Handle Tool

User Manual

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Handle Tool

CNRI developed a simple GUI tool for performing handle operations such as creating and deleting handles, authenticating, and setting up a handle server. The Handle Tool has been found to be useful for quickly creating and updating handle URL values that are used with the World Wide Web.

The Handle Tool is included in the HANDLE.NET software distribution.

Before using this tool it is important that you read *"How Your Prefix is Set Up"* in the Handle Technical Manual (http://www.handle.net/tech_manual/HandleTechnicalManual.pdf).

The Handle Tool runs on Windows, Linux and Mac OS X, and requires that Java™ 1.5 be installed. The tool uses Java™ WebStart, which is built-in on OS X, and comes with Java™ 1.5 for Windows and Linux.

1. Start the Handle Tool

The Handle Tool is initiated by navigating to the folder containing the directory "bin" and configuration file (in previous examples "srv_1"). Running the following script will start the handle tool:

> bin/hdl-admintool
> *On Windows:* bin\hdl-admintool.bat

2. Default Window

The application's Default Window, displayed at launch, is a panel used to look up an existing handle's values; to create, modify or delete handles; and to authenticate an administrator.
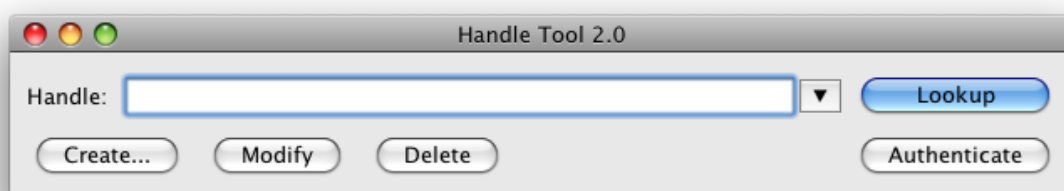

Figure 1: Default Window

Default Window Options

Under the **File** menu in the default window there are three options (see Figure 2).
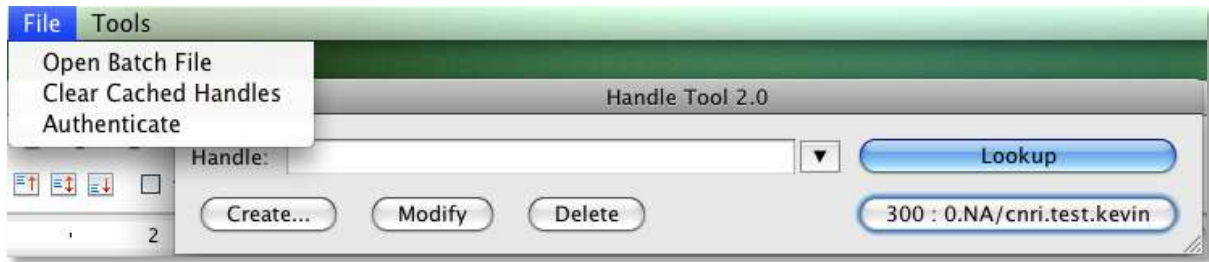
Figure 2: The File Menu

(1) **Open Batch File**. Open an exiting batch file stored on the desktop, prepared according to the specification and ready for upload. The pathname of the file will be added to the Batch Process Tool. (See also Section 10, *"Batch Processing".*)

(2) **Clear Cached Handles.** Empty the cache of data stored from previous handle resolutions. Like most name resolution systems, the Handle System makes use of caching (storing the values it retrieves from the Handle System) in order to improve performance and keep network traffic and server load to a minimum. The default configuration for the Handle Tool is to cache all handles as they are resolved, and to use the cached values whenever possible. This allows the tool to display the resolved values of most handles with little or no delay. However, if you know that a handle has been modified, but the change is not reflected in the View Handle display, click **Clear Cached Handles.** The next time that handle, or any handle, is resolved, it will be retrieved from the handle server rather than the local cache. The cache is automatically cleared each time you quit the Handle Tool.

(See also "*Add... Button"* for more information on caching, TTL, and TTL Type.)

(3) **Authenticate.** Authenticate as an administrator using Public/Private Key pair or a Password (Secret Key). See also" *Authentication".*

Quit the Handle Tool by closing the Handle Tool window.

Under the **Tools** menu in the default window there are several options (see Figure 3):

(1) **Batch Processor.** Uploads handle records contained in a batch file.

(2) **Console.** Displays the communication between the computer you are on and the handle servers.

(3) **Home/Unhome Prefix**. Tells servers in a site that they are (or no longer are) responsible for resolving handles with a given prefix. (See *Homing/Unhoming a Prefix*.)

(4) **Checkpoint a Handle Server**. Makes a back up of the supplied handle server.

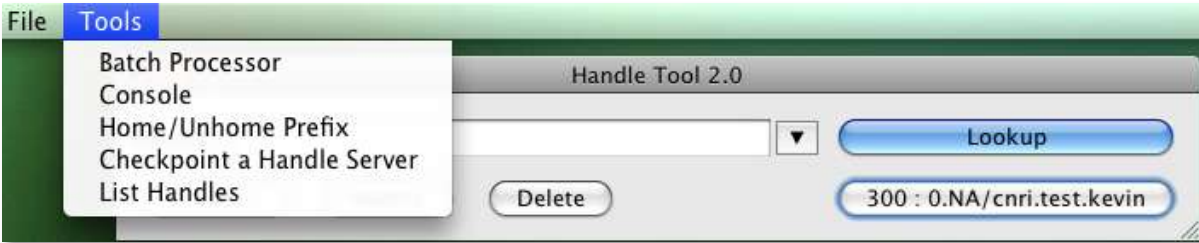(5) **List Handles**. Lists all the handles associated with a supplied handle.

Figure 3: The Tools Menu

3. Console

The console records the interaction between the Handle Tool and the handle servers it contacts.

Using the Console Window

The **Console** window can be opened at the time the Handle Tool is launched, and moved to the side of the desktop (see Figure 4). Use the Console to view the communication between the computer you are using and the Handle System. You will also see general diagnostic and log messages displayed in the console.
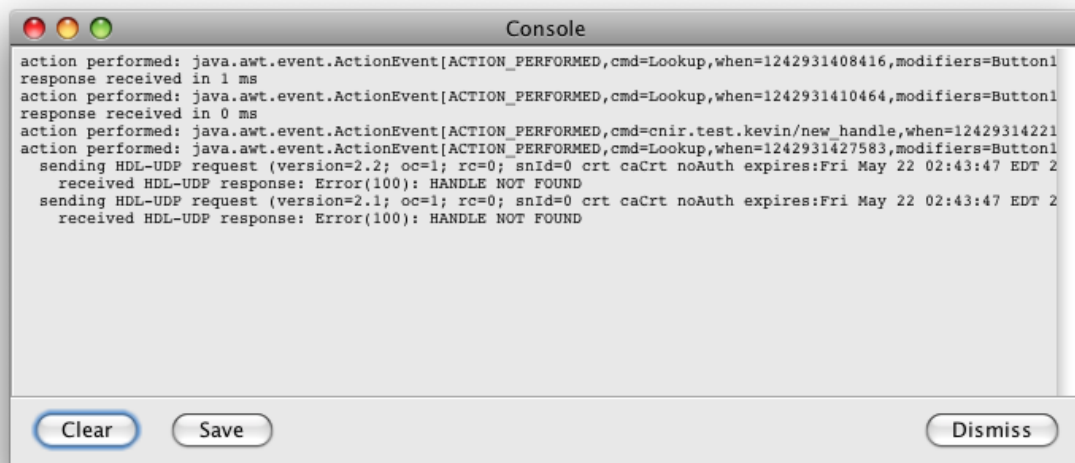

Figure 4: Console

The Console displays all client requests sent to the server (including the IP address of the server) and all responses received from the server, and will maintain the list until the Handle Tool is quit. The contents of the window can be cleared at any time by clicking the **Clear** button, or saved to a desktop file for analysis by clicking the **Save** button. Error messages should be saved for troubleshooting. **Dismiss** closes the window.

4. Authentication

You must have an administrative handle to use for authentication in order to administer handles. When authenticating yourself you will be providing the following information:

(1) Your admin handle (which is usually your prefix handle) and the index of your public key value within that handle; or, some organizations use individual handles with passwords.

(2) Your private key. Note: your private and secret key will *never* be sent over the Internet by the Handle System. You only need to provide this to the Handle System client software so that it can prove to any handle server that you have this information.

The owner of a prefix under which you are administering handles (the part of the handle before the slash) will have given you permission to create handles under that prefix by adding your administrator handle, and the index for your key value, to a list of administrators who have permission to create handles under that prefix.

When you send a "create handle" request to the Handle System, the server will verify that you are the individual identified by the administrator handle (i.e., your private key matches your public key, or you enter the correct password (secret key)) before the requested handle is created.

Administrator Authentication

Select **Authenticate** from the **File** menu, or click **Authenticate** on the Default Window to display the Handle Authentication Window (see Figure 5 below).

Figure 5: Handle Authentication Window Showing Public/Private Key Authentication

Enter your administrator handle into **Your ID:**. The default index value is 300. (Change this value only if required by your system administrator.)

Select the **Key Type:**, either Public/Private Key as illustrated above, or Password (Secret Key). **Your Key:** will display the name of your Key file. If you are using the tool for the first time, or your private key file has moved or changed, click **Select Key File** to browse for the (updated) file.

Click OK. If you use Public/Private Key, you will next be asked to enter your passphrase (see Figure 6).
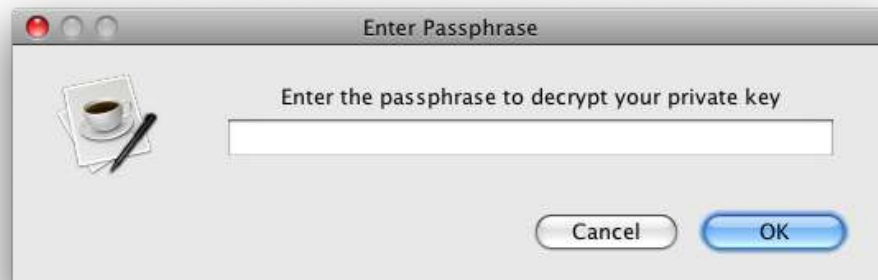

Figure 6: Enter Passphrase

If you selected Password, the Handle Authentication window will allow you to enter your password (see Figure 7).

Figure 7: Handle Authentication Window Showing Password (Secret Key) Authentication

When authentication is successful, your administrator handle will display in place of the Authenticate button on the default window (see Figure 8).
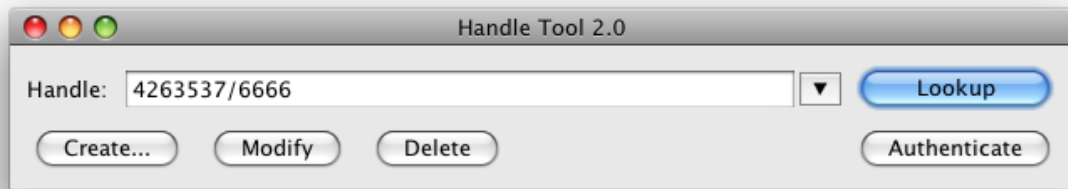
Figure 8: Authentication Complete

5. Lookup

It is not necessary to authenticate yourself as a handle administrator before viewing a handle record. Some low level system handle values remain hidden from view, but values that have public read permission and might need to be edited by an administrator will be displayed in this view.

Lookup a Handle Value

Enter the handle into the Default Window's textbox, and click **Lookup**. The publicly readable values stored in the handle will be displayed in the View Handle window (see Figure 9 below).
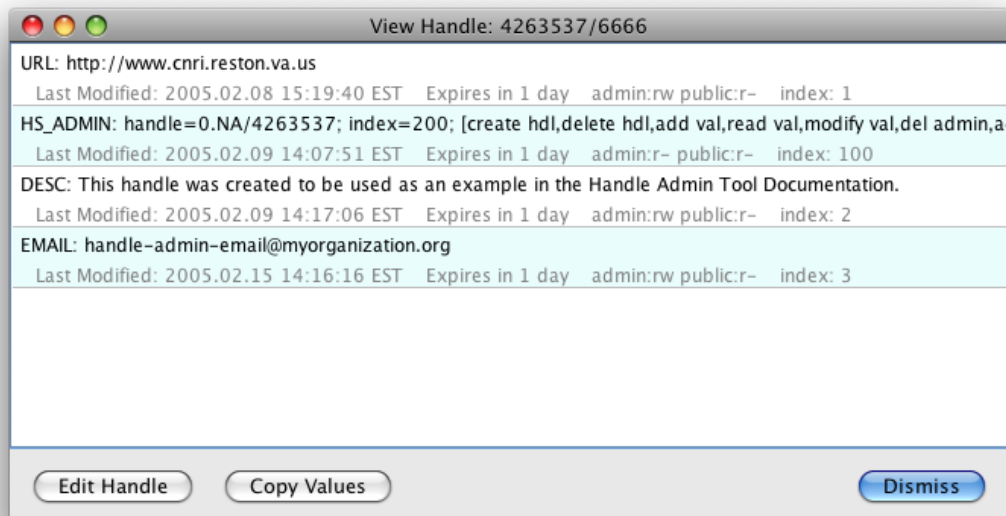

Figure 9: View Handle Window

Edit Handle

To edit one or more of the values for the handle displayed in the View Handle window, click **Edit Handle** to bring up the Edit Handle Window. (See the section *Modify* for instructions for Modifying a handle using the Edit Handle window.)

Copy Values

The Copy Values function is a short cut for creating handles with the same values as an existing handle.

To create a new handle that will have all (or most) of the same values as the handle being displayed in the View Handle window, click **Copy Values**. Type the new handle string into the window, and the new handle will be created with all of the copied values. The new handle values will be displayed in a Create Handle window, which includes a button for removing any unwanted values.

Figure 10: Copy Values to New Handle

6. Create, Modify or Delete Handles

Handles can be created, modified or deleted individually or in batches. This section explains how to create, modify or delete handles one at a time. See Section 10, *Batch Processing* for information on creating and processing batches.

If you do not authenticate yourself before attempting a create/modify/delete, the Handle Authentication window will appear as the first step. (See Section 4, *Authentication*, for instructions.) You must have permission to perform the requested action on any given handle.

Create New Handle

To create a new handle, use the **Create** button on the Default Window. Handles may have any number of associated values. By default, the Handle Tool will assign an administration value to the new handle. See *Value Types* for an explanation of the types of values that can be included.

If you are creating a handle that contains the same (or most of the same) values as an exiting handle, do a Lookup for the existing handle and click **Copy Values** on the View Handle window (see the section *Copy Values*).

Administration Values

Every handle must have at least one "administration value" associated with it, to identify the administrators that have permission to act on that handle, and which permissions each administrator will have. Administration (or admin) values are values of type HS_ADMIN, and for consistency are being given an index

of 100. (If there are multiple admin values, then the additional indexes are 101, 102, 103, and so on.) HS_ADMIN values specify who can perform administration by referring to values stored in other handles.

Create Handle Steps

To create a handle, first enter the new handle string into the text box on the Default Window, and then click **Create.**

The **Create** button offers three options (see Figure 11 below).

(1) Selecting **Create Simple URL Handle** will display a panel for quick entry of a handle's URL value, and then display that value in the Create Handle window.

(2) **Create Simple Email Handle** will display a panel in which to enter an email address, and then display that value in the Create Handle window.

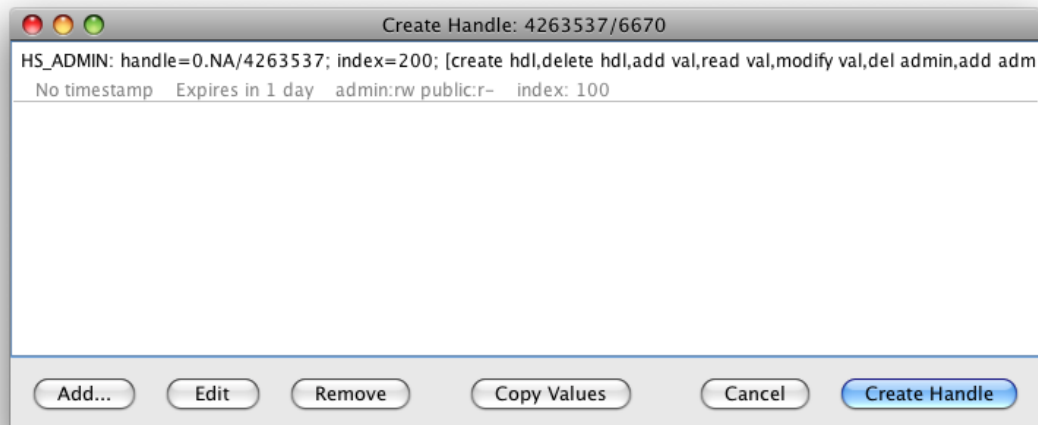(3) **Create Blank Handle** will bring up the default Create Handle window (see Figure 11 below).
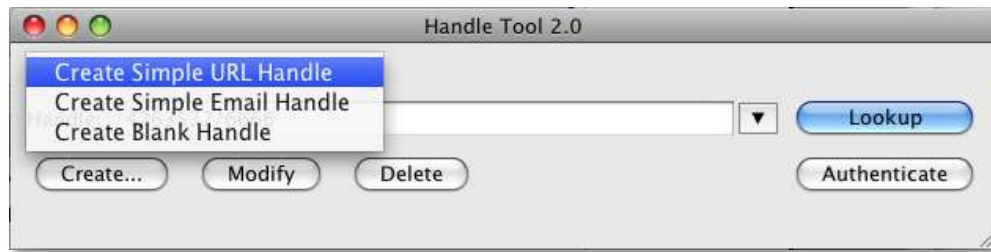

Figure 11: Create Button Options

Figure 12: Create Handle Window

The new handle will automatically have a default HS_ADMIN value that, depending on the configuration of your naming authorities, will most likely be sufficient. Additional HS_ADMIN values can be added.

Add... Button

To add additional values to the handle record, click **Add.**

Figure 13: Add... Button Options

Selecting one of the **Add** button options affects the Value Type displayed in the Add Value window. Selecting URL, Email or Administrator will fill in the appropriate Value Type in the Add Value widow. **Add Blank Value** requires the administrator to identify the type for the new value.

Note: If you have selected **Create Simple URL Handle** and entered a URL into the text box, you need only click **Create Handle** to complete the process and create the handle. You will not need to add additional values as explained in the remainder of this section. When the handle has been created, a message as shown in Figure 14 will display.
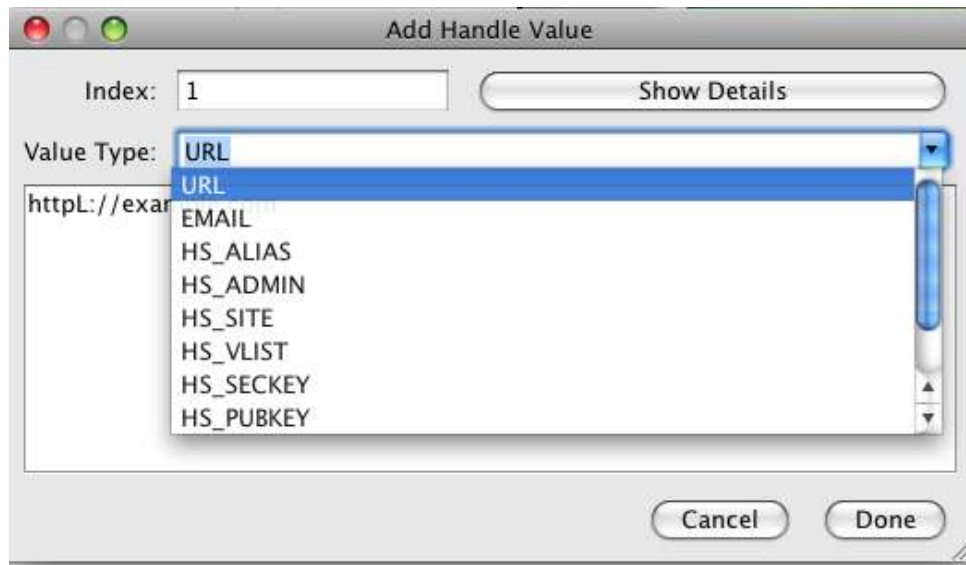
Figure 14: Add Handle Value

For example, selecting Add URL Value will fill in the Value Type with URL. (Selecting Add Blank Value will leave the Value Type blank so that the appropriate type can be selected from the pick list under the down arrow, shown in Figure 14 above.) The URL is added in the text window, in place of the example URL shown.

Clicking **Show Details** will display additional data about the new value being added (see Figure 15). It is only necessary to use Show Details when changes to the default settings are required. The default set of permissions is the recommended practice for most handles. ("Writable by Everyone" permission is not recommended.) Should it be necessary to change the **Index** value or **TTL** (Time To Live) values that affect caching, use this window to change the settings.

TTL stands for "Time to Live" which indicates that maximum number of seconds a handle value can be cached before a handle client must clear the value and retrieve it again from the Handle System. Setting the TTL to a low value forces handle clients to retrieve the handle more often, so low values are more appropriate for handles that change frequently.

The TTL Type provides a choice between "relative" and "absolute". If the TTL Type is "relative" then the TTL value will indicate the number of seconds since being retrieved that the handle value is valid. If the TTL Type is "absolute" then the TTL value indicates the number of seconds after Jan 1st, 1970 12:00 am GMT that the handle value is valid. The absolute TTL Type is useful for handle values that expire or will be updated at a specific date and time.

The default TTL Type is "relative" and the default TTL is 86400 which means that the handle value can be cached for only 24 hours before it being re-retrieved. There are very few situations in which the default settings are not appropriate.

Figure 15: Show Details Window for "Add Handle Value"

In addition to the settings shown in Figure 15, the **Show Details** window for an Administrator Value will display all of the administrator permissions possible for that admin value (see Figure 16). These should be edited with care and only when necessary.
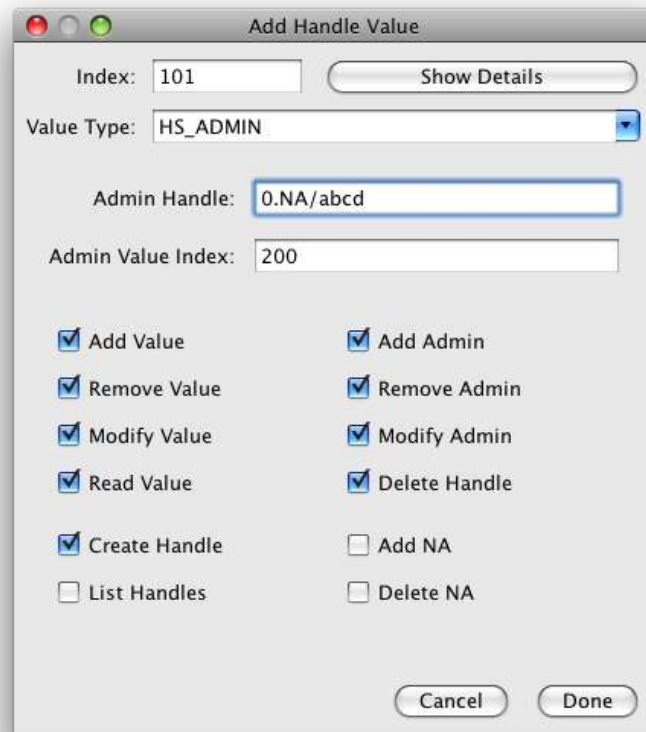
Figure 16: Add Admin Value

Value Types

In addition to URL, EMAIL, and HS_ADMIN, there are additional **Value Types**. They include:

HS_ALIAS – used to add a handle alias as a handle value.

HS_SITE – used to add the site information for prefix handles to indicate where handles with that prefix are resolved.

HS_VLIST – used to define administrator groups with a list of other handle values.

HS_SECKEY – used to add a secret key as a handle value. Typically, the 'public read permission' for this type of value would be turned off.

HS_PUBKEY – used to add a public key as a handle value.

HS_SERV – used to add site information as a handle value.

URN – used to store a value identified as a URN (type not defined or registered).

INET_HOST – used to identify a handle value which has an IP address or host name.

DESC – UTF8-encoded text descriptions of the object identified by the handle.

Additional information on Value Types can be found in the Handle System Informational RFCs.

Additional Options for Managing New Handle Values

A value can be changed after it has been added by clicking on it to select it, and then clicking the **Edit** button. Values can be removed before the handle is created by selecting them and clicking **Remove**. A warning message will display to verify that removing the value is the action you intended.

Create Handle

When all values have been added and are correct, click **Create Handle.** If the creation is successful, the message displayed below in Figure 17 will display. If there was an error that prevented the handle from being created, the message will display the error instead.
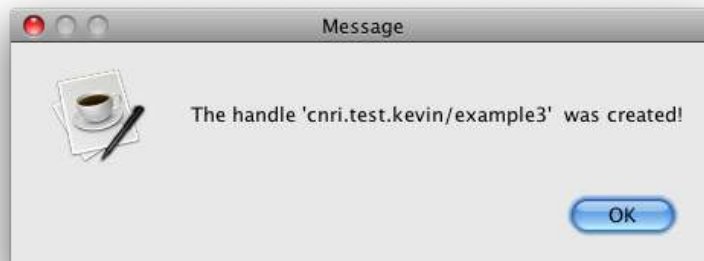
Figure 17: Successful Creation Message

7. Modify

To modify a handle means to change one or more of its values, or remove values. (A handle string itself cannot be "modified". If you create handle 123/456 when you meant to create 123/457, you must delete 123/456 and create 123/457.) The terms "modify" and "edit" are frequently used interchangeably.

In the Default Window text box, type the handle you wish to modify, and click **Modify**. If you have not authenticated yourself, the **Handle Authentication** window will display.

Modify a Handle By Changing Its Values

The **Edit Handle** window displays all the existing values that you have permission to edit. To change a value, click on the value to highlight it, and click **Edit**, or highlight the value and double click.
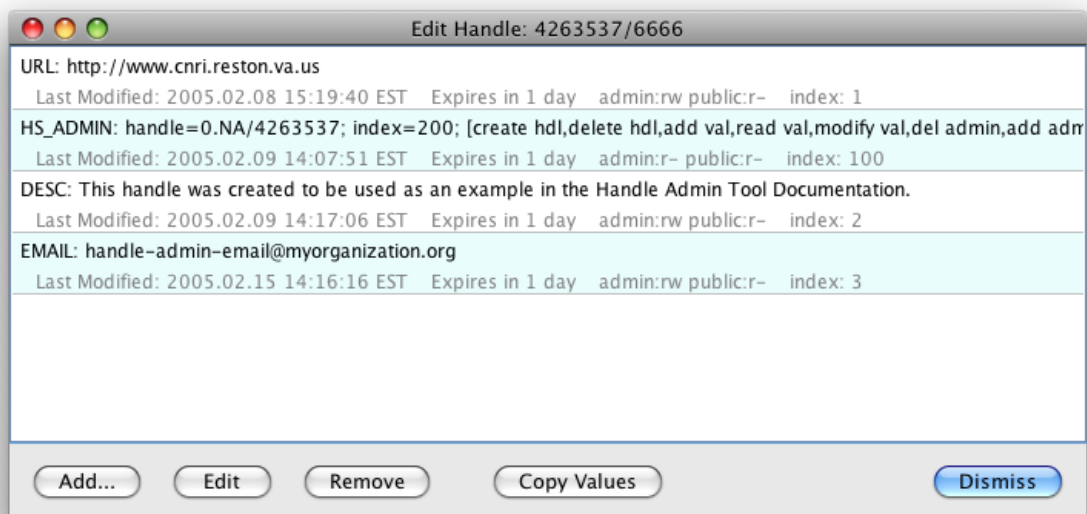
Figure 18: Edit Handle

The **Edit Handle Value** window displays the current data with details hidden. The **Index** value will be grayed out. It cannot be changed. If the **Permissions** or the **TTL** value must be changed, click **Show Detail**. Enter the change and click **Done**.
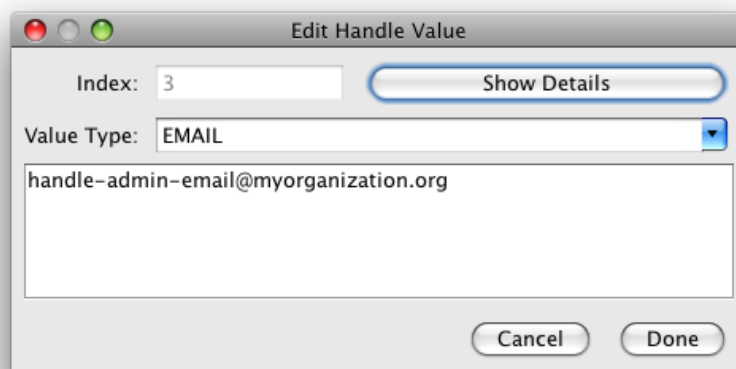

Figure 19: Edit Handle Value for Email

The Edit Handle window may also be retrieved following a LookUp by clicking on the **Edit Handle** button in the **View Handle** window.

8. Remove Handle Value

To delete a selected value from a handle (not a handle itself) select and highlight the unwanted value and click the **Remove** button in the **Edit Handle** window. A Delete Confirmation message will appear to confirm your choice before the handle value is removed. (see Figure 20 below).
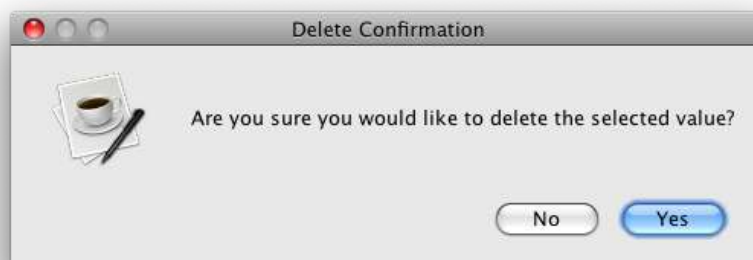

Figure 20: Remove Handle Value Confirmation

9. Delete Handle

To delete a handle means to remove it permanently from the Handle System. Enter the handle to be deleted into the Default Window, and click **Delete**. If you have not authenticated yourself, the Handle Authentication window will display. A confirmation message will display to verify that deleting the handle is the action you intended. The action cannot be undone.

Figure 21: Delete Handle Confirmation

10. Batch Processing

Handles can be created, modified or deleted in "batches". Batches can be submitted via the Handle Tool, or by using the command line utility described in the Batch Operation section of the Handle Technical Manual (http://www.handle.net/tech_manual/Handle_Technical_Manual.pdf).

All batch files are plain text format lists of create, modify or delete operations for specified handles. One batch file can have more than one type of handle operation. (See the Handle Technical Manual chapter on *Batch Operations* referenced above for a list of operations, formats, examples, and instructions for creating batch files.)

The **Batch Processor** tool in the Handle Tool submits batches to the Handle System, provides output for review including actions taken during the process, and reports success or errors encountered during the process.

You can watch the batch upload process by selecting **Open Batch File** from the File Menu on the Default Window.

Figure 22: Open Batch File Option

An Open Batch File window will display with which you can browse the desktop to find the batch file. The Batch Processor will start, and the path to the selected file will display in the Batch Processor window.
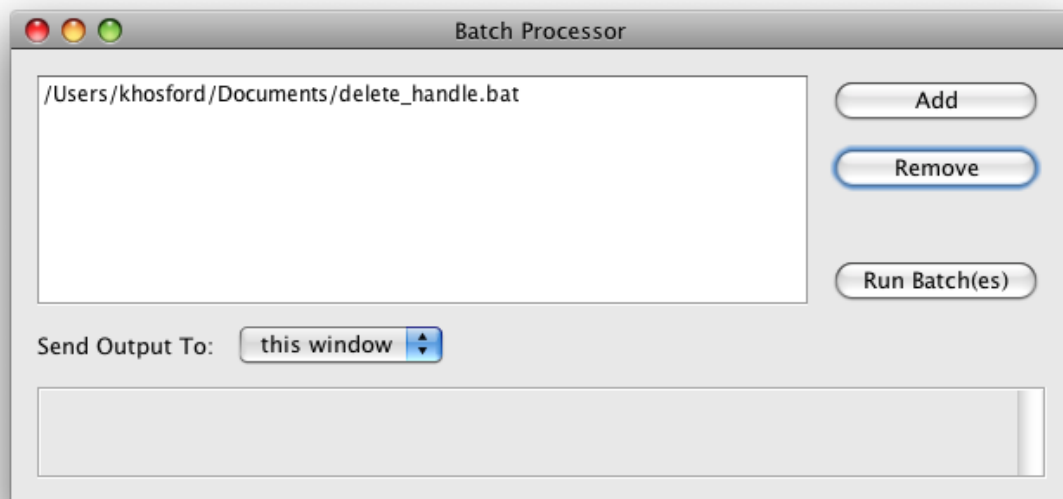

Figure 23: Batch Processor With Single Batch File Added

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The **Batch Processor** can also be started by selecting **Batch Processor** under the **Tools** menu on the Default Window.
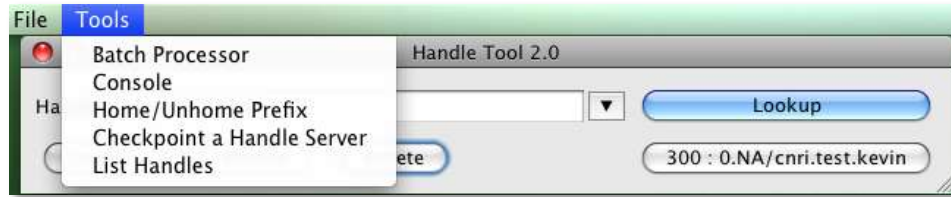

Figure 24: Starting the Batch Processor

Use the **Add** button to add more batches to the operation, or highlight a batch file name and select **Remove** to delete a previously selected batch file. The output (log) from the batch process can be directed to display in the Batch Processor window (See Figure 25) or directed to a file. If Send Output To: is changed to a file, use the **Choose File** button to bring up the Select Output File window for choosing a file for the output. See Figure 25 below.

Figure 25: Send Output To a File

Click on **Run Batch**(es) when all batches have been listed. If you have not authenticated yourself to the Handle System, the Handle Authentication window will display before the process begins. However, if authentication is specified in the batch file, then that is used instead. A message will display when the processing is complete.
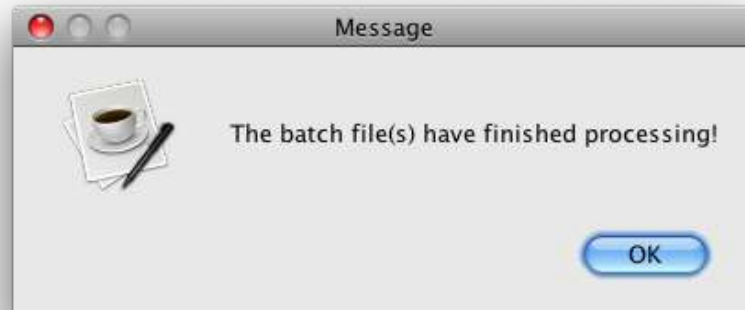
Figure 26: Processing Complete Message

The Output from a batch process shows the handle operations that were processed, any errors that occurred, and the summary of each batch (number of items, number of lines in the file, number of successful items, and processing time).

The output displayed in Figure 27 indicates that the batch failed to process, and provides diagnostics explaining what caused the failure. Success/Total Entries would be 1/1 if the batch had processed successfully. The batch should be edited and resubmitted. There would be output for each batch if more than one is submitted.
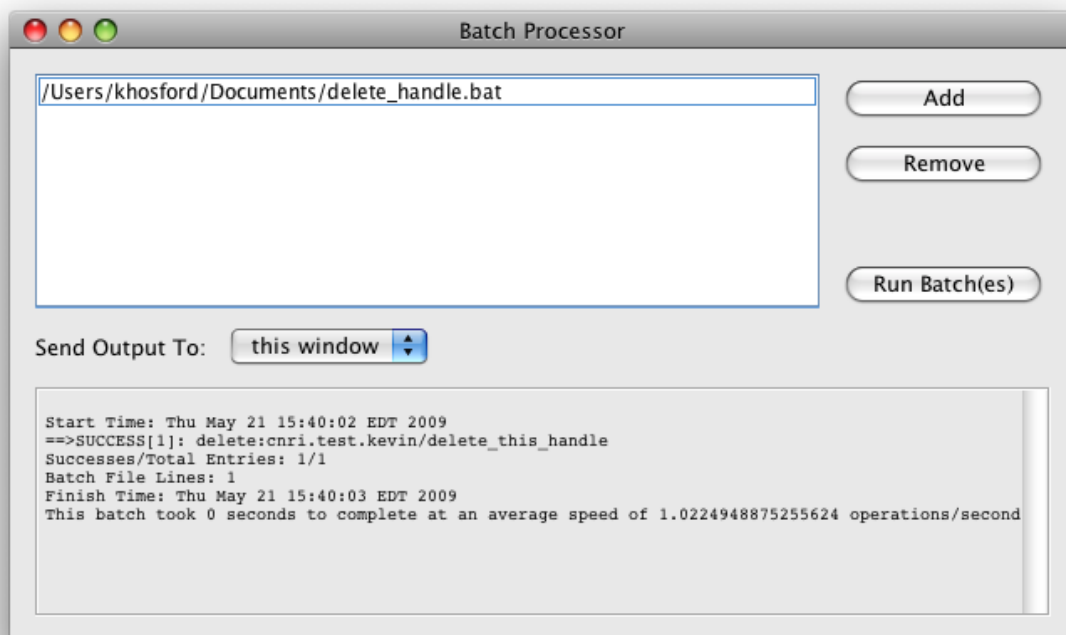

Figure 27: Batch Processor with Output Displayed

11 Homing/Unhoming a Prefix

"Homing" a prefix on a particular site tells the server(s) that make up the site that they are responsible for the given prefix. When a resolver asks for a handle under that prefix, the server can say "Here it is." or "It doesn't exist." or " I don't have it." Permission to Home and Unhome is in the server admins parameter in the config.dct file in the server directory.

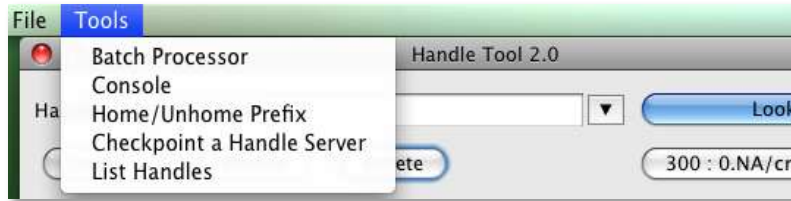From the Tools menu, click on the Home/Unhome Prefix. See Figure 28 below.

Figure 28 Home/Unhome Prefix Tool Menu

Enter the prefix to be Homed or Unhomed, and select either "Home Prefix" or "Unhome Prefix". The site information can be provided either by selecting a siteinfo.bin file (default), or by selecting "By Address" and providing the Server Address and Server port number. See Figure 29.

Figure 29 - Home detail