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| **Environment Cloning**  Like Splitting the Atom: Only Harder | Abstract  Cloning – could be the answer to your prayers. It saves you all of the configuration associated with a full-blown system. The drawback, you ask? It is a system in which people have tinkered and tampered so you may not like the data. Also, since experimentation has been allowed, you may inherit some issues with the setup. But, hey, you saved many hours of configuration. It’s your choice.  Fairbrother,Stephen  Author |

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# **Overview**

Environment cloning consists of duplicating the databases, image shares, and configuration files associated with an existing environment. Once duplicated references to the environment name need to be changed in the databases and configuration files. The kit must be run to lay in the web site and application. Subsequently, services can be installed.

As suggested in the abstract, there are drawbacks. You don’t get clean data and since people can change things on the system, you may inherit problems caused by tinkering.

The solution? Create a clean model that is configured properly and contains the data that you want. If you have the time, you might be much happier. If you don’t have that time, then cloning is your best option.

The thing you don’t want to do is move clone across domains. There is a lot more to change and if you need LPA enabled, that is even more fun. Even cloning within a domain can be painful if routers are involved. You want to make sure they are reconfigured properly.

NOTE: Much of this process is based on examples of cloning in the USMLVV1D0A domain. Be sure to verify group names in use for a DevCloud environment. The adminuser (and usual password) do exist in the DevCloud.

# **Databases**

## **Overview**

The databases used for a clone are obtained through backups generated using the DM Backup and Restore process. Click [here](https://connect.ucern.com/docs/DOC-597503) for information on that process.

Once you have the necessary .dat files for environment you wish to clone, do the following.

## **Create the New Data and Log Directories**

Data\_Dev and Log\_Dev directories live on the server where your databases will be. You can use the imbedded document to create the directories for your new environment.



1. You will have to rename the file so it ends with .cmd for it to be functional.
2. In addition, do the following edits:

* Replace all of the RRHH values with the RRHH of your new environment.
* Verify the drive letter where the Data\_dev and Log\_dev directories live for your databases and change the value in the file to reflect the proper drive location.

1. Once you have edited the file, you can run the command and the necessary subdirectories will be created.

You will want to keep the file handy to use the path values during the install of the databases.

## **Creating the New Databases in SQL Server Management Studio**

If you are lucky (or smart) you will restore the databases using SQL 2014. It is much easier there than in SQL 2008, because of better support for the Data and Log locations that you will be using.

1. On the candidate server, open the **SQL Server 2014 Management Studio**. (If this is the first time you have opened it, it will take a bit to open.
2. Log onto SQL Server using **Windows Authentication**.
3. On the left, near the top, right-click on the **Databases** entry in the list.
4. Click on **Restore Database…**
5. In the well on the right, select the **Device** radio button.
6. Click on the  button on the far right.
7. Make sure the **Backup media type** dropdown is focused on **File**.
8. Click the **Add** button.
9. Navigate to the location of the .dat files that you will be using.
10. Change the dropdown to the **All Files(\*)** value and the .dat files will appear.
11. Double-click on the first .dat file for the database that you want to restore.
12. Highlight the name of the .dat file.
13. Click the **OK** button.
14. In the **Destination Database** field, change the RRHH (last four letters of the database name) to the RRHH value for the environment that you are creating.
15. Make sure the checkbox in the **Restore** column in the **Backup sets to restore** section is checked.
16. Click on the **Files** option in the upper left.
17. In the well on the right, near the top, check on the **Relocate all files to this folder** checkbox.
18. Edit the CreateDbDirs.cmd file.
19. Copy the location of the Data\_dev directory for the database you are creating.
20. Copy the location into the **Data file folder** field.
21. Copy that value into the **Log file folder** field and change the word Data to Log.
22. Click on the **Options** item in the upper left.
23. Under Restore options, check the box next to **Overwrite the existing database (WITH REPLACE)** name.
24. Make sure none of the boxes in the **Tail-Log backup** section are checked.
25. Scroll to the bottom and click the **OK** button.
26. Once the restore is completed, repeat the above process for the other two databases.

If you have to use SQL 2008, the Data\_dev value has to be copied in for each of the entries in the display. The last file listed is the Log\_dev value.

## **Edit the Database Tables**

Each of the databases has tables that you must edit.

### **IAD Database Edits**

1. Delete the contents of the AuditIntegrity and EventsEx tables.
2. Revise the DbInfo table to a build number lower that the kit you will run.

### **IDB Database Edits**

1. Restore the **TotalKBFree** values in the **ActiveMagDevices** table by restoring them to the values in the **TotalKBAllocated** column.
2. Delete the contents of the **CacheSubscribers** table.
3. Modify the **MagDevices** table to reflect the names of the new storage shares.
4. Revise the **DbInfo** table to a build number lower than the kit you will run.

### **IDT Database Edits**

1. Delete the contents of the following tables: BackgroundJobs; ServiceInstances; StatusTracker; TransactionQueue
2. Revise the **DbInfo** table to a build number lower than the kit you will run.

## **Run the Add Logon SQL**

The following SQL needs to be run on each of the databases.



## **Obtain the View Rebuild SQL**

1. Go to <https://github.cerner.com/dm/utilities>
2. Switch the **Branch**: dropdown to **master**.
3. Double-click on the **SQL** folder.
4. Copy the three SQL files.

## **Run the View Rebuild SQL**

Run the 3 files on the respective databases in the following order:

1. IDB
2. IDT
3. IAD

## **Run the Shrink IDB Log SQL**

This SQL is applied after creating a new IDB data base and keeps the log from getting too large.

1. Open the model file: 
2. Replace the IDB database name in the model SQL with the name of your database.
3. Copy the edited SQL.
4. Open the SQL Server Management Studio that houses your IDB database.
5. NOTE: You must be an administrator on the server and should use Windows Authentication when logging onto the Studio.
6. Click on New Query in the second level of the toolbar at the top of the Studio.
7. Paste the edited SQL into the query window on the right.
8. Highlight the SQL.
9. Click on the **Execute** button. 

You may exit the SQL Server Management Studio.

# **Configuration Files**

## **Create New Directory under CernerApps for Configuration Files**

1. Create a directory in the following location with the name of the HHRR you are using:
2. [\\servername\\Cernerapps\Program](file:///\\servername\\Cernerapps\Program) Files\Cerner\DM\ENVIRONMENT
3. Copy files from existing environment to the appropriate directory:
4. If no DATA subdirectory, copy everything under the original HHRR to the new HHRR
5. If there is a DATA subdirectory, copy the DATA directory under the original HHRR to under the new HHRR directory

## **Edit the Files**

### **Edit Efcsys.xml**

1. Edit efcsys.xml file replacing the old HHRR with the new HHRR.
2. Edit efcsys.xml file replacing the old RRHH with the new RRHH.
3. Revise receiver port numbers in efcsys.xml. You have to change the port numbers to ones not currently in use.
4. See the section below on **Port Numbers** for help selecting the ones to use.
5. Change the port numbers in the new efcsys.xml to the candidate numbers

#### **Port Numbers**

To determine ones not in use, go to the main application server.

1. Open a command window.
2. Type netstat > netstat.txt at the prompt.
3. Hit return.
4. Type notepad netstat.txt
5. Hit return.
6. Search the file for candidate numbers. If the candidate is **not found**, use that. If **found**, try another. You can usually go sequentially from the highest port number in the efcsys.xml and find a range where no ports are in use.

### **Edit the MINCONTENT.XML File**

Revise MINCONTENT.XML file, replacing the existing primary RRHH with the new one.

### **Edit the ServerInstalls.xml File**

1. Revise ServerInstalls.xml to reflect appropriate servers (if necessary).
2. Modify the install level to a number below the level you are installing.

# **Storage Directories and Shares**

## **Overview**

You will need to create new directories on the database server where the other storage shares are housed.

Typically you will create two directories with names that have the following pattern:

* RRHH-StmArchStg1
* RRHH-StmArchStg1

To confirm the names, you can look at the MagDevices table in the IDB database and use the names you created there. They must match, except for the dollar sign ($) – leave that off, it is part of the share name, not the physical directory name.

* The USI03G-EDM-F250DIServices group can be used for all DM installs in the USMLVV1D0A domain.
* If you are cloning a DM install in USMLVV1D0A that is for another group (typically Soarian Clinicals), see how the original shares are secured and use the same group on the new one.
* For any clones in the DevCloud, see how the original shares are secured and use the same group on the new one.

## **Directories and Sharing**

1. Create the new directories.
2. Right-click on a directory and select **Properties**.
3. Click on the **Sharing** tab.
4. Click the **Advanced Sharing** button.
5. Click on the **Share this folder** checkbox.
6. In the Settings section, add **$** after the physical directory name.
7. Click the **Permissions** button.
8. Type usi03g-edm-f250diservices in the **Enter the object name to select** field.
9. Click **OK**.
10. Click on the **Full Control** checkbox below.
11. Click the **Add** button.
12. Type servername\administators (where servername = the name of the database server you are on) in the **Enter the object name to select** field.
13. Click **OK**.
14. Click on the **Full Control** checkbox below.
15. Click the **OK** button.
16. Click the **Apply** button.
17. Click the **OK** button.
18. Click on the **Security** tab.
19. Click the **Edit** button.
20. Click the **Add** button.
21. Type usi03g-edm-f250diservices in the **Enter the object name to select** field.
22. Click **OK**.
23. Click the **Full control** checkbox below.
24. Click the **Apply** button.
25. Click **OK**.
26. Click **Close**.
27. Repeat the above process for each of the directories and shares that you need.

Once you have created the necessary directories and shared them, copy the contents from the existing shares into their appropriate new locations.

# **Install the Application**

## **Get the Kit**

1. Go to Jenkins: <https://usmlvv1cto2874.usmlvv1d0a.smshsc.net/jenkins/>
2. To select the build you want:
3. Click on **DM-25.2** or **DM-25.3**.
4. Click on **IMS**.
5. Click on the **branch** you want. Usually you will apply the production build so the branch value will be either **25.2** or **25.3**.
6. Click on the build number you want.
7. Click on the **Artifactory Build Info** link. This will take you to Artifactory.
8. Under the **Published Models** tab, click on the link displayed.
9. Hover over the .zip file name and select the **Show in Tree** option.
10. Click on the icon next to the .zip file to show the files in the .zip file.
11. Right-click on the DMSetup.exe file and select **Download**.
12. When prompted, click the **Save** button.
13. When the file has downloaded, click on the **Open folder** button.
14. Copy DMSetup.exe to the server(s) where you will be running the install.
15. You can close Artifactory and Jenkins now.

## **Log onto the Server**

1. Log onto the server from which you will be performing the install.

You must be an administrator on the server. When you log onto the server, include the /admin command in the RDP **Computer:** field.

**Example**: usmlvv1edm603.usmlvv1d0a.smshsc.net /admin

## **Backgroundroot Share**

### **Background on the backgroundroot Share**

* For net new installations that will be used for testing, you will do this process on both USMLVV1EDM226 and USMLVV1EDM603
* For net new install tests and verifications, I recommend that you use the usmlvv1edm603.usmlvv1d0a.smshsc.net server.

You will now install the application to verify that the install kit is working properly. You first create a backgroundroot\_hhrr directory on the drive where the other backgroundroot directories already exist, and then run the installation kit.

* For net new installations that will be used for testing, create the backgroundroot\_hhrr share on USMLVV1EDM226.
* For net new install tests and verifications, create the backgroundroot\_hhrr share on USMLVV1EDM603.

These instructions use USMLVV1EDM603 as the destination.

### **Create the backgroundroot Share**

1. On the usmlvv1edm603 D:\ drive, create a new backgroundroot directory. In this example, we will create backgroundroot\_1234.
2. Right-click on the directory, and select **Properties**.
3. Click on the **Sharing** tab.
4. Click on the **Share…** button.
5. In the field to the left of the Add button, enter the following:

usi03g-edm-f250diservices

1. Click on the **Add** button.
2. On the line with the new group, click on the dropdown and change **Read** to **Read/Write**.
3. In the field to the left of the Add button, enter the following:

usi03g-edm-f250diusers

1. Click on the **Add** button.
2. On the line with the new group, click on the dropdown and change **Read** to **Read/Write**.
3. Click on the **Share** button.
4. Click on the **Done** button.

### **Run the Installation Kit**

1. Log onto the server from which you will be running the upgrade.

You must be an administrator on the server. When you log onto the server, include the /admin command in the RDP **Computer:** field.

**Example**: usmlvv1edm226.usmlvv1d0a.smshsc.net /admin

1. Go to the folder on the server where you placed the DmSetup.exe file.
2. Double-click on the DmSetup.exe file.
3. Page through each screen of the install to make sure there are no issues.
4. On the final screen click **Finish**.

.

Log onto the application with the stmuser account so you can determine the status of the services and start any that are not running already.

Log onto the application as adminuser and verify that everything is set up and working as expected.

# **Create the New Organization**

1. Log onto the new instance of the application using the following account:

* Adminuser / Phillies05

1. Click on the **Administrator** option on the home screen.
2. Under **Other**, click on **Organizations**.
3. From the **Organization** dropdown, select the Organization for the previous environment.
4. The entry will most likely be associated with Colonial Medical Associates and the HHRR will be that of the originating environment.
5. Click the **Revise** button at the bottom of the screen.
6. Revise the values in the following fields to reflect the new organization HHRR values:

* Short name
* Organization code
* Hospital code
* Region code
* OID (if valued)

1. Click the **Save** button in the lower right.
2. Exit the Organizations UI.

# **Create the Upload Subdirectories**

Prior to installing the pollers, you will need to create the upload subdirectories.

1. Locate the existing upload subdirectories for the originating environment.
2. The location will be in the **backgroundroot\_HHRR** directory.
3. Open the **Upload** directory and note the subdirectory values.
4. With the exception of the **Accepted** directory, create all the same directories under the Upload directory for your new environment.

# **Services Configuration and Installation**

## **Create and Revise the Pollers**

1. Run the command prompt as an administrator.
2. Change to the bin directory for the application (cd "[drive]:\Program Files\Cerner\DM\HHRR\WWWROOT\BIN" – where [drive] = the drive on the server where the application is installed and where HHRR = the new environment).
3. Hit **Enter**.
4. Type ikmser and hit the tab key. This should find the IkmServiceController.exe file.
5. Hit **Enter**.
6. The **Interactive Service Controller** UI will display.
7. Click **Configure Service**.
8. From the **Service name** dropdown, select the poller for the main organization (IMSHHRR\_Poller$RRHH).
9. Click the **Create** button.
10. Value the **Source Folder** field as follows:

* [\\servername\backgroundroot\_HHRR\Upload](file:///\\servername\backgroundroot_HHRR\Upload)

(where servername = the server you are installing on, HHRR = the new environment name)

1. Click **OK**.
2. Click **Configure Service**.
3. From the **Service name** dropdown, select the next poller you wish to revise.
4. Click the **Revise** button.
5. In the **Source Folder** field, revise the HHRR value to reflect the new environment value.
6. Click **OK**.
7. Repeat this process for each of the defined pollers.
8. Do not close the ikmservicecontroller UI.

## **Install the Services**

1. Select **Uninstall Service** from the main screen of the ikmservicecontroller UI.
2. Make sure the **Group** dropdown is valued to **All**.
3. Click **OK**.
   * The message “Uninstall was completed” will display in the command window.
4. Select **Install Service** from the main screen of the ikmservicecontroller UI.
5. Make sure the **Group** dropdown is valued to **All**.
6. Click **OK**.
7. The following messages will display in the command window:

* The Commit phase completed successfully.
* The transacted install has completed.

1. Click on the **X** in the upper right of the ikmservicecontroller UI to close it.

## **Start the Services**

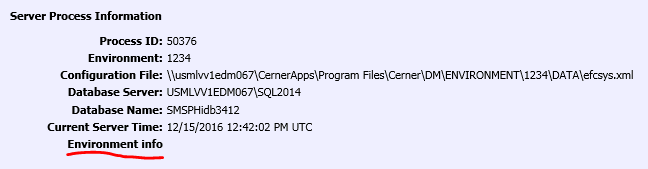
In order to see the Service Control Manager, you must log on with an ID that is a member of the STM Admins group.

1. Log onto the application.
2. Select **Operations** from the main screen.
3. Select **Service Control Manager**.
4. Select the **Application Servers** tab.
5. Click on the **icon** next to the server name you are working on.
6. Click **Start**.
7. Click on the **Services** tab.
8. Click on **Refresh**, below the Services tab.
9. Click on **Refresh** periodically to monitor the start up of the services.

If all of the services do not start, you should look at the service logs for the problematic service(s) and determine the issue. Reconfiguration of the problematic service(s) may be necessary.

# **Review Installation Configuration**

1. Log onto the application (in IE, enter usmlvv1edm603/1234, in this case), using the adminuser / Phillies05 account.
2. Click on Help in the upper right and click **Help**, then click **About**.
3. Review the contents of the screen to be sure the correct version of the software has been installed (value at top center).
4. Review the **Server Process Information** to see if all of the values are expected:



1. Click on the **Environment info** link for further details. A separate screen will appear.
2. Review the entries on the **Environment Information** screen to be sure all values are as expected.

Once satisfied, close the **Environment Information** screen

# **Perform the Smoke Test**

This section details how to import and display documents after a system refresh or upgrade has been done. This process exercises a significant portion of the application’s overall functionality and serves as a good initial test to establish that base functionality has not been disrupted by the refresh or upgrade.

To check out the application install or refresh:

1. Launch the application from Internet Explorer.
2. Enter a logon ID and password for an account that has administrative access to the application.
3. On the **Help** menu, click **About**.
4. Verify that the Version number at the top center of the screen matches the build level of the software that you have just applied.
5. On the top menu of the application, click **Acquire**.
6. Select **Assisted Filing**.
7. Select a **Worklist** folder type.
8. Enter a **Worklist Name and Worklist title**.
9. Click **Find**. If the name does not exist, answer **Yes** to the create folder question.
10. Select the STM **Document type**.
11. Make sure the **Source** value is set to **Import**.
12. Select the TXT Text Files **File type**.
13. Click the **Browse** button and select a file with the *.TXT* extension.
14. Click the **Add to list** button. (If you get a new screen, you may have to resize it to see this question at the bottom: “This file is smaller than the blank page threshold. Do you wish to import it?” Click the **Yes** button.)
15. Click the **Import** button.  
    The document should appear on the **Folder Display** window.
16. In the document display on the right, click on the **X Clear** button to remove the document from the display.
17. On the left, click on the Folder **Retrieve** button. 
18. Select the Worklist folder type and enter the name of your worklist.
19. Click the **Find** button.
20. Under **Select folders** **to display**, double-click the name of your worklist.  
    The **Folder Display** window should appear.
21. Click the plus (+) sign next to the name of your worklist and verify that there is a document in the folder with today’s date on it.
22. Double-click that document and verify that the document successfully displays in the **Document Display** window on the right side of the screen.
23. Click on the icon next to the folder name and document name and make sure information is displayed.
24. On the left, click on the Document **Retrieve** button. 
25. Scroll down and highlight the STM document type by clicking it.
26. Specify today’s date in the **Document Date To** and **From** fields.
27. Click the **Find** button.
28. Double-click the document in the **Select documents to display** window.  
    The **Split Folder/Document Display** window should appear.
29. Double-click the document in the Folder Display window on the left of the display and verify that the document successfully displays in the **Document Display** portion of the screen on the right.
30. You may now use the **Maintain** documents and **Maintain** folders functions to remove the document and worklist.



# **Release the Environment for Use**

Send a message to the H SHS EDM Team [shsedm2410healthcare@cerner.com](mailto:shsedm2410healthcare@cerner.com) group, notifying everyone that the new environment is available for use.