ACE Installation and Licensing Guide (UG002)

All Achronix Devices

Achronix®
Data Acceleration

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Chapter - 1: General Information and Preparation

Supported Operating Systems

Supported operating systems are: Windows and Linux. For details on versions, releases and kernels, refer to the section, "System and Tool Requirements," of the release notes for the specific ACE download or delivery.

Minimum Memory Requirements

Criteria		Amount
Minimum	≤100k LUTs	32 GB
Recommended	>100k LUTs	64 GB

Download the Software

Obtaining Credentials for Download Access

Downloads from Achronix are available via a secure FTP (SFTP) server. The Achronix web site provides a hosted FTP client enabling downloads directly from the site, avoiding the need for separate FTP software.

To gain access to the download server you must request login credentials. At www.achronix.com, click **Technical Support → Getting Started with Achronix → Learn more**. From there you can find directions on how to register for a support account at Achronix. After reviewing your authorization request, Achronix will send an automated email containing your username and password.

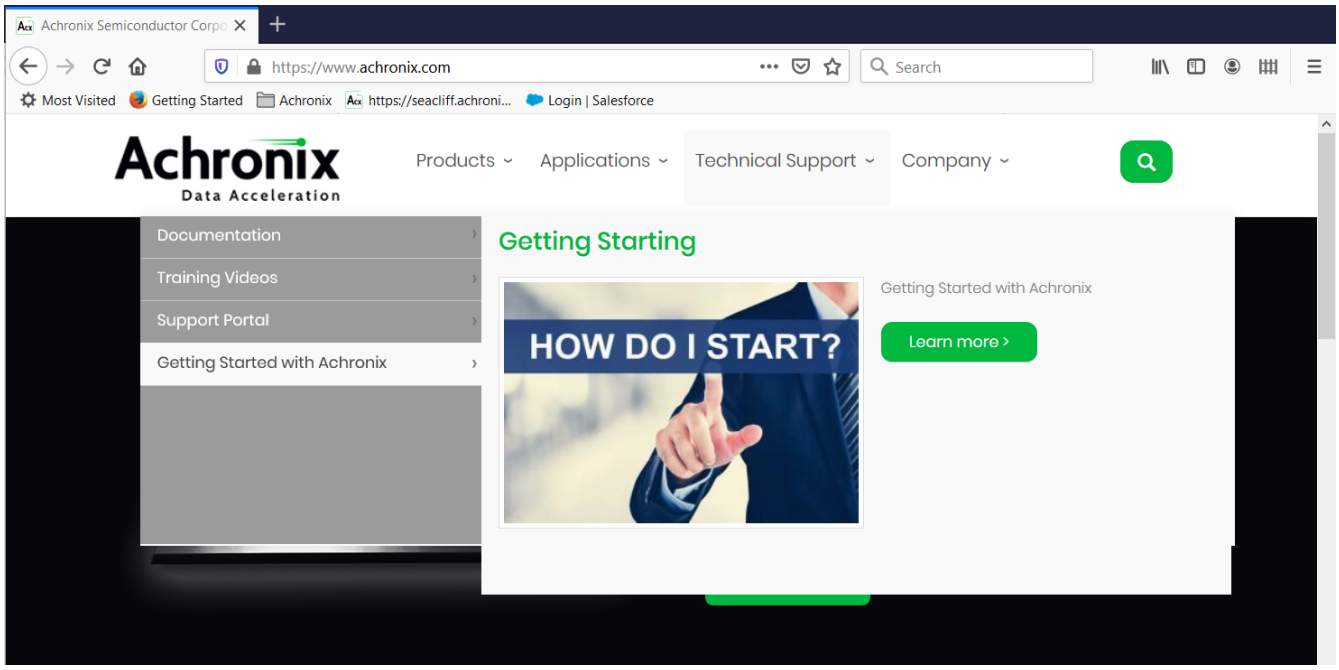


Figure 1: ***Achronix Home Page***

Logging into the Secure Server

Use a web browser to navigate to the secure web site location: https://secure.achronix.com. Use your username and password obtained from Achronix to access the Achronix secure FTP server:

Download the Needed File(s)

Once logged in, the toplevel FTP screen appears displaying your home directory (see the figure below). Any files contained in your home directory are private to you and cannot be accessed by others. These files can be specific files provided to you by Achronix, or files that you choose to upload to the secure server. By default there are no files in your home directory.

> **Note**
>
> Files contained in the 'public' directory can be seen by any user. You cannot upload to the public folder.

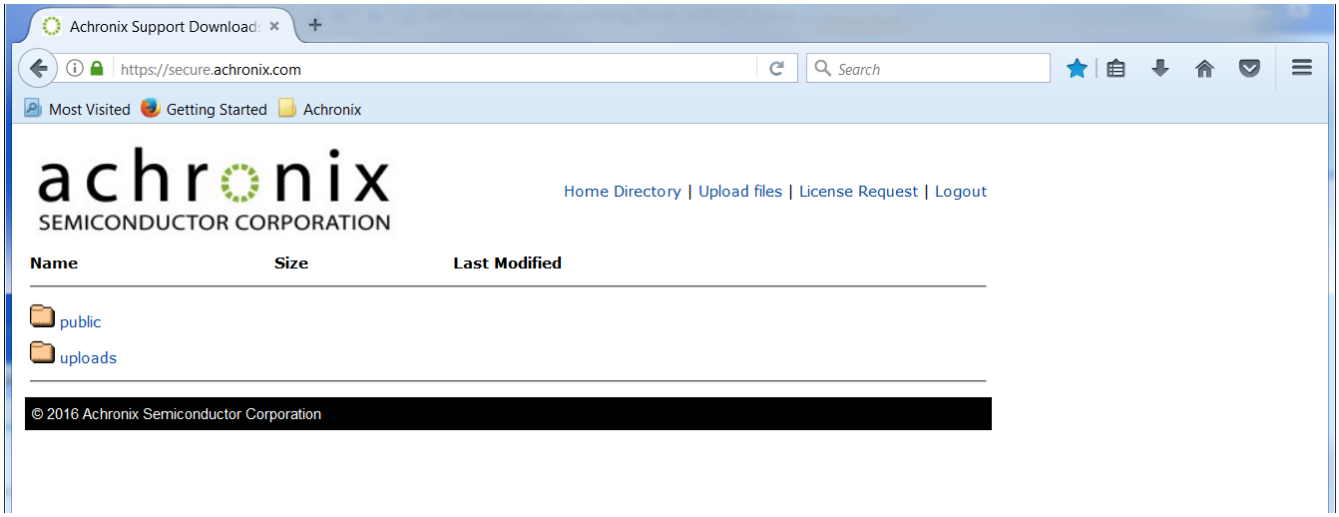


Figure 2: ***Home Directory on the Achronix Secure Server***

In the directory `/public/Achronix/ACE`, you will find subdirectories containing software specific to different Achronix FPGA architectures (previous releases can be downloaded from the sub-directory `/Archive`).

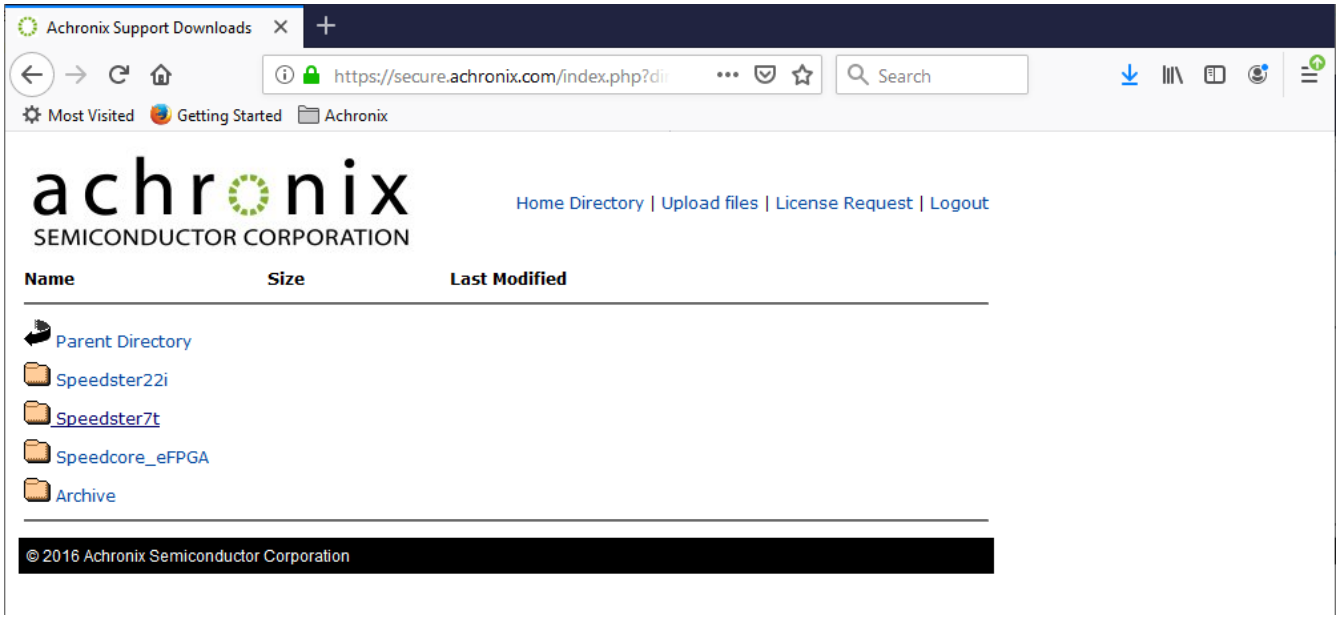


Figure 3: ***ACE Directory on the Achronix Secure Server***

In the selected subdirectory you will find the most recent releases of ACE and device overlays for the cores available, sorted by process node. The latest version of license server binaries are included in the ACE download for both Linux and Windows. If installing for Linux, also download `install_ace.sh`.

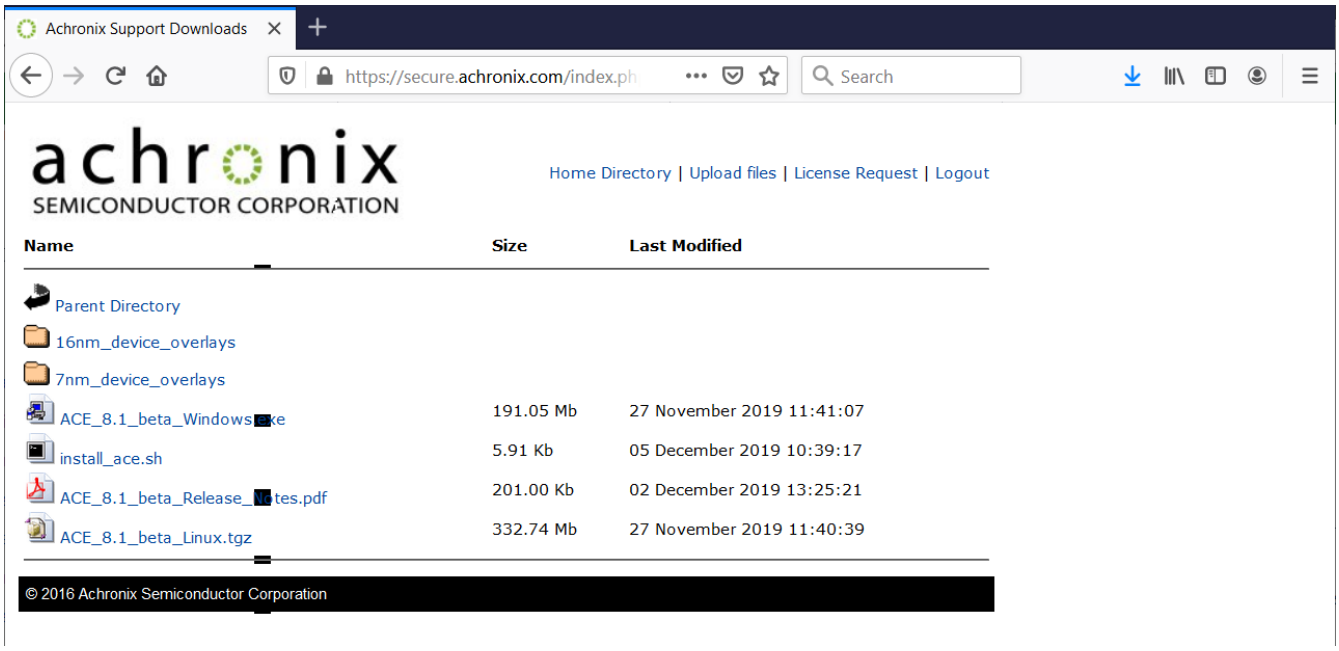


Figure 4: *Speedster7t Directory Listing*

In the directory `/public/Synopsys` , you will find the most recent releases of Synplify Pro for Achronix. The most recent license server binaries can be found in the `/Licensing` subdirectory.

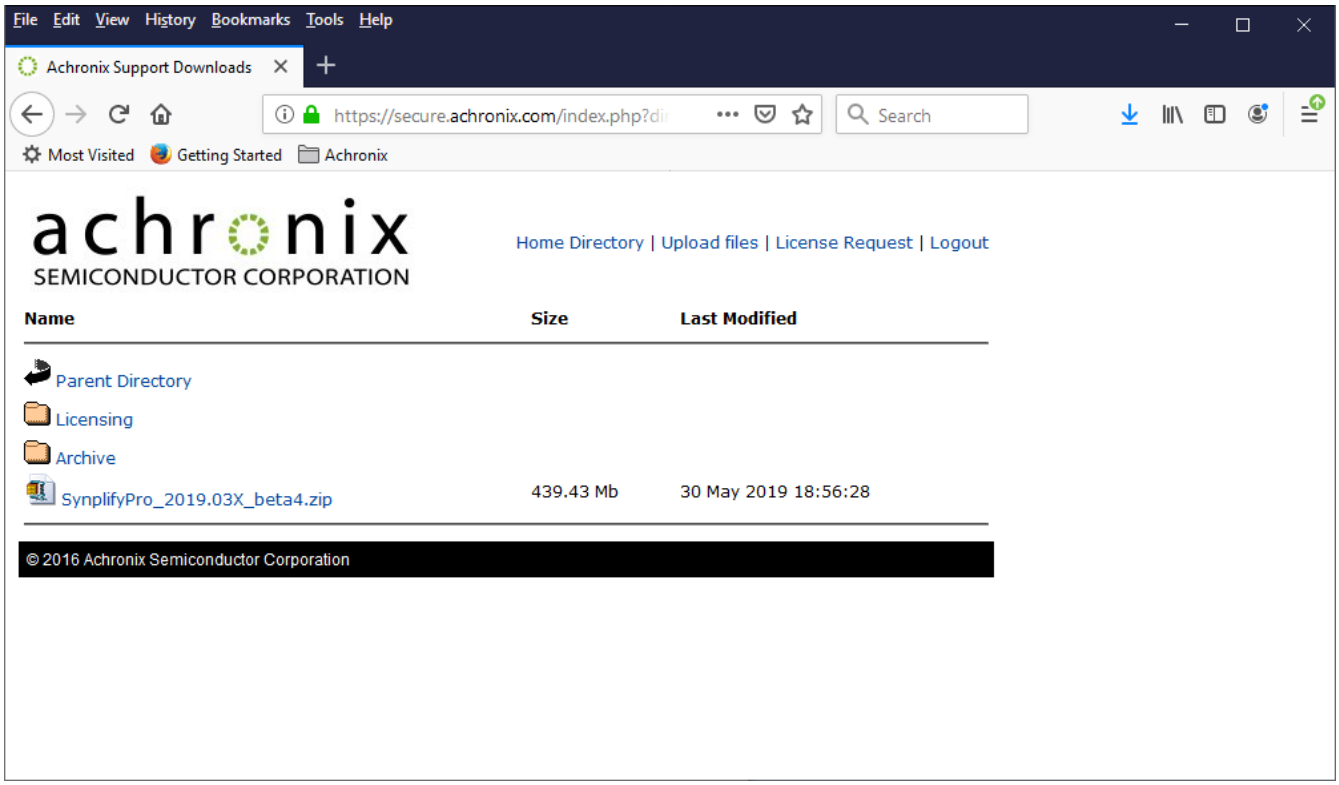


Figure 5: *Synopsys Directory Listing*

ACE can be installed to use a node-locked or floating license. Node-locked licenses do not require a license server, while floating licenses do, which can be hosted on a Linux or Windows machine. Synplify Pro always uses a server. In the node-locked case, the server is the same machine as the client, and is, therefore, treated like a floating license installation.

Floating license configurations requires that both client and server machines are connected to the same network. The client machines connecting to a floating license server (i.e., the machines running the ACE and Synplify Pro installations) can be Windows or Linux based regardless of the license server's operating system. In other words, a Linux license server can provide licenses to both Windows and Linux clients. Likewise, a Windows license server can provide licenses to both Windows and Linux clients.

Download the appropriate files depending on your setup.

Note

Specific file names below are examples and may be updated when newer versions are available.

OS and License Type	File Names
Linux Node Locked / Linux Client Software	`/public/Achronix/ACE/<Architecture>/_X_X_X_Linux.tgz` (ACE) `/public/Synopsys/SynplifyPro_X_X_X_.zip` (Synplify Pro)
Windows Node locked / Windows Client Software	`/public/Achronix/ACE/<Architecture>/_X_X_X_Windows.exe` (ACE) `/public/Synopsys/SynplifyPro_X_X_X_.zip` (Synplify Pro)
Floating (Linux License Server)†	Included in software download
Floating (Windows License Server)†	Included in software download

Table Note

† For the client software, download the Linux or Windows client software.

Chapter - 2: Obtaining Software Licenses

This chapter describes the process of obtaining licenses for ACE design tools and Synplify Pro for Achronix. When installing ACE, you will be asked to agree to the Achronix software license agreement. The process is as follows.

Determine the MAC Address of the License Host

Achronix needs the MAC address of the machine for which the license is being generated, plus the license type (floating or node-locked). MAC addresses are 12 hexadecimal digits long, represented as six pairs of hex digits, with each pair separated by colons (`12:34:56:78:90:AB`) or dashes (`FE-DC-BA-09-87-65`).

Windows

To determine the MAC address for Windows machines, from the command prompt, enter:

Example ipconfig output

```
D:\examples>ipconfig /all

Windows IP Configuration

   Host Name . . . . . . . . . . . . : DEMO-PC
   Primary Dns Suffix  . . . . . . . : achronix.local
   Node Type . . . . . . . . . . . . : Hybrid
   IP Routing Enabled. . . . . . . . : No
   WINS Proxy Enabled. . . . . . . . : No
   DNS Suffix Search List. . . . . . : achronix.local
                                       example.net

Ethernet adapter Local Area Connection:

   Connection-specific DNS Suffix  . : example.net
   Description . . . . . . . . . . . : Realtek PCIe GBE Family Controller
   Physical Address. . . . . . . . . : DE-AD-BE-EF-12-34
   DHCP Enabled. . . . . . . . . . . : Yes
   Autoconfiguration Enabled . . . . : Yes
   Link-local IPv6 Address . . . . . :
   IPv4 Address. . . . . . . . . . . : 192.168.1.5(Preferred)
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Lease Obtained. . . . . . . . . . :
   Lease Expires . . . . . . . . . . :
   Default Gateway . . . . . . . . . : 192.168.1.1
   DHCP Server . . . . . . . . . . . : 192.168.1.1
   DHCPv6 IAID . . . . . . . . . . . :
   DHCPv6 Client DUID. . . . . . . . :
   DNS Servers . . . . . . . . . . . : 192.168.1.1
   NetBIOS over Tcpip. . . . . . . . :
   Connection-specific DNS Suffix Search List :
                                       example.net
```

The minimum information required are the hexadecimal numbers following the string "Physical Address" (the value `DE-AD-BE-EF-12-34` in the example above).

Alternately, open the **Settings** → **Network & Internet** → **Network and Sharing Center** to open the network connections window. Then select the primary connection link in your active networks, for example Local Area Connection, and click to open the Status dialog box.

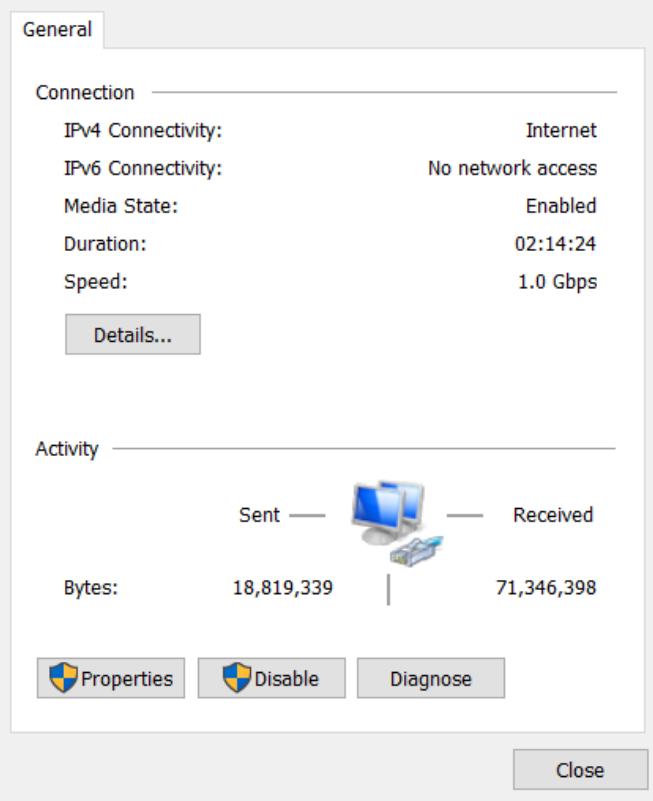


Figure 6: ***Active Network Status Dialog Box***

From the **Status Dialog Box**, click **Details...** to open the Network Connection Details dialog box (see below). The information required are the numbers following "Physical Address" (MAC address) in the form 00-12-34-56-67-89. Click **Close** on both windows to return to the desktop.

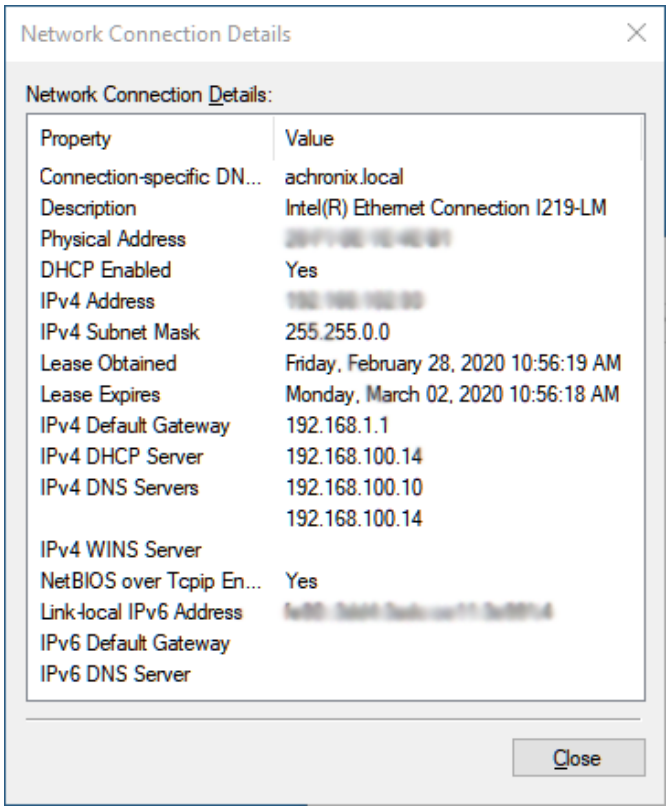


Figure 7: ***Network Connection Details Dialog Box***

Linux

In RHEL/CentOS 5 or 6, the physical network address (or MAC) value will typically be called the Ethernet "HWaddr", reported in the form "`00:00:00:00:00:00`" (six pairs of hexadecimal digits separated by colons).

For Linux machines, run the `ifconfig` command to determine the physical network address (or MAC) of the license server:

```
example ifconfig output from CentOS6

$ /sbin/ifconfig
eth0      Link encap:Ethernet  HWaddr DE:AD:BE:EF:12:34
          inet addr:192.168.1.5  Bcast:192.168.255.255  Mask:255.255.0.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:330618256 errors:0 dropped:0 overruns:0 frame:0
          TX packets:535549364 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:152764099486 (142.2 GiB)  TX bytes:668058234091 (622.1 GiB)
```

For RHEL/CentOS 7 the naming is slightly different where the physical network address value will typically be called "ether". Below is an example of the output:

```
example ifconfig output from CentOS 7

$ /sbin/ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.99.247  netmask 255.255.0.0  broadcast 192.168.255.255
```

```
        ether DE:AD:BE:EF:12:34  txqueuelen 1000  (Ethernet)
        RX packets 1763784155  bytes 3080686114867 (2.8 TiB)
        RX errors 0  dropped 35229878  overruns 0  frame 0
        TX packets 1251178054  bytes 2499128995736 (2.2 TiB)
        TX errors 0  dropped 29 overruns 0  carrier 0  collisions 0
```

If ACE has already been downloaded, the MAC address can be determined by running `rlmutil rlmhostid ether` from the `Achronix-Linux/bin` (or bin64) directory.

Request an Evaluation License

Initiate an evaluation license request from https://secure.achronix.com by selecting **License Request** on the top of the page.

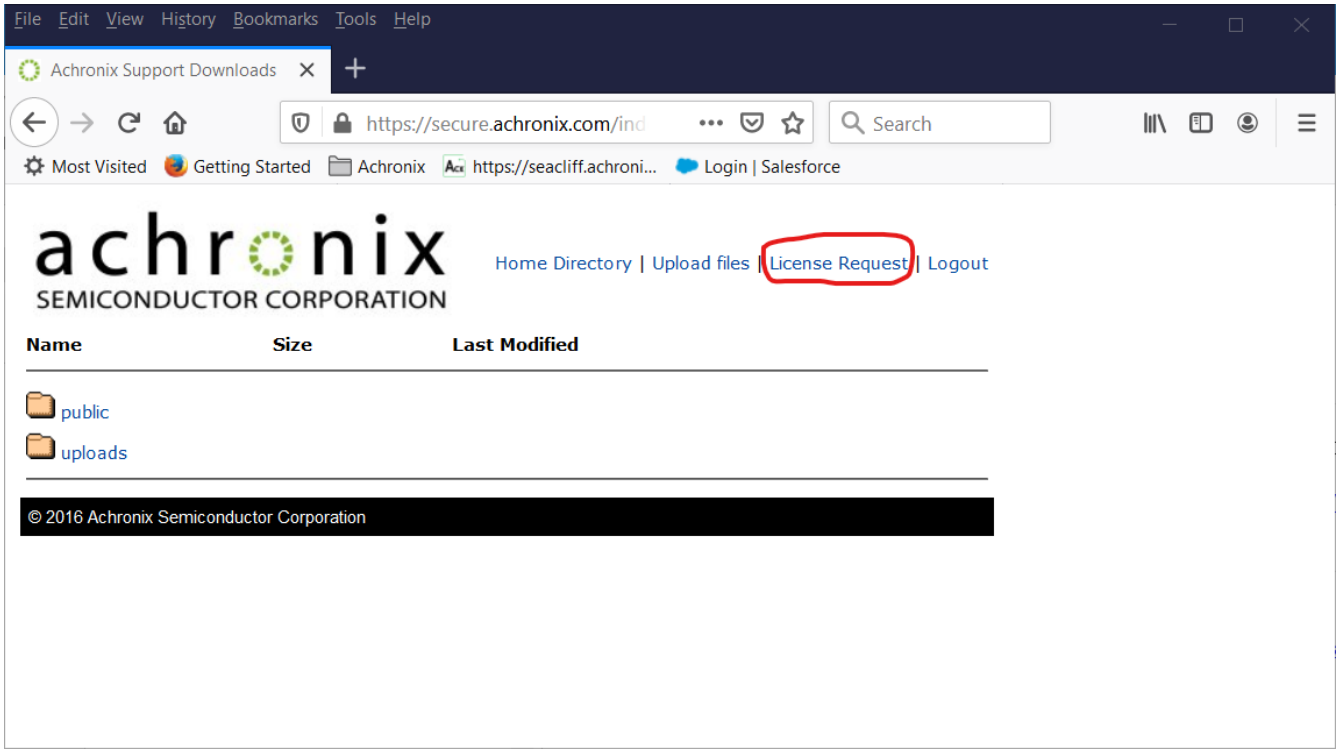


Figure 8: ***Starting the License Request Process***

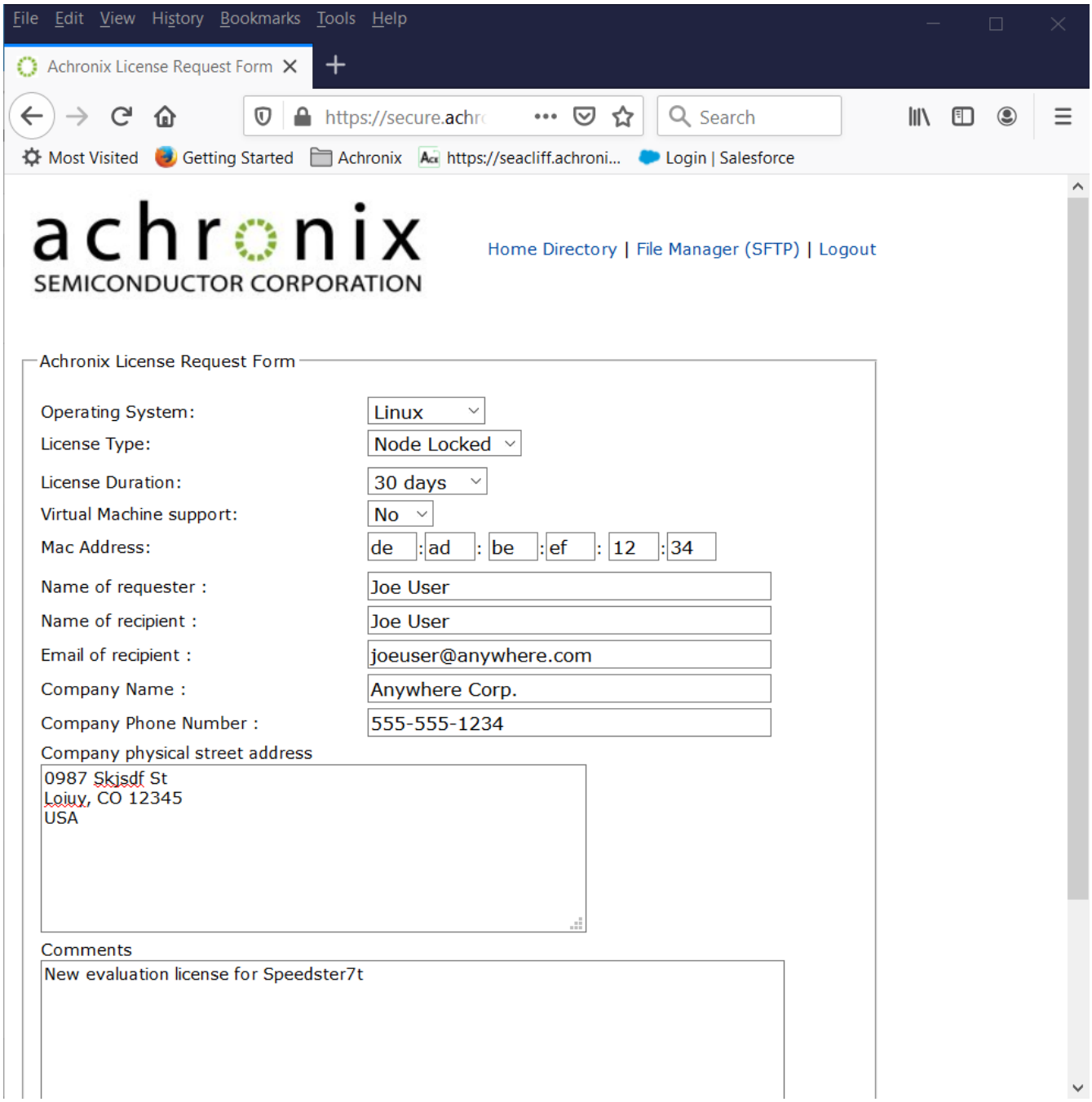
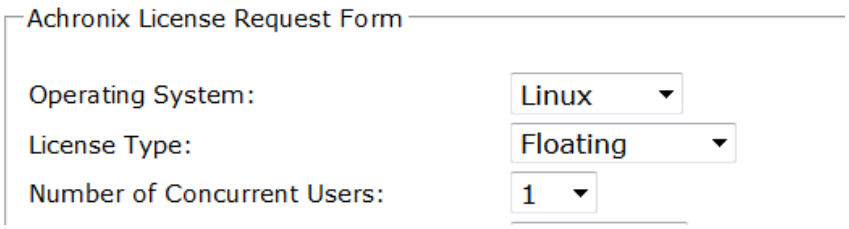


Figure 9: ***License Request On-line Form***

If the request is for a floating license, enter the number of concurrent users.



After providing the requested information, scroll down to click **Submit**, The system will confirm your request:

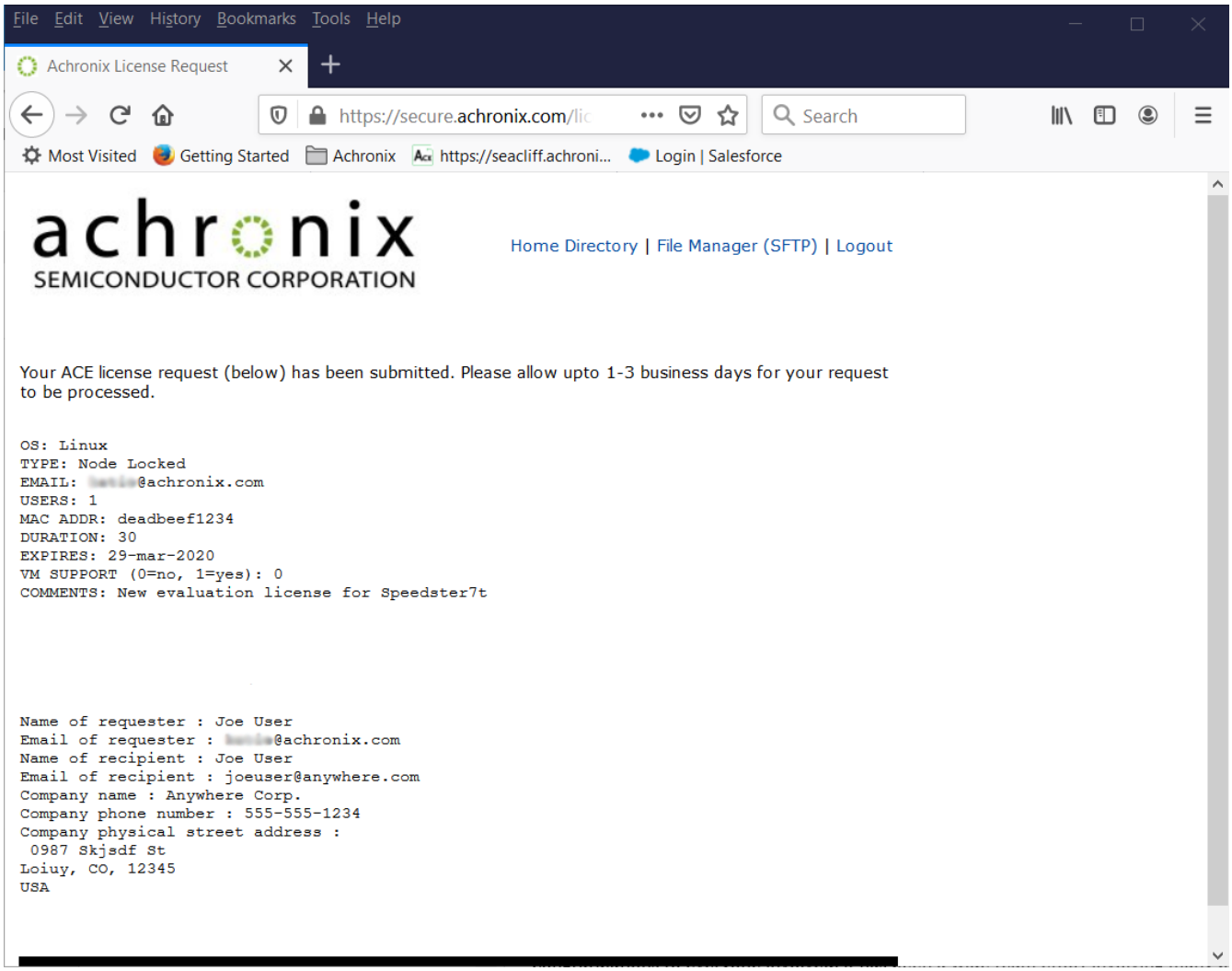


Figure 10: *License Request Confirmation*

Achronix will respond with license files via e-mail. Details of how to deploy this license file are covered in License Installation (Linux) (see page 20) and License Installation (Windows) (see page 45).

For non-evaluation license requests, i.e., tool licenses attached to sales orders for devices, boards, IP or tools, please contact Achronix technical support at support@achronix.com or your sales representative directly to have a purchase order filled out for the generation of new licenses or renew expired/expiring ones.

Chapter - 3: Software Installation (Linux)

This chapter covers installing Linux versions of ACE design tools and Synplify Pro for Achronix.

Installing ACE

Floating and Node-Locked Licensing

Installing ACE includes installing the ACE tool itself, along with any device overlays. The device overlays include library files for the specific device, example designs, etc. After downloading the ACE software archive, the necessary overlays and `install_ace.sh` into one directory, perform the following steps:

1. In the directory containing the downloaded files, set the installation script to be executable:

```
$ cd <download_directory>
$ chmod 755 install_ace.sh
```

2. Extract the software.

```
$ install_ace.sh [-d <installdir> ] or [-i] | [-h]
```

Table 1: *Installer Script install_ace.sh Options*

Option	Description
-d <installdir>	Specifies the root directory to install ACE into. If omitted, ACE is installed to the current directory.
-i (interactive mode)	Prompts the user to enter the name of each TGZ file to install. If omitted, all TGZ files in the current directory will be installed.
-h (help mode)	Code enters 'Help' mode where all these command line options are listed.

3. Copy the resulting `/Achronix_Linux` directory into the desired "ACE-Install" directory (usually `/opt`).
4. Optionally set up an environment variable `ACE_INSTALL_DIR` set to the location of the `/Achronix_Linux` directory that can be used by scripts to easily access ACE.
5. Install the license file and verify the installation per "FloatingNode and Node-Locked Licensing," in License Installation (Linux). (see page 20)

Upgrading an ACE Installation

Each version of ACE must be installed into a new, empty directory! Never install ACE in the same directory as a prior install.

1. Create a new directory to contain the new version of ACE
2. Untar ACE into the new directory
3. Run ACE

Uninstalling ACE

To uninstall the current installation, delete the directory used to install ACE (default is `/opt/Achronix-linux`):

```
$ rm -r /opt/Achronix-linux
```

Note

Root permissions may be required to delete the install directory.

Users may also want to remove the directory `~/.achronix/` found in their home directory. This directory contains ACE session log files and ACE GUI metadata and logs from previous runs of ACE. When installing a new version of ACE, it is good practice to clear out this directory.

Installing Synplify Pro for Achronix

Node-Locked and Floating Licensing

Installing Synplify Pro includes installing the tool and the device overlays. Additionally, the user can choose to only install the overlays if the tool has already been installed. After downloading the Synplify Pro software archive and `install_synplify_pro.sh` in the same directory, perform the following steps:

1. In the directory containing the downloaded files, set the installation script to be executable:

   ```
   $ chmod 755 install_synplify_pro.sh
   ```

2. Install the software:

```
$ ./install_synplify_pro.sh [-d <installdir> ] or [-h]
```

Table 2: *Installer Script install_synplify_pro.sh Options*

Option	Description
-d <installdir>	Specifies the root directory to unzip the Synplify Pro archive into. If omitted, the archive is unzipped in the current directory. Please enter full path when using this mode.
-h (help mode)	Code enters 'Help' mode where all these command line options are listed.

3. Follow the instructions given in the installation script, accepting the default options during the installation process. When prompted to enter the installation directories, please enter the full paths (tilde(~) is not allowed when specifying the paths). At the conclusion of the installation process, the software creates a sub-directory for the installed version of the tool suite in the current directory (default) or in the directory you chose.
4. Install the license file and verify the installation per "Synplify Pro for Achronix License Installation" in License Installation (Linux) (see page 20).

Uninstalling Synplify Pro for Achronix

To uninstall the current installation, simply delete the directory used to install Synplify Pro (default is `/<install_directory>/` , for example):

```
$ rm -r /<install_directory>/synppro_2016.09X-1w
```

Note

Root permissions may be required to delete the install directory.

Chapter - 4: License Installation (Linux)

ACE License Installation

Node-Locked Licensing

1. After installing the software per Software Installation (Linux) (see page 17), determine the physical network address (or MAC) of the host system:

   ```
   $ /sbin/ifconfig
   ```

   Alternatively, the MAC address can be determined by running `rlmutil rlmhostid ether` from the `Achronix-Linux/bin` (or `bin64`) directory.

2. Request licenses from Achronix as described in Obtaining Software Licenses (see page 11). Achronix Semiconductor will send license files as an email attachment. Save these files to a safe location.

3. Once the Achronix CAD Environment is unpacked per Software Installation (Linux) (see page 17) (in this example, under `/opt`), the directory tree appears as follows:|

Directory Structure	
`/opt/Achronix-linux`	
	`/bin`
	`/bin64`
	`/doc`
	`/examples`
	`/libraries`
	`/system`
	`/license`
	`/ace`

   Navigate to the directory where the license file was saved in step 2, and copy `<license_file_name>.lic` into the license sub-directory.

   ```
   $ cp <license_file_name>.lic /opt/Achronix-linux/license
   ```

4. Start ACE by launching the executable

```
$ ./install_directory/Achronix-linux/ace
```

Review the license agreement, clicking the **Spacebar** to scroll, then click **y** to agree to the terms. After agreeing to the license, ACE starts, displaying a welcome screen (shown below).

Figure 11: ***ACE Welcome Screen***

5. If the license was not found or was improperly installed, an error screen below appears. Click **Close** to terminate. Refer to "ACE Licensing Issues" in Troubleshooting (Linux) (see page 28) or contact Achronix Technical Support at support@achronix.com.

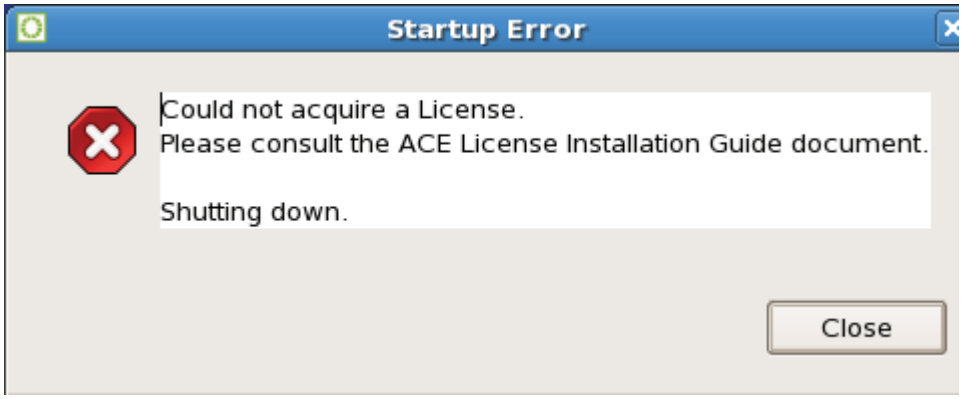


Figure 12: ***Startup Error Screen***

Floating-Node Licensing

1. After installing the software on the client per "Installing ACE" in Software Installation (Linux) (see page 17) , determine the physical network address (or MAC) of the license server:

   ```
   $ /sbin/ifconfig
   ```

   Alternatively, the MAC address of the license server can be determined by running the RLM utility copied over from the client machine where ACE was installed. Copy the directory `<ACE install dir> /Achronix-linux/bin` (or `bin64`) from the client to the license server. Then run `rlmutil rlmhostid ether` from the `Achronix-Linux/bin` (or `bin64`) directory.

2. Request licenses from Achronix as described in Obtaining Software Licenses (see page 11). Achronix Semiconductor will send a file, `ace.lic`, as an email attachment. Save this file to a safe location.

3. Copy the license file `<license_file_name>.lic` to an appropriate directory on the license server (`/<license_file_path>`).

4. If you have not done so already, copy the directory `<ACE install dir>/Achronix-linux/bin (or bin64)`from the client to the license server.

5. Edit `<license_file_name>.lic` to add the license server name and path to the licensing agent:

   ```
   HOST <license_server_host> XXXXXXXXXXXX 1710
   ISV achronix <install_directory>/bin/achronix_license_agent
   ```

   Where XXXXXXXXXXXX is the host ID of the license server.

6. Set the environment variable on the client machine: From a C shell:

   ```
   $ setenv RLM_LICENSE 1710@<license_server_host>
   ```

   From a bash shell:

   ```
   $ export RLM_LICENSE=1710@<license_server_host>
   ```

   To verify that the environment variable is set:

   ```
   $ echo $RLM_LICENSE
   ```

   Note

   The last command is used to check that the environment variable is properly set.

7. Start the remote licensing manager (RLM) on the license server:

```
$ /<install_directory>/bin/rlm -c <license_file_path> &
```

> **Note**
>
> The line above can be copied into `/etc/rc.d` to ensure the server is started each time the license server is restarted,

This command returns an indication that the license server is up:

```
07/14 18:18 (rlm) RLM License Server Version 3.0BL4
Copyright (C) 2006-2007, Reprise Software, Inc. All rights reserved
07/14 18:18 (rlm) License server started on <license_server_host>
07/14 18:18 (rlm) Server architecture: x86_l2
07/14 18:18 (rlm) License files:
07/14 18:18 (rlm)/opt/Achronix-linux/<license_file_name>.lic
07/14 18:18 (rlm)
07/14 18:18 (rlm) Web server starting on port 9000
07/14 18:18 (rlm) Using TCP/IP port 1710
07/14 18:18 (rlm) Starting ISV servers:
07/14 18:18 (rlm)... achronix on port 56255
07/14 18:18 (achronix) RLM License Server Version 3.0BL4 for ISV "achronix"
07/14 18:18 (achronix) Server architecture: x86_l2
Copyright (C) 2006-2007, Reprise Software, Inc. All rights reserved
RLM contains software developed by the OpenSSL Project for use in the
OpenSSL Toolkit (http//www.openssl.org) Copyright (c) 1998-2003 The
OpenSSL Project. All rights
reserved.
07/14 18:18 (achronix)
07/14 18:18 (achronix) Server started on <license_server_host>
(hostid: XXXXXXXX) for:
07/14 18:18 (achronix)ace-v1.0
07/14 18:18 (achronix)
07/14 18:18 (achronix) License files:
07/14 18:18 (achronix) /opt/Achronix-linux/<license_file_name>.lic
07/14 18:18 (achronix)
```

8. Start ACE by launching the executable on the client machine:

```
$ /install_directory/Achronix-linux/ace
```

9. Review the license agreement, clicking **Spacebar** to scroll, then click **y** to agree to the terms. After agreeing to the license, ACE starts, displaying a welcome screen (Figure: ACE Welcome Screen (see page 21)).

> **Note**
>
> ACE uses the default browser to display information, including the welcome page. If the welcome page is blank, then there is no default browser installed.

10. If the license was not found or was improperly installed, an error screen (Figure: Startup Error Screen (see page 21)) appears. Click **Close** to terminate. Refer to "ACE Licensing Issues" in Troubleshooting (Linux) (see page 28) or contact Achronix Technical Support at support@achronix.com.

Synplify Pro for Achronix License Installation

Node-Locked and Floating Licensing

Nodelocked licensing for Synplify Pro under Linux is just a simplified floating node installation where the client and server are the same host.

1. Request licenses from Achronix as described in Obtaining Software Licenses (see page 11). Achronix Semiconductor will send a file, `synplify.lic`, as an email attachment. Save this file to a safe location.
2. Copy the license file `<license_file_name>.lic` to an appropriate directory on the license server (`/<`*license_file_path*`>`).
3. Edit `synplify.lic` to set the hostname1 to "localhost" or the actual hostname, and set the path to the Synplify Pro license daemon:

```
SERVER localhost 012345678901 27000
VENDOR snpslmd <path_to_snpslmd>/snpslmd
USE_SERVER
INCREMENT SSST snpslmd 1.0 05-Jul-2012 1
ED1EDC268F3F082F8849 \
```

> **Note**
>
> On an unconfigured Linux machine, the default hostname can be set to localhost.localdomain. This setting can cause a license problem to occur. Changing the hostname to' localhost' (using the command hostname), or any other name without a '.' should resolve the issue. Also, the SERVER, VENDOR, USE_SERVER, PACKAGE, INCREMENT, or # lines in `synplify.lic` each need to end with a newline return. Moving text files between Windows and Linux machines can cause the newline return to be lost. If the newline returns are lost, licensing problems can occur.

4. For floating license installations, copy the contents of `Synopsys_Linux_License_Server.tar.gz` from the unzipped download file into a directory on the license server (for example, `/SCL_manager`).
5. Navigate to the install directory and start the license server:

```
$ ./license_server/lmgrd -c <license_file_path> -l /usr/tmp/lmgrd_synplicity.log &
```

6. Verify that the license server has started correctly.

```
$ ./license_server/lmutil lmstat -a
```

This command returns an indication that both the license server and daemon are up:

```
lmutil - Copyright (c) 1989-2006 Macrovision Europe Ltd. and/or
Macrovision Corporation. All Rights Reserved.
Flexible License Manager status on Sat 7/16/2011 16:15
License server status: 27000@localhost
License file(s) on localhost:
/<license_file_path>/<license_file_name>.lic:
localhost: license server UP (MASTER) v10.8
Vendor daemon status (on localhost):
snpslmd: UP v11.6
Feature usage info:
Users of synplifypro_achronix: (Total of 1 license issued; Total of 0 licenses in use)
```

7. Set the required environment variable on the client. From a C shell:

```
$ setenv SNPSLMD_LICENSE_FILE <license_file_path>
```

From a bash shell:

```
$ export $ SNPSLMD_LICENSE_FILE=<license_file_path>
```

To verify that the environment variable is set:

```
$ echo $SNPSLMD_LICENSE_FILE
```

8. Start Synplify Pro:

```
$ ./linux/synppro_201009xsp3/bin/synplify_pro
```

If the license is properly installed and the license server and daemon are up, the License Agreement window appears (Figure: License Agreement Window (see page 26)). Click **Yes** to start the program. The main program window opens.

> **Note**
>
> It can take Synplify Pro up to 30 seconds to check out its license and start.

If the license is not found or is improperly installed, a license error window (Figure: License Error Window (see page 27)) opens. Click **Close** to terminate. Refer to "Synplify Pro for Achronix Licensing Issues" in Troubleshooting (Linux) (see page 28) or contact Achronix Technical Support at support@achronix.com.

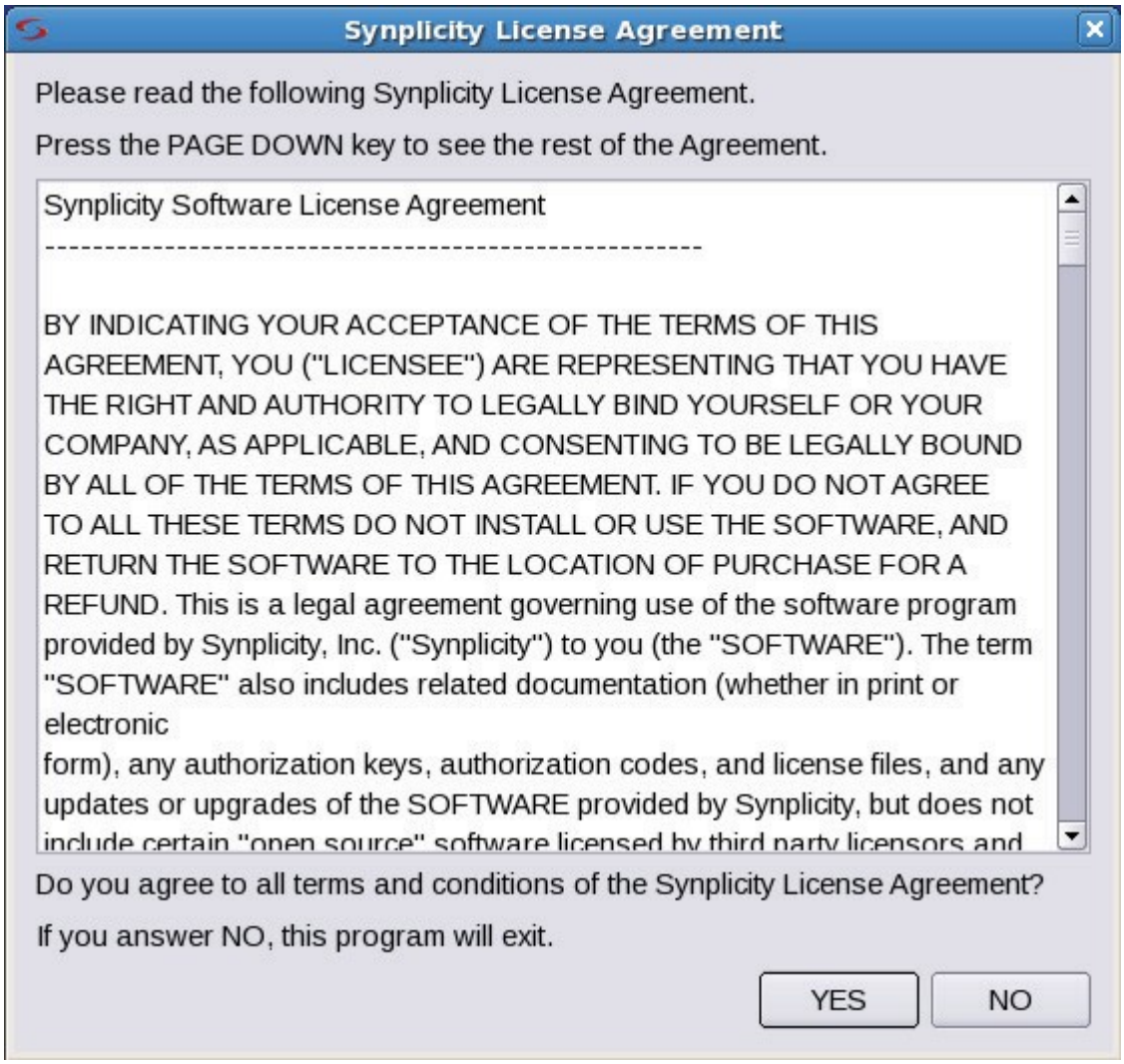


Figure 13: ***License Agreement Window***

If the license is not found or is improperly installed, a license error window (Figure: License Error Window (see page 27)) opens. Click **Close** to terminate. Refer to "Synplify Pro for Achronix Licensing Issues" in Troubleshooting (Linux) (see page 28) or contact Achronix Technical Support at support@achronix.com.

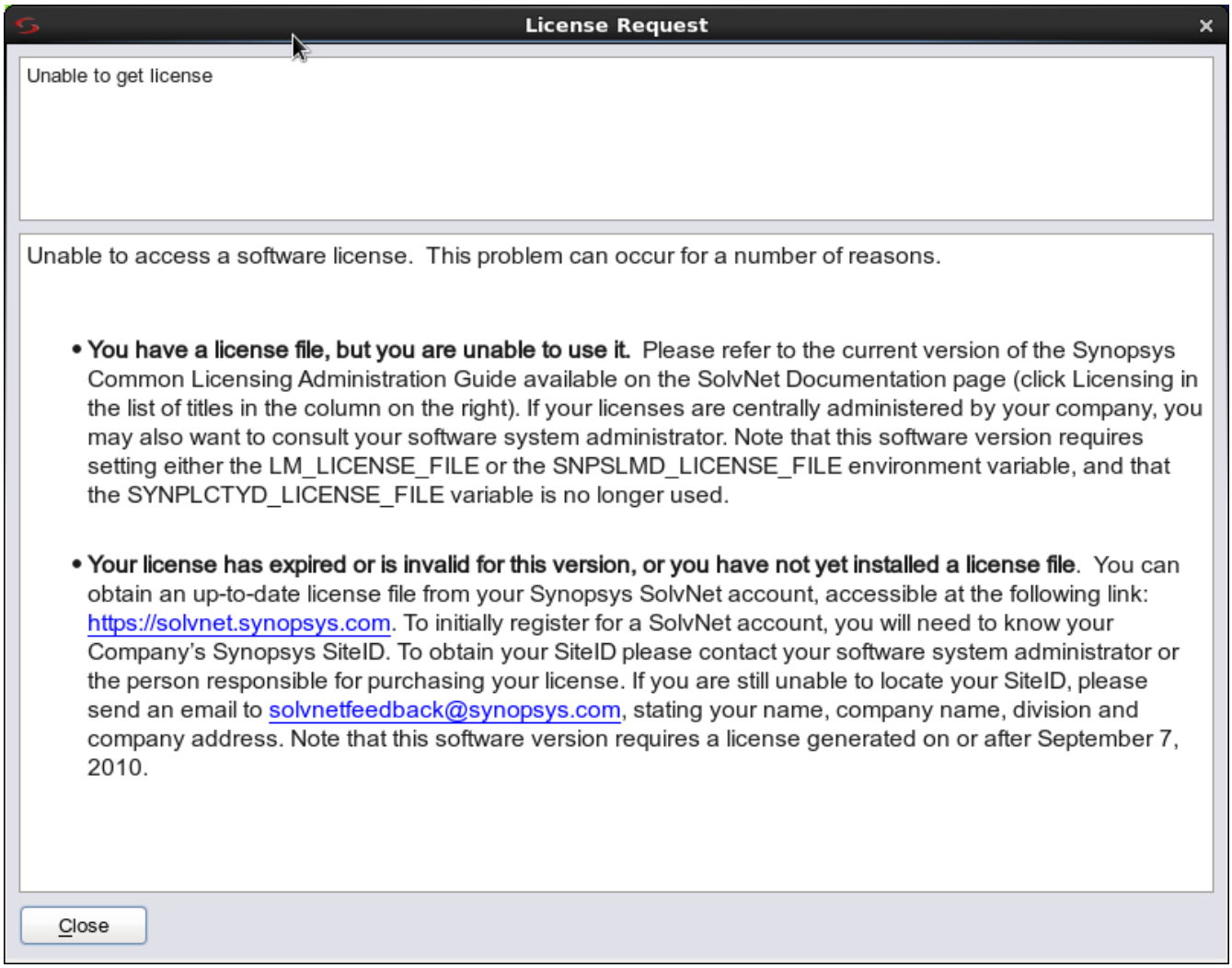


Figure 14: ***License Error Window***

Chapter - 5: Troubleshooting (Linux)

ACE Licensing Issues

Checklist

Node-Locked Installations

- Verify that the host ID listed in the license file matches the MAC address of the first Ethernet adapter in the system (typically marked eth0).
- Verify the install path of the license is correct:

```
<install_directory>/Achronix-linux/license
```

- Verify that license file has the proper extension (`.lic`) and does not contain an illegal (nonalphanumeric) characters in the name.

Floating-Node Installations

- Verify that the correct type of license (nodelocked versus floatingnode) was requested.
- Verify that the host ID listed in the license file matches the MAC address of the first Ethernet adapter in the system (typically marked eth0).
- Ensure that the machine host name (HOST line), and license agent path (ISV path) are set correctly.
- Ensure that the port number listed in the RLM_ LICENSE variable matches the port number listed in the license file.
- Verify the license manager is up on the server by checking the logs.
- If the license manager is running, but the client fails to receive a license, check the license manager logs for an entry showing the license being checked out by the client:

```
01/17 21:12 (achronix) OUT: ace-v1.0 v1.0 by user@client_host
```

And returned once ACE is closed:

```
01/17 21:19 (achronix) IN: ace-v1.0 v1.0 by user@client_host
```

No entry means that the license request is not reaching the server. Verify network communication between the client and server as well as that environment variables are properly set.
An entry of DENIED can mean that the number of requested licenses has exceeded the number specified in the license file.

32-bit Libraries

When starting the license server, if an error is returned "/lib/ld-linux.so.2: bad ELF interpreter: No such file or directory.", then the Linux host is 64-bit, but does not have the 32-bit libraries installed. To fix this

- On any RPM based distribution (CentOS/RedHat/Fedora/Suse/Mandriva);

```
$ sudo yum -y install glibc.i686
```

- On any DEB based distribution (Debian/Ubuntu/Mint/Crunchbang);

```
$ sudo apt-get update
$ sudo apt-get install ia32-libs
```

Synplify Pro for Achronix Licensing Issues

Checklist

- Verify that license file name does not contain an illegal (nonalphanumeric) characters in the name.
- Verify that the host ID listed in the license file matches the MAC address of the first Ethernet adapter in the system (typically marked eth0).
- Ensure that first Ethernet adapter in the system (typically marked eth0) is active.
- For nodelocked installations, ensure that the host name in the license file is set to "localhost" or the actual host name.

  Note

  The host name can be changed via the command hostname.

- Verify that the path to **snpslmd** in the VENDOR line is set correctly.
- Ensure that the license file formatted properly:
  - Do *not* remove the USE_SERVER line. This keyword must exist on a line by itself, before any INCREMENT lines.
  - Remove any VENDOR or DAEMON lines for nonsnpslmd vendor daemons.
  - All lines should start with SERVER, VENDOR, USE_SERVER, PACKAGE, INCREMENT, or #
  - Lines may only wrap after a space and a continuation character (" \"), and all comment lines must start with #
  - Blank lines must *not* be present in the key file as this may cause problems
  - Strip out all extraneous characters, such as > or >> symbols at the beginning of lines.
- Ensure that the port number referenced in the SNPSLMD_LICENSE_FILE environment variable matches the port number listed in the license file.

- Problems can occur in batch mode when the license server has both Synplify Pro for Achronix and other Synopsys licenses available. This situation can be avoided by setting an environment variable that sets license preference or using a command line switch that sets license preference:

```
Environment variable
-------------------------
Variable: SYNPLIFYPRO_LICENSE_TYPE
Value: synplifypro_achronix
Command line switch
-------------------------
%synplifypro -batch -licensetype synplifypro_achronix <project_file>
```

License Server

The command **lmstat** returns:

```
Cannot find license file -1,359:2 (No such file or directory)
```

Even though the license path is set correctly, try running the command with the following option:

```
$ lmstat -a -c /license_path/license.dat
```

If the license file is valid, the program returns the server and daemon status.

Running Multiple License Servers

When running a license server, it is recommended that the version of **lmgrd** be equal to or greater than the highest version of the vendor daemon. Also, two of the same vendor daemons cannot be running on the same system. If multiple Synopsys product licenses are being hosted on this server, the license features for Synplify Pro Achronix will have to be appended to the existing license file using the following steps:

1. Stop the license server started for the Synplify Pro Achronix feature.
2. Append the INCREMENT lines for Achronix SynplifyPro to the main license file:

```
INCREMENT SSST
INCREMENT SCL_WAN_DISABLE
INCREMENT synplifypro_achronix
```

3. Confirm the versions of **lmgrd** and **snpslmd** being used with the main license file.
4. Run `lmutil lmreread` on the main license server, and then `lmutil lmstat -a` to confirm that the Synplify Pro Achronix feature is being read.

Other Issues

CentOS Linux

While CentOS 5 Linux is not officially supported, Synplify Pro for Achronix can be run after shared libraries are loaded. If the following error is seen when starting either tool:

```
error while loading shared libraries: libstdc++.so.5: cannot open shared object file:
```

Additional shared libraries need to be installed:

```
$ /usr/bin/yum install libstdc++.so.5
```

Host Name Resolution

For floatingnode (clientserver) licensing applications, the license manager normally uses the port@host convention for the license file environment variable set on the client, for example, for ACE licensing:

```
RLM_LICENSE=1710@main-server
```

Within some network topologies, the host name may not resolve. In these case, the actual IP address of the license server can be substituted for the host name as a workaround, for example:

```
RLM_LICENSE=1710@192.168.0.15
```

Note

This workaround may not be durable, as the server's IP address could change.

Chapter - 6: Software Installation (Windows)

Installing ACE

> **Warning!**
>
> If this is not a first-time installation, refer to Upgrading an ACE Installation (see page 38) below before proceeding. It is generally recommended to uninstall previous versions of ACE before attempting to install a new version of ACE.

Installing ACE includes installing both ACE itself, along with any device overlays. These device overlays include library files for the specific device, example designs, etc. After creating an empty directory to download the files into, follow these steps:

1. Download the `ACE_X.Y.Z_Windows.exe`, the `install_ace.bat` file and all the device overlays needed for the desired version of ACE into this directory.

   > **Note**
   >
   > Only download the files for one version of ACE into this directory; do *not* mix files from multiple versions of ACE.

2. Run the `install_ace.bat` file by right clicking on the file in Windows Explorer and select "Run as Administrator".
3. If the software was installed previously, the installer asks whether to remove the previous versions (figure below). If you do *not* wish to retain previous version(s) of ACE on this client, click **Yes** to proceed with automatically uninstalling the most recent previous installation of ACE (regardless of version number). If you have multiple previous versions of ACE, you will need to manually uninstall them. If you want to retain previous version(s), click **No** to proceed to step 3.

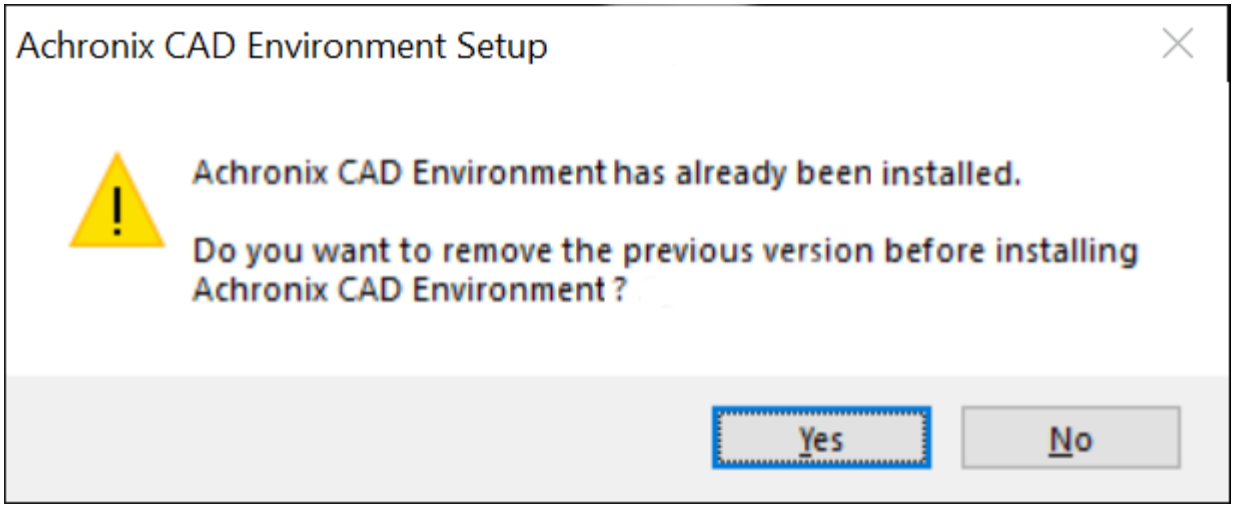


Figure 15: ***Remove Previous Version Dialog Box***

4. The installer verifies the archive and opens the Installer Language dialog box (figure below). Select the desired language from the pulldown menu and click **OK** to open the Achronix CAD Environment Setup wizard.

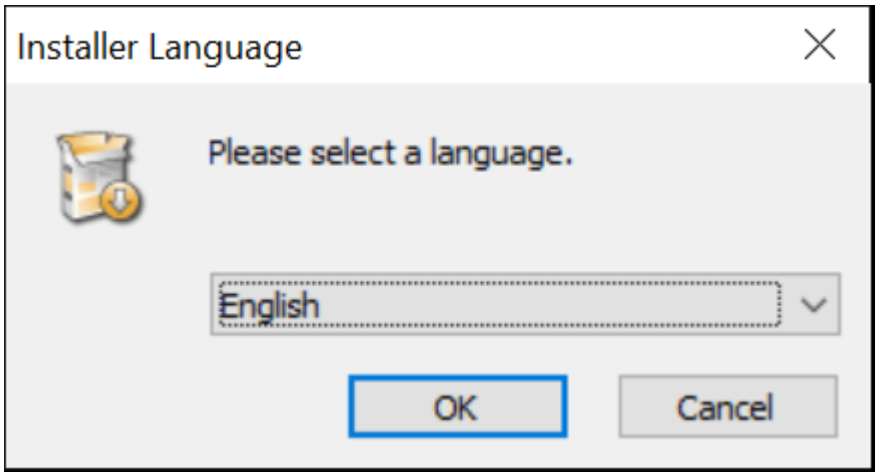


Figure 16: ***Installer Language Dialog Box***

5. From the wizard, click **Next>** to open the License Acceptance dialog box.

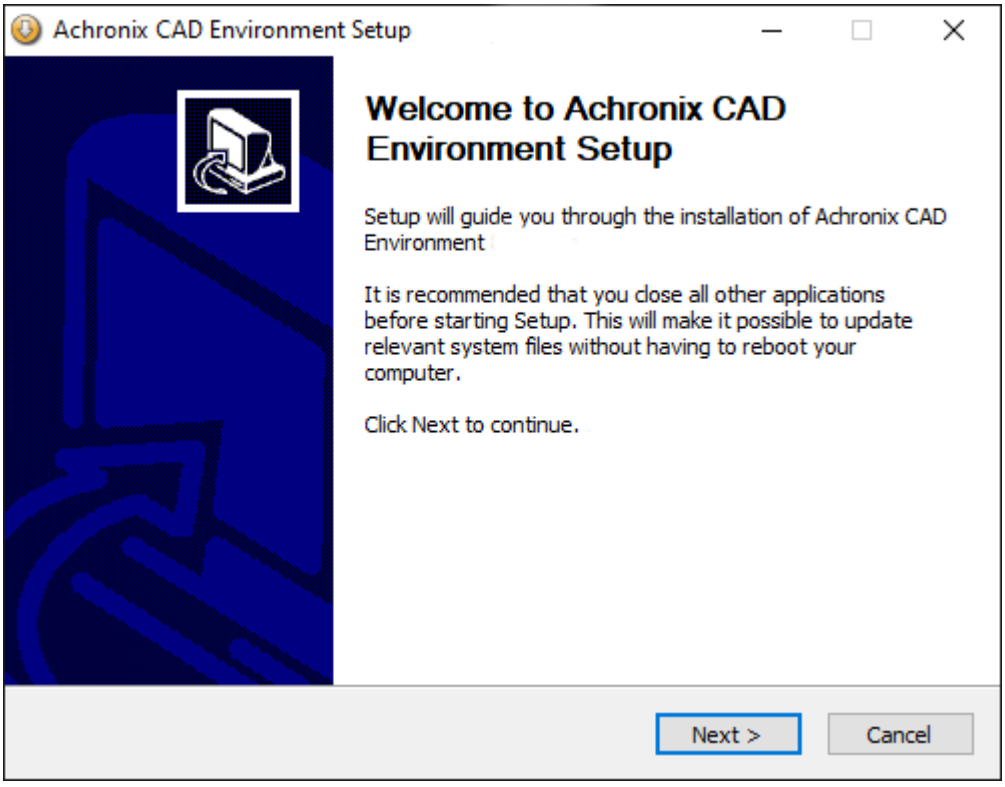


Figure 17: ***Achronix CAD Environment Setup Wizard***

6. From the License Agreement dialog box, click **IAgree** after reviewing the license.

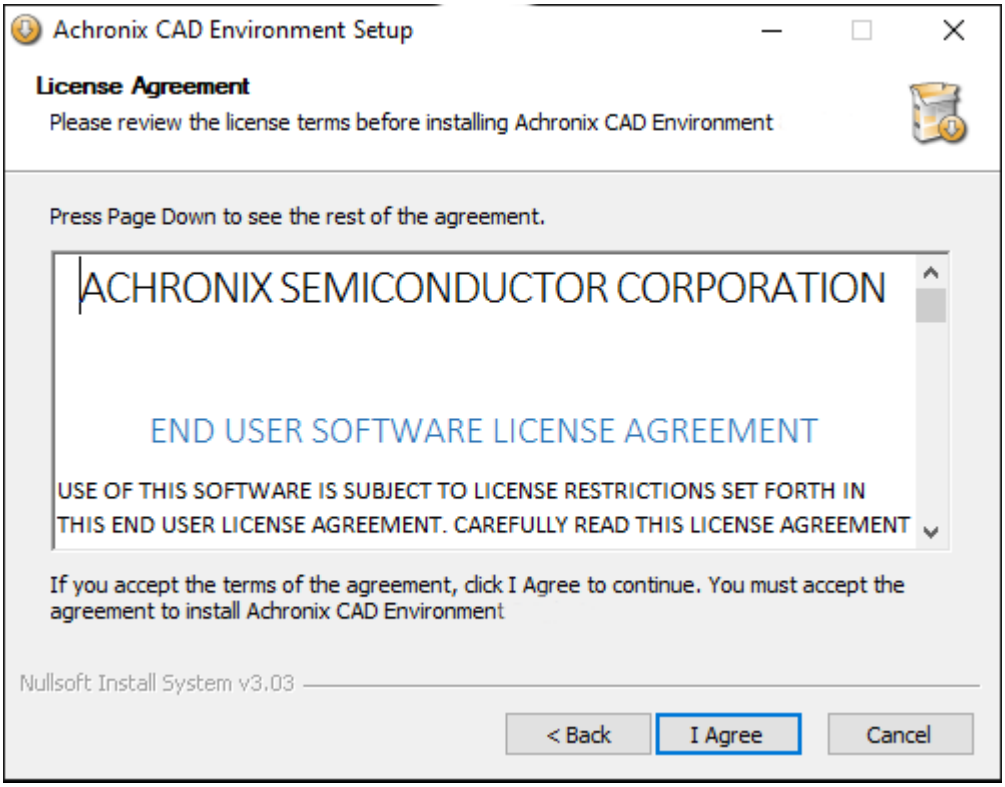


Figure 18: ***License Agreement Dialog Box***

7. From the Choose Components dialog box, select the desired components to install. For example, uncheck **AchronixCADEnvironment** to install only the software and drivers needed for programming. Click **Next >** to continue.

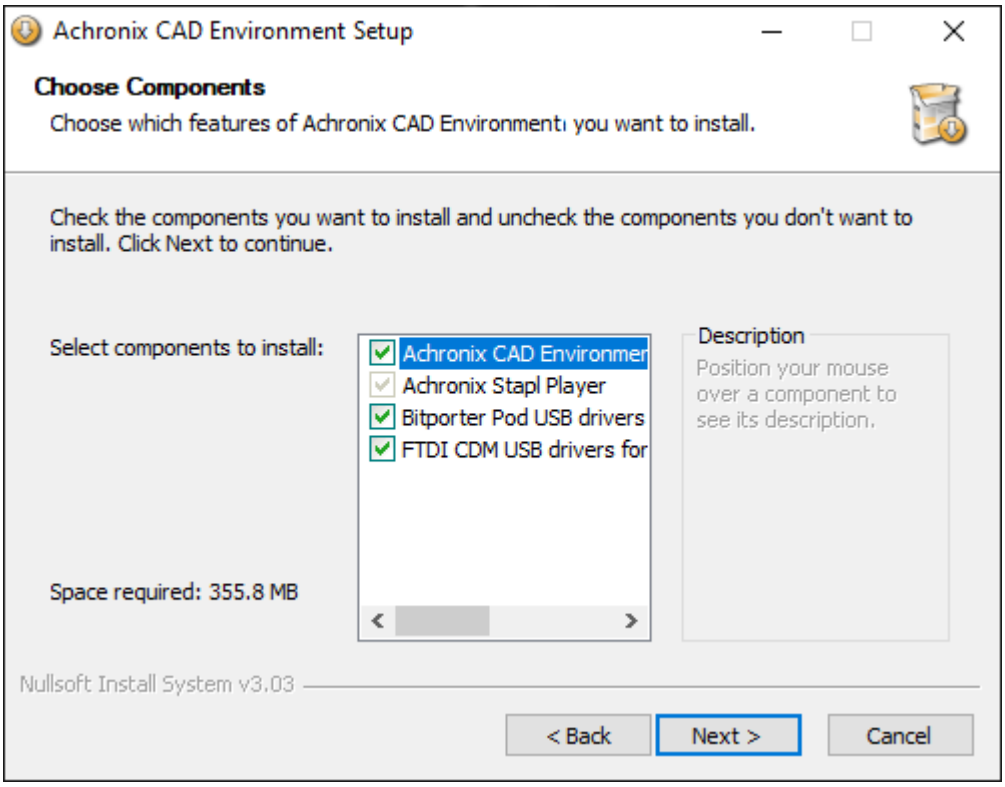


Figure 19: ***Choose Components Dialog Box***

8. From the Choose Install Location dialog box, set the desired installed directory by either typing the path under Destination Folder or using the Browse button to navigate to the desired location. If previous version (s) of ACE are being retained, you must pick a location other than where a previous version is installed. For ease of use with scripts, choose a directory name that does not use spaces. Click **Next>** to continue.

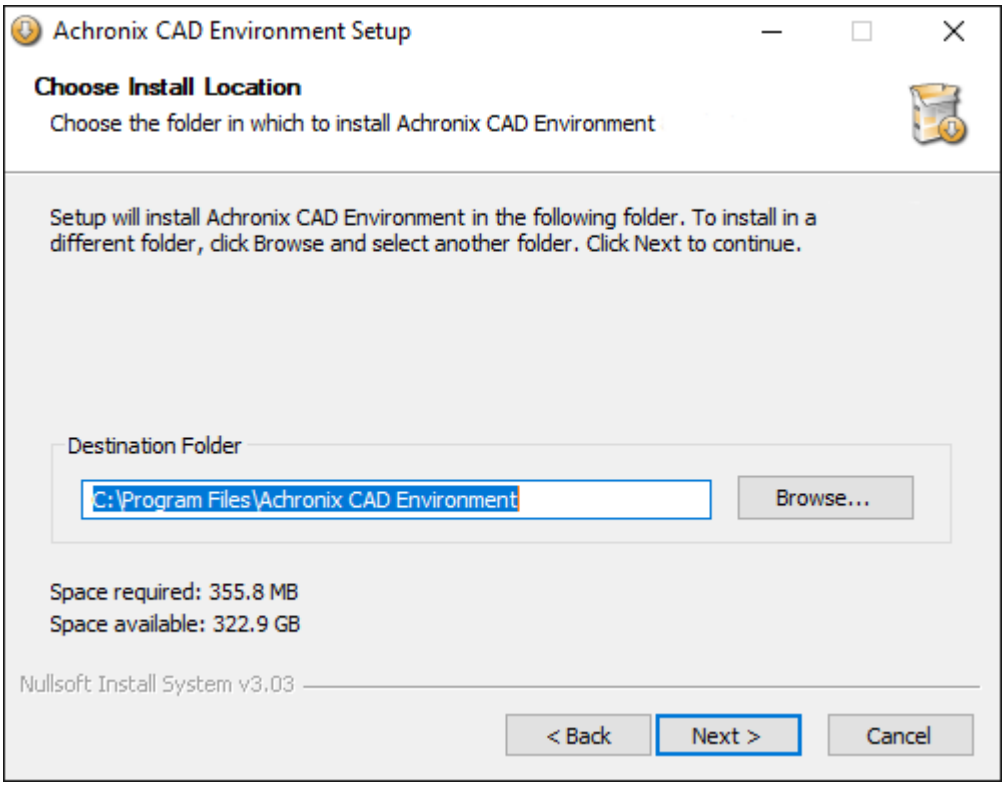


Figure 20: ***Choose Install Location Dialog Box***

9. From the Choose Start Menu Folder dialog box, select the desired folder and click **Install** to start file extraction and begins installation. If a Microsoft Visual C++ installer appears, click **Yes** to accept the license agreement.

10. For a first-time installation, from the License Selection page, select **Manuallyinstalllicenselater** and click **Close**. Otherwise, if a node-locked license or a license server has already been installed, point to the location of the license file or license server and click **Close**.

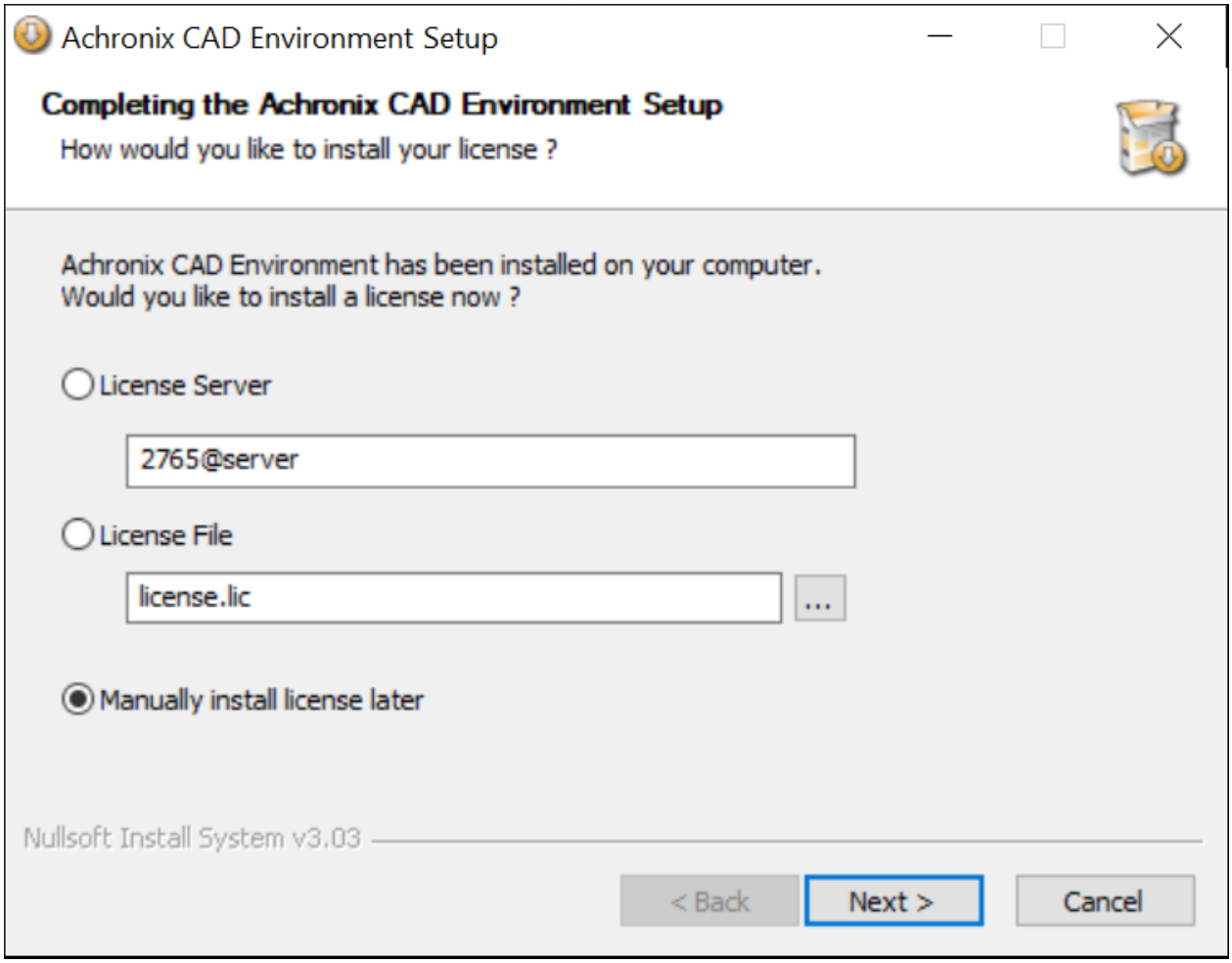


Figure 21: ***License Selection***

11. Click **Finish** from the final dialog box. Install the license file and verify the installation per License Installation (Windows) (see page 45).

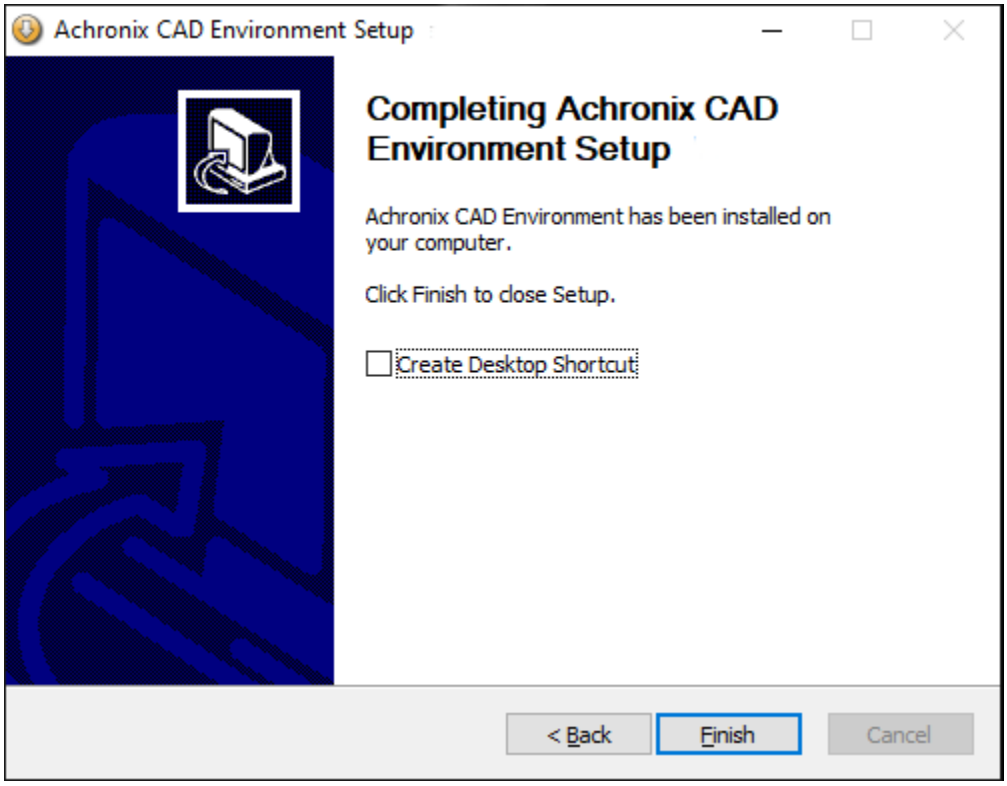


Figure 22: ***Completing Install***

12. Optionally create an environment variable `ACE_INSTALL_DIR` to set the location of the `/Achronix` directory that can be used by scripts to easily access ACE.

Upgrading an ACE Installation

Achronix presently does not support multiple parallel versions of ACE on the same machine. Thus before upgrading ACE, the prior version should be uninstalled.

1. Disconnect any USB Bitporters
2. (If a node-locked license is being used for ACE:) Copy the `license/*.lic` file from the ACE installation directory to another location (somewhere not under the ACE installation directory).
3. Uninstall the prior version of ACE
4. Install the desired version of ACE
5. (If a node-locked license is being used for ACE:) Copy the `license/*.lic` file back to the proper location within the new ACE installation directory.
6. Re-connect any USB Bitporters
7. Run ACE

Installing multiple versions of ACE at the same time is not supported in Windows

Unsupported: Installing multiple versions of ACE at once

This is not officially supported due to limitations in the existing installer/uninstaller framework used by ACE. We do hope to support this scenario in a future ACE release.

Unsupported Workaround:

1. Disconnect any USB Bitporters
2. Install each version of ACE into a separate directory. See the directions below regarding uninstalls.
3. Re-connect any USB Bitporters
4. Run the desired version of ACE.

Be aware that the most recently installed version of ACE will also be the first one in the PATH environment variable, which will affect which version of ACE and `acx_stapl_player` gets executed if /when running those tools manually from the Command Prompt.

Unsupported: Uninstalling ACE after having previously installed multiple versions of ACE at once

This scenario is not officially supported, though we do hope to remedy this in a future version of ACE.

At this time, the ACE uninstaller is only able to uninstall the most-recently-installed version of ACE. (Note that this is not the same as the most recent release of ACE.)

Unsupported Workaround (if the version-to-be-uninstalled is not the version most recently installed):

1. Disconnect any USB Bitporters
2. Re-install the EXACT version of ACE you wish to uninstall on-top-of itself. ***The installation directory must match exactly.***
3. Uninstall that unwanted version of ACE. When complete, all remnants of that ACE version should have been removed.
4. Repeat steps 2 and 3 (re-install, then uninstall) for each remaining unwanted version of ACE.
5. Re-install the current favorite version of ACE on-top-of itself. This will ensure the favorite version of ACE is once-again the first version in the PATH environment variable (required when running "`ace`" and "`acx_stapl_player`" from the Command Prompt), and will also make the uninstaller once-again aware of that version.
6. Re-connect any USB Bitporters

Uninstalling ACE

> **Caution!**
>
> The ACE (un)installer does not fully support multiple copies of ACE being installed on the same machine simultaneously. The uninstaller will always uninstall the most recently installed version of ACE, regardless of version number. See the section Upgrading an ACE Installation (see page 38) for further details and workarounds.

To uninstall the windows installation of ACE:

1. Select **Start** → **Programs** → **AchronixCADEnvironment** → **UninstallAchronix CADEnvironment.** Then skip to step 4. Or open the **Control Panel**.
2. Click on **Programs and Features**.
3. From the Uninstall or change a program window, double-click **AchronixCADEnvironment**.
4. From the Achronix CAD Environment Uninstall window, click **Uninstall** to start the uninstall process. The window closes once the process completes.

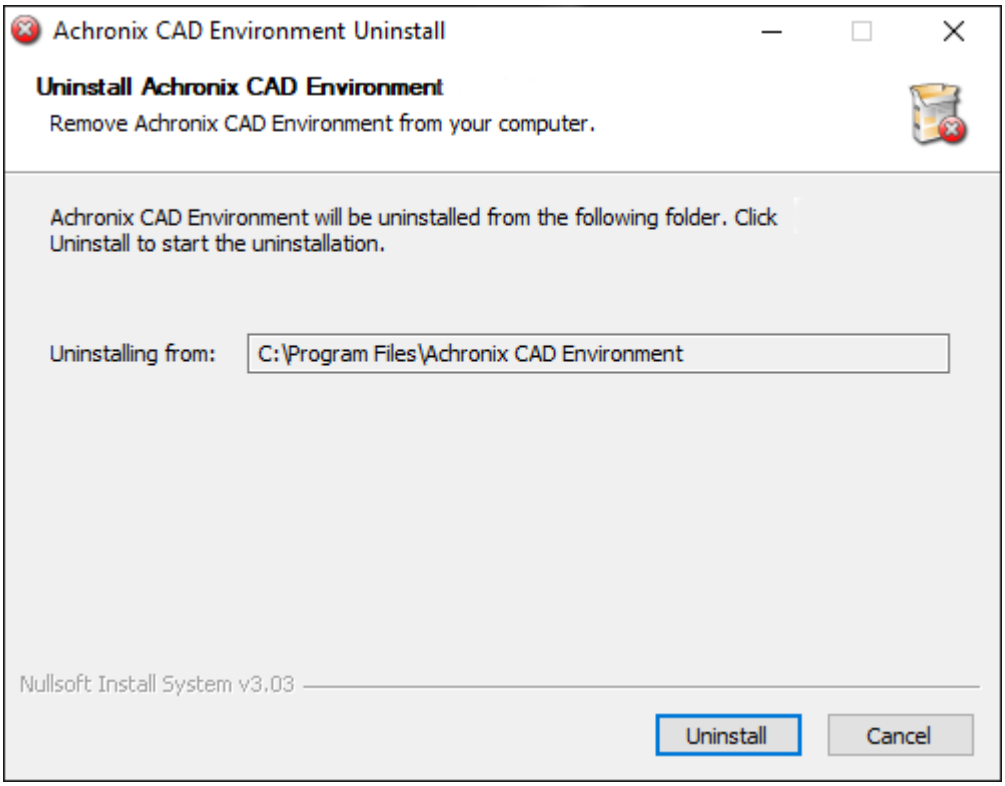


Figure 23: ***Achronix CAD Environment Uninstall Window***

Installing Synplify Pro for Achronix

Warning!

If the license configuration is node locked when upgrading Synplify Pro for Achronix, any existing license files in the directory `\Synopsys` may be removed or overwritten. Be sure to save a copy of the license file in a safe place for reuse after a program upgrade.

After downloading the Synplify Pro software archive, start the install process:

1. Doubleclick the install program (for example, `fpga_vL-2016.09X_1w_win.exe`) to begin the install.
2. From the Synplify Pro for Achronix Setup window (shown below), click **Next >** to open the License Agreement window. Select **Iacceptthetermsofthelicenseagreement** followed by **Next>**.

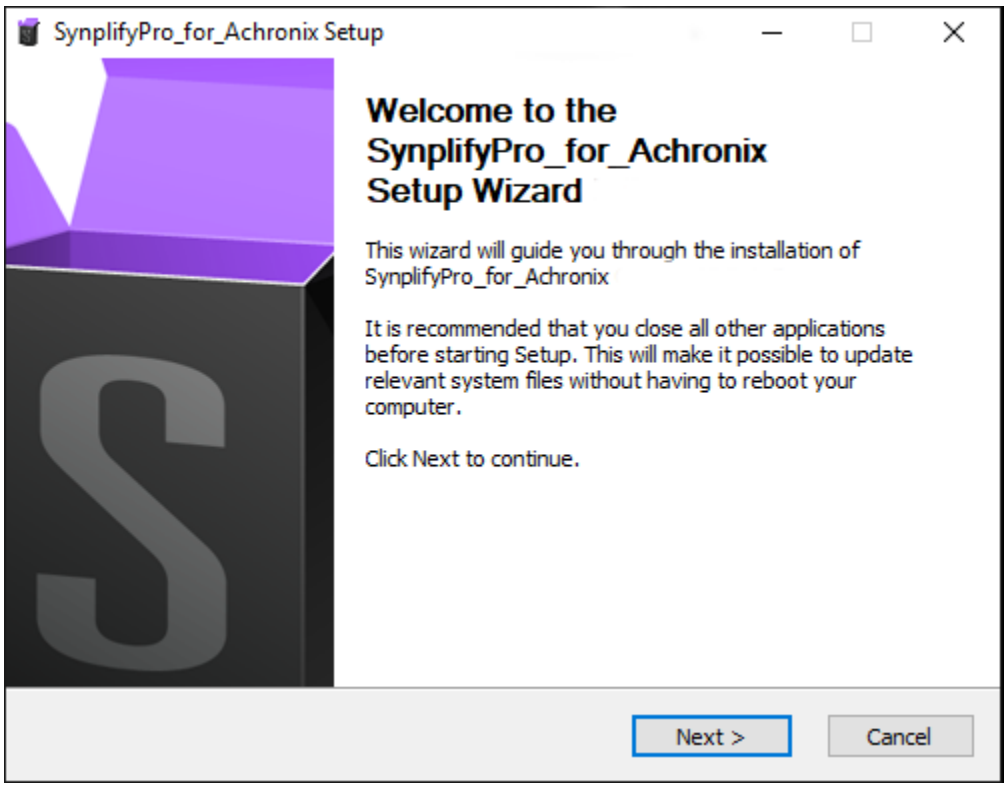


Figure 24: ***Synplify Pro for Achronix Setup Window***

3. Accept the License Agreement.

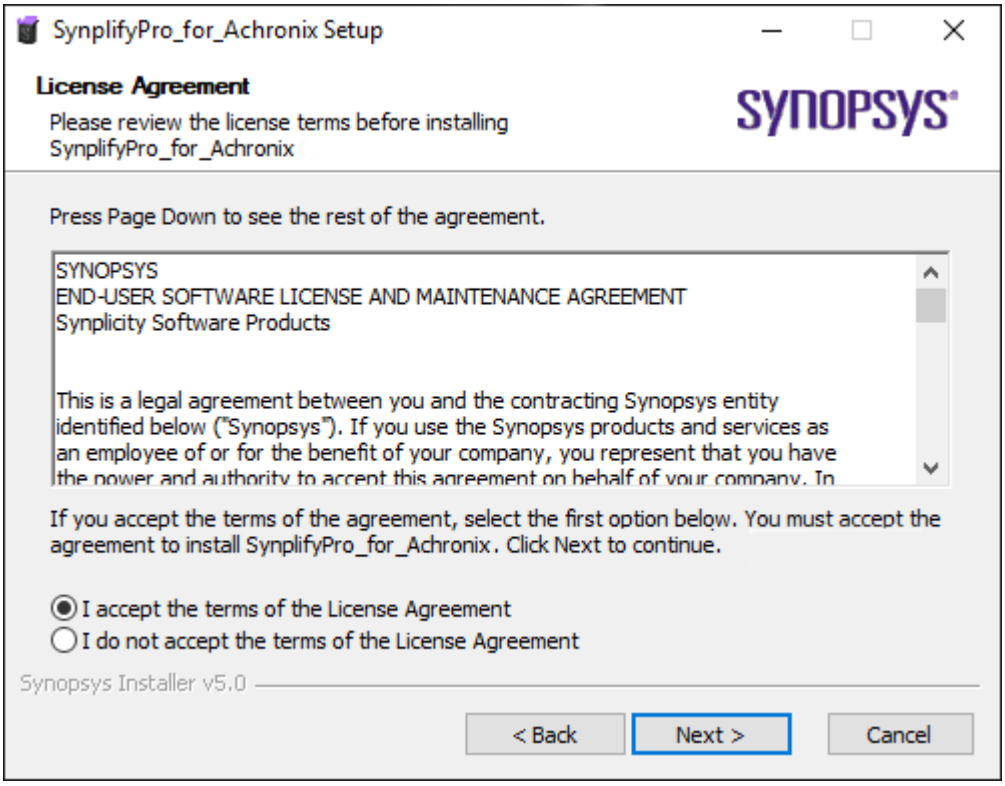
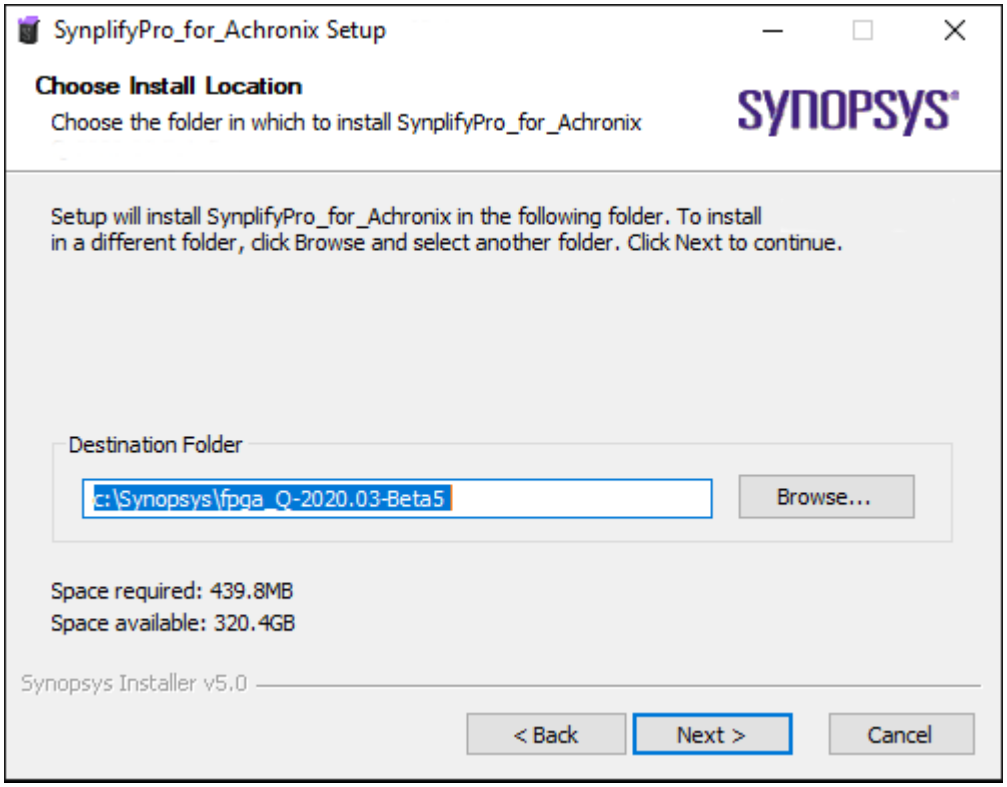


Figure 25: ***Synopsys End-User License Agreement***

4. Choose the location for the software.



5. From the Start Copying Files window, select **Next>** to begin the installation.

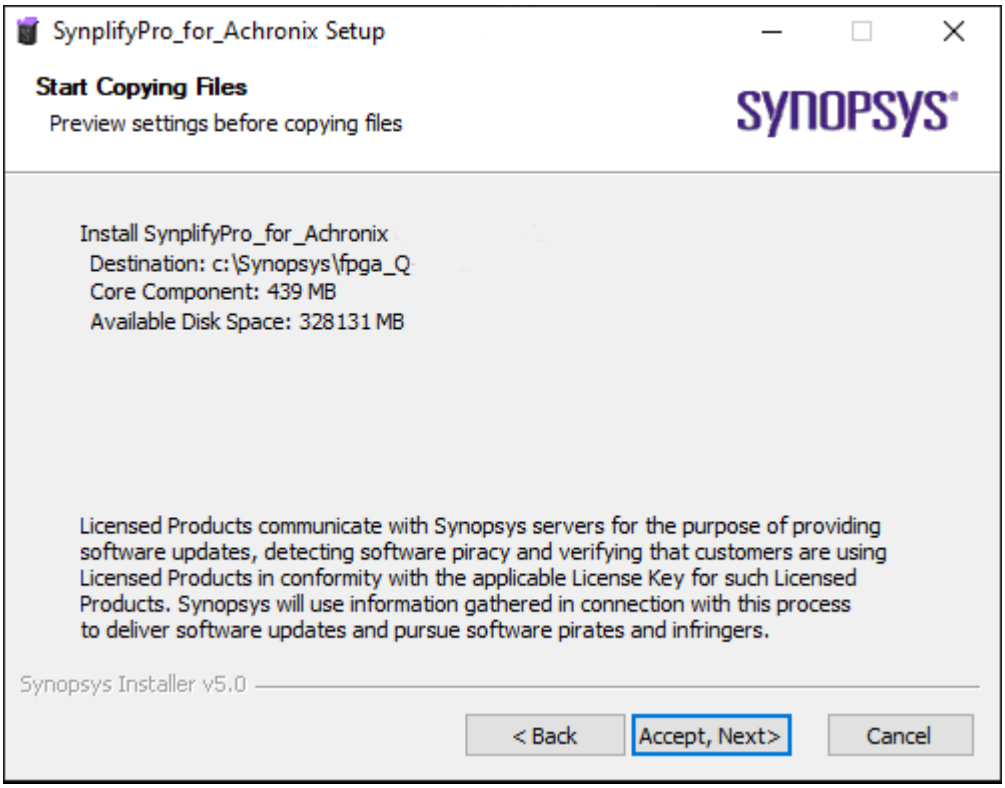


Figure 26: *Start Copying Files Window*

6. From the InstallShield Wizard Complete window, click **Finish** to complete the installation.

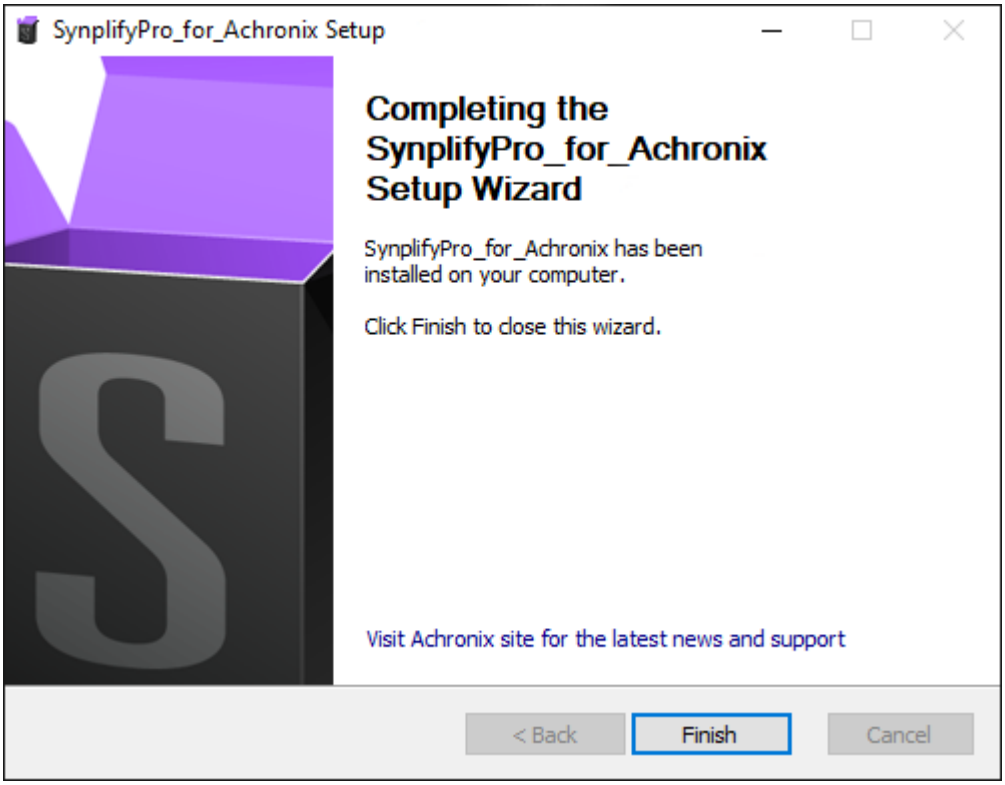


Figure 27: ***InstallShield Wizard Complete Windows***

7. Install the license file and verify the installation per "Synplify Pro for Achronix License Installation" in License Installation (Windows) (see page 45).

Chapter - 7: License Installation (Windows)

ACE License Installation

Node-Locked Licensing

1. Determine the physical network address (or MAC) of the host system.
2. Request licenses from Achronix as described in Obtaining Software Licenses (see page 11). Achronix Semiconductor will send a file, `ace.lic`, as an email attachment. Save this file to a safe location.
3. Once the Achronix CAD Environment is installed per Software Installation (Windows) (see page 32), save `ace .lic` to the directory: `\Program Files\Achronix CAD Environment\Achronix\license.` Or to the location used during install if the default location was overridden. Ensure you have sufficient write privileges for the target directory.

4. To verify installation and licensing, select **Start** → **Programs** → **Achronix CAD Environment** → **Achronix CAD Environment** to start ACE. ACE starts, displaying a welcome screen (see below).

Figure 28: ***ACE Welcome Screen***

If the license is not found or is improperly installed, an error screen (shown below) appears. Click **OK** to terminate. Refer to Troubleshooting (Windows) (see page 54) or contact Achronix Technical Support at support@achronix.com .

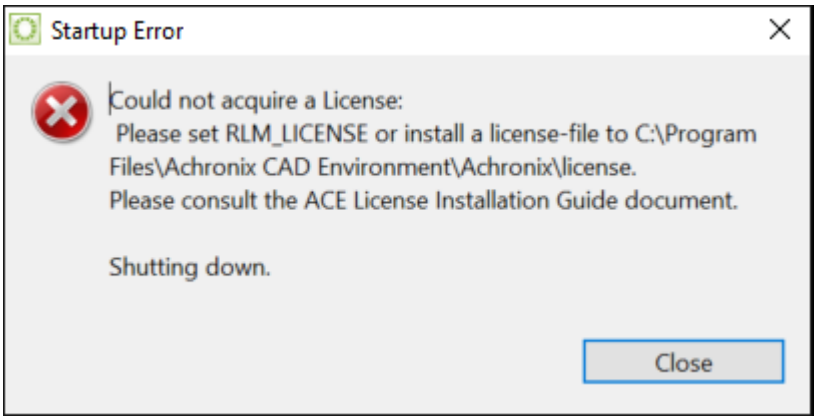
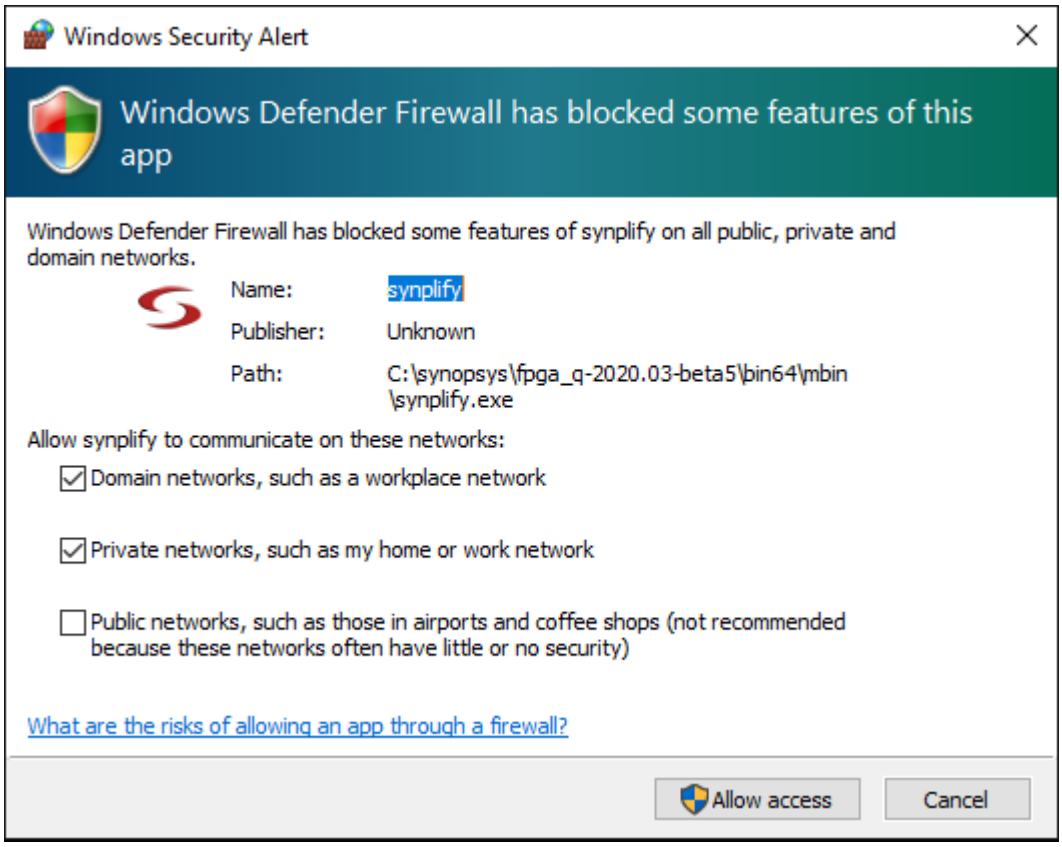


Figure 29: ***Startup Error Dialog Box***

It is possible that the windows firewall configuration will prompt for permission to allow ACE to access the network (an example is shown below). Grant permission by clicking **Allow access**.



Floating Licensing

For a floating license, there is an option to run the license server from a Linux or Windows server, even if the license(s) themselves are intended for use on Windows. If your license server is on a Linux machine, see the section on License Installation (Linux) (see page 20). If you require installing the license server on a Windows server, contact Achronix support for further information.

Note

Contact Achronix support at support@achronix.com if you require assistance with installing the license server software on a Windows server.

Synplify Pro for Achronix License Installation

Floating-Node Licensing

1. Determine the physical network address (or MAC) of the host system.
   From Command Prompt, enter:

   ```
   C:\ ipconfig /all
   ```

   The minimum information required are the numbers following the string “Physical Address” (of the form 00:12:34:56:67:89).
   Or:

   a. Open the **Settings** → **Network & Internet** → **Networkand Sharing Center** to open the network connections window.

   b. Select the link in your active networks, for example Local Area Connection, and click to open the Status dialog box.

   c. From the **Status Dialog Box** tab, click **Details...** to open the Network Connection Details dialog box. The information required are the numbers following “Physical Address” (MAC address) in the form 00-12-34-56-67-89. Click Close on both windows to return to the desktop.

2. Request licenses from Achronix as described in Obtaining Software Licenses (see page 11), Achronix Semiconductor will send a file, `synplify.lic`, as an email attachment. Save this file to a safe location.

   Note

   Ensure the FEATURE line in `synplify.lic` begins on a new line. If the newline returns are lost, licensing problems can occur.

3. Once the Synplify Pro for Achronix is installed per “Installing Synplify Pro for Achronix” in Software Installation (Windows) (see page 32), save `synplify.lic` to the location: `C:\Synopsys\<license_dir>`. Or similar location used for storing license files.

4. Edit `synplify.lic` to set the hostname1 to “localhost” or the actual hostname, and set the path to the Synplify Pro license daemon:

   ```
   SERVER localhost 012345678901 27000 VENDOR snpslmd <path_to_snpslmd>/snpslmd USE_SERVER
   INCREMENT SSST snpslmd 1.0 05-Jul-2012 1
   ED1EDC268F3F082F8849 \
   ```

5. Navigate to the license server directory and start the license server:

```
C:\> c:\<license_server>\lmgrd -c
C:\<license_server>\license.lic -l
C:\<license_server>\lmgrd_synplicty.log &
```

Verify that the license server has started correctly.

```
C:\> C:\license_server\lmutil lmstat -a
```

This command returns an indication that both the license server and daemon are up:

```
lmstat - Copyright (c) 1989-2009 Flexera Software, Inc. All Rights
Reserved.
Flexible License Manager status on Mon 10/3/2011 22:04 [Detecting lmgrd processes...]
License server status: 27000@localhost
License file(s) on Australia: C:\license_server\license.lic:
localhost: license server UP (MASTER) v11.8
Vendor daemon status (on localhost):
snpslmd: UP v11.8
Feature usage info:
Users of SSST: (Total of 1 license issued; Total of 0 licenses in use) Users of
synplifypro_achronix: (Total of 1 license issued; Total of 0
licenses in use)
```

6. To set the required environment variable on the host, open the**Control Panel** → **System** → **Advanced system settings** to open the System Properties window (see below).

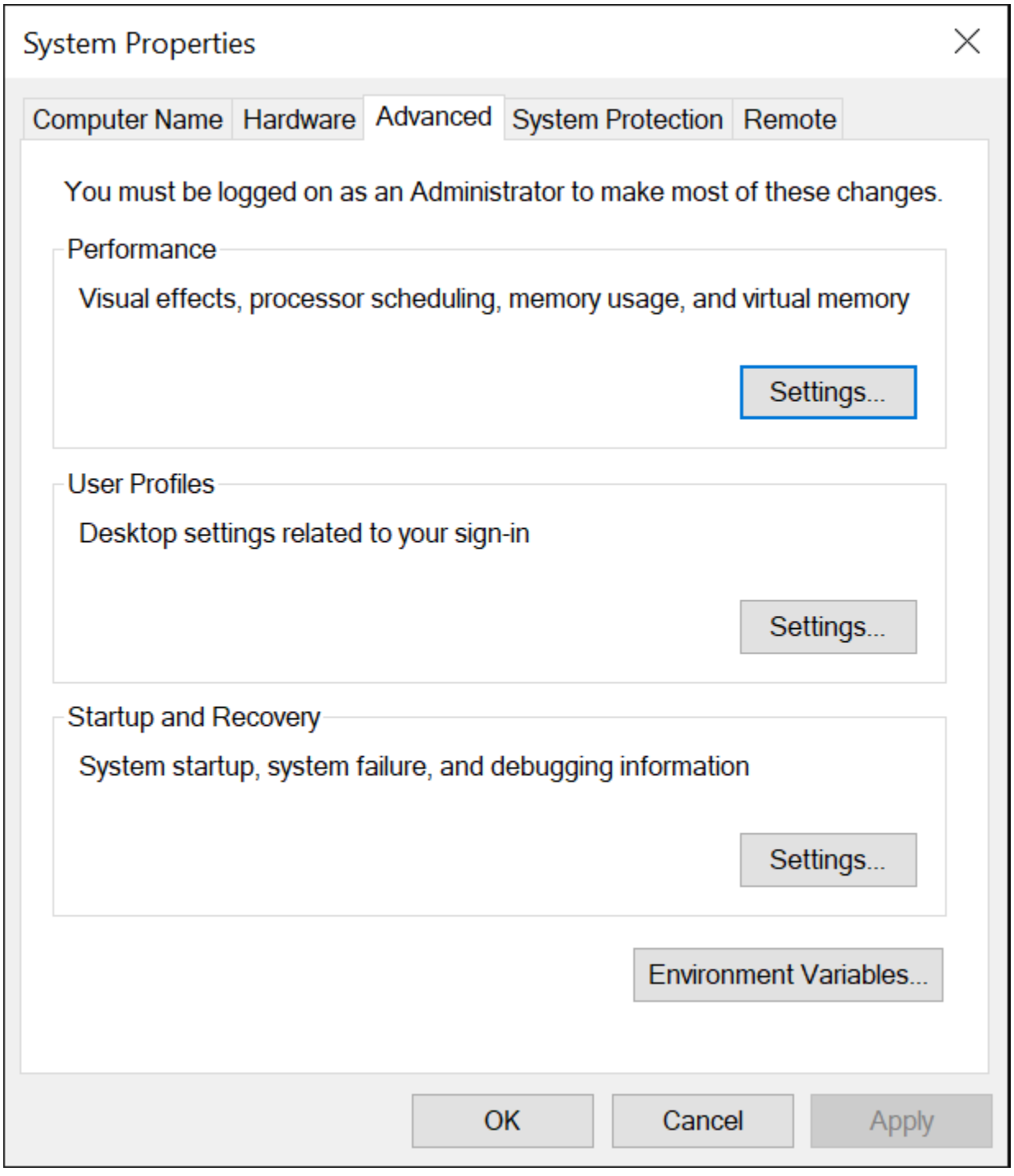


Figure 30: ***System Properties Window***

7. Click **Environment Variables...** to open Environment Variables window (figure below). Click **New** and enter:

   Variable name: **SNPSLMD_LICENSE_FILE**
   Variable value: ***<license_file_path>***

8. Click **OK** to set, followed by **OK** to close the Environment Variables window and then the System Properties window.

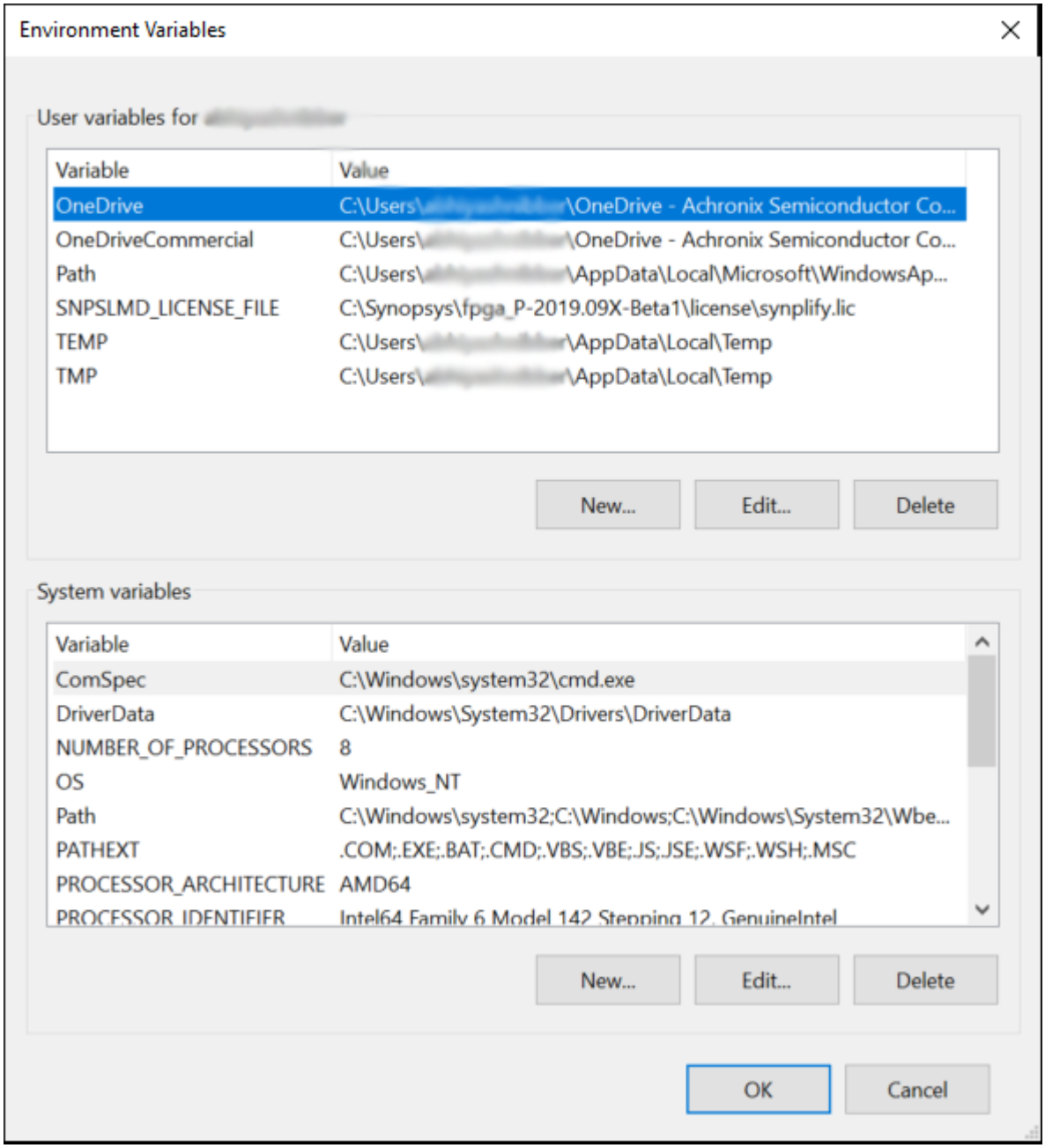


Figure 31: ***Environment Variables Window***

Note

The environment variable can also be set from the command line (but will be forgotten as soon as the command line window is closed):

```
C:\> set SNPSLMD_LICENSE_FILE=C:\<license_file_path>
```

Node-Locked License

Under Windows, Synplify-Pro for Achronix does not require the license server software to be running. Simply store the `synplify.lic` file received from Achronix in a directory on the host machine, and set the SNPSLMD_LICENSE_FILE environment variable as in step 6 above.

Starting Synplify Pro for Achronix

To verify installation and licensing, select **Start → Programs → Synopsys → Synplify Pro for Achronix E-201x.xxx-xxx → Synplify Pro** to start the program. A window displaying the license agreement appears. Click **Yes** to start the program. If licensing is properly set, the main program window appears.

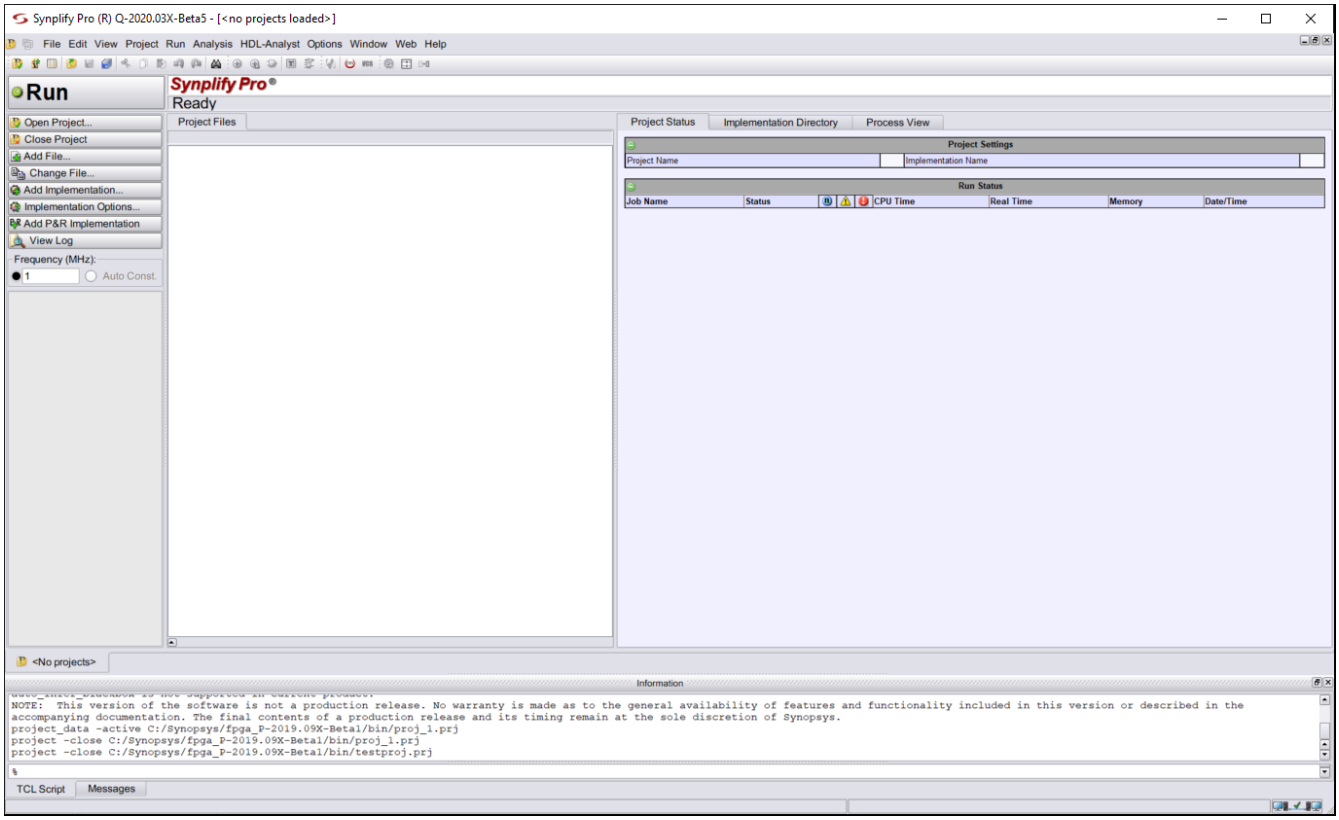


Figure 32: ***Synplify Pro for Achronix Main Program Window***

1. If the license is not found or is improperly installed, a License Request window (below) opens. Click **Close** to terminate. Refer to "Synplify Pro for Achronix Licensing Issues" in License Installation (Windows) (see page 45) or contact Achronix Technical Support at support@achronix.com .

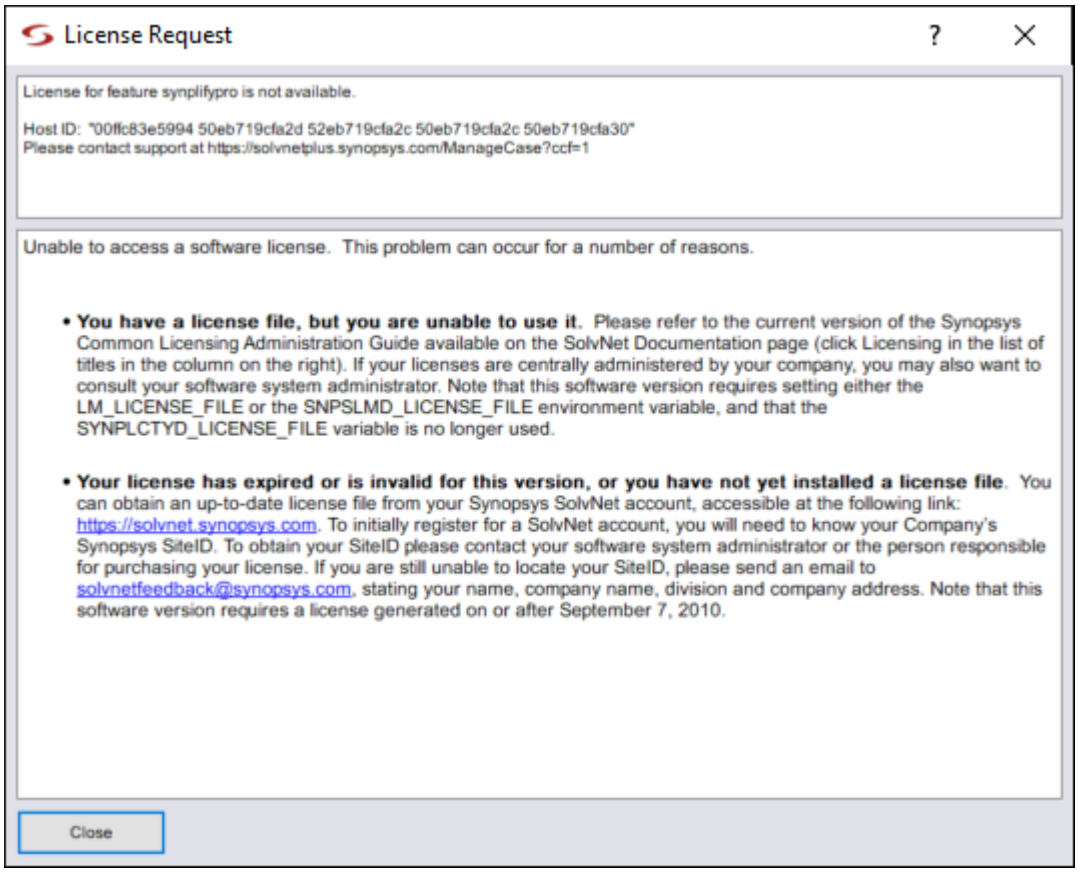


Figure 33: ***License Failure Window***

Chapter - 8: Troubleshooting (Windows)

This chapter provides troubleshooting hints for Windows licensing.

ACE Licensing Issues

Checklist

- Verify the install path of the license is correct:

```
C:\Program Files\Achronix CAD Environment\Achronix\license
```

- Verify that license file has the proper extension (`.lic`) and does not contain an illegal (nonalphanumeric) characters in the name.
- Verify that the host ID listed in the license file matches the MAC address of an enabled Ethernet adapter in the system.
- Ensure the program path below has been added to the Path statement:

```
C:\Program Files\Achronix CAD Environment\Achronix\system\cmd
```

The Path variable is set by opening the **Control Panel** → **System** → **Advanced system settings** to open the System Properties window, then clicking the Advanced tab, followed by clicking **Environment Variables**.

Other Issues

When upgrading ACE, any existing license files in the directory `./license` may be removed. Be sure to save a copy of the license file in a safe place for reuse after a program upgrade.

Synplify Pro for Achronix Licensing Issues

Checklist

- Verify the install path of the license is correct, for example:

```
C:\Synopsys\license.txt
```

- Verify that license file does not contain an illegal (nonalphanumeric) characters in the name.
- Ensure that the FEATURE line in the license file starts on a new line.
- Verify that the HOSTID listed in the license file matches the MAC address of an enabled Ethernet adapter in the system.
- Ensure that the SNPSLMD_LICENSE_FILE environment variable exists and is set to the correct install path for the license file, for example:

```
C:\Synopsys\license.txt
```

The Path variable is set by opening the **Control Panel** → **System** → **Advanced system settings** to open the System Properties window, then clicking the Advanced tab, followed by clicking **Environment Variables**.

Other Issues

Save the License File when Performing an Upgrade

When upgrading Synplify Pro for Achronix, any existing license files in the directory `\Synopsys` may be removed or overwritten. Be sure to save a copy of the license file in a safe place for reuse when performing a program upgrade.

Multiple Ethernet Cards Present on the System

If the host system has multiple Ethernet cards, first install the Synplify license manager and run `lmutil lmhostid` from the command prompt to get the reported MAC address. Then, use this MAC address when requesting the license.

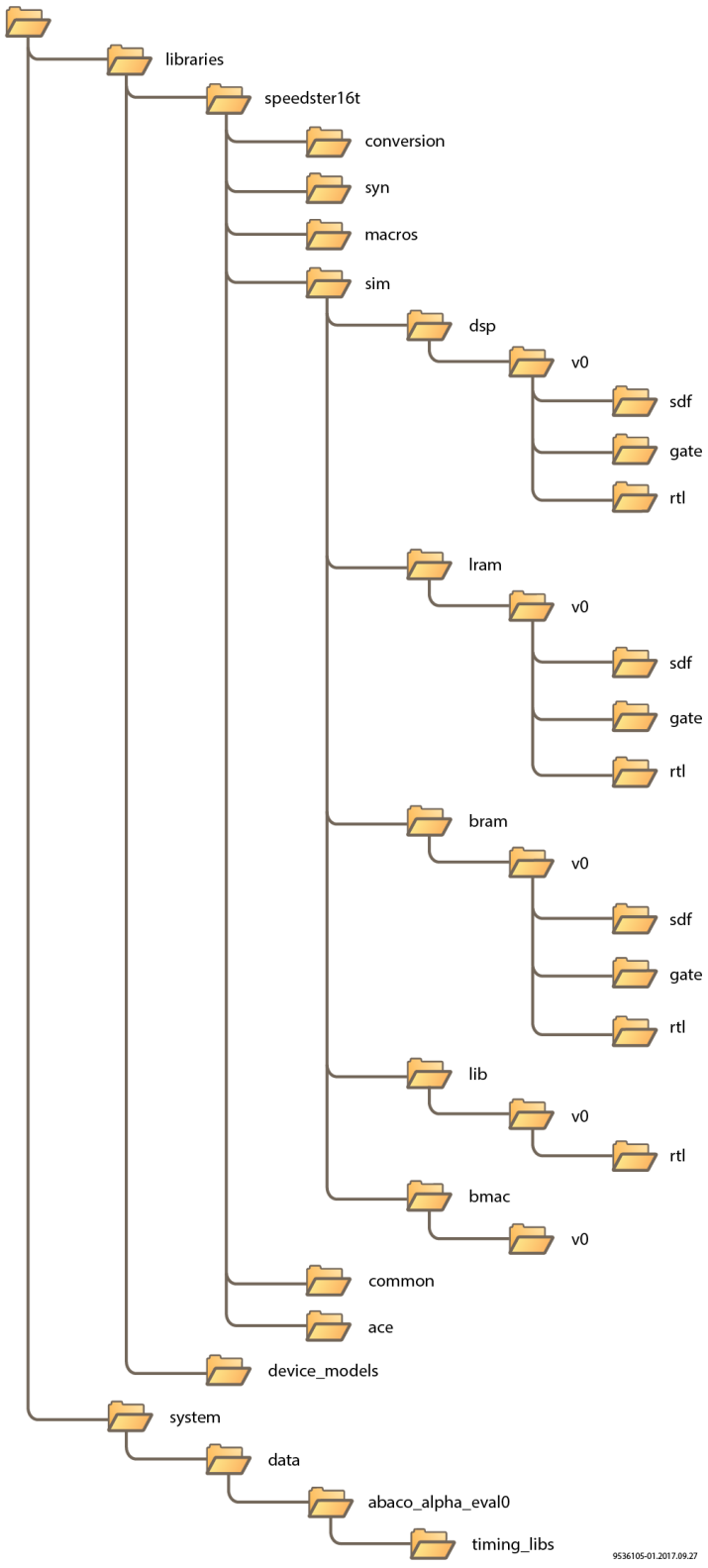
Chapter - 9: Device Overlays

Support for Achronix devices (e.g., Speedcore instances or Speedster devices) is provided in ACE and Synplify-Pro by the use of overlays. Achronix provides device overlays for downloading. Users must install all device overlays for the devices they are planning to use.

ACE Overlays

Device overlays for ACE are delivered as a zip or tar file containing the additional library and system files required for the device in use. For example, `ACE_8.1.1_Linux_AC7t1500ES0.tgz` and `ACE_8.1.1_Windows_AC7t1500ES0.zip` contain the necessary overlays to support the Speedster7t AC7t1500 device in ACE version 8.1.1 in Linux (`.tgz` file) and Windows (`.zip` file) respectively. To install ACE along with the device overlays on Linux, users can simply use the `install_ace.sh` script provided. See the directions on how to use this script in the section Installing ACE (see page 17). For Windows, or if users wish to install device overlays manually on Linux, follow the directions below.

The zip/tar file will contain a directory structure similar to the following:


libraries
speedster16t
conversion
syn
macros
sim
dsp
v0
sdf
gate
rtl
lram
v0
sdf
gate
rtl
bram
v0
sdf
gate
rtl
lib
v0
rtl
bmac
v0
common
ace
device_models
system
data
abaco_alpha_eval0
timing_libs
9536105-01.2017.09.27

Note

Before proceeding, make sure that write privileges are enabled for the ACE Install directory (usually `C:\Program Files\Achronix CAD Environment\Achronix` in Windows or `/opt/Achronix-Linux` in Linux).

Extract the contents of the zip/tar file into the ACE Install directory. ACE now allows the selection of device(s).

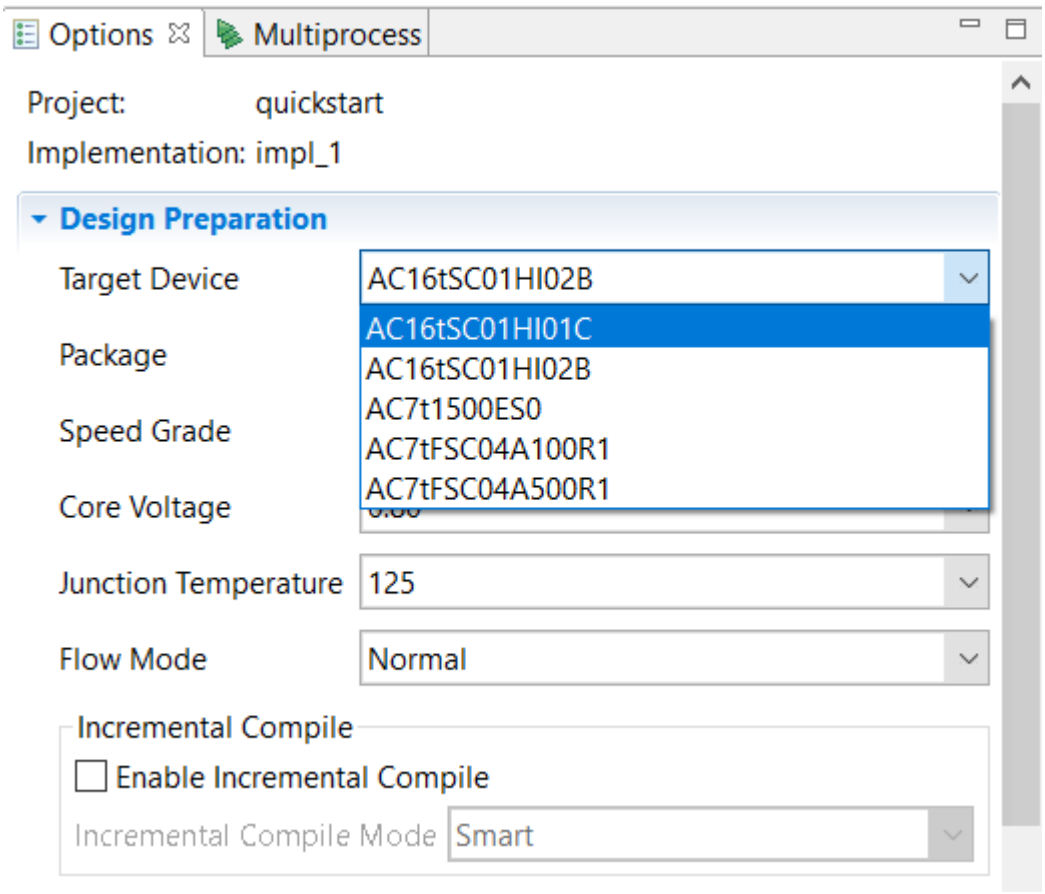


Figure 34: ***ACE Design Preparation Options Showing the Added Devices***

Synplify Pro Overlays

Synplify Pro overlays are delivered as a tar file, with the name indicating the applicable version of Synplify Pro and the custom devices supported. For example, `speedster7t_16t_Linux_P-2019.09X-Beta1_overlay.zip` represents the overlays for the Speedster7t, Speedcore7t, and Speedcore16t evaluation devices, with the overlays applying to version P-2019.09X-Beta1 of Synplify-Pro.

Caution!

Ensure that the overlay downloaded matches the version of Synplify Pro that is to be updated. If subsequently a new version Synplify Pro is used, then a new overlay file must be requested from Achronix.

Once the tar file is downloaded, it can be extracted with the following command:

```
$ tar xvf <overlay_file_name>.tar
```

Once extracted the following directory structure is obtained:

```
/-lib
   |-generic
   |-parts
   |-vhd
   |-vhd2008
/version.txt
```

Applying the Overlay

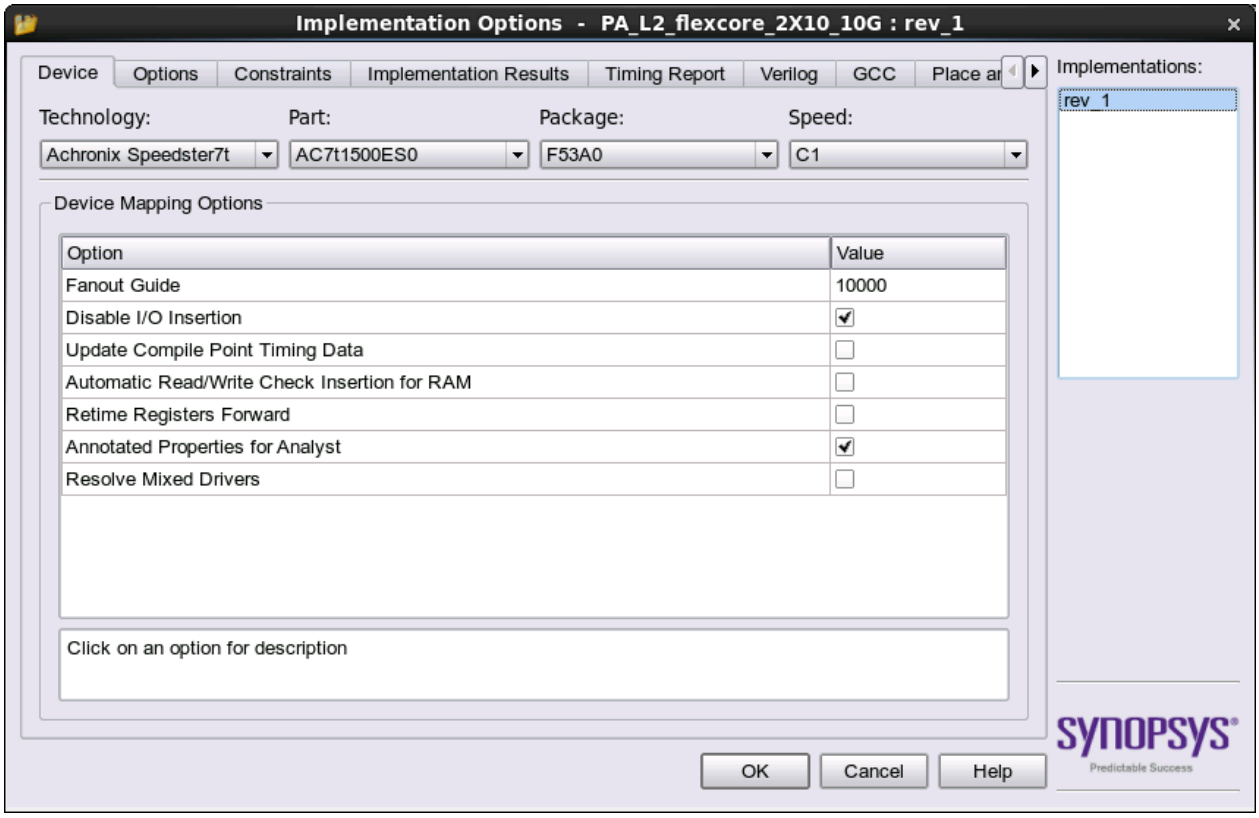
1. Locate the subdirectory `/lib` within the Synplify Pro installation directory.
2. All of the files from the extracted overlay directories should then be copied to their equivalent locations in the Synplify Pro installation directory. However, if other overlays have been downloaded, it may be necessary to manually merge some files.

   Note

   Files `/lib/generic/custom_partdata.txt` and `/lib/parts/custom_parts.txt` must be manually merged if they already exist in the Synplify Pro installation. In both instances, add the contents of the new overlay file to the existing file, using a text editor.

3. To ensure that all new devices have been installed, launch Synplify Pro. The splash screen should indicate that the new devices have been detected.

4. To confirm the parts are correctly installed, after opening Synplify Pro, create a new project. Then select **Implementation Options** → **Device**. The new parts should be available in the "Part:" drop-down list.



Revision History

Version	Date	Description
2.0	01 Oct 2017	• Significant set of updates for new Synplify-Pro and ACE installation licensing schemes and conversion of document to Confluence.
2.1	23 Oct 2018	• License Installation (Windows) (see page 45): Updated ACE Welcome screenshot. • Obtaining Software Licenses (see page 11): Provided clarifications and a note to differentiate between requesting for an evaluation license and generating PO for licenses attached to sales orders.
2.2	25 Jun 2019	• Updated all pages and screenshots to reflect the newest licensing and installation schemes based on architecture specifications and after migration to the ACE 7.x infrastructure.
2.3	24 Mar 2020	• Updated Minimum Memory Requirements (see page 6). • Included install_ace.sh instructions for Linux. • Updated Synplify Pro Node-Locked License Installation (Windows) (see page 52) to exclude need for server. • Updates for Windows 10 and various screenshots.
2.4	20 Jul 2020	• Updated the Linux and Windows Troubleshooting sections. • Included the steps for running install_ace.bat in ACE Windows installation instructions. • Updated all screenshots to not include the product version.