



JDSU

PathTrak™ UCD Import Tool Users Guide

JDSU PathTrak
Return Path Monitoring System

Section 1: Overview

The UCD Import Tool is a standalone application developed to facilitate import of Upstream Channel Descriptor (UCD) information needed by PathTrak to provide MACTrak™ capabilities in WebView versions 2.5 and higher. Features requiring UCD import to operate are MAC Address identification, Codeword Error (CWE) detection, and full operation of impulse noise detection algorithm.

This application is independent of WebView and can be installed on as many PC's as desired in addition to the WebView server machine itself. It will install on the WebView server machine by default at the time of WebView installation and will be updated automatically if required upon each WebView upgrade.

Section 2: What Is a UCD and Why Is It Needed For MACTrak?

UCD: **U**pstream **C**hannel **D**escriptor

Information is sent on the downstream DOCSIS channel(s) by the CMTS during the Range/Register process and typically every two seconds thereafter to all cable modems telling them how to communicate on the DOCSIS network. Examples of UCD parameters are modulation type, preamble details, FEC details, scrambler seed, etc. WebView needs some of this information to properly decode customer modem or DSAM meter packets and extract the MAC address plus detect the presence of correctable or uncorrectable CWE's.

Section 3: How Does the UCD Import Process Work?

The UCD Import Tool automates the process of the capturing needed UCD information from the downstream using a DSAM. The tool controls the DSAM and commands it to take the appropriate actions to begin the ranging process, capture the necessary information from the downstream, and either send it directly to the WebView server or store it locally depending on the capture method in use.

As part of the QAMTrak Analyzer automatic channel scan process QAMTrak will detect all upstream channels present on a node with at least minimal modem traffic and attempt to match them to UCD's stored in the WebView database. If a match is made between a carrier and a stored UCD the "MACTrak Available" column in WebView will be populated with a "Yes". If a match cannot be made this column will not populate indicating that an appropriate UCD is not available.

Section 4: When Are UCD Imports Needed:

As noted above PathTrak needs UCD information to achieve full functionality. Obviously when a MACTrak-capable Webview server is first installed UCD import(s) will be needed. Exactly how many imports will be necessary to cover all nodes on a server will vary system to system. UCD's will frequently be common across ports within a CMTS chassis and sometimes common across ports of the same CMTS type throughout a system. In the ideal case scanning one downstream could contain all UCD's needed to cover an entire system, although frequently additional scans will be required to cover multiple CMTS types or unique port configurations within a CMTS type.

It is important to note that changing a carrier center frequency will not drive the need for a new UCD import. The QAMTrak Analyzer can be commanded to rescan a node, if only the center frequency was changed the carrier will be automatically detected at its new frequency and matched to the same UCD.

Section 6: Installing The UCD Import Tool:

1. Launch "install ucdImportTool.exe"
2. Select the directory to install the tool into, it is recommended to accept the default

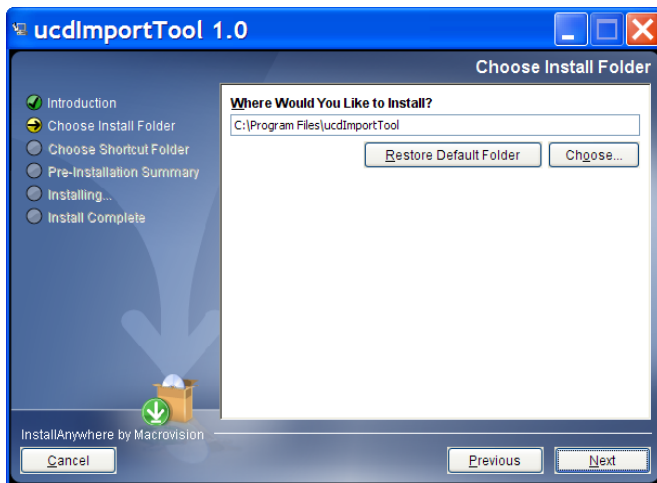


Figure 1 - Choose Install Folder

3. Select the shortcut folder – again the default is recommended.

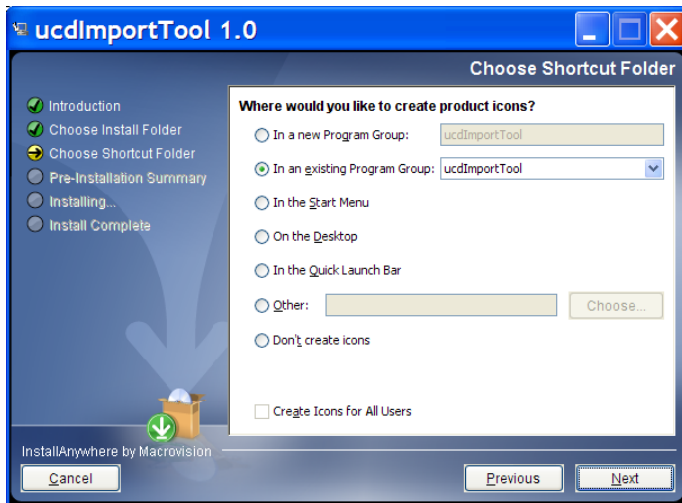


Figure 2 - Choose Shortcut Folder

4. Once all install options have been confirmed select Install to continue



Figure 3 - Pre-Installation Summary

5. Once installation is complete a notification screen will be presented informing of the successful installation

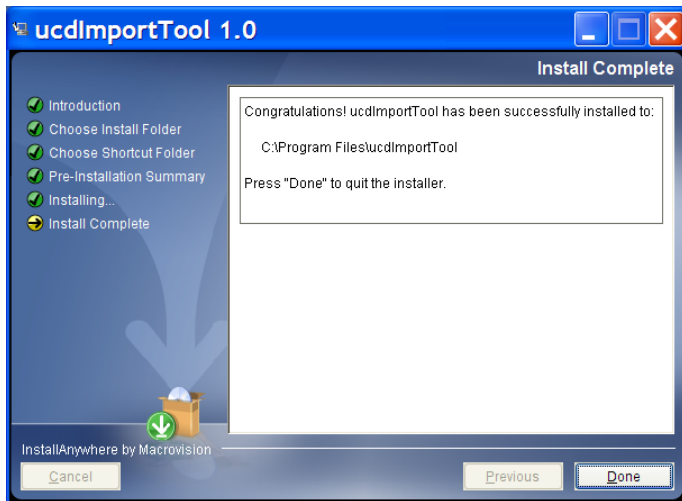


Figure 4 - Successful Install

Section 7: Configuring the UCD Import Tool

There are only two configurable items in the UCD Import Tool , WebView Server IP and the DOCSIS Annex. The configuration screen shown in Figure 5 can be accessed by selecting the **File**→**Properties** menu items from the main UCD Import Tool screen. If you plan to use the DSAM Direct Import method enter the ip address of the WebView server in the appropriate box. If the tool is being installed on the WebView server itself than “localhost” is an acceptable entry.

Next configure the DOCSIS Annex. The default is Annex B, common in North America, South America, Korea, Taiwan, and Japan. Annex A is commonly used in Europe, China, and Australia.

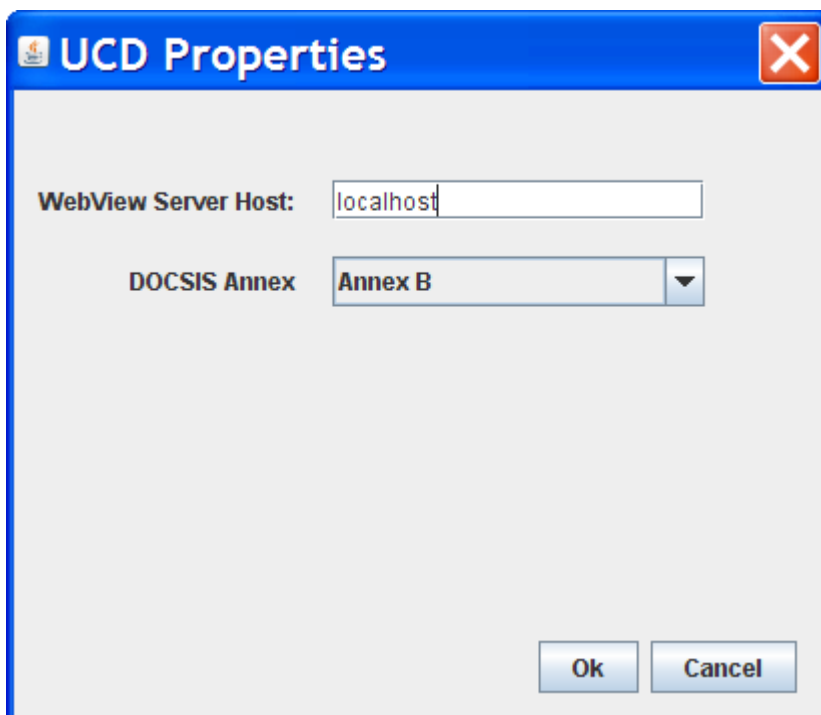


Figure 5 - UCD Properties Dialogue Box

Section 8: Getting To Know The UCD Import Tool Interface

When the UCD Import Tool is launched the following screen will be displayed. Note the database connection status indicator in the bottom left corner of the screen, this indicates whether or not network connectivity has been established with the WebView UCD database. If operating in Offline mode (no LAN connectivity to WebView server) the tool will search for the server ip address for about 20 seconds, after which an error dialogue box will appear indicating that it could not connect to the server database. See Figure 11 for an example of the error dialogue box.

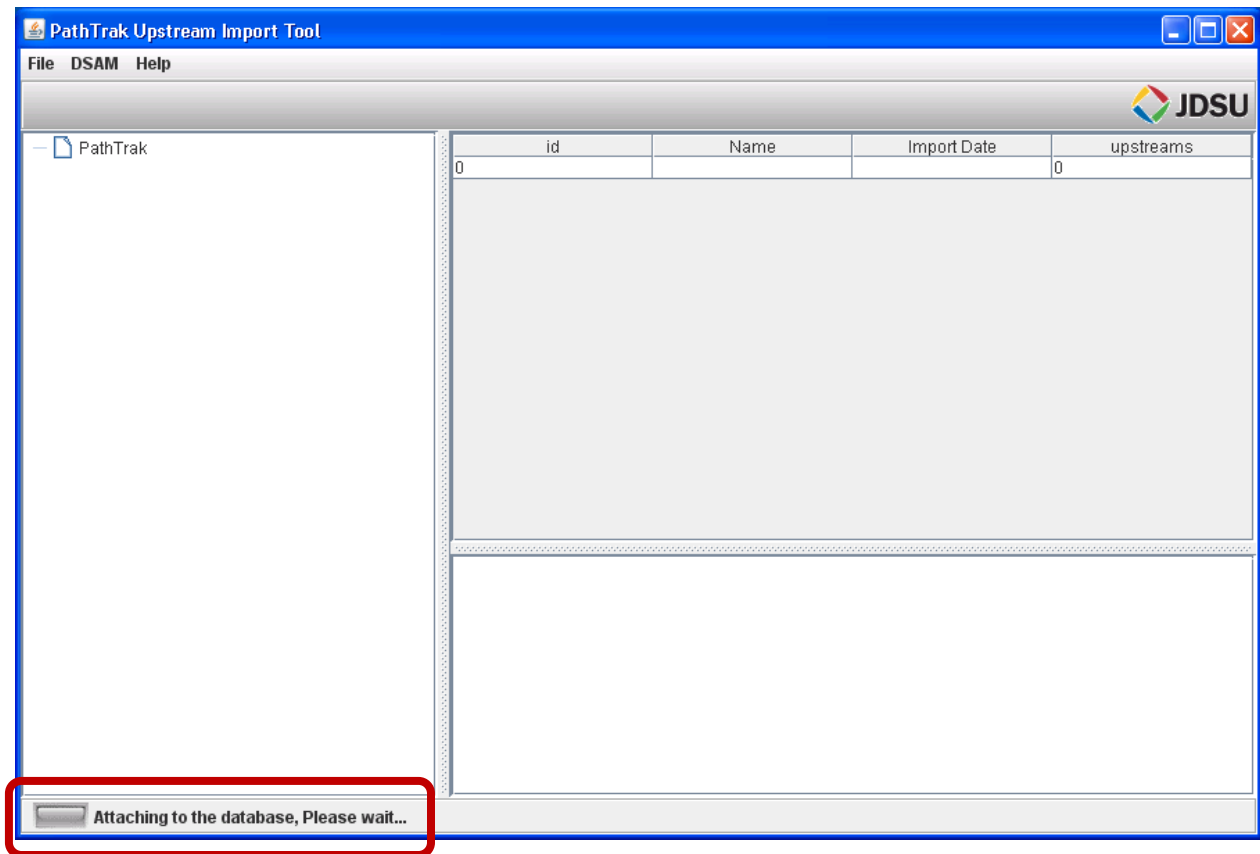


Figure 6 - Attaching To Database Message

If the PC running the UCD Import Tool has network connectivity to the WebView the database a screen resembling the one below will appear. When the server name is selected (top of the tree), the right pane will display details about each import in the database including name, date captured, and number of upstreams detected.

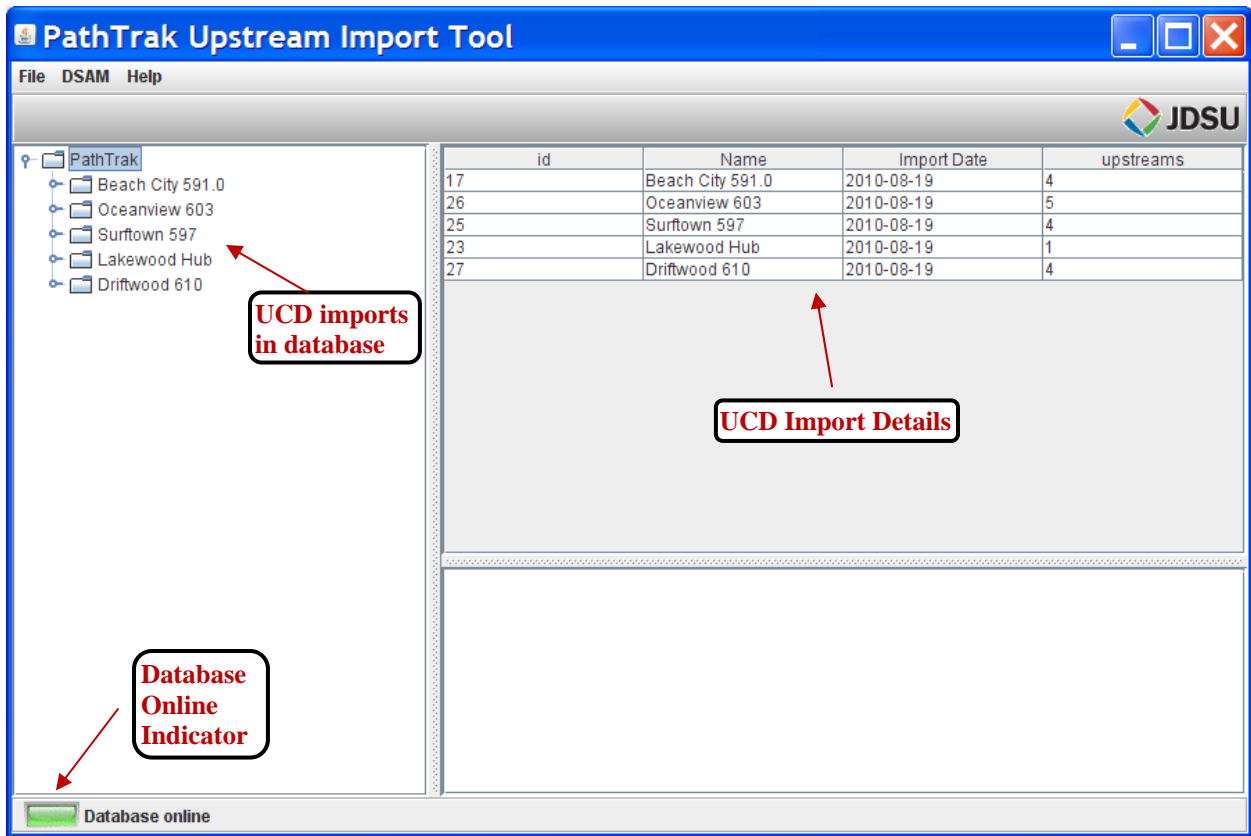


Figure 7 - UCD Import Tool Main Screen

Clicking on any of the circles next to each UCD Import will result in a screen resembling the one below, detailing upstreams detected during that scan.

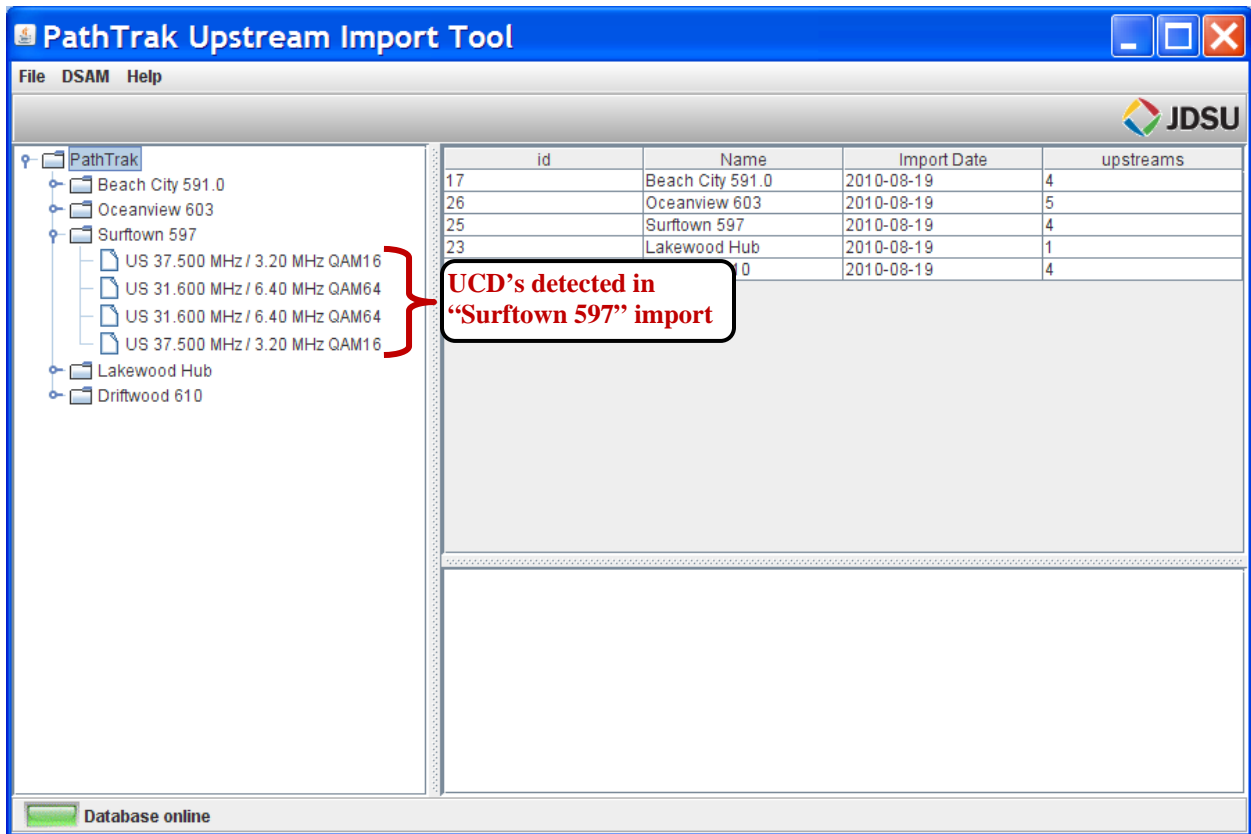


Figure 8 – UCD's per Downstream Frequency Detail

Drilling down one level deeper into a single UCD will reveal the specific parameters for that UCD. This is more detail than is needed by the standard user but can be helpful in diagnosing differences between CMTS ports.

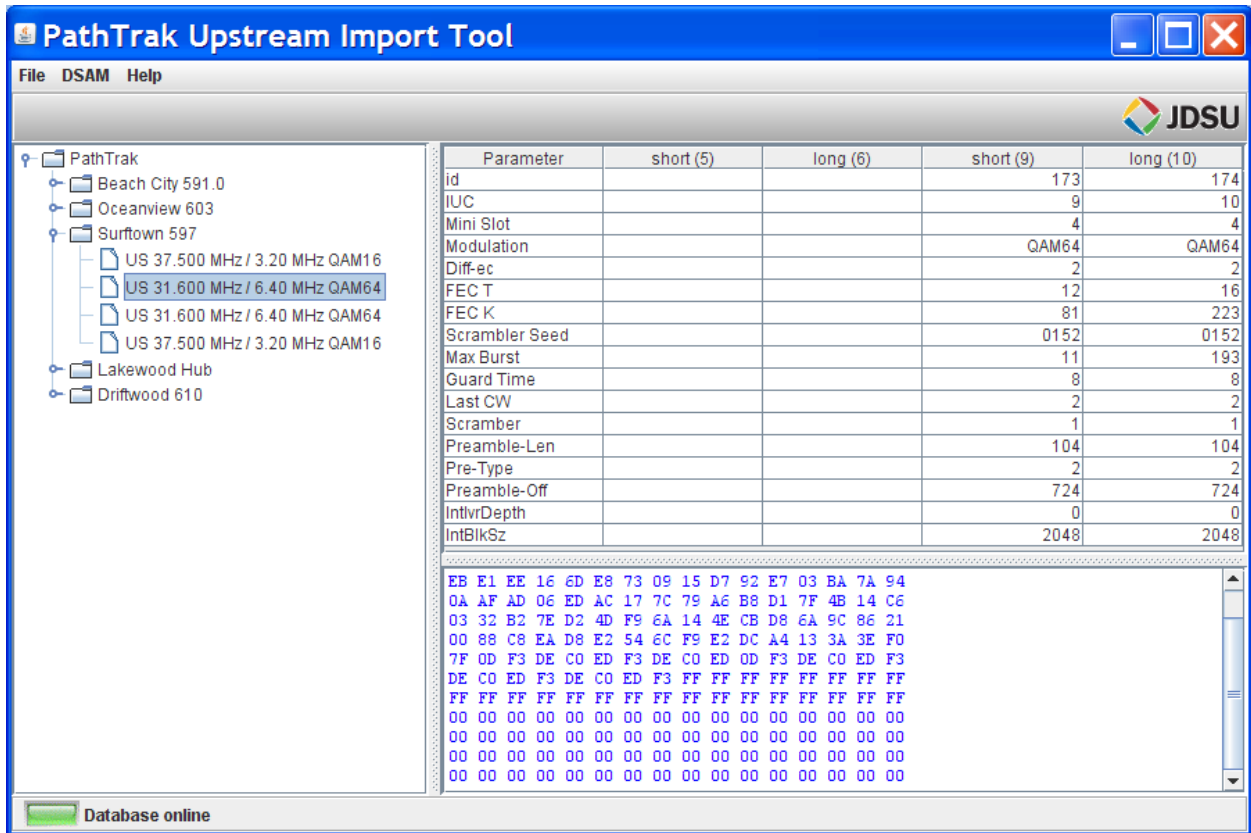


Figure 9 - Individual UCD Detail

Section 9: Capturing UCD Information From The HFC:

There are several methods which can be used to capture UCD information from the HFC. Which is appropriate for any given situation depends primarily on whether a serial communications channel can be established between a DSAM and the PC running the import tool and whether network connectivity to the WebView server PC is available in close proximity to a downstream test port.

The first method assumes that the WebView server resides on an IT subnet not easily accessible from the location of a downstream access point. In this case the UCD data will be collected locally on the PC running the UCD Import Tool and later transferred to the WebView server via LAN, thumb drive, or email.

Requirements:

- DSAM with firmware version 3.6 or higher
 - A DOCSIS® 2.0 DSAM is required if DOCSIS 2.0 downstreams are to be scanned. A DOCSIS 1.1 DSAM will not be able to lock on a DOCSIS 2.0 downstream and therefore no UCD's will be captured for that downstream.
- DSAM serial cable (PN:1020-00-0005)
- PC with UCD Import Tool installed

- Access to downstream test point for each CMTS port to be scanned (can be CM test port at CMTS, does not have to be downstream only test point)
- A list of downstream DOCSIS channel frequencies to be scanned



Figure 10 - Direct DSAM Method

1. Connect the DSAM's RF port 1 to the DOCSIS downstream
2. Connect the DSAM's serial cable to the PC with the ucd import tool installed
3. Launch the UCD Import Tool. Since you will not have connectivity to the WebView server, the tool will search for the server IP for approximately 20 seconds and then display the error message below that the server could not be found. This is normal behavior.

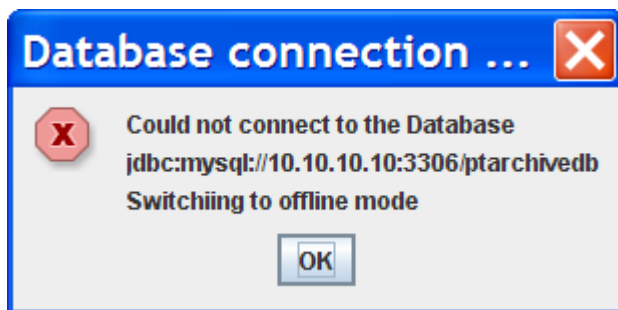


Figure 11 - Database Connection Error Dialogue

4. From the UCD Import Tool menu select "**Import DSAM Direct**". The tool will display an import config dialog box.
5. Enter the **Import Name** and the **DOCSIS Downstream Channel Frequency** and click the **Import** button. It is recommended that descriptive file names be used at this step to simplify future maintenance of UCD database.
6. The application will search the serial ports for the connected DSAM and initiate a DOCSIS ranging cycle. As a result of the ranging initiation the DSAM will capture and send the UCD information to the tool. During the scan the Status window will update periodically and the activity bar will update to indicate the scan is still in progress.
7. When completed the dialog will display the upstreams detected, the word **Done**, and illuminate the **Save** button. Press the **Save** button to save the UCD import log file to the local PC. The log file will be saved to the "/Program

Files/ucdImportTool" directory if the default installation location was chosen. Repeat steps 4-7 for other downstream frequencies available from the current access point.

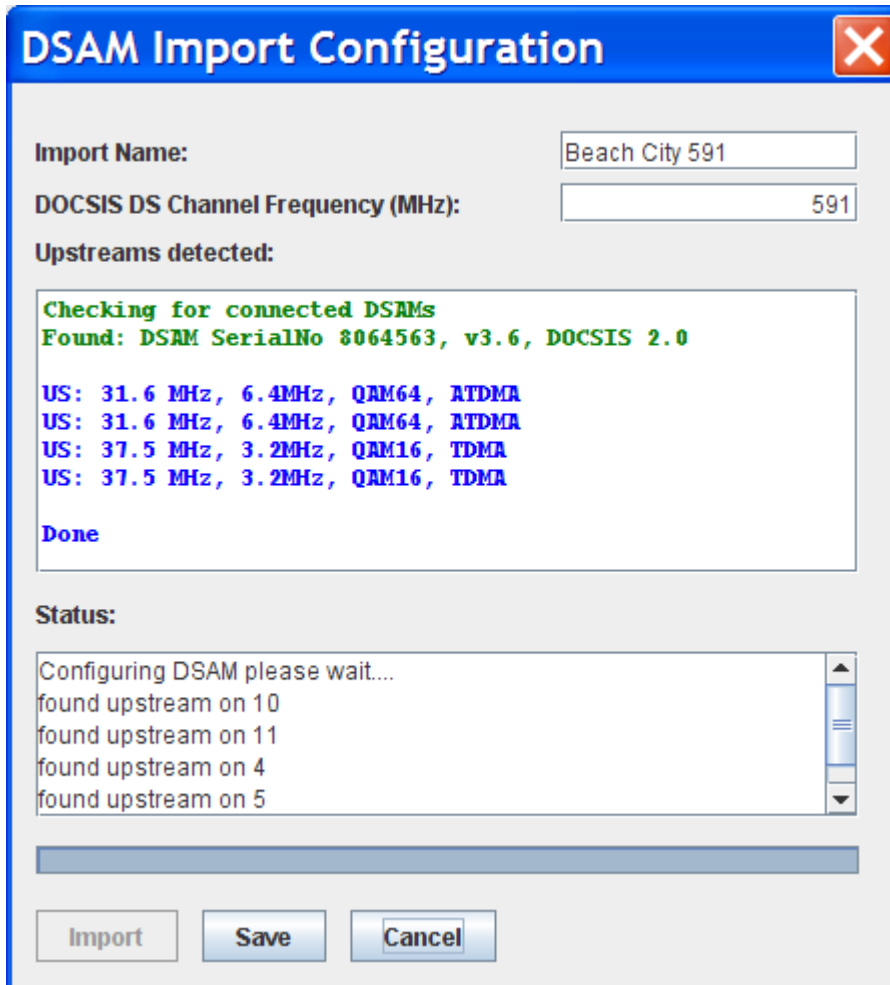


Figure 12 - Example of Successful UCD Import

8. Transfer the file(s) from step 6 to the WebView server via flash drive, email, or other method at a later time
9. From WebView server or any PC with connectivity to the WV server, launch the tool and select **File, Import DSAM File**, select the import file from above, enter the **Import Label** (what will be displayed in tree structure) and click **OK**. As an alternative the drag and drop method can be used to import log files as well, see Section 10 for more details on this.
10. After successful import the **Import Label** should be visible in tree structure.

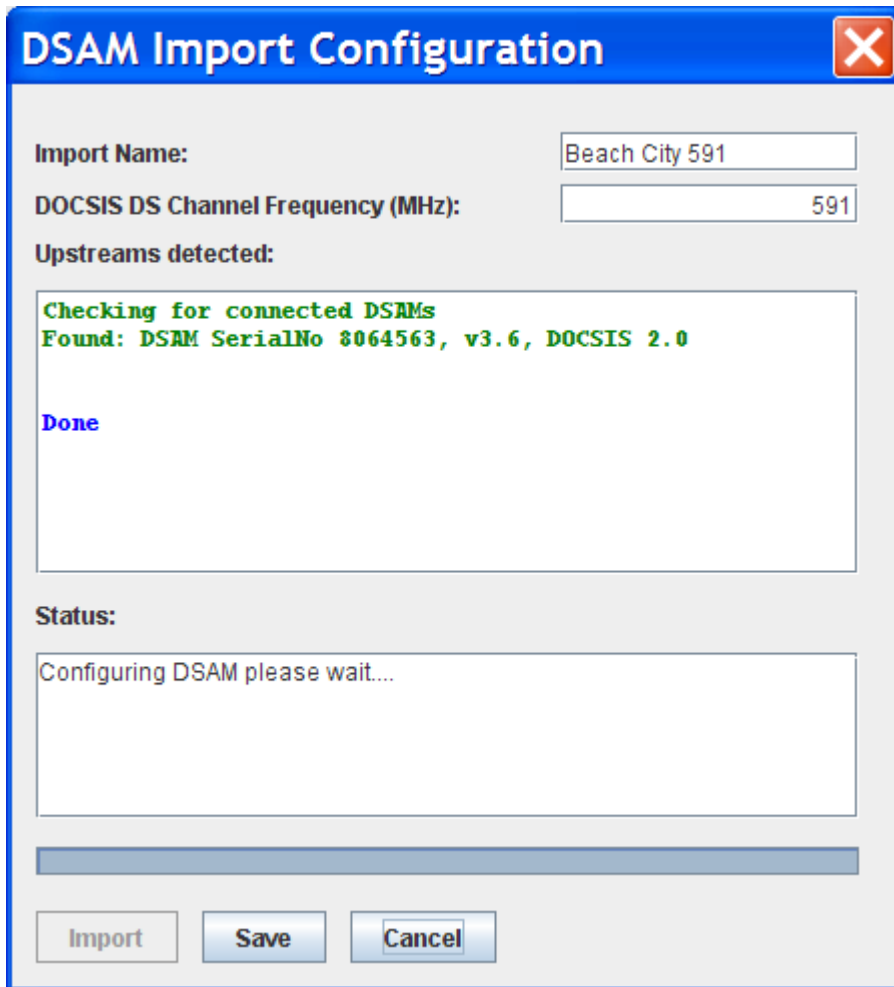


Figure 13 - Example of Import With No UCD's Found

The second method is perhaps the most commonly used as it does not require that the technician located at the desired downstream test point have access to the UCD Import Tool or know how to use it, and does not require a DSAM serial cable. The WebView admin can essentially remote-control the tech's DSAM to obtain the capture and import directly into the WebView database (if PC has LAN access to DSAM and WebView server simultaneously) or saved locally on the PC for later import into WebView database.

Requirements (Tech)

- DSAM with firmware version 3.6 or higher
 - A DOCSIS 2.0 DSAM is required if DOCSIS 2.0 downstreams are to be scanned. A DOCSIS 1.1 DSAM will not be able to lock on a DOCSIS 2.0 downstream and therefore no UCD's will be captured for that downstream.
- Ethernet access to WebView Admin or person running the UCD Import Tool.
- Access to downstream test point for each CMTS port to be scanned (can be CM test port at CMTS, does not have to be downstream only test point)

Requirements (WebView Admin)

- PC with UCD Import Tool installed
- Ethernet access to tech with DSAM at downstream test point

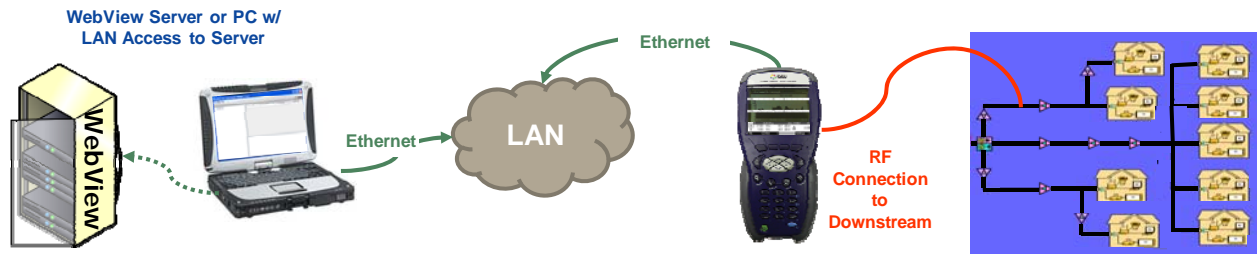


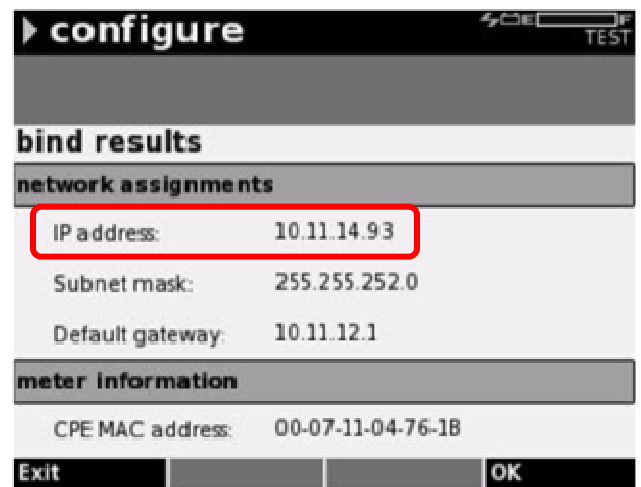
Figure 14 - Remote DSAM Method

DSAM Instructions

1. Connect the DSAM's RF port 1 to the DOCSIS downstream
2. Connect the DSAM's Ethernet port to a LAN that access to the PC with the UCD Import Tool installed
3. Configure the DSAM in Remote DSAM mode and communicate IP address of the DSAM to WebView Administrator

How to access the Remote DSAM mode:

- Press the round **Config** button on the DSAM
- Select the **General** softkey on the DSAM screen
- Scroll down to the **Diagnostic** menu item and hit the enter key on the DSAM
- Scroll down to the **Use Virtual DSAM** menu item and hit the enter key on the DSAM
- Note the IP address on DSAM screen



UCD Import Tool Instructions:

1. From the **DSAM** menu of the UCD Import Tool menu select "**Import Remote DSAM**"
2. The tool will prompt the user for the DSAM's IP address, Enter the IP address and press **Connect**. The tool will display an import configuration dialog
3. Enter the Import name and the DOCSIS Downstream channel frequency and click the **Import** button. It is recommended that descriptive file names be used at this step to simplify future maintenance of UCD database.
4. The application will search the serial ports for the connected DSAM and initiate a DOCSIS ranging cycle. As a result of the ranging initiation the DSAM will capture and send the UCD information to the tool. During the scan the Status window will update periodically and the activity bar will update to indicate the scan is still in progress.
5. When complete the dialog will display the upstreams that were detected and illuminate the **Save** button. Press the **Save** button to save the UCD info.

The above method can be used in an offline mode if connectivity to the WebView Server is not available to the PC running the UCD Import Tool. Instead of importing UCD information directly to the WebView server the information can be stored locally on the PC controlling the DSAM and later transferred to the WebView server for import.

Section 10: Importing Previously-Captured UCD Information

There are two primary methods of importing saved UCD Import log files into the WebView database. The first is to select "Import DSAM File" from the File menu of the tool and navigate to the location where the file(s) are stored. The UCD Import Tool will save log files to the base directory at which the tool is installed (Will be /Program Files/ucdImportTool/ if the default install location was chosen at time of program installation). If more than one file is to be imported a simpler method is to drag and drop files from another application directly into the left pane of the tool under the server name. For example a user could navigate a Windows Explorer window to a directory where many UCD Import log files are stored, multi-select the entire group, and drag and drop into the left pane. See illustration below for more details.

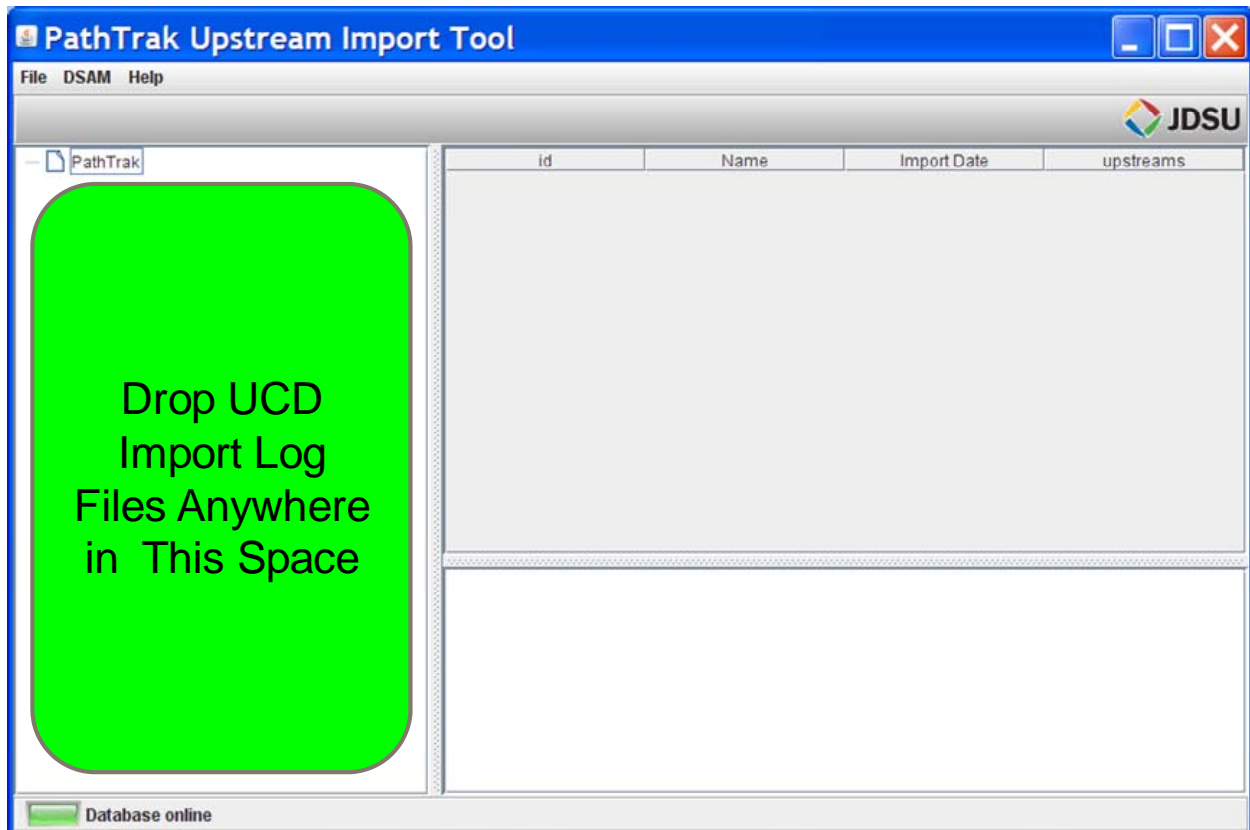


Figure 15 - UCD Import Tool Main Screen

Section 11: UCD Database Maintenance

There are no provisions within WebView to automatically delete outdated, duplicate, or otherwise unnecessary UCD import logs from the database. If the database is allowed to grow too large channel scan times in the QAMTrak Analyzer can be affected negatively. It is recommended that UCD imports be named descriptively and intuitively to make maintenance easier. If descriptive file names are used it will be possible to determine which previous scans can be deleted when an updated scan is acquired. It is also suggested that the population of personnel empowered with importing UCD information directly into WebView is controlled for the same reasons.

Deleting of obsolete UCD scan can be accomplished by right-clicking on the UCD Import filename from the tree structure and selecting Delete.

Section 12: Frequently Asked Questions:

Q: I entered my downstream frequency and hit Import, the tool ran for a minute or two and then indicated it was Done but no UCD's were captured. What is wrong?

A: Possible causes for successful completion of UCD import with no UCD's found:

Wrong downstream frequency chosen. If frequency chosen is not a valid DOCSIS downstream the result will be a completed scan with no UCD's found.

If there is no RF input to the DSAM or if the RF level reaching the DSAM is too low the result will be a complete scan with no UCD's found.

Wrong **DOCSIS Annex** chosen in the **UCD Properties** configuration screen

Q: When I launch the UCD Import Tool it seems unresponsive for the first 20 seconds or so, what is going on?

A: If you are using the UCD Import Tool in Offline mode (you do not have LAN connectivity to the WebView Server) there will be about a 20 second delay while the tool searches for the server IP before it times out. This timeout value is a default in the programming language of the tool is not user-configurable.

Q: I frequently see multiple UCD's imported with the same carrier frequency and modulation type for a given downstream. Why is this?

A: It has become quite common for a single downstream to be shared across multiple nodes in an HFC network. Different UCD parameter settings may be desired for upstreams on the different nodes, which will frequently be associated with different ports on the CMTS. For this reason multiple UCD's will be transmitted on the downstream allowing the CMTS flexibility in assigning appropriate UCD's to modes on each of the nodes covered by the single downstream.

