

## ADAPT 5 - Installation and Validation

### 1. System Requirements

ADAPT 5 is supported for the following platforms:

HARDWARE	COMPILER	OPERATING SYSTEM
PC	<u>Intel oneAPI Base Toolkit + oneAPI HPC Toolkit</u> Requires separate installation of MVS <sup>1</sup> 2019 or 2022.	Windows 11/10/8/7
PC	<u>Intel Parallel Studio XE 2020 and XE 2019 (updates 3-5)</u> Only Composer Edition w/Fortran needed. Requires separate installation of MVS <sup>1</sup> 2019 or 2017.	Windows 10/8/7
PC	<u>Intel Parallel Studio XE 2019 (initial release, updates 1 &amp; 2)</u> Only Composer Edition w/Fortran needed. Distribution <u>will</u> automatically install MVS <sup>1</sup> 2015 Shell & Libraries when MVS 2017 or 2015 <u>not</u> already installed.	Windows 10/8/7
PC	<u>Intel Parallel Studio XE 2018</u> Only Composer Edition w/Fortran needed. Distribution <u>will</u> automatically install MVS <sup>1</sup> 2015 Shell & Libraries when MVS 2017 or 2015 <u>not</u> already installed.	Windows 10/8/7
PC	<u>Intel Parallel Studio XE 2017</u> Only Composer Edition w/Fortran needed. Distribution <u>will</u> automatically install MVS <sup>1</sup> 2013 Shell & Libraries when MVS 2017, '15, '13 or '12 <u>not</u> already installed.	Windows 10/8/7
PC	<u>Intel Parallel Studio XE 2016</u> Only Composer Edition w/Fortran needed. Distribution <u>will</u> automatically install MVS <sup>1</sup> 2013 Shell & Libraries when MVS 2015,2013,2012 <u>not</u> already installed.	Windows 10/8/7
PC	Intel Fortran 2013, 2011, 11.x, 10.x also supported	Windows 7

<sup>1</sup>Microsoft Visual Studio.

With its release of the oneAPI (Application Programming Interface) toolkit, the Intel Fortran compiler is now available at no cost to all users and does not require license files. The required version of Microsoft Visual Studio (Community edition) is also freely available.

The platforms listed in the table above are the only ones on which ADAPT 5 has been tested and validated.

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## 2. Installing ADAPT

### 2.1 Installation of ADAPT with Intel oneAPI

To install ADAPT, the following steps are required in order:

- 1) install Microsoft Visual Studio
- 2) install Intel oneAPI Toolkits
- 3) install ADAPT

Each of these installation steps is detailed below.

#### 2.1.1 Installing Microsoft Visual Studio – Free Community Edition

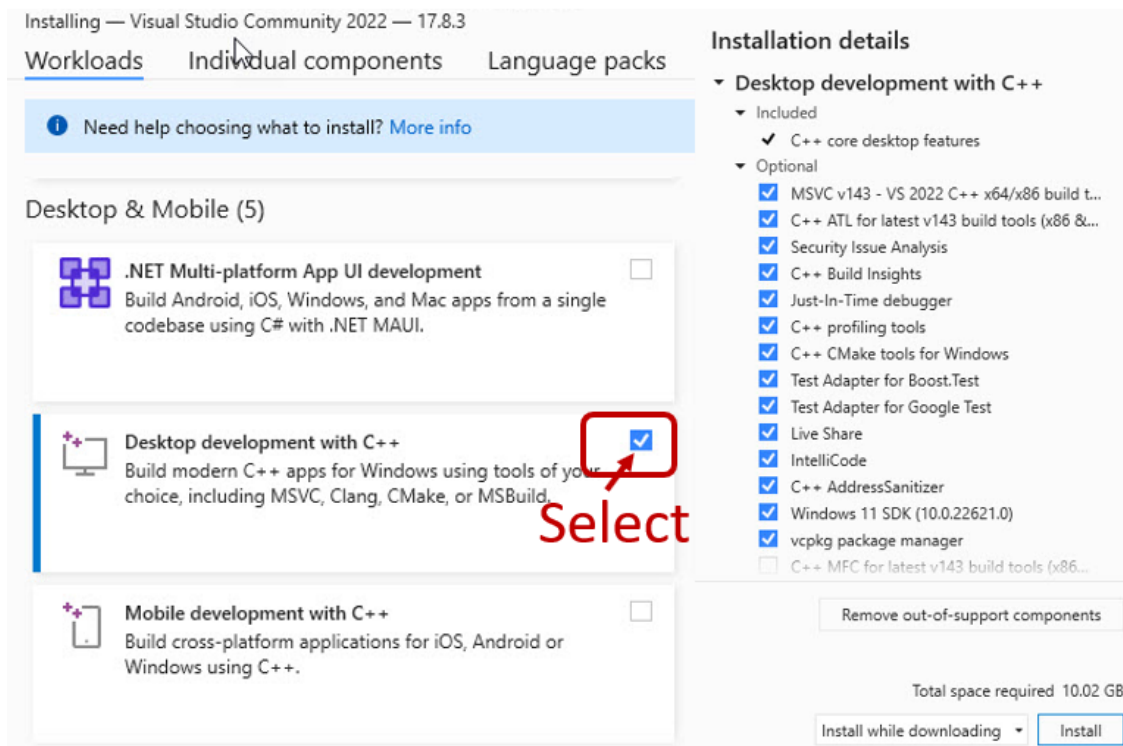
You can install either MVS 2019 or 2022. The description below is for MVS 2022.

From the link below, download and install the free Community Edition of MVS 2022:

<https://visualstudio.microsoft.com/downloads/>

Select the Visual Studio Community 2022 Edition from the list.

During installation, you will need to add the “Desktop development with C++” toolset by checking the box as illustrated in the screen shot below (your install screen may have a different arrangement – you may need to scroll to see all options). No other options (workloads) are needed, and you do not need to create a Visual Studio Account when the installation completes.



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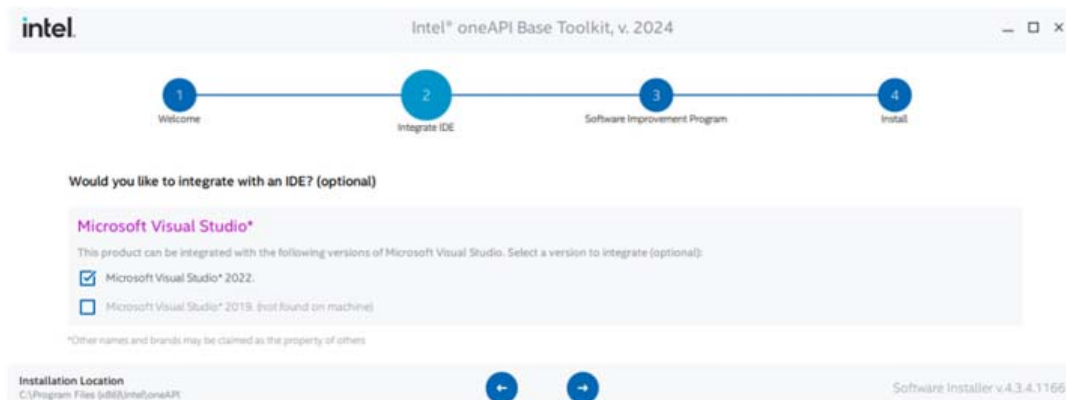
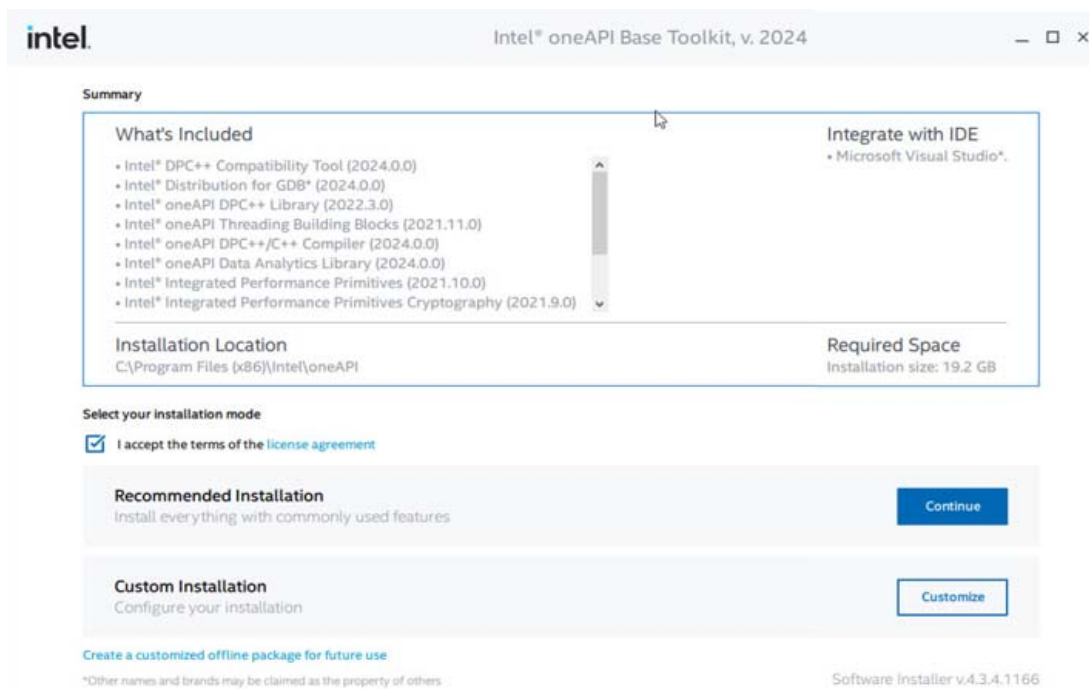
## 2.1.2 Installing Intel oneAPI Base Toolkit and Intel HPC Toolkit

Installation of both Intel's oneAPI Base Toolkit and oneAPI high Performance Computing (HPC) Toolkit are required in that order. Use the following link to download the current versions (2024.0, as of this date) of each of these two toolkits:

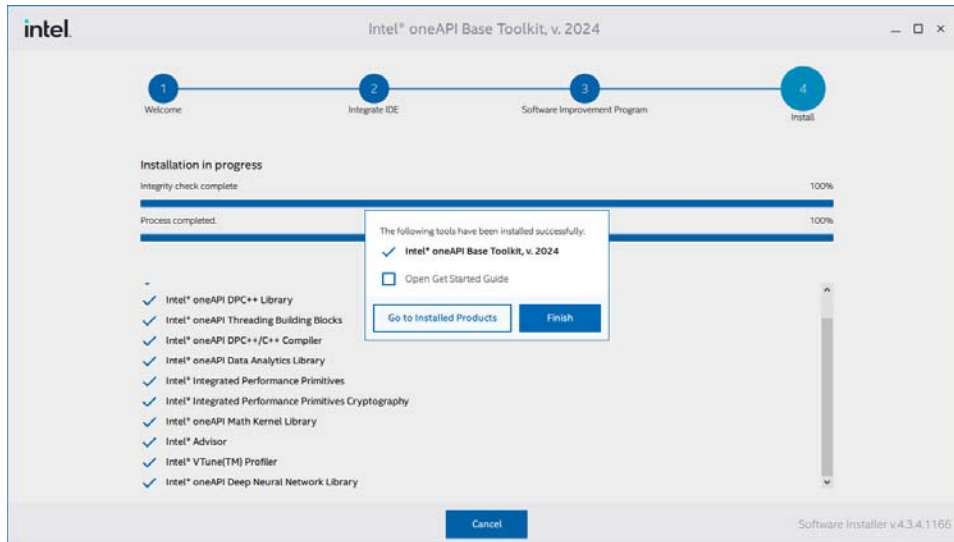
<https://www.intel.com/content/www/us/en/developer/tools/oneapi/toolkits.html#base-kit>

Note: Some earlier versions of these Toolkits contain a bug that make them incompatible with ADAPT (and other software). Intel corrected this problem in its 2022.3 release.

Intel oneAPI Base Toolkit: The following are some of the windows that will appear during installation:



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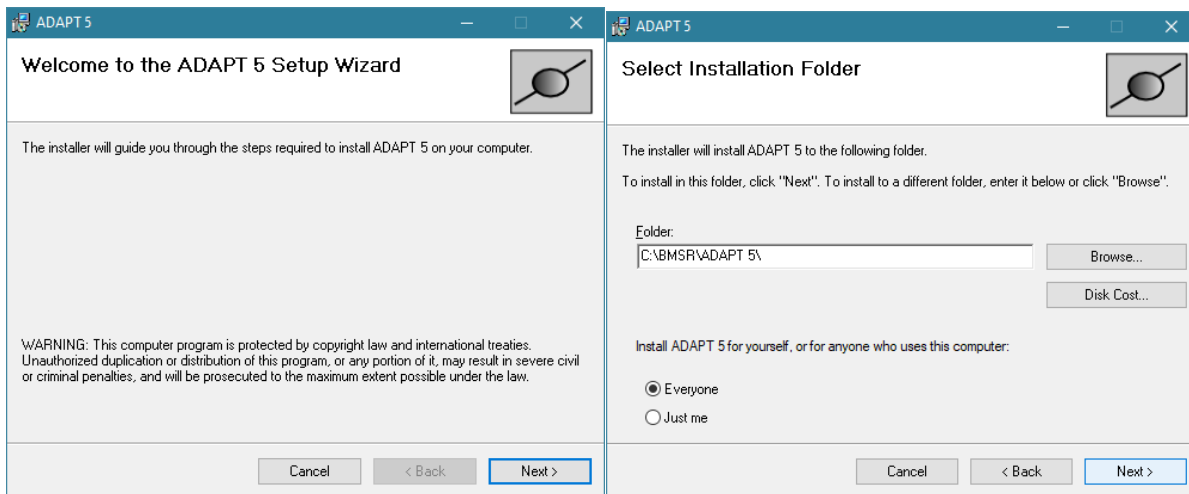
You may see some warning messages (e.g., missing Intel Graphics Driver), which can be ignored.

### 2.1.3 Installing ADAPT

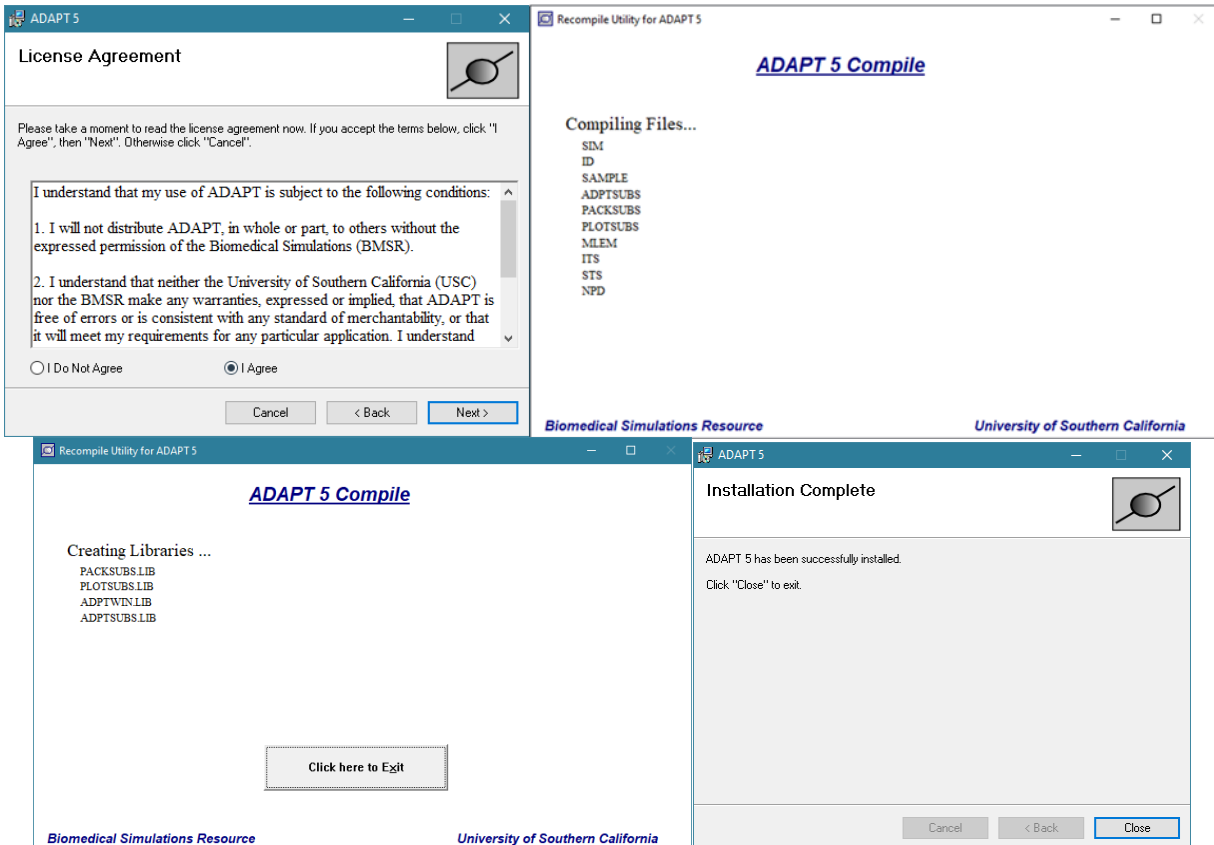
Download ADAPT 5 from the BMSR the web site via the link:

<https://bmsr.usc.edu/software/adapt/>

The following windows (and others) will appear during installation:



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After installing ADAPT it may be necessary to change the Properties of the following files in the ADAPT 5 folder: ADAPT 5.exe; Recompile.exe; ValidateADAPT.exe. For each, change the Compatibility as follows: Privilege Level – Administrator (Run this program as administrator).

The installation can be validated by running the Validation application in the ADAPT Program Group (see Section 3 below). The pdf file for the ADAPT User's Guide can also be accessed via the ADAPT Program Group after installation.

The installation folder (default: C:\BMSR\ADAPT 5\) also includes the subfolders:

- \Validation, that contains all the model, data, parameter and control input files used to validate the ADAPT 5 installation
- \Example, that includes the files used for the examples in this User's Guide
- \Library, contains all the model files that are available in the ADAPT Library

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## 2.2 Installation of ADAPT with Intel Parallel Studio XE 2020 and XE 2019 (updates 3-5)

To install ADAPT, the following steps are required in order:

- 1) install Microsoft Visual Studio
- 2) install Intel Parallel Studio XE 2020
- 3) install ADAPT

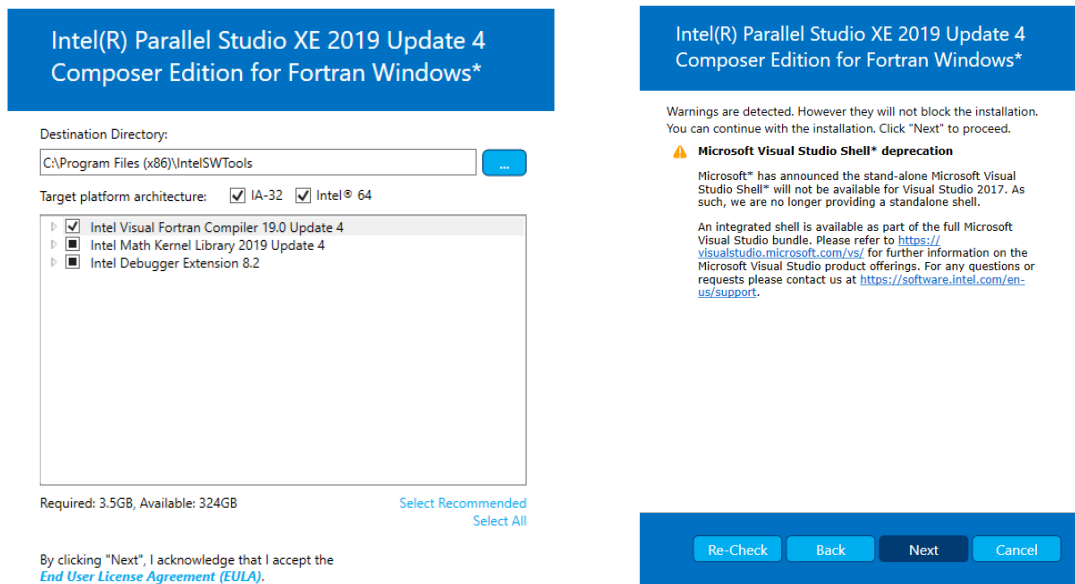
Each of these installation steps is detailed below.

### 2.2.1 Installing Microsoft Visual Studio – Free Community Edition

Follow the MVS 2019 installation instructions given above in [Section 2.1.1](#). Note: MVS 2017 is also compatible.

### 2.2.2 Installing Intel Parallel Studio XE 2020 and XE 2019 (updates 3-5)

All versions of Intel Parallel Studio XE 2020 and XE 2019 (updates 3-5) can be installed following the details below: free academic (student & educator), free noncommercial open-source contributor, paid academic research, paid commercial and free trial versions.



No other warning messages, besides the one in the right panel above should appear.

### 2.2.3 Installing ADAPT

Follow the ADAPT installation instructions given above in [Section 2.1.3](#).

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## 2.3 Installing Intel Parallel Studio XE 2019 (initial & updates 1 & 2) and XE 2018 (all updates)

To install ADAPT, the following steps are required in order:

- 1) install Microsoft Visual Studio
- 2) install Intel Parallel Studio XE 2019 and 2018
- 3) install ADAPT

### 2.3.1 Installing Microsoft Visual Studio

For paid commercial and academic versions of Intel Parallel Studio XE

For the 2019 and 2018 versions of Intel Parallel Studio XE it is NOT necessary to separately install Microsoft Visual Studio (MVS). The Intel Fortran download will include a version of MVS (MVS 2015 Shell). It will, however, be necessary to first install Microsoft Windows Software Development Kit (SDK) 10 before installing the Intel Parallel Studio. To do so, install the version of Windows SDK from the following link:

<https://drive.google.com/open?id=19GJmvkso3PosPflK4aUP77yKEwquHJvw>.

Skip to the installation instructions for Intel Parallel Studio XE 2019 and 2018 in Section 2.3.2 below.

For evaluation licenses or the "free tools" license obtained through the free software program for students and educators

For these versions, the MVS 2015 Shell is not included with the Intel Fortran as it is with the paid versions. Therefore, you must have MVS installed separately (MVS 2017 or 2015, previous versions are not supported) as described below.

From the link below, download and install MVS 2017 or 2015:

<https://visualstudio.microsoft.com/vs/older-downloads/>

In addition, you will need to ensure that 'Common Tools for Visual C++ 2015' component from Visual Studio is installed. This component is not installed by default in MVS 2017 and 2015. Please see the following link to install this component for MVS 2017 or MVS 2015:

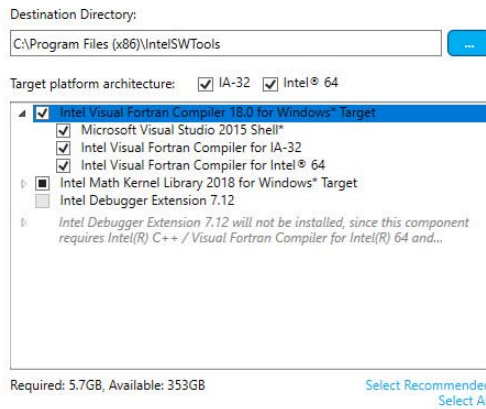
<https://software.intel.com/en-us/articles/intel-c-fortran-compilers-for-windows-integration-into-microsoft-visual-studio-2017>

### 2.3.2 Installing Intel Parallel Studio XE 2019 and 2018

For paid commercial and academic versions of Intel Parallel Studio XE

If SDK 10 is installed properly, you will see the following window during Intel Parallel Studio XE 2018 installation (XE 2019 is similar).

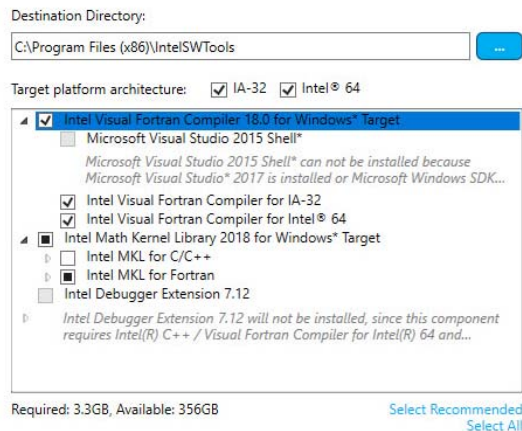
### Intel(R) Parallel Studio XE 2018 Composer Edition for Fortran Windows\*



For evaluation licenses or the "free tools" license obtained through the free software program for students and educators

If MVS is installed properly, you will see the following window during Intel Parallel Studio XE 2018 installation (XE 2019 is similar).

### Intel(R) Parallel Studio XE 2018 Composer Edition for Fortran Windows\*



### 2.3.3 Installing ADAPT

Follow the ADAPT installation instructions given above in Section 2.1.3.

**\*\*\* Note:** When using MVS 2017, there is now a 15-20 sec delay to invoke the Intel Fortran Compiler due to licensing checking. If the "Link" button is selecting before compilation is complete, you will see the message "Error compiling Model File".

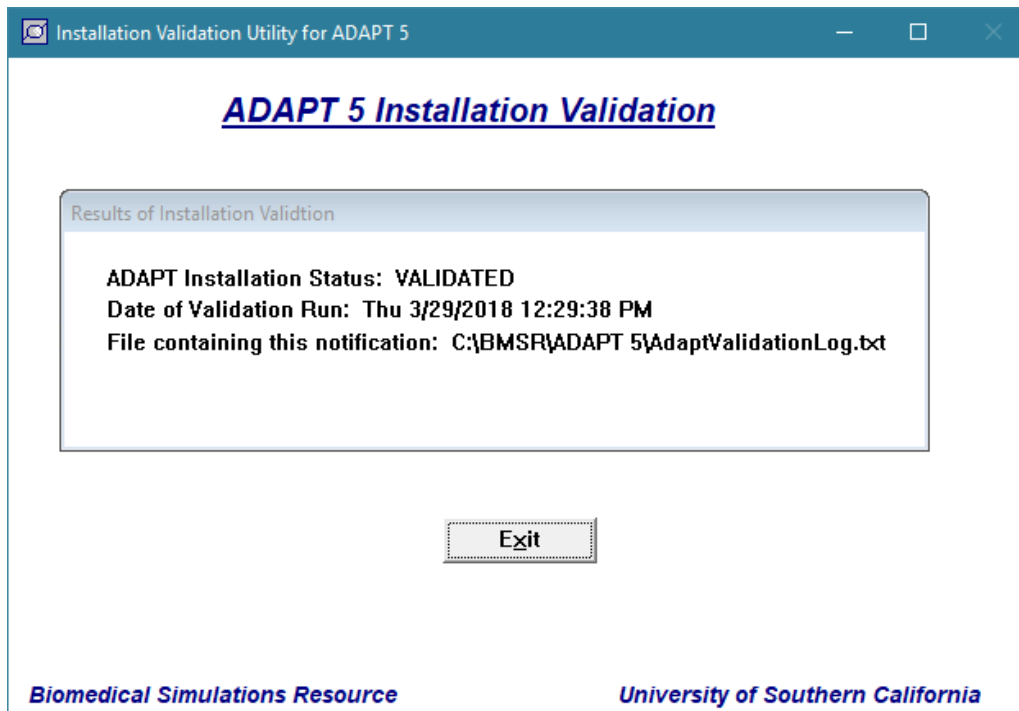


### 3. Validating the Installation

After successful installation, the installation can be validated by running the Validation application in the ADAPT 5 Program Group as indicated shown below.



This process will run 29 examples invoking various features of the ADAPT applications and will compare the results obtain from the user's installation to the set of results distributed with ADAPT. If these two sets of results agree, the window shown below will be displayed. The full set of results from the validation (all files created by ADAPT) are archived in the validation folder. ADAPT 5 has been validated for all the platforms listed in in the table above.



The file installSTATUS.txt in the top level of the ADAPT installation folder also indicates the Installation Status.

If ADAPT is uninstalled, all the files in the installation director will be removed, including those in the \Validation, \Example and \Library folders and any files created by the user. Thus, the user should not place his or her project files in the ADAPT installation folder. The globals.inc file, however, with any changes made by the user will be retained and used on reinstallation of ADAPT 5 (see Appendix A of the User's Guide).