.z.0
        if (opt2 == 'Y') then do
        queue "call ddiMacro.bat "groups.i" "groups.z.x" "global_opt" "url,
        ugdir udir" %u% %p% %flag%"
        end
        else
        say groups.z.x
        end
    end
end

else do
    Say "Group = " groups.i
```

```rexx
    z = groups.name.0
    do x = 1 to groups.z.0
        if (opt2 == 'Y') then do
        queue "call ddiMacro.bat "groups.i" "groups.z.x" "global_opt" "url,
        ugdir udir" %u% %p% %flag%"
        end
        else
        say groups.z.x
    end
end

end
if (opt2 == 'Y') then do
queue "cls"
queue "echo Upload Ended."
queue 'set /p str="Do you wish to delete the CURL output. y|n?"'
queue 'if /I "%str%" EQU "y" del output.txt'
queue "color"
queue "pause"
'EXECIO' queued() 'DISKW SYSUT1'
end
exit

get_infos: procedure expose groups. userid.
USER  = arg(1)
y = OUTTRAP('group.')
address tso 'lu ('USER')'
y = OUTTRAP('OFF')
parse var group.1 'USER='userid . 'OWNER='group .
if group <> '' then do
    if (groups.group <> group) then do
        groups.group = group
        n = groups.0
        n = n + 1
        groups.0 = n
        groups.n = group
        groups.n.0 =0
        groups.group.0 = n
    end
    x = groups.group.0
    n = groups.x.0
    n = n + 1
    groups.x.0 = n
    groups.x.n = userid
end
return

build_bat: procedure
queue "@echo off"
queue "rem Upload DDI macros to Virtel via CURL"
queue "rem GROUP=%1 USERID=%2 Global=%3 ip address=%4"
queue "rem Group Directory=%5 User Directory=%6"
queue "title Virtel Macro Upload V1.0"
queue "if exist 'output.txt' del output.txt"
queue "curl -V"
queue "echo This program will invoke CURL. See https://curl.haxx.se/"
```

```
queue "pause"
queue "cls"
queue "color 4"
queue "set /p u=Enter your userid :"
queue "set /p p=Enter your password :"
queue "set flag=0"
queue "cls"
return
```

APPENDIX B

JCL to run REXX Procedure LISTUSRS

```
//yourhlqB JOB CLASS=A,MSGCLASS=X,NOTIFY=&SYSUID
//*------------------------------------------------------------*
//*  RACF : List Groups and users                              *
//*------------------------------------------------------------*
//*- Change all occurences of yourhlq to your HLQ.         -*
//*- Change all occurences nnn to your Virtel release      -*
//*------------------------------------------------------------*
//*------------------------------------------------------------*
//*- List all groups and users                             -*
//*------------------------------------------------------------*
//*-                                                       -*
//*  %LISTUSER                                               *
//*-                                                       -*
//*------------------------------------------------------------*
//*- List a group and its users                            -*
//*------------------------------------------------------------*
//*-                                                       -*
//*  %LISTUSER CTKGROUP                                      *
//*-                                                       -*
//*------------------------------------------------------------*
//*- Create ddiMacro bat file. Write to SYSUT1. Use        -*
//*- defaults for url, group directory and user directory  -*
//*------------------------------------------------------------*
//*-                                                       -*
//*  %LISTUSER CTKGROUP Y                                    *
//*-                                                       -*
//*------------------------------------------------------------*
//*- Create ddiMacro bat file. Write to SYSUT1. Use defined *
//*- url, group directory and user directory.              -*
//*------------------------------------------------------------*
//*-                                                       -*
//*  %LISTUSER SPGPTECH Y 192.168.170.48 sysgroup sysprog   *
//*-                                                       -*
//*------------------------------------------------------------*
//STEP0    EXEC PGM=IEFBR14
//DDA      DD DSN=yourhlq.TEMP,DISP=(MOD,DELETE),UNIT=SYSDA,
//         SPACE=(TRK,0)
//STEP1    EXEC PGM=IKJEFT1A,DYNAMNBR=20
//SYSEXEC  DD  DSN=yourhlq.VIRTnnn.CNTL,DISP=SHR <=== CHANGE
//SYSTSPRT DD  SYSOUT=*
//SYSUT1   DD  DSN=yourhlq.TEMP,DISP=(,CATLG),UNIT=SYSDA,SPACE=(TRK,5),
// DCB=(RECFM=VB,LRECL=255,BLKSIZE=10000)
```

```
//EXAMPLES DD   *
%LISTUSER
%LISTUSER CTKGROUP
%LISTUSER CTKGROUP Y
%LISTUSER CTKGROUP Y 192.168.170.48 usergroup user
//SYSTSIN  DD   *
%LISTUSER SPGPTECH Y 192.168.170.48 sysgroup sysprog
```

APPENDIX C

ddiMacros.bat script

```
@echo off
color F
rem echo Group=%1 User=%2 Global=%3 URL=%4 AssociateGroup=%5 AssociateUser=%6 Admin=%7
↪PW=%8
set group=%1
set user=%2
set ag=%5
set au=%6
set userid=%7
set password=%8
set url_getGroup="http://"%4":41001/SECURE/capabilityCode.json+USRCAP?GROUP="
set url_getUser="http://"%4":41001/SECURE/capabilityCode.json+USRCAP?USER="
set url_glb="http://"%4":41001/SECURE/upload.txt+uplglb"
set url_grp="http://"%4":41001/SECURE/upload.txt+uplgrp+x-Virtel-group-Directory:"
set url_usr="http://"%4":41001/SECURE/upload.txt+uplusr+x-Virtel-user-Directory:"
set _global=%3
set flag=%9


if  [%_global%] == [Y]  (
    curl -v -F "file=@global/macros.json;type=application/json" -u %userid%:%password%
↪%url_glb%1 >> output.txt 2>&1
)
curl -v -u %userid%:%password%  %url_getGroup%%1 > curl.txt 2>&1
for /f "delims==" %%a in (curl.txt) do set var=%%a&call :getGroup
curl -v -u %userid%:%password%  %url_getUser%%2 > curl.txt 2>&1
for /f "delims==" %%a in (curl.txt) do set var=%%a&call :getUser
color 4
exit /b

:getGroup
if not "x%var:x-Virtel-group-Directory:=%" == "x%var%" (
    call :uploadGroup "x%var%"
    )
goto :eof


:uploadGroup
if %flag%==0 (
echo Uploading 'macros.json' for group %group% from directory %ag%.
for /F "tokens=1-2 delims=:," %%i in ("%~1") do (
    curl -v -F "file=@"%ag%"/macros.json;type=application/json" -u %userid%:%password%
↪%url_grp%%%j1 >> output.txt 2>&1
)
```

```
set flag=1
)
exit /b

:getUser
if not "x%var:x-Virtel-user-Directory:=%" == "x%var%" call :uploadUser "x%var%"
goto :eof

:uploadUser
echo Uploading 'macros.json' for user %user% from directory %au%.
for /F "tokens=1-2 delims=:," %%i in ("%~1") do (
    curl -v -F "file=@"%au%"/macros.json;type=application/json" -u %userid%:%password%
→%url_usr%%%j1 >> output.txt 2>&1
)
exit /b
```