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PLDU User Guide
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Using the Production Line Descriptor Update Utility (PLDU)

Purpose: The PLDU is used to update device firmware and/or device descriptors such as the VID/PID, Manufacturer and Product ID strings in a production line environment using Windows 2000 SP3 and SP4. Under Windows XP, this can be used to update device descriptors or firmware if all the devices have same descriptor data. Otherwise, each device will enumerate as a MSC device and the utility needs to keep swapping drivers which is a time consuming operation and not really effective under a production line environment. This application is intended to be used by OEMs in their production line environment and is not intended for other users. The utility features a simple interface that displays success or failure of the programming operation in graphical form using either a green box with a checkmark (PASS), or a red box with an "X" (FAIL). The PLDU is capable of programming one device at a time and takes approximately 12 seconds to complete.

Features:

1. Firmware update.
2. Descriptor (NVRAM) update.
3. Read descriptor (NVRAM) data from device.
4. GUI editor to edit and create DAT files.
5. Graphical and Text status display.
6. Automatic serial number increment after every descriptor update.
7. Break up of serial number to YY-MM-DD-S-SN format where
 - YY - Year (2 digits)
 - MM - Month (2 digits)
 - DD - Day (2 digits)
 - S - Station number (1 digit)
 - SN - Serial number (5 digits)

Application Behavior:

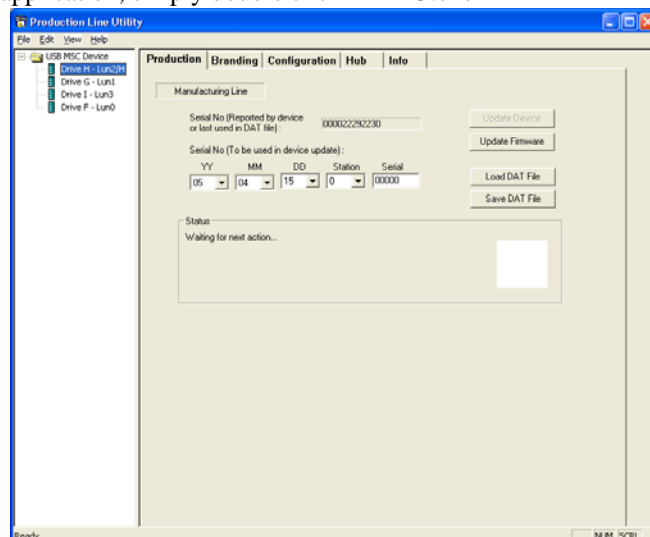
-
1. When the application is run with no SMSC devices plugged in, all controls should be disabled.
 2. While the application is running, the controls should be dynamically enabled and disabled as the device is plugged and unplugged.
 3. The button controls on all tabs except the "Production" tab will always be disabled.
 4. The "Update Device" button will be enabled only after loading a DAT file.
 5. If the "Update Firmware" button is clicked, the utility removes reference to a previously loaded DAT file and disables the "Update Device" button.
 6. Any changes made to the YY-MM-DD-S-Sno controls will be lost if user switches to a different tab and returns to the "Production" tab. The changes should be saved immediately to a DAT file before switching tabs. If the user needs to switch tabs to make changes in those tabs, then those changes should be made first and lastly switch to the "Production" tab. Now the user can make necessary changes to the formatted serial number controls and can be saved to a DAT file that will include all the changes done on the other tabs as well. However, **NOTE THAT THIS IS THE BEHAVIOR ONLY WHEN A DAT FILE HAS NOT BEEN LOADED ALREADY AND THE BUTTON "Update Device" IS DISABLED.**
 7. When a DAT file is loaded and the "Update Device" button is enabled, following behavior is to be expected;
 - a. Changes made to serial number controls in "Production" tab will be lost if user changes tabs. However, these changes will be active for the user to save to a DAT file or update to the device immediately after the changes are made and before switching tabs.
 - b. Changes made to controls on other tabs will be lost and can never be saved to a DAT file or updated to a device.
 - c. Changes made to serial number controls, though available for an immediate update to a device, will be lost after the update completes if those changes don't reflect the current date (YY-MM-DD).
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Button Behavior:

1. Update Device
 - a. Enabled only after a DAT file is loaded
 - b. Disabled whenever a firmware update is done
 - c. When clicked, app reads the serial number from the YY-MM-DD-S-Sno controls and embeds this serial number into the DAT file that is loaded in memory to write to the device.
 - d. After every update, the DAT file is updated to reflect the last serial number used to write to the device and also automatically increments the serial number.
2. Update Firmware
 - a. Prompts for a DFU file (only the first time) and uses this file to update the device's firmware.
 - b. Always ignores any changes done to the controls in all tabs. The utility always reads the descriptor data from the device and embeds this into the DFU file image before writing the DFU file image to the device. Thus, after a firmware update, the device's descriptor data should be the same as it was before the update.
 - c. If a DAT file was previously loaded, clicking this button would unload the DAT file and disable the "Update Device" button.
3. Load DAT File
 - a. Loads a DAT file into memory.
 - b. Enables the "Update Device" button
 - c. Any changes done to controls on all tabs are lost while switching tabs.
 - d. Changes done to YY-MM-DD-S-Sno controls are available for saving to a DAT file or writing to device only immediately after the changes are made.
 - e. When a DAT file is loaded, the YY-MM-DD-S-Sno controls are set to reflect current date, same station number digit as in the DAT file and either a default value of "00000" or DAT file's last 5 digits of serial number value incremented by one. The default value of "00000" is used whenever the DAT file's YY-MM-DD digits do not match the current date.
4. Save DAT File
 - a. Saves the values from the controls to a DAT file.
 - b. Refer to earlier sections to find out when changes to controls are lost.
 - c. After saving to DAT file, this DOES NOT automatically load that DAT file into memory.

Setting Up the PLDU Application

1. First attach a USBxxxx device to the host. To start the PLDU application, simply double click "PLDU.exe" executable.
2. After the main program dialog opens, the production tab displays four options:
 - a. Update Device—Updates NVStore descriptor data such as VID/PID, Manufacturer and Product ID strings from the "EEPROM.DAT" file. Note – this option is not available until a DAT file is loaded.
 - b. Update Firmware—Updates the device firmware using a DFU update file with the .dfu extension.
 - c. Load DAT file—Loads a DAT file into memory.



- d. Save DAT file–Saves the values from the controls to a DAT file.

Using the PLDU to Update Device Descriptors

1. The first operation that should be performed on a USBxxxx device coming off the production line is to update its descriptors. To do this, first press “Load DAT file”. The application will prompt you to select the EEPROM.dat file that will be used to program the descriptors. Once the EEPROM.DAT file has been selected the option to Update Device will now be available.
2. Click the “Update Device” button. The PLDU application will swap the mass storage class driver for the SMSC DFU driver.
3. Once the DFU driver swap has completed, the data from the eeprom.dat file that is loaded is programmed into the device. The operation takes about 12 seconds to complete. Provided the programming was successful, the Status box displays a green box with a checkmark and reports success. At this point the user simply detaches the device and reattaches the next device to be programmed. The PLDU automatically updates the EEPROM.DAT file to the next unique serial number.

