THINC-API
Installation Manual

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Revision History

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		4.5.1.2 Validation 4.5.2.4 Logging Service for .NET Framework 4.0 THINC-API libraries 6.1 Machine Installation	
06/03/2024	S5015-007-11	Support OAC License File	LHuynh

Table of Contents

1. Introduction 6
- 1.1 Purpose 6
- 1.2 Scope 6
- 1.3 Definitions, Acronyms, and Abbreviations 6
- 1.4 Overview 6

2. References 6

3. Requirements 6
- 3.1 Compatibles 6

4. Installation Instruction 7
- 4.1 Machine/NC Master Installation 7
  - 4.1.1 Run Setup 7
  - 4.1.2 Setup Type 9
  - 4.1.3 Setup 9
  - 4.1.4 Installing 10
  - 4.1.5 Finish 11
- 4.2 Desktop Installation 12
  - 4.2.1 Run setup 12
  - 4.2.2 Setup Type 13
  - 4.2.3 Setup 14
  - 4.2.4 Installing 14
  - 4.2.5 Finish 15
- 4.3 Upgrade Installation 15
  - 4.3.1 Run setup 16
  - 4.3.2 Installing 17
  - 4.3.3 Finish 18
- 4.4 Install License file 19
- 4.5 Validate Installation 19
  - 4.5.1 THINC-API Libraries 19
    - 4.5.1.1 Run THINC sample application 19
    - 4.5.1.2 Validation 19
    - 4.5.1.3 Errors 23
  - 4.5.2 Logging Service & Logging Service Client Application 33
    - 4.5.2.1 Logging Service 33
    - 4.5.2.2 Logging Library 36
    - 4.5.2.3 Logging Service Client Application 36
    - 4.5.2.4 Logging Service for .NET Framework 4.0 THINC-API libraries 37

5. Repair/Uninstall THINC-API 38
- 5.1 Repair/Un-install 38
  - 5.1.1 Repair 39
    - 5.1.1.1 Run Setup 39
    - 5.1.1.2 Setup 42
    - 5.1.1.3 Finish 43
  - 5.1.2 Uninstall 43
    - 5.1.2.1 Run setup 43

5.1.2.2 Setup Status 46
5.1.2.3 Finish 47

6. Installation Files 48
6.1 Machine Installation 49
6.1.1 Lathe 49
6.1.1.1 GAC Folder 49
6.1.1.2 Okuma Folders 49
6.1.2 Machining Center 50
6.1.2.1 GAC Folder 50
6.1.2.2 Okuma Folders 50
6.1.3 Grinder 51
6.1.3.1 GAC Folder 51
6.1.3.2 Okuma Folders 51
6.2 Desktop Installation 52

7. Installation for Custom Application 52
7.1 THINC-API Spec. Code 52
7.2 License 53
7.2.1 Flexnet License File 53
7.2.2 OAC License File 55
7.3 Installation 60
7.4 Public Release 61
7.5 Best Practice 61

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Installation Manual

1. Introduction

1.1 Purpose

The purpose of this document is providing the instruction of how to install THINC-API on machine, NC Master, and desktop PC. It also provides information on how to repair and uninstall THINC-API.

1.2 Scope

This installation will cover installing THINC-API for different machine types, and desktop PC.

1.3 Definitions, Acronyms, and Abbreviations

GAC – Global Assembly Cache Windows folder located in 'C:\WINDOWS\assembly'

1.4 Overview

The THINC-API setup application will automatically detect if this installation is for Machine/NC master or desktop PC.

- The Machine/NC Master installation will install:
  - THINC-API document, and sample application using THINC-API
  - THINC-API libraries to enable building and running THINC-API application to run.

- Desktop installation will installs all THINC-API libraries, sample application, help file
  - THINC-API document, and sample application using THINC-API
  - THINC-API libraries to enable building THINC-API application.

The THINC-API setup application also detects and installs the correct THINC-API library files for lathe, machining center, and grinder when installing for Machine/NC Master.

For desktop installation, all libraries can be installed altogether if needed

2. References

None

3. Requirements

The THINC-API setup application requires running under Administrator user account only. It also requires to run under Windows mode only (NC is not running). If NC is running, it requires rebooting the machine to Windows mode.

3.1 Compatibles

THINC-API must be installed on the OSP-P100II/P200 or newer OSP-P controls in order to access to machine data. It requires .NET framework 4.0 for Lathe, Machining Center and Grinder.

THINC-API has been tested on the following platforms:

- Microsoft Windows XP Professional Embedded with SP3

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- Microsoft Windows 7 x86 with SP1

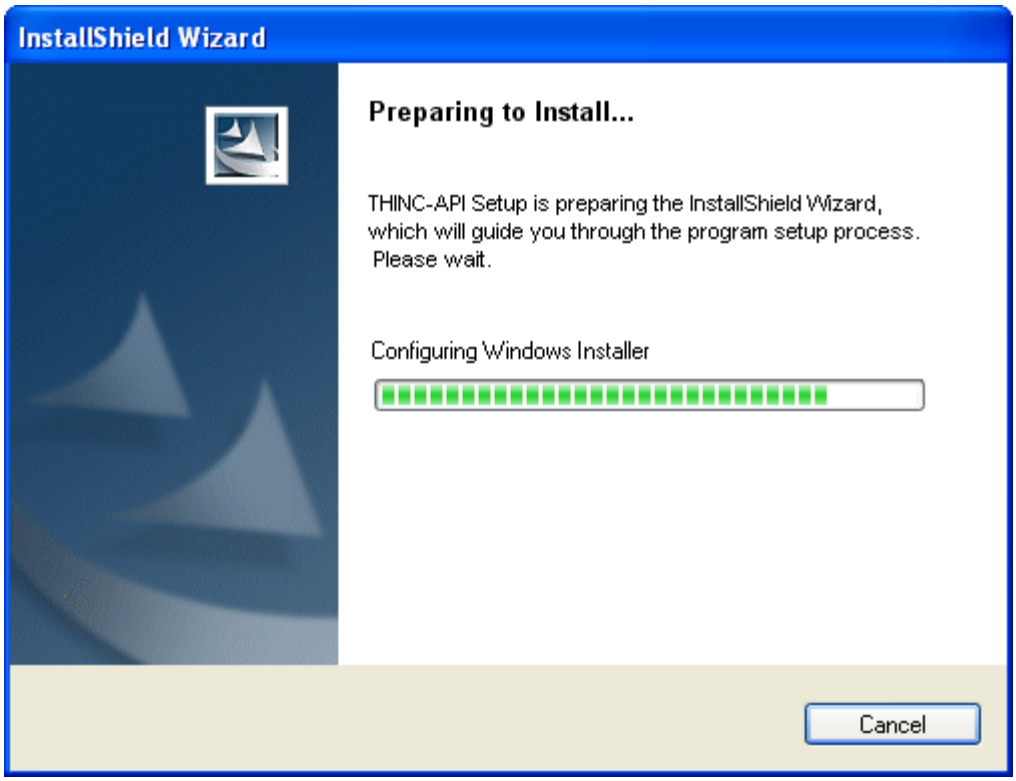
THINC-API libraries can be used with Microsoft Visual Studio 2010 or newer Visual Studio version to develop custom Windows application.

4. Installation Instruction

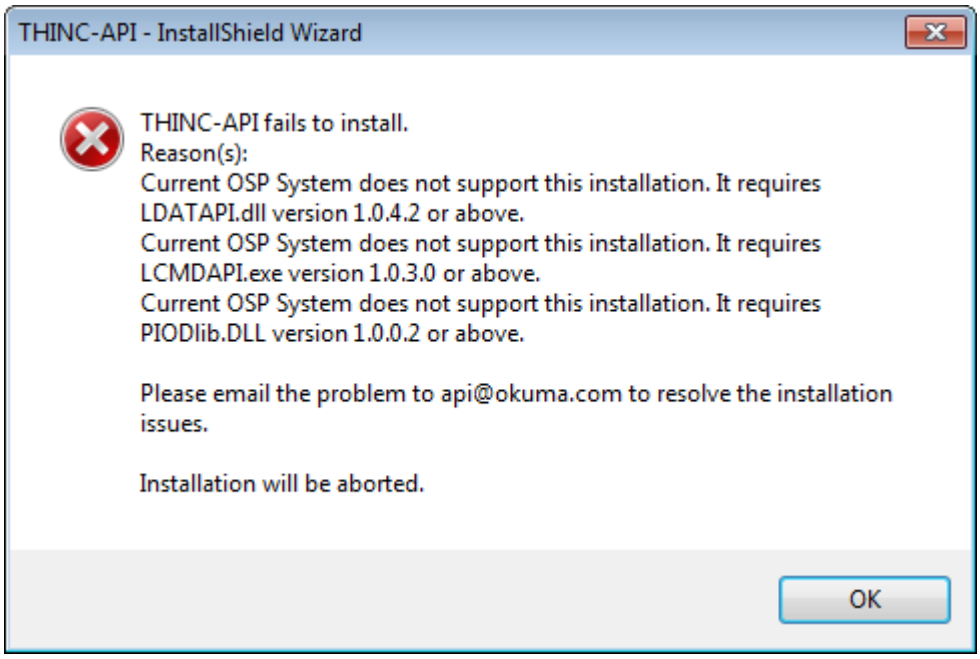
4.1 Machine/NC Master Installation

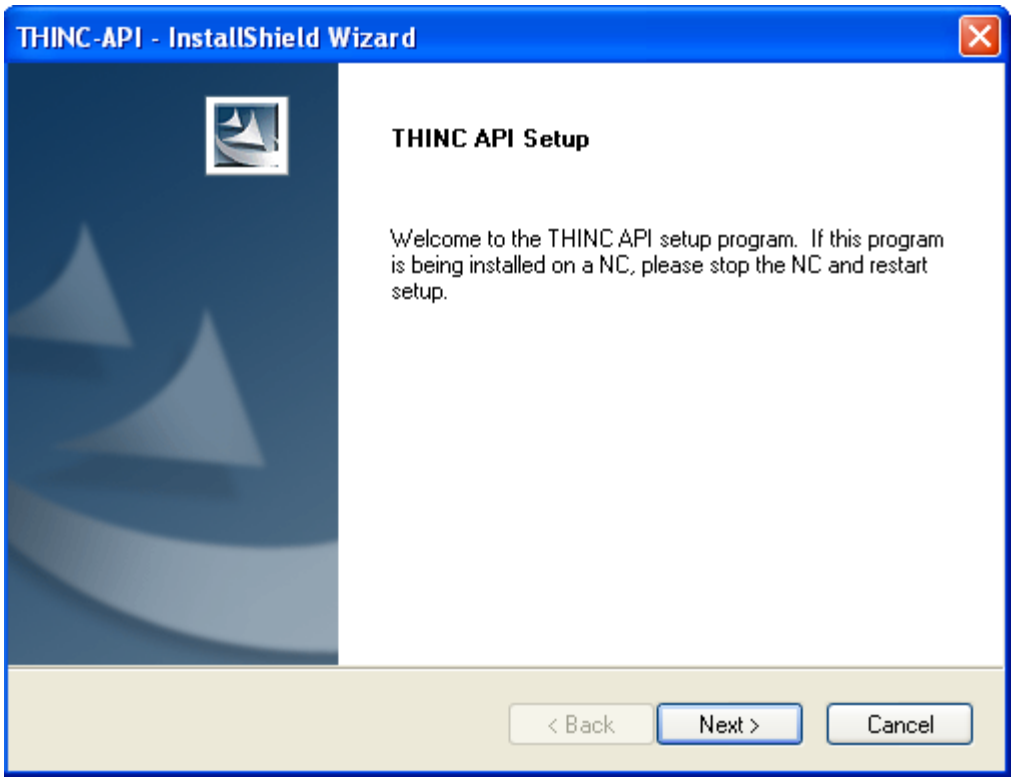
4.1.1 Run Setup

Run the THINC-API-Setup.exe program from the provided installation disk on Machine/NC Master



During this stage, the installation will evaluate OSP system file to ensure that it can support current installation. If not, the setup will generate an error message and terminate the installation.





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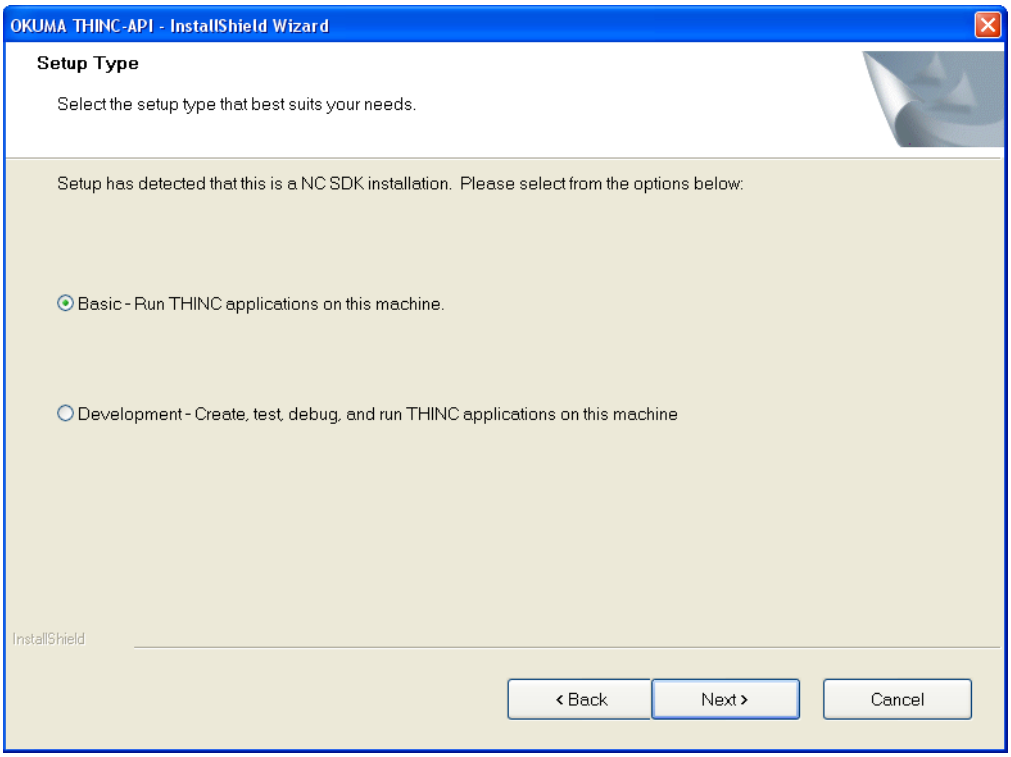
4.1.2 *Setup Type*



Select the appropriate option and click Next to continue with the installation process.

4.1.3 *Setup*

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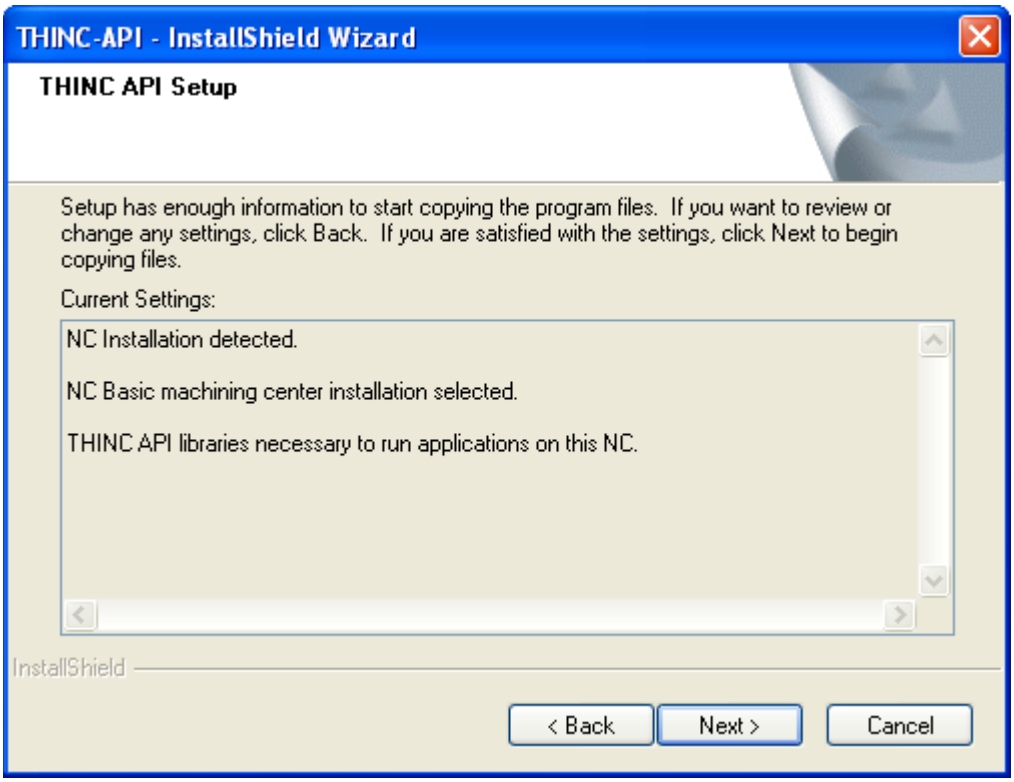
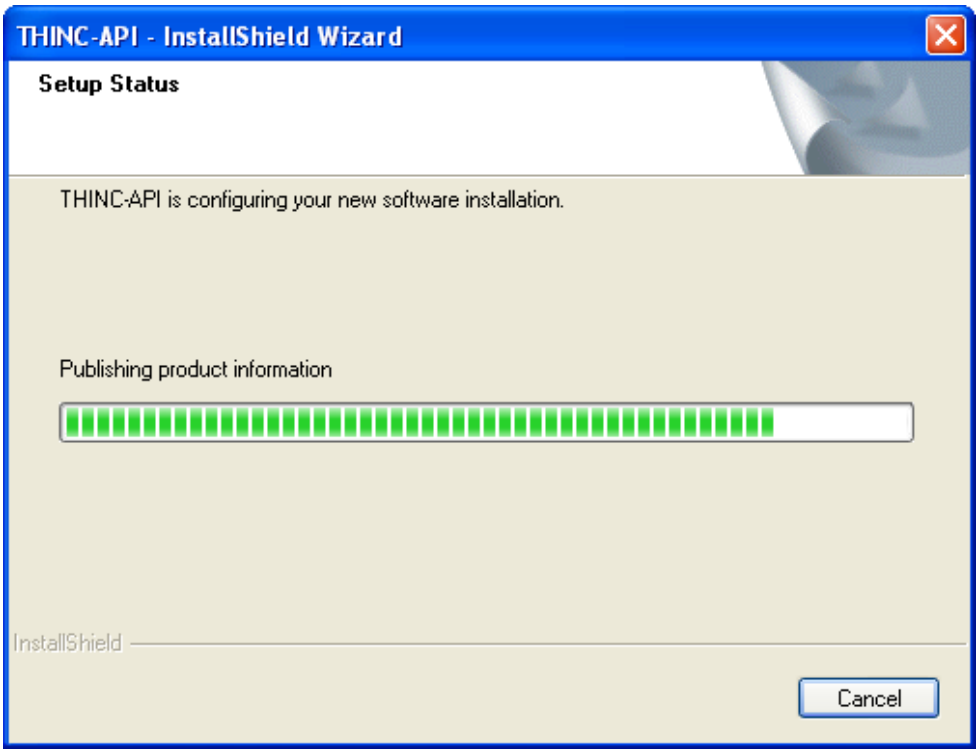


In this setup dialog, information on the selected options will be displayed.

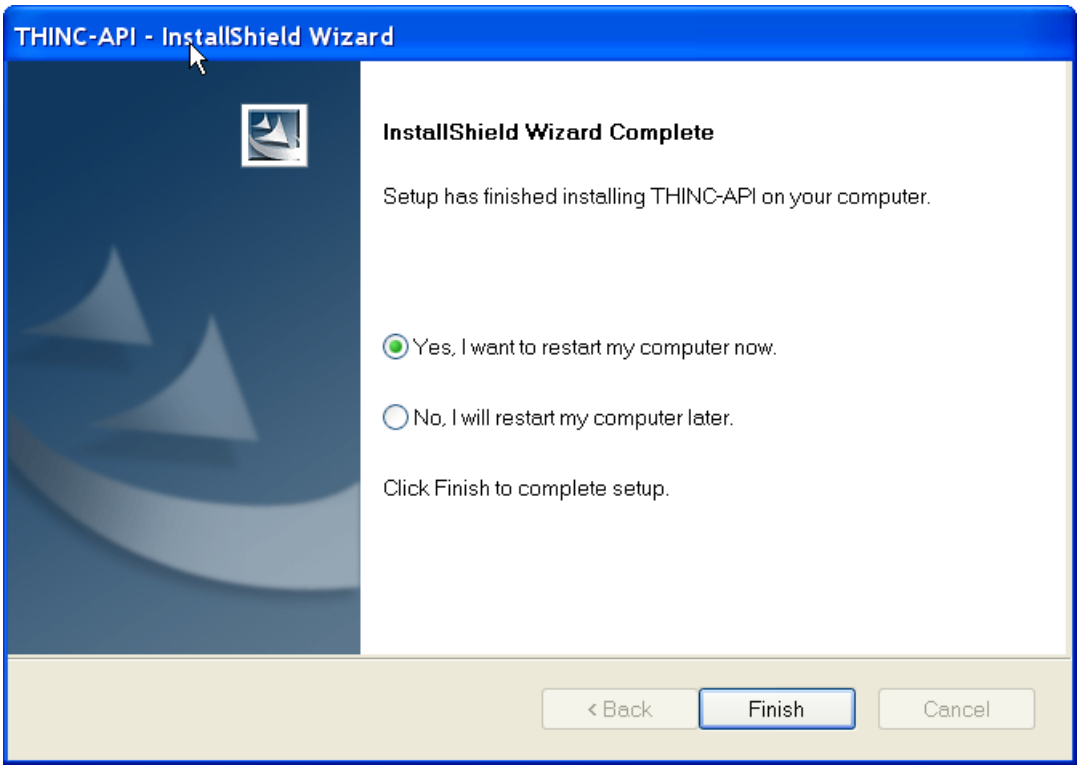
Click Next to continue with the installation process or click Back to review/ change any settings.

4.1.4 Installing



At any time, you can press Cancel button to terminate the installation.

4.1.5 Finish



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Click Finish to just finish the installation process.

4.2 Desktop Installation

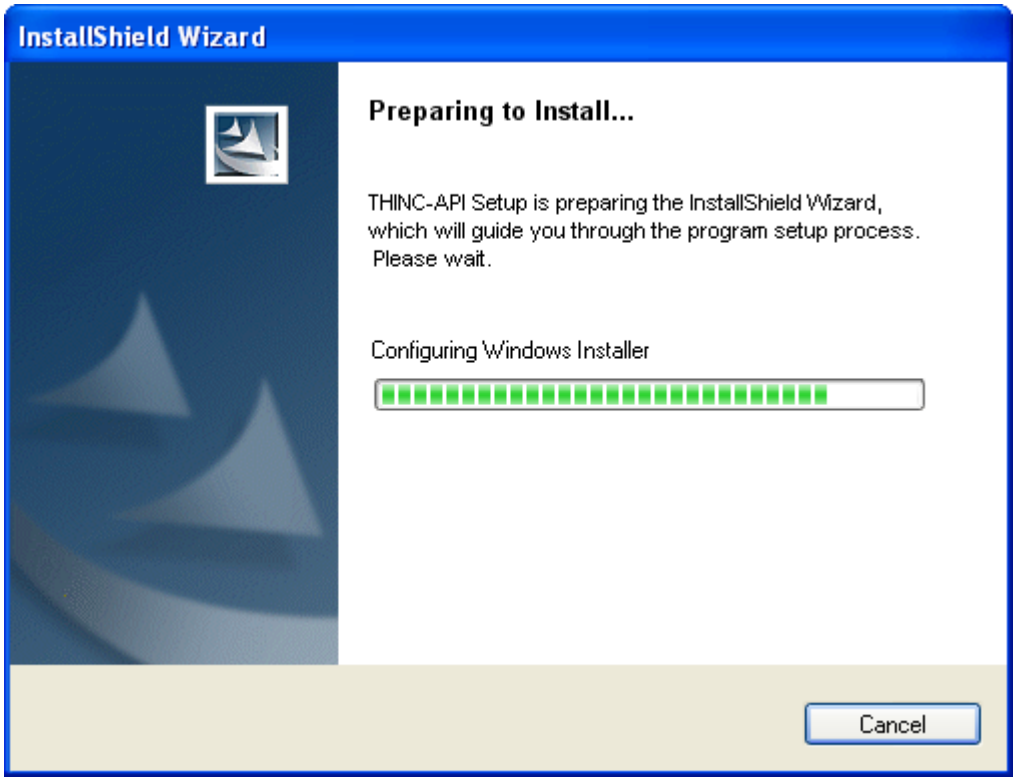
All 3 libraries for Lathe, Machining Center, and Grinder can be installed when desktop installation is detected. The installation will consider desktop installation when there is no OSP-P folder on C drive.

All libraries and applications will be installed for each selection of machine types.

Note: An upgrade installation might not be able to install all 3 libraries if the previous version of THINC-API installed on desktop is 1.18.0.0 or older.
D drive is also required for Desktop Installation

4.2.1 Run setup

Run the THINC-API-Setup.exe program from the provided installation disk on desktop PC.



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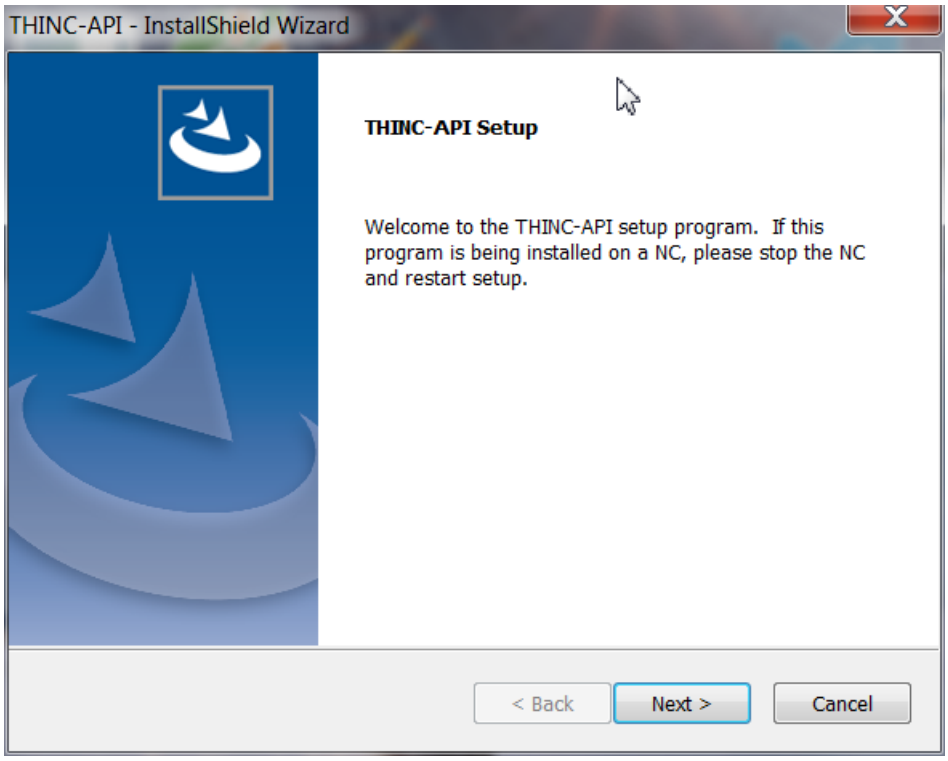

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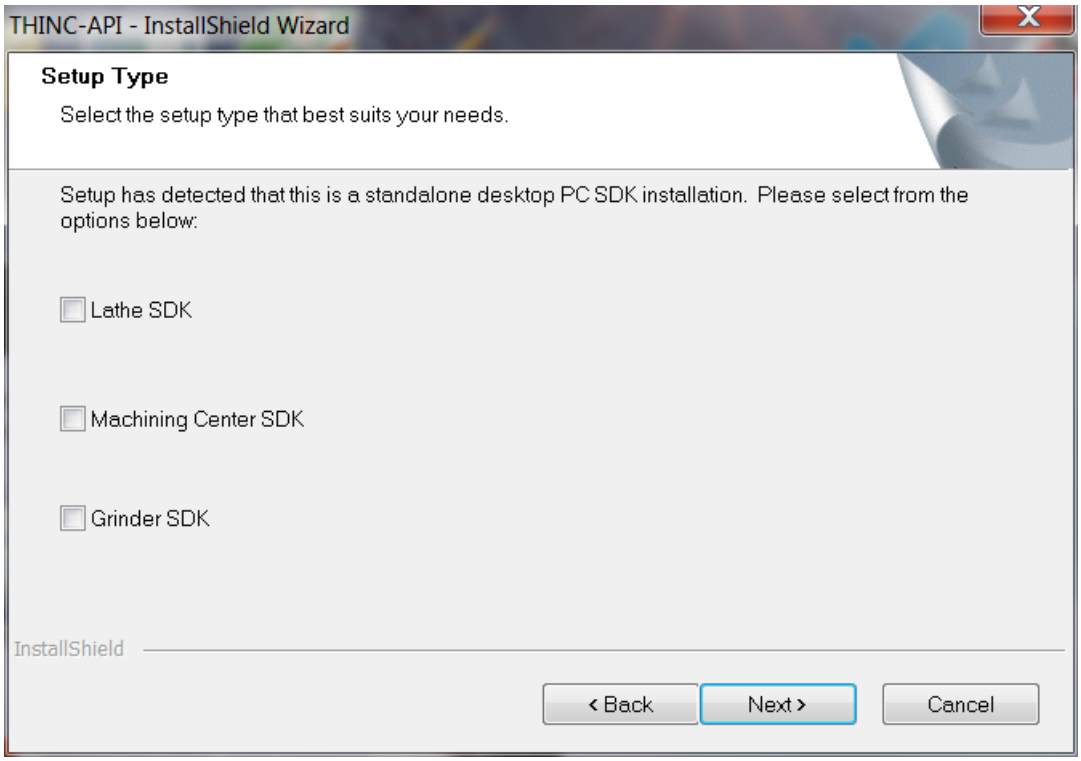
4.2.2 *Setup Type*



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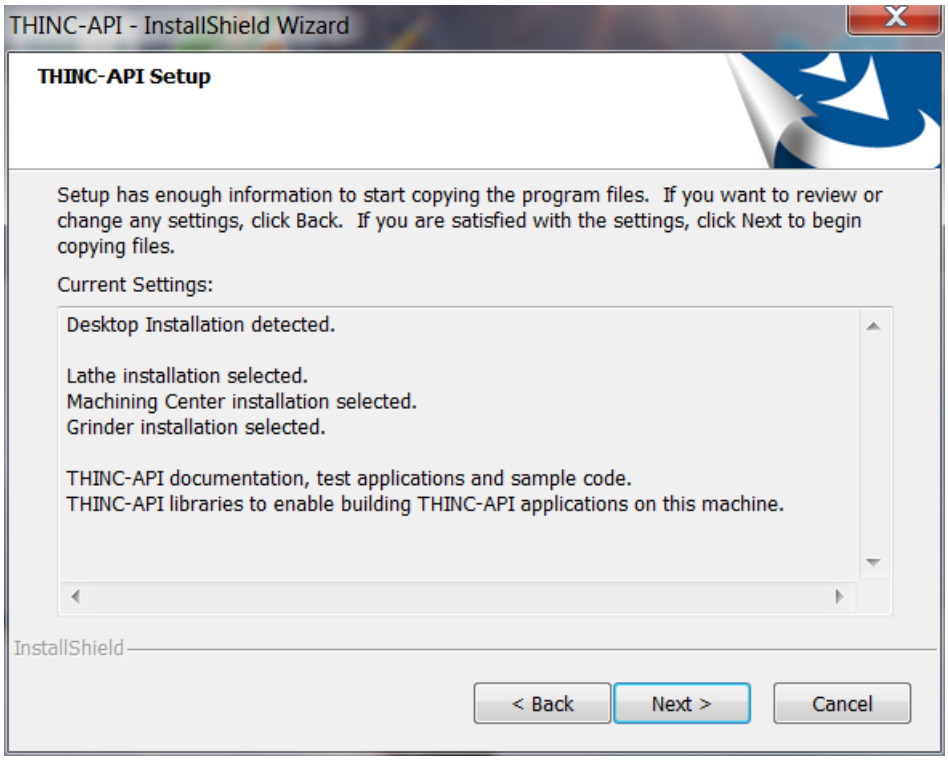
Select the appropriate option and click Next to continue with the installation process.

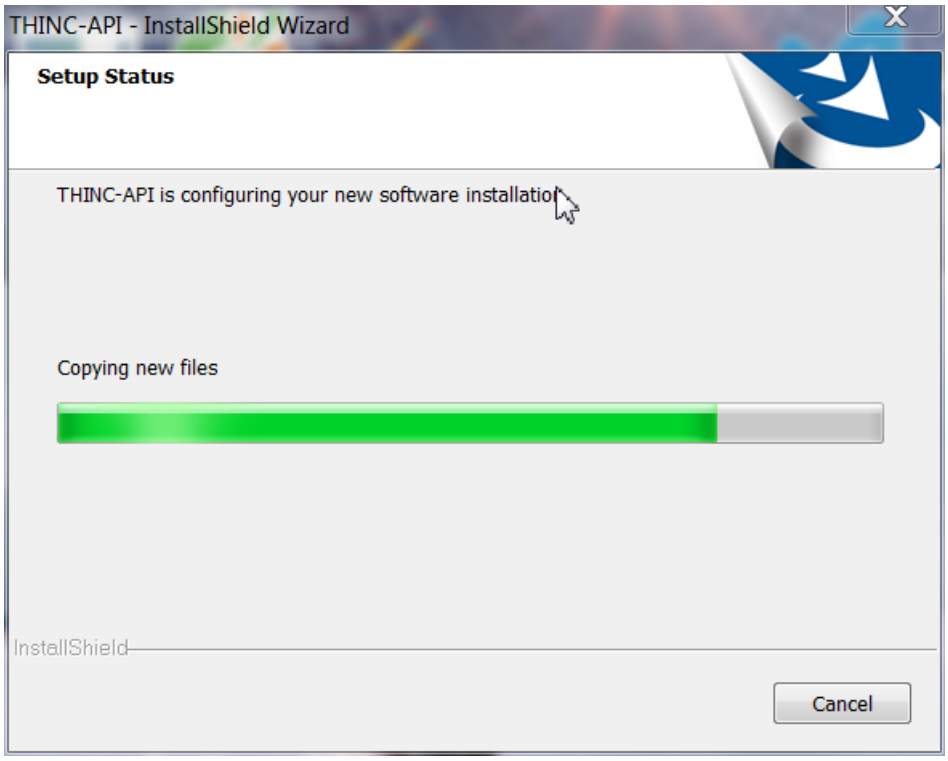
4.2.3 Setup



In this setup dialog, information on the selected options will be displayed.

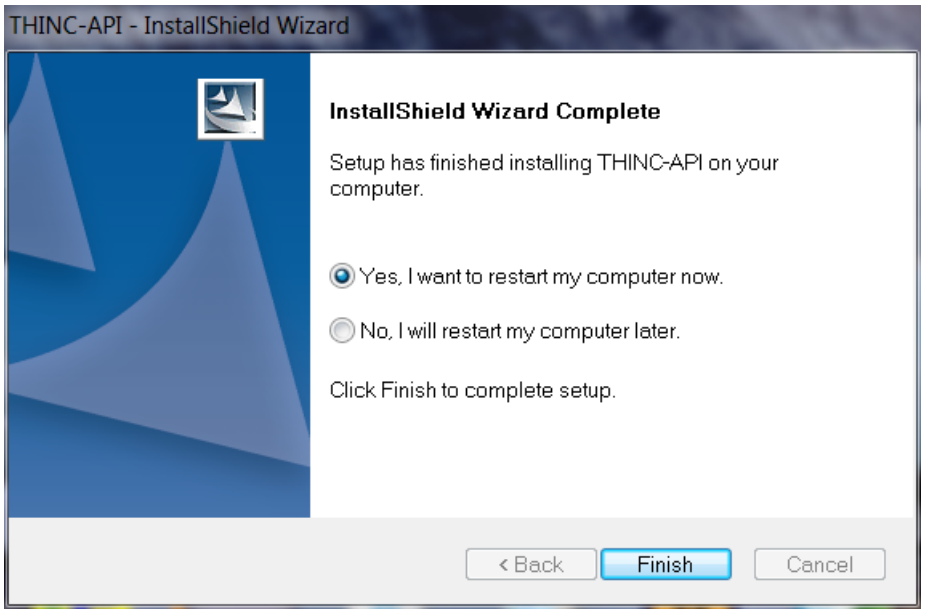
Click Next to continue with the installation process or click Back to review/ change any settings.

4.2.4 Installing



At any time, you can press Cancel button to terminate the installation.

4.2.5 Finish



Click Finish to just finish the installation process.

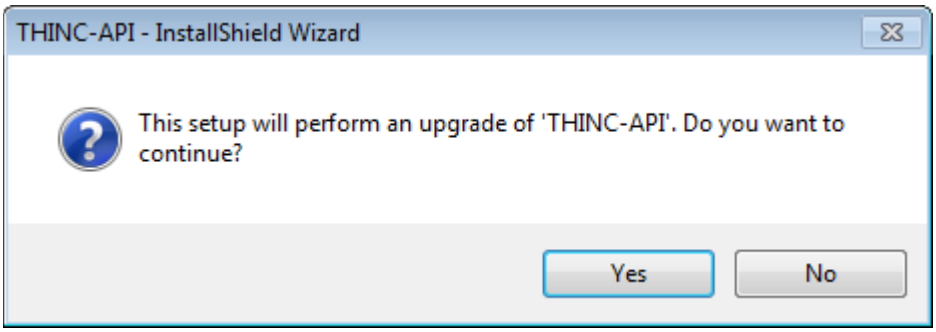
4.3 Upgrade Installation

If the target machine or PC already has the previous version THINC-API then the installation will enter the

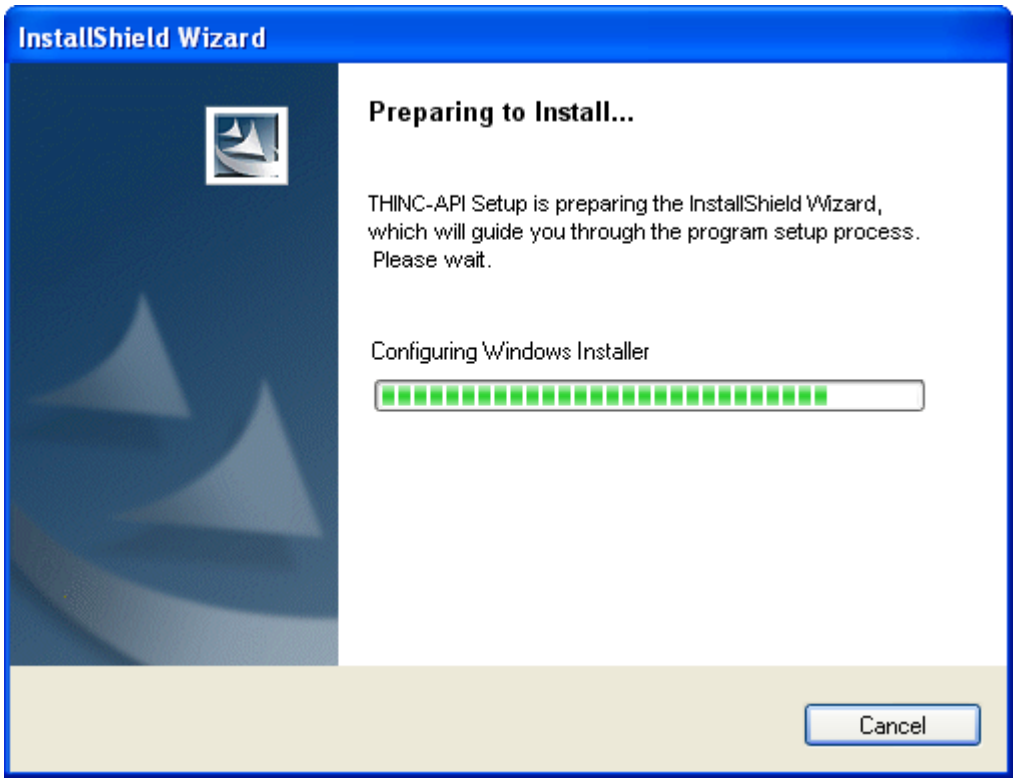
upgrade installation mode.

4.3.1 *Run setup*

Run the THINC-API-Setup.exe program from the provided installation disk on Machine/NC Master



Click “Yes” button to perform upgrade THINC-API to the newer version



During this stage, the installation will evaluate OSP system file to ensure that it can support current installation. If not, the setup will generate an error message and terminate the installation.

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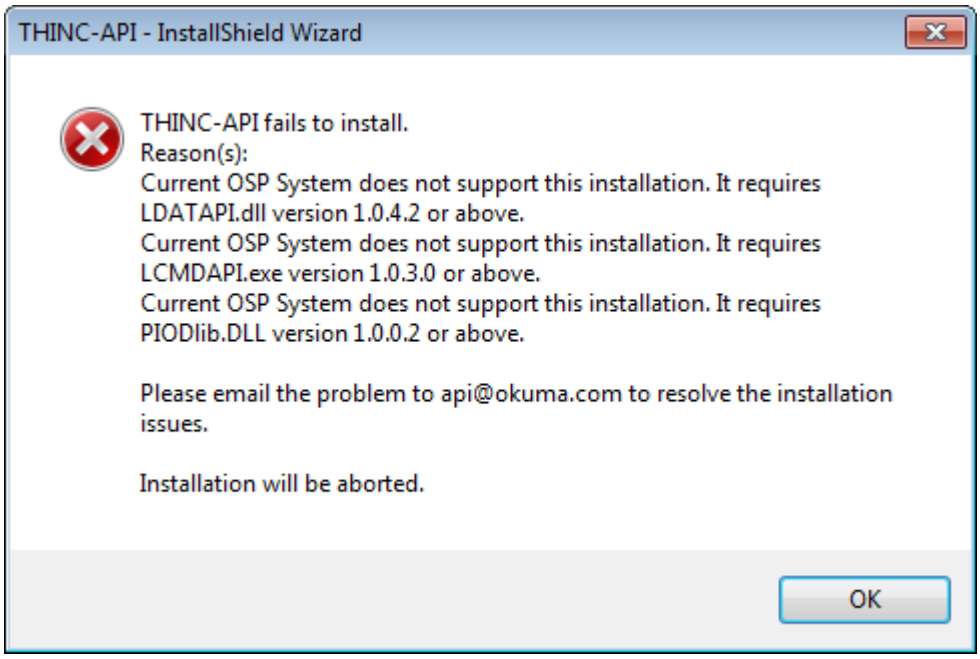

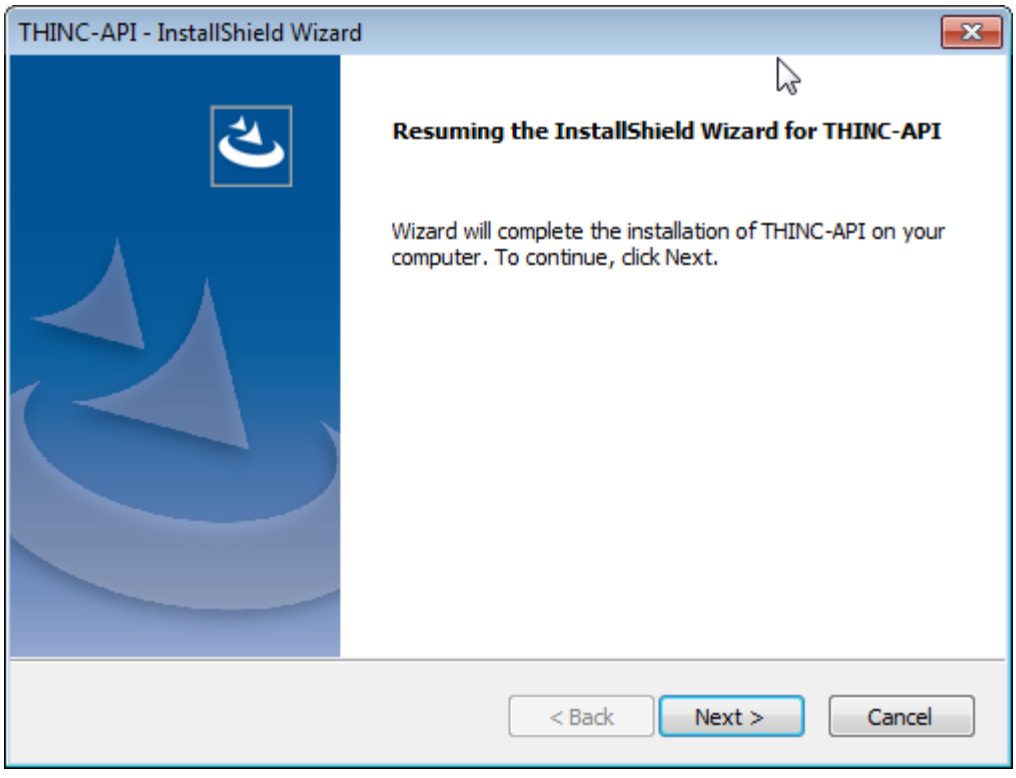

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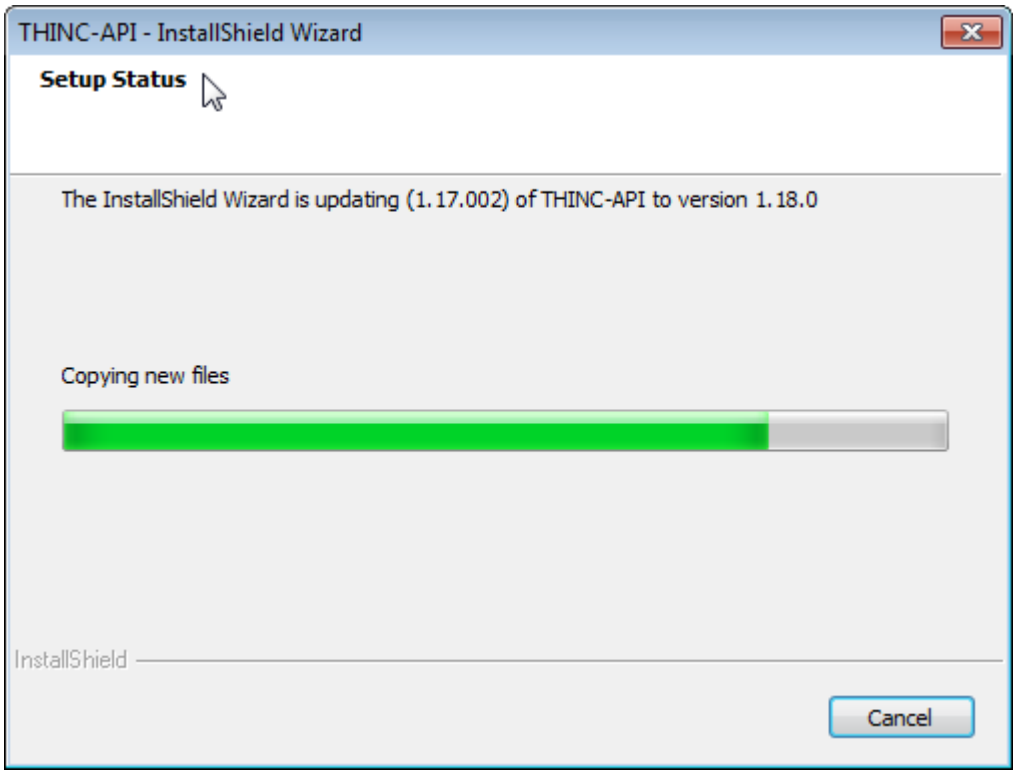
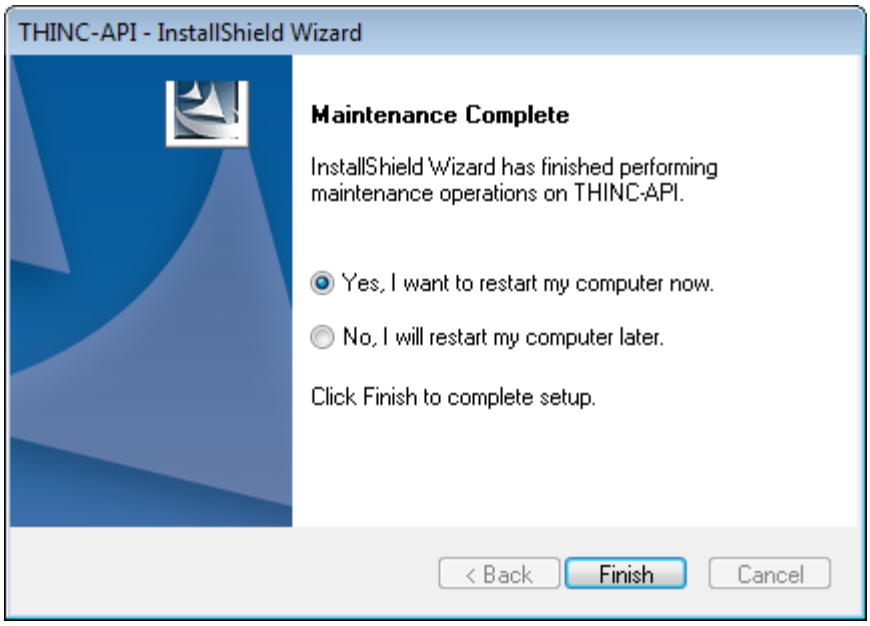
4.3.2 Installing



At any time, you can press Cancel button to terminate the installation.

4.3.3 Finish



Click Finish to just complete the installation process.

4.4 Install License file

When THINC-API Setup program runs it will install either demo or permanent license version.

It is best to obtain the license file that supports the latest release of THINC-API libraries version although your application only requires an older THINC-API version.

License file can also manually copy to the D:\Program files\Okuma\License folder.

By default, the current version of installation will always copy the license file included with the Setup to the destination folder.

Note: Each Public Release of THINC-API always has a license file that supports the latest version of all THINC libraries. All applications developed with THINC-API use the same license file as long as THINC-API library version that your application compiled with is less than or equal to library version in the license file.

4.5 Validate Installation

4.5.1 THINC-API Libraries

For machine/NC Master installation, the test sample application can be run to ensure that THINC-API libraries can be supported under current machine configuration. By design, THINC-API libraries are tightly integrated with NC OSP System software. Therefore, a certain file version of NC OSP System files must be met in order to support all functions in the libraries.
Note: Per function call in the libraries also depends on machine options, spec. code, NC Control software version etc…

4.5.1.1 Run THINC sample application

Based on OSP Software System files, the Setup program will only install the appropriate libraries. It will install either Lathe/Machining Center/Grinder libraries.

Using Windows Explore to navigate to D drive and subfolder:

Lathe: D:\Program Files\Okuma\THINC API\ThincLathe\bin
MC: D:\Program Files\Okuma\THINC API\ThincMC\bin
Grinder: D:\Program Files\Okuma\THINC API\ThincMC\bin

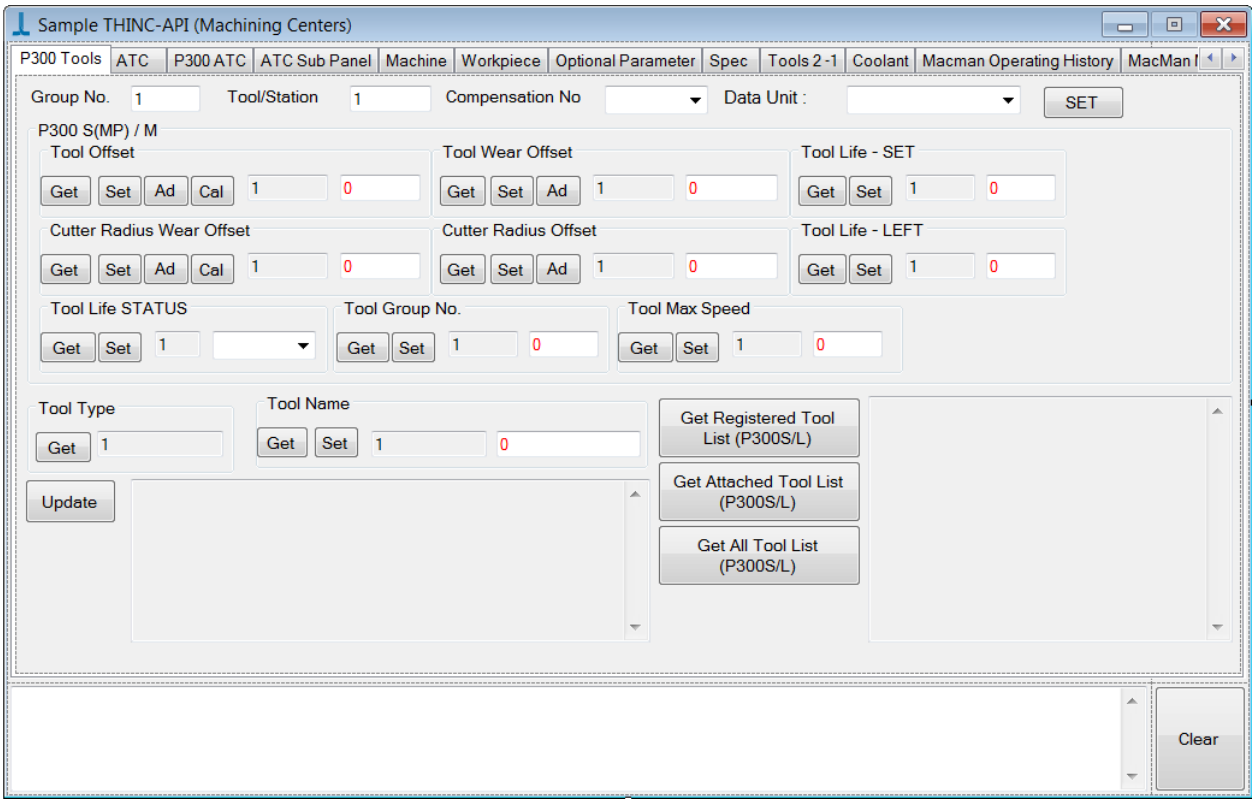
Run THINC sample application by double clicking on ThincLathe.exe, ThincMC.exe, and ThincGrinderApp.exe for Lathe/Machining Center/Grinder, respectively.

4.5.1.2 Validation

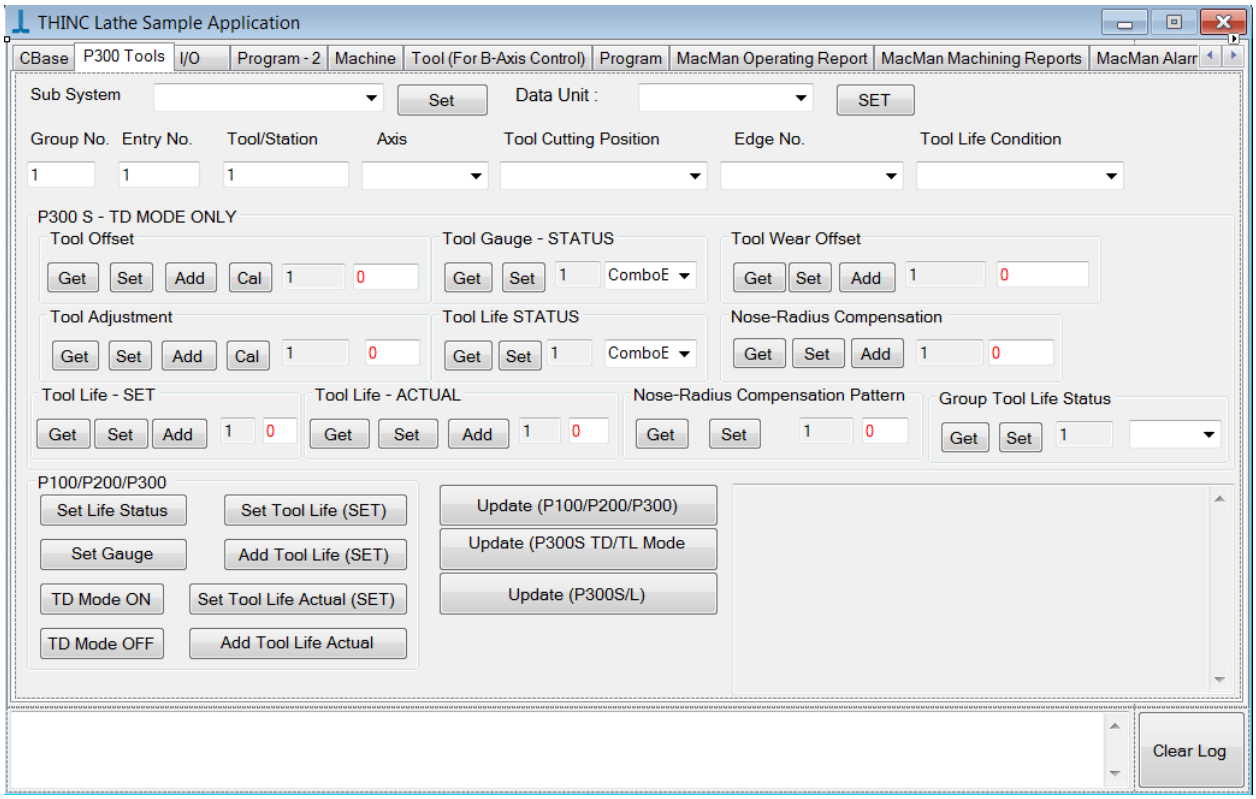
4.5.1.2.1 THINC-API Sample Applications

If current OSP System software can support current version of THINC-API libraries installed on machine, a Windows Form should be displayed without any error message as shown:
Note: Per function call in the libraries also depends on machine options, spec. code, NC Control software version etc…

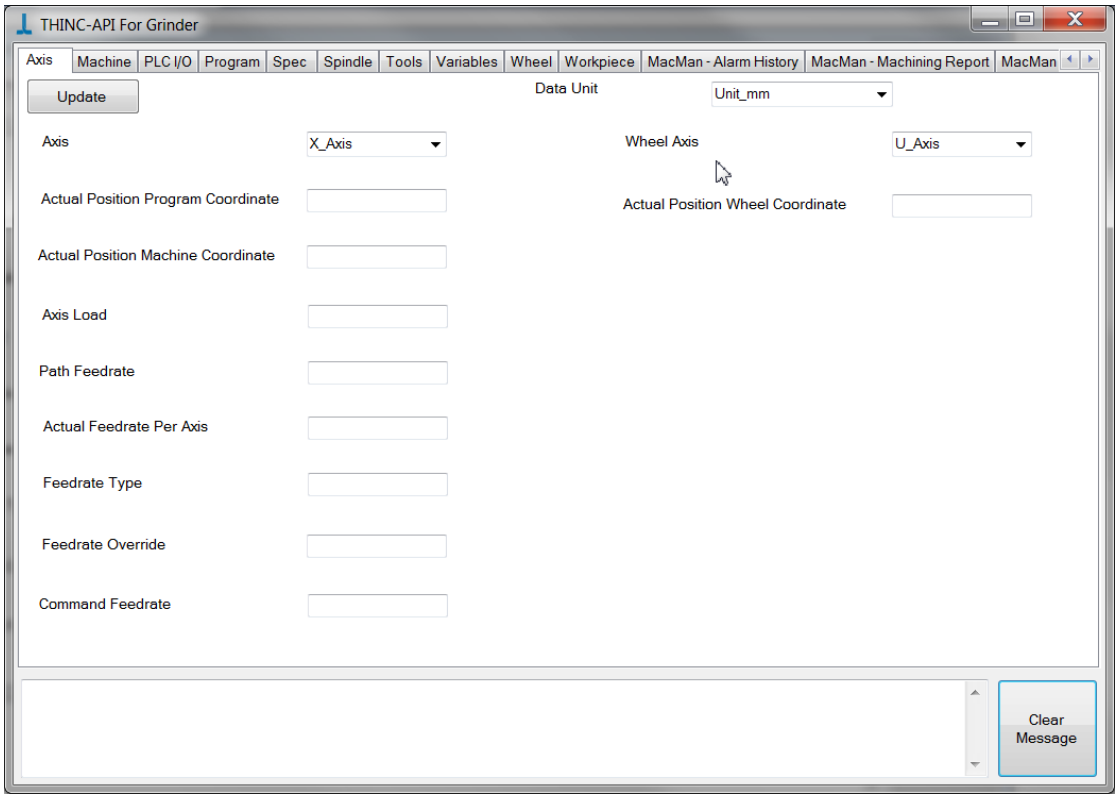
Machining Center Test application



Lathe Test application:



Grinder Test application:



4.5.1.2.2 THINC-API Notifier

There is a Windows Service called 'Okuma API Notifier' which will be installed on machine, NC Master, and desktop PC. It indicates the status of THINC-API as an icon in the system taskbar.

There are 4 states of THINC-API Notifier as shown below:

1/ Waiting State (API white-background icon) – NC is not running yet. THINC-API is not initialized yet.

2/ Initializing state (API Yellow-background icon) – NC is started and THINC-API is initializing.

3/ Initialized (API Green-background icon) – THINC-API is successfully initialized with NC and is ready for exchanging data.

4/ Failed to initialize (API red-background icon) – NC is started and THINC-API cannot communicate with NC due to some reasons.

By clicking on the icon, it will bring up a dialog and shows status of THINC-API with message, for example:

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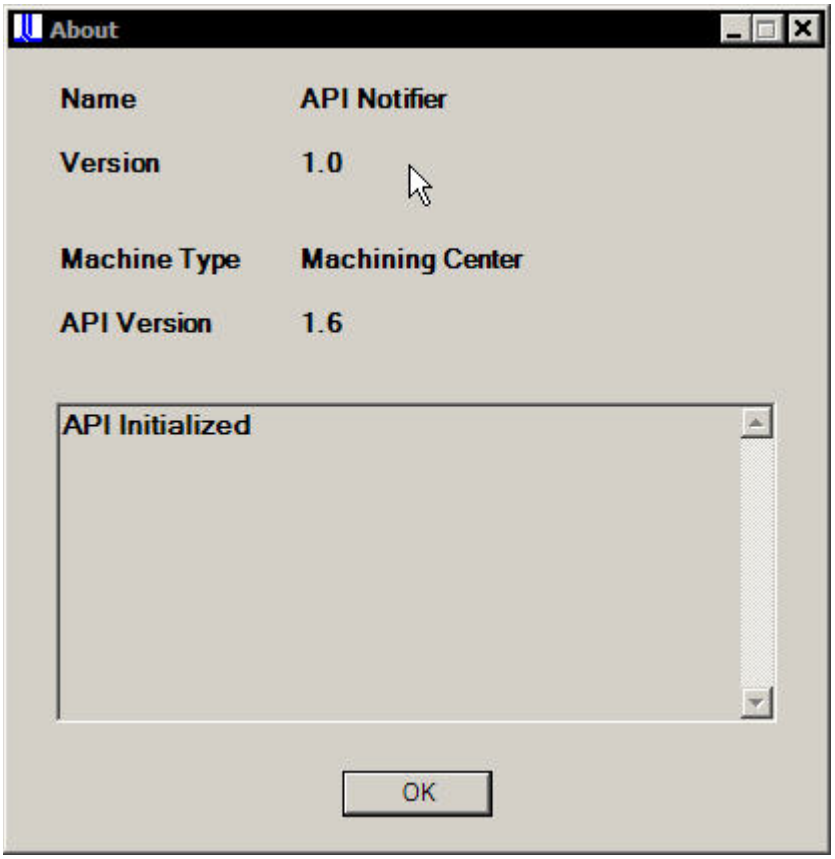
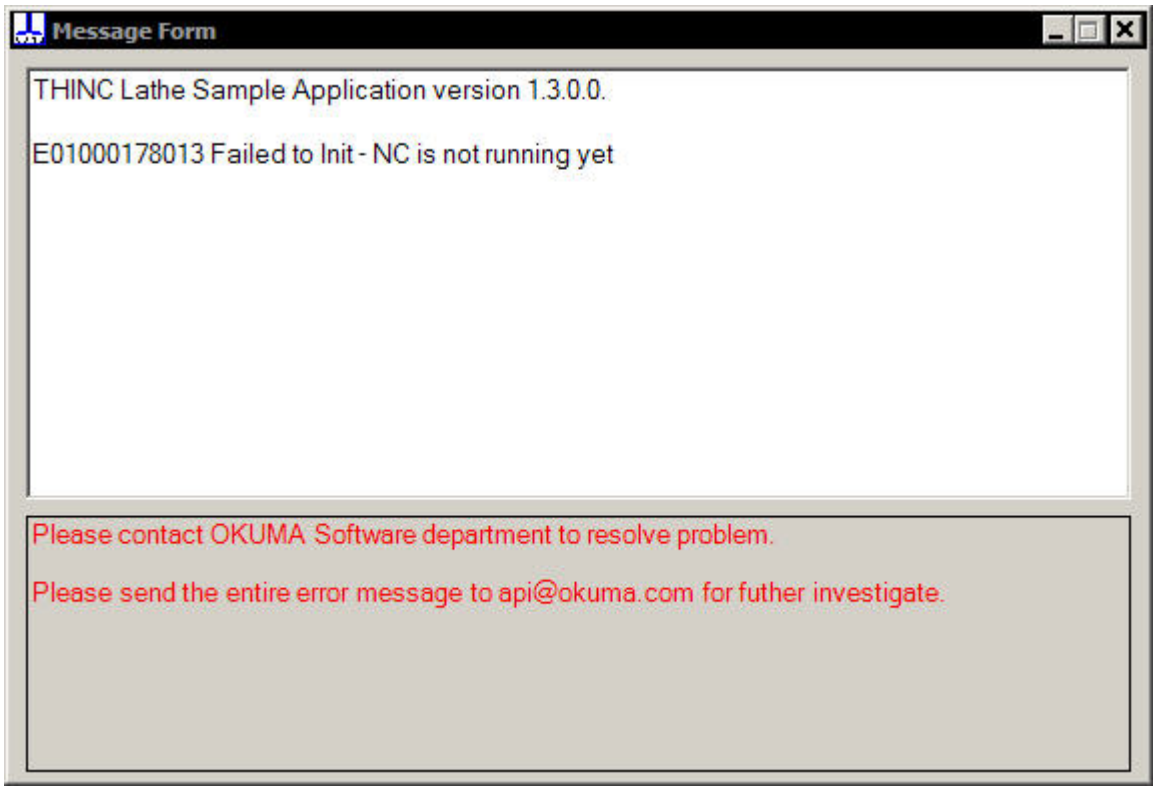


4.5.1.3 Errors

4.5.1.3.1 NC Not Running

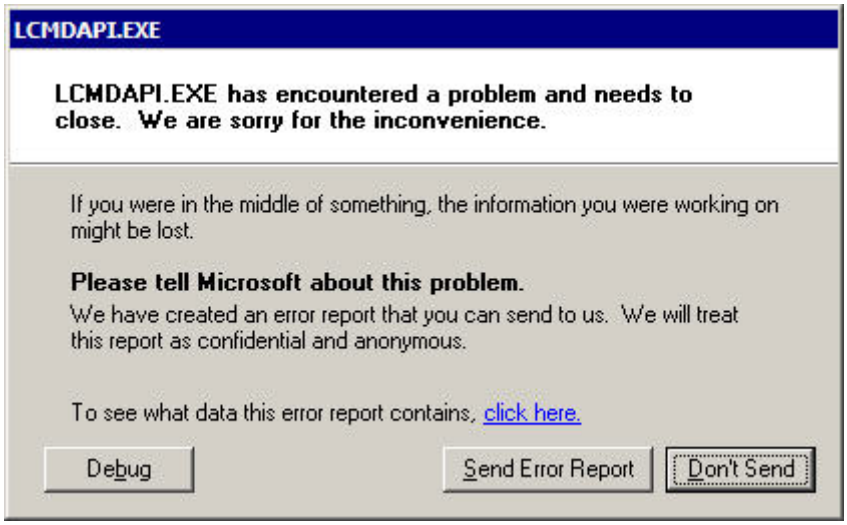
4.5.1.3.1.1 DATA-API

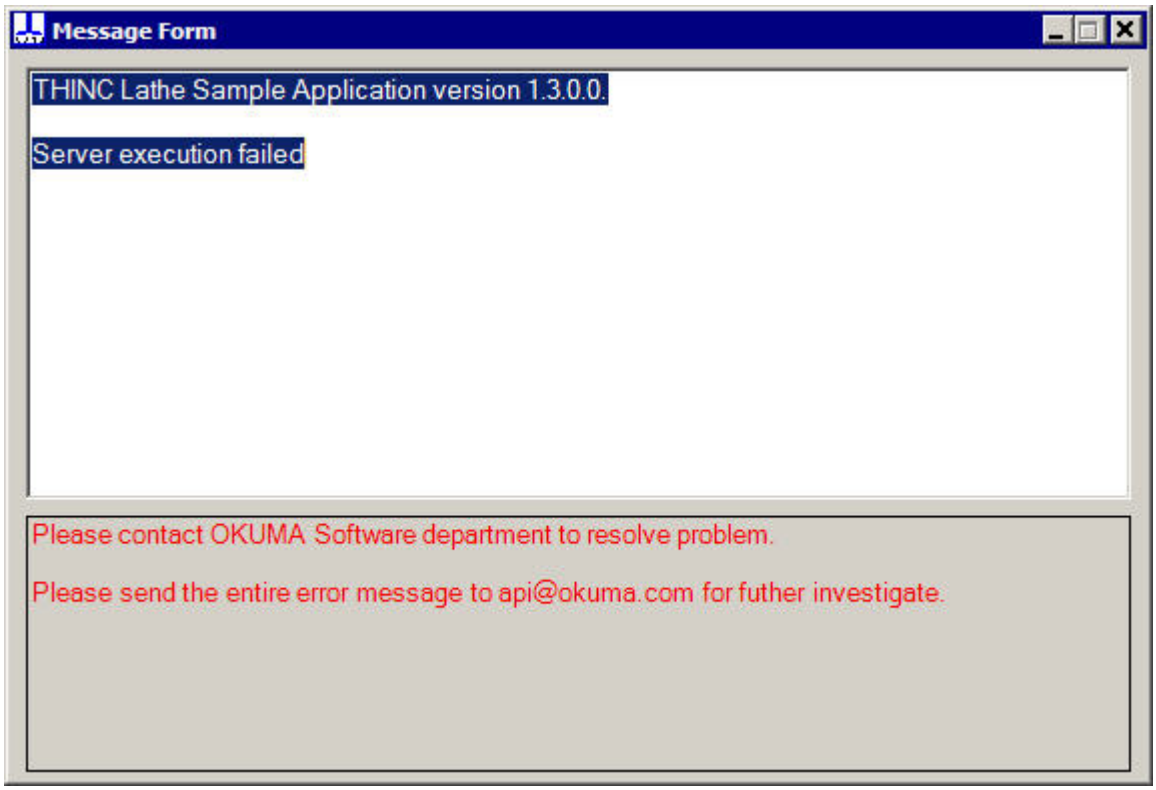


Problem: THINC-API libraries fail to initialize due to NC running condition.

Solution: Start application developed with THINC-API libraries after NC is running.
Custom applications can utilize ‘Startup Service’ developed by OKUMA to ensure that your custom application starts after NC started.

4.5.1.3.1.2 Command API





Problem: THINC-API libraries fail to initialize due to NC running condition.

Solution: Start application developed with THINC-API libraries after NC is running.
Custom applications can utilize ‘Startup Service’ developed by OKUMA to ensure that your custom application starts after NC started.

4.5.1.3.2 THINC-API dependency library files

THINC-API will check the following files in NC OSP system software for the same or greater file version.

For Lathe:
- LDATAPI.dll
- LCMDAPI.exe
- Softswitch.exe

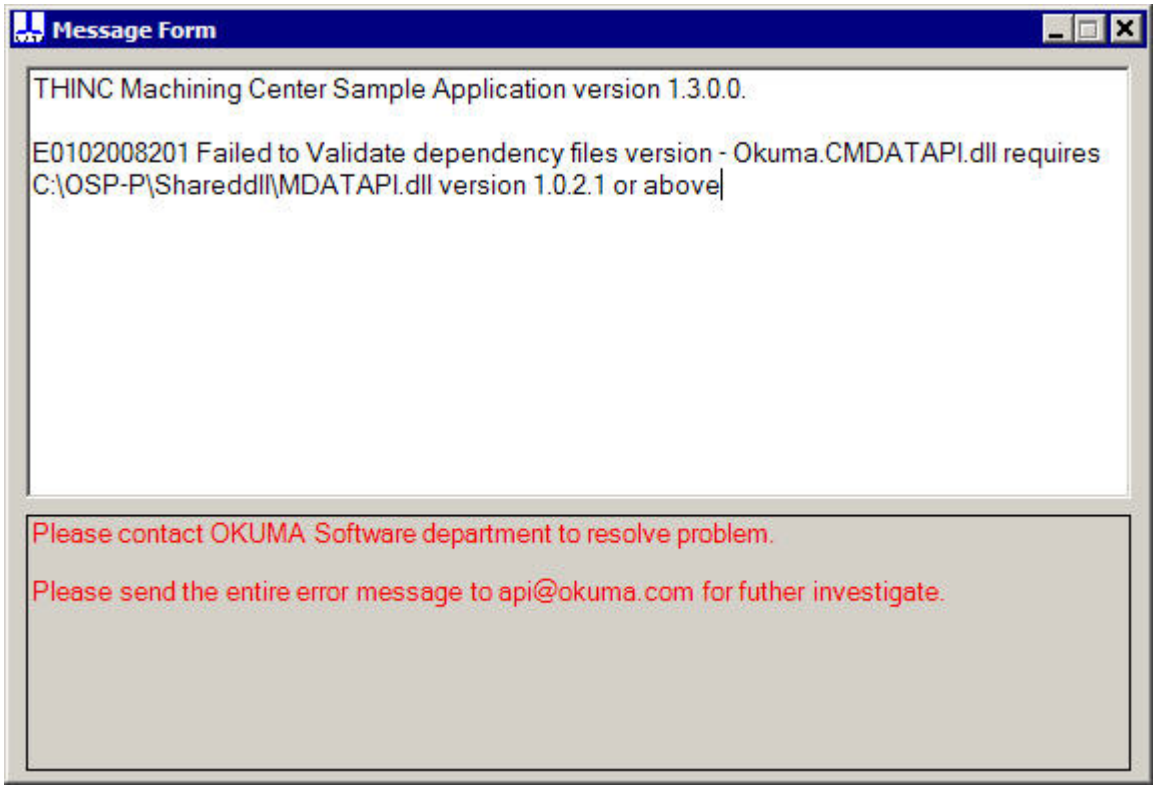
For MC:
- MDATAPI.dll
- MCMDAPI.exe
- Softswitch.exe

For Grinder:
- GDATAPI.dll
- GCMDAPI.exe
- Softswitch.exe

And PIODLIB.dll library

4.5.1.3.2.1 Incorrect file version

For any reason if the above files listed for Lathe/MC have incorrect file version, a dialog box will display and show the error message of what causing THINC-API sample application fails to run correctly.

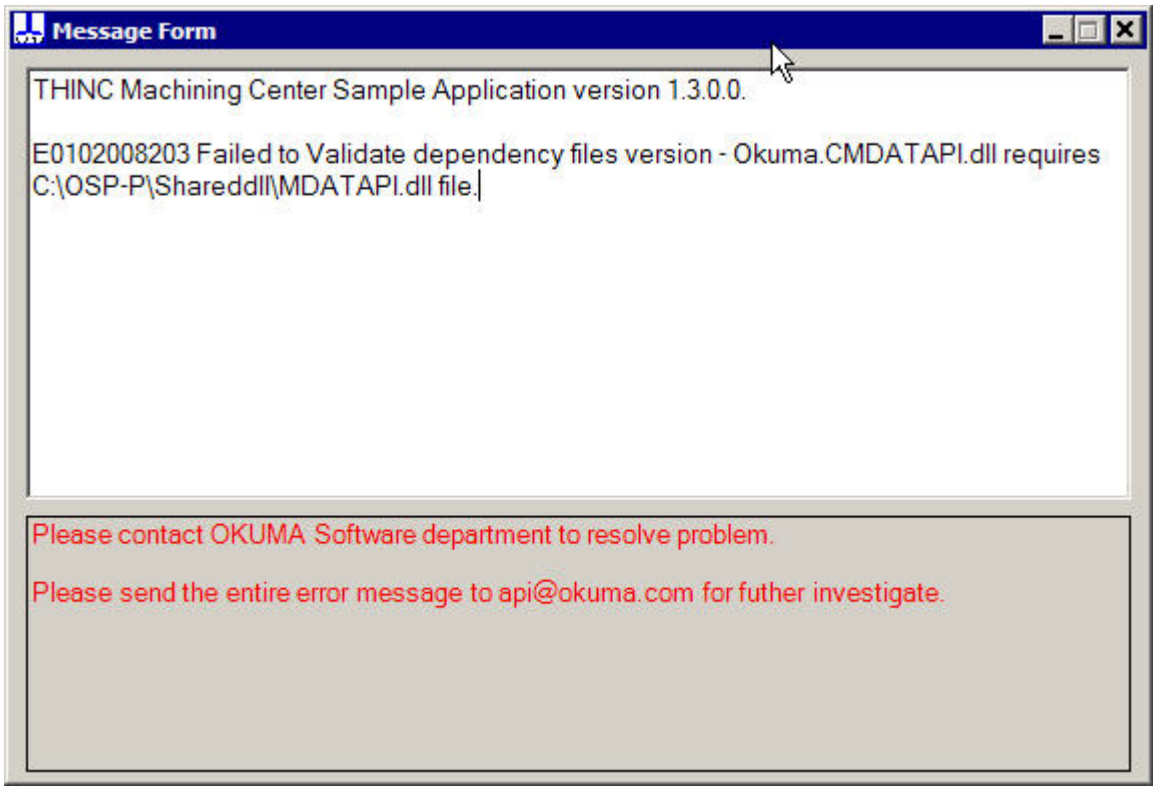


The error message shows an incorrect file version:

- Operation: Failed to Validate dependency files version
- Problem: Okuma.CMDATAPI.dll requires C:\OSP-P\SharedDll\MDATAPI.dll version 1.0.2.1 or above.

Solution: Re-Install/Install THINC-API again if any of the above file listed for Lathe/MC has incorrect file version.

4.5.1.3.2.2 Missing Dependency files

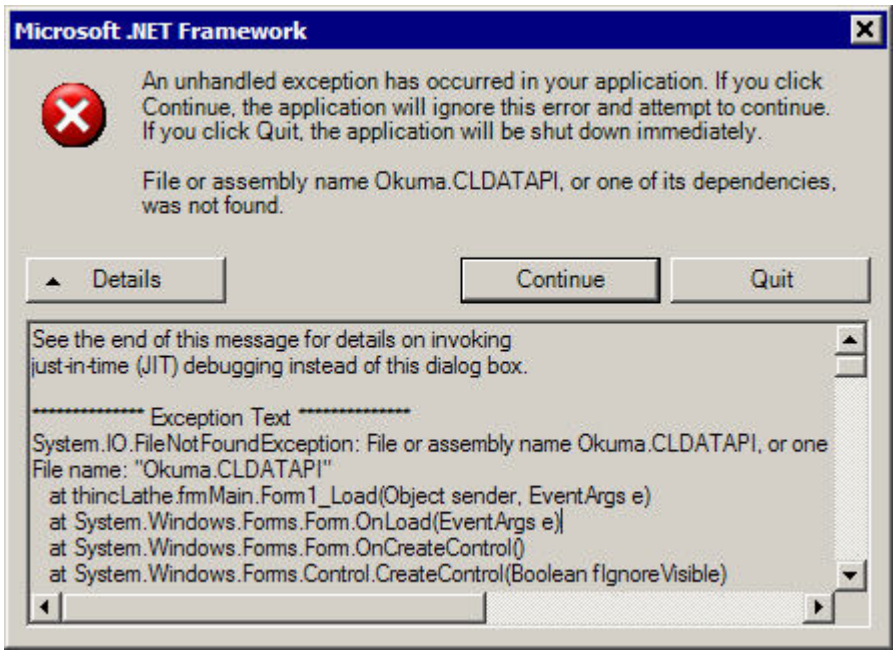


The error message shows a missing file:
- Operation: Failed to Validate dependency files version
- Problem: Okuma.CMDATAPI.dll requires C:\OSP-P\SharedDll\MDATAPI.dll file.

Solution: If any of the above files listed for Lathe/MC are missing, then an installation of THINC-API to the latest version is needed.

4.5.1.3.3 THINC-API library files

4.5.1.3.3.1 Missing library file



All applications developed with .NET THINC-API libraries are required to include an exact version of THINC-API libraries with the custom installation. THINC-API libraries compiled with application should be installed with your application folder.

The above error message shows that THINC-API library named Okuma.CLDATAPI.dll cannot be found at the folder where the application runs from.

Solution: Include THINC-API libraries compiled in your application with your custom setup and re-install your application with new setup.

4.5.1.3.3.2 Incorrect library file version

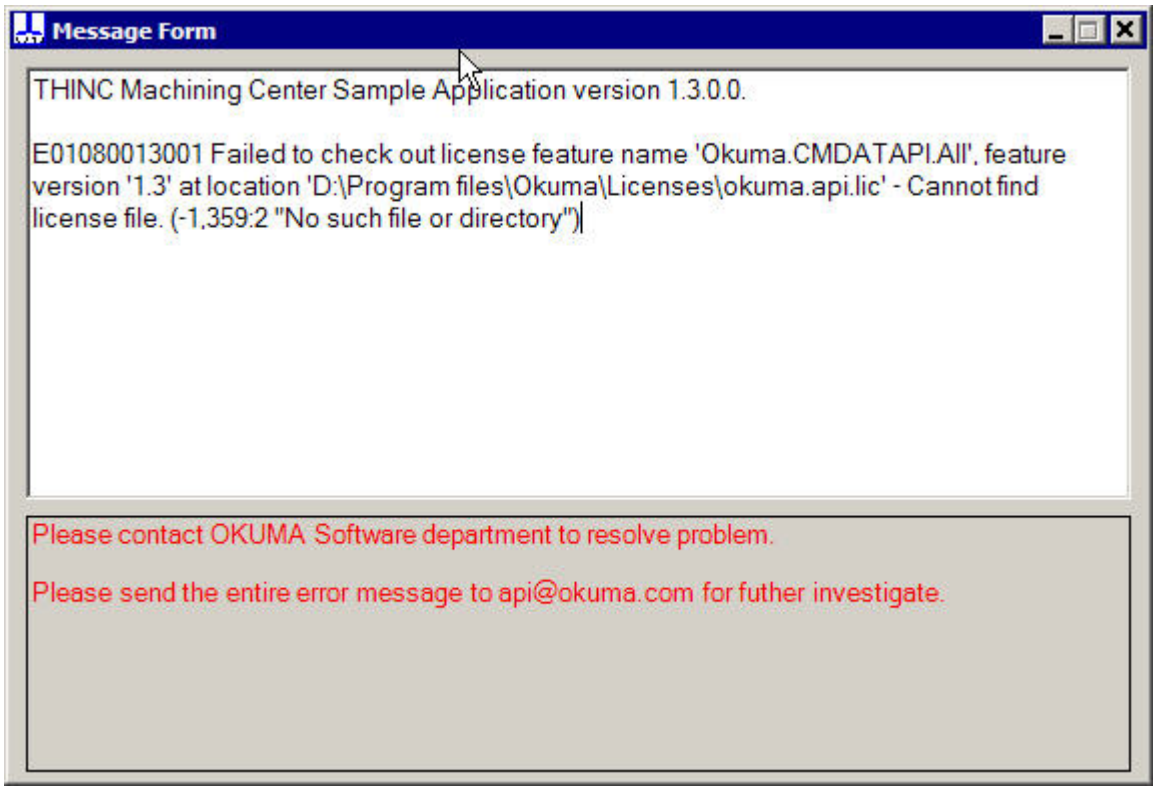
Problem: THINC-API libraries fail to load due to incorrect library version.

Solution: All custom applications developed with THINC-API libraries must install THINC-API libraries in the application's installation folder and must have the same file version as the libraries version compiled with.

4.5.1.3.4 License file

At first run, THINC-API will validate its license file named Okuma.api.xml or Okuma.api.lic located in D:\Program Files\Okuma\Licenses folder for correct version per THINC-API library file.
Note: If Okuma.api.xml license is in the license folder, THINC-API will only validate its license with this license file ONLY. Only Okuma.api.xml license file can support alphanumeric machine serial number.

4.5.1.3.4.1 Missing license file

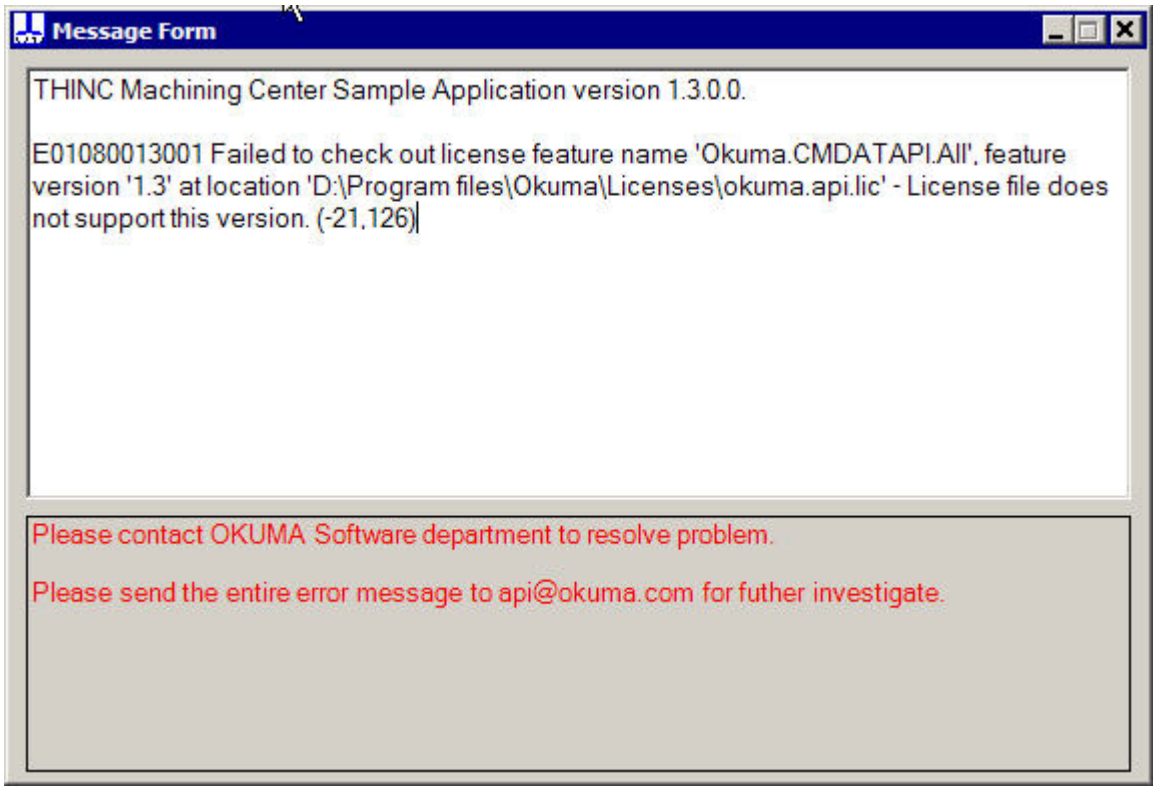


The error message shows a missing file:

- Operation: Failed to check out license feature name ‘Okuma.CMDATAPI.All feature version ‘1.3’ at location ‘D:\Program files\Okuma\Licenses\okuma.api.lic’
- Problem: Cannot find license file (-1, 359:2 “No such file or directory”)

Solution: If the license is missing, then an installation of THINC-API to the latest version is needed.

4.5.1.3.4.2 Incorrect license file version



The error message shows an incorrect license version for a particular THINC-API library:

- Operation: Failed to check out license feature name ‘Okuma.CMDATAPI.All feature version ‘1.3’ at location ‘D:\Program files\Okuma\Licenses\okuma.api.lic’
- Problem: License file does not support this version. (-21, 126)

Solution: Installation of THINC-API to the latest version is needed.

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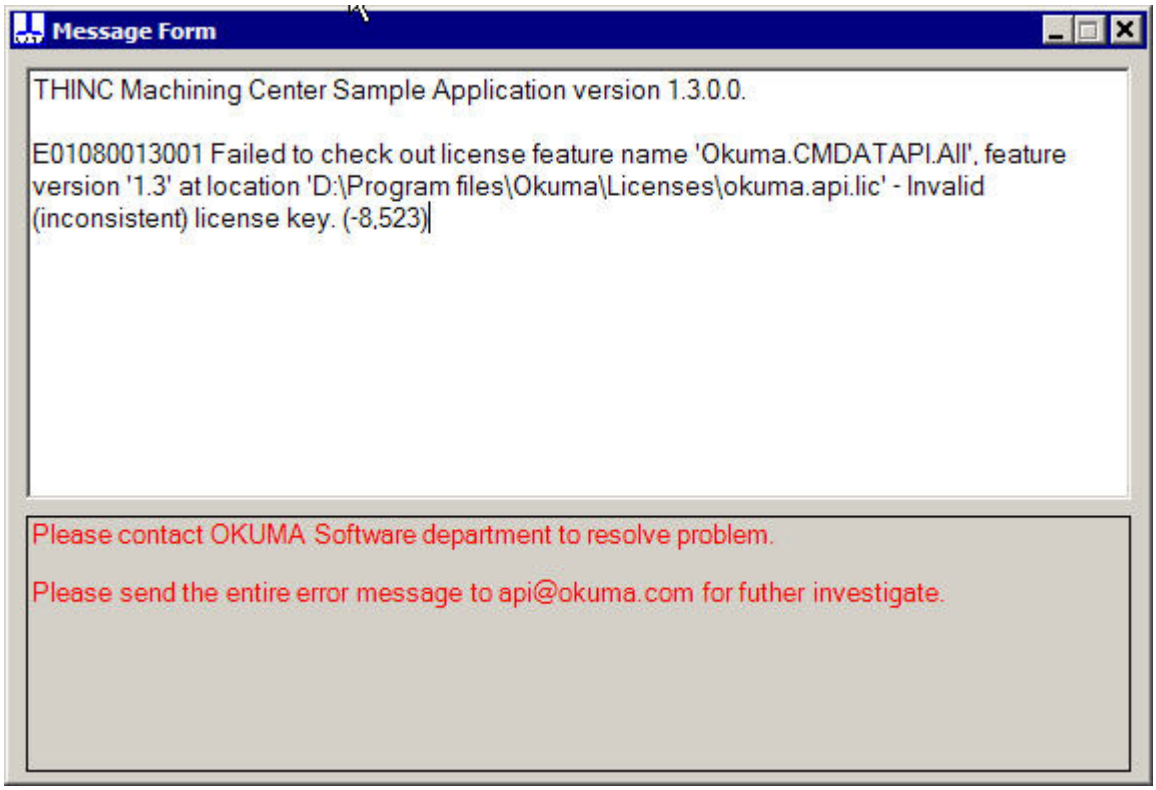
4.5.1.3.4.3 Invalid license file

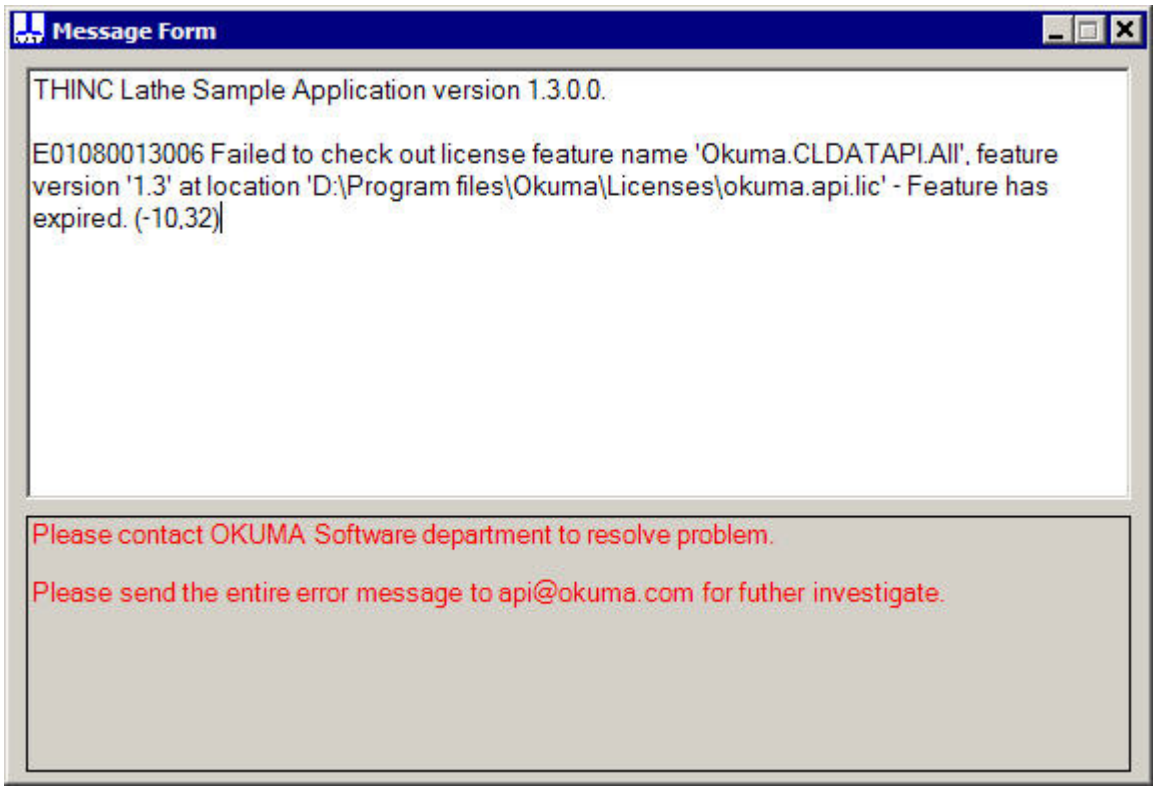


The error message shows an invalid license file for a particular THINC-API library:

- Operation: E01080013001 Failed to check out license feature name 'Okuma.CMDATAPI.All', feature version '1.3' at location 'D:\Program files\Okuma\Licenses\okuma.api.lic'
- Problem: Invalid (inconsistent) license key. (-8,523). Probably, the license file has been modified.

Solution: Un-install current version and install THINC-API to the latest version.

4.5.1.3.4.4 Expired license file

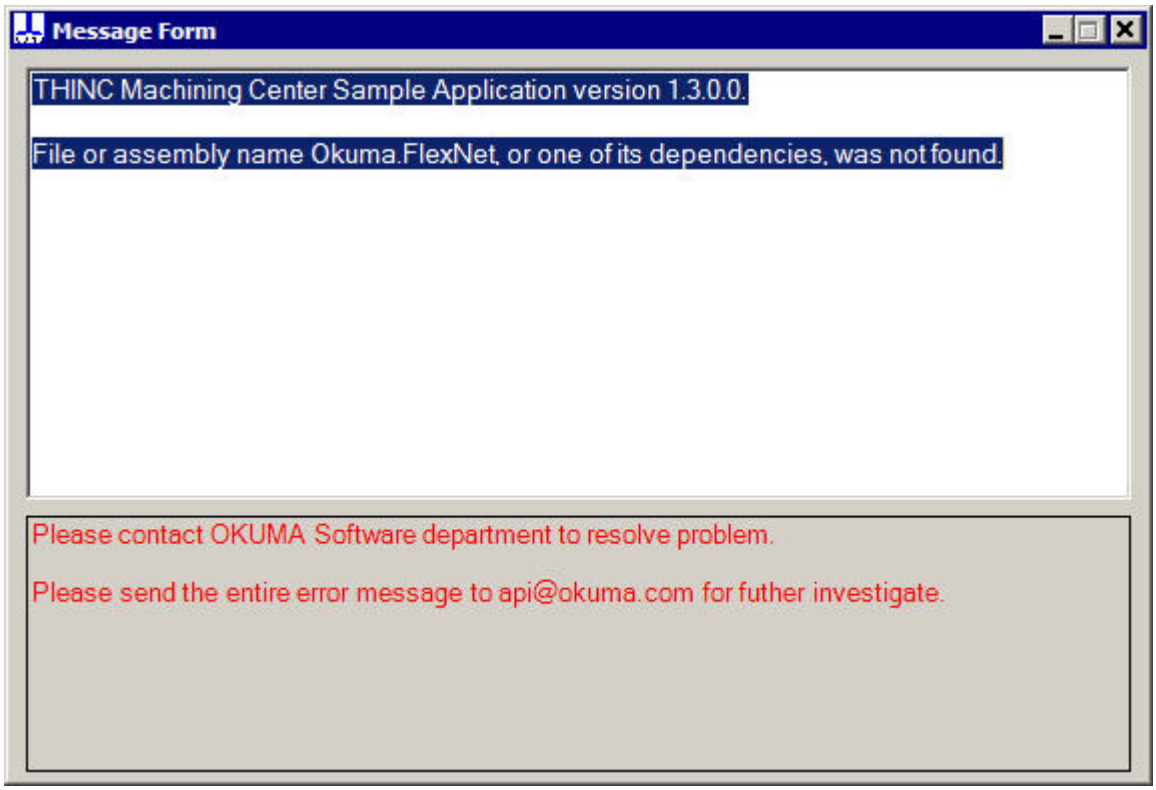


The error message shows an expired license file for a particular THINC-API library:

- Operation: E01080013001 Failed to check out license feature name 'Okuma.CLDATAPI.All', feature version '1.3' at location 'D:\Program files\Okuma\Licenses\okuma.api.lic'
- Problem: Feature has expired (-10,32)

Solution: Install THINC-API to the latest version with permanent license file. *Please see section '4.3 Install External License file' for installing external license file.*

4.5.1.3.4.5 Flexnet License library



The error message shows that a dependency library for THINC-API library cannot find in GAC (Global Assembly Cached (\Windows\assembly) folder:

- Problem: File or assembly name Okuma.FlexNet, or one of its dependencies, was not found.

Solution: Install THINC-API to the latest version.

4.5.1.3.4.6 OAC License library

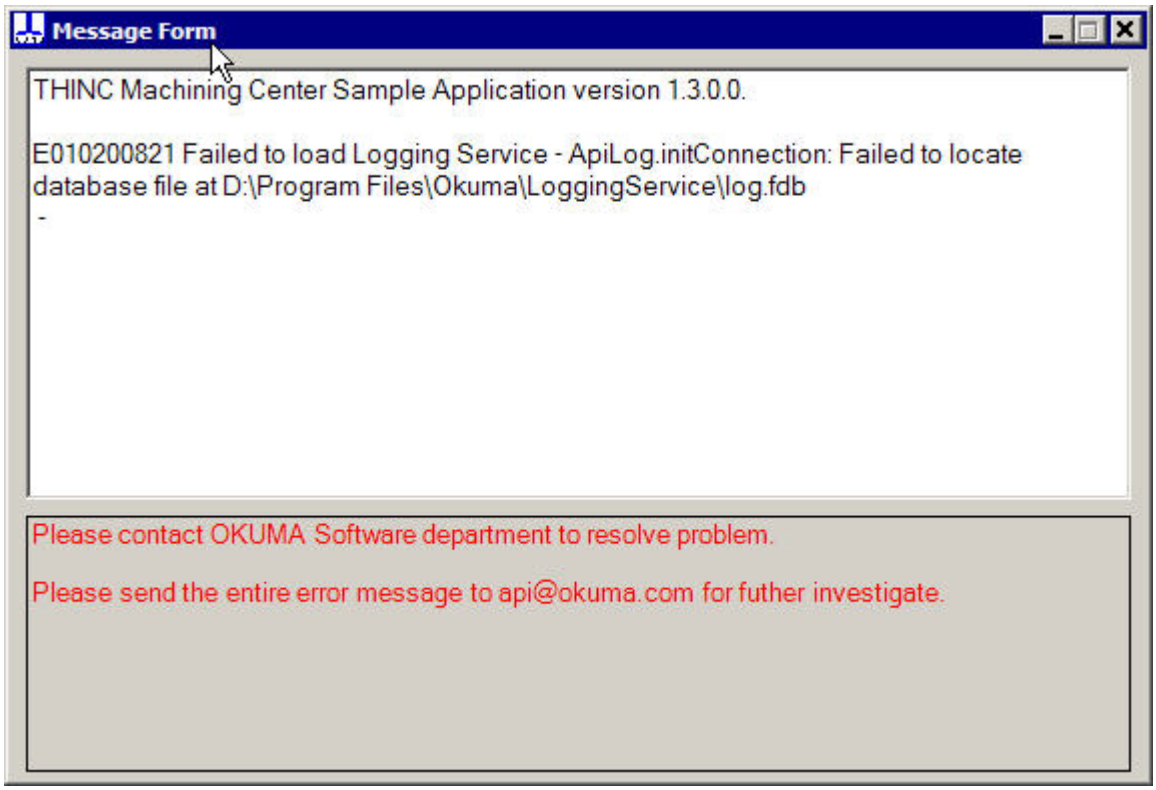
For license file named Okuma.api.xml, the following must be installed with Windows System folder: Okuma.LicensingMgr.dll and Okuma.LicenseLib.dll

4.5.2 Logging Service & Logging Service Client Application

4.5.2.1 Logging Service

At first run, THINC-API libraries will connect with Logging Service utility.

The Logging Service could fail to load correctly as indicated below:



The error message shows a missing file:

- Operation: Failed to load Logging Service
- Problem: Failed to locate database file at D:\Program Files\Okuma\LoggingService\log.fdb

Solution: Re-install or install THINC-API libraries to the latest version.

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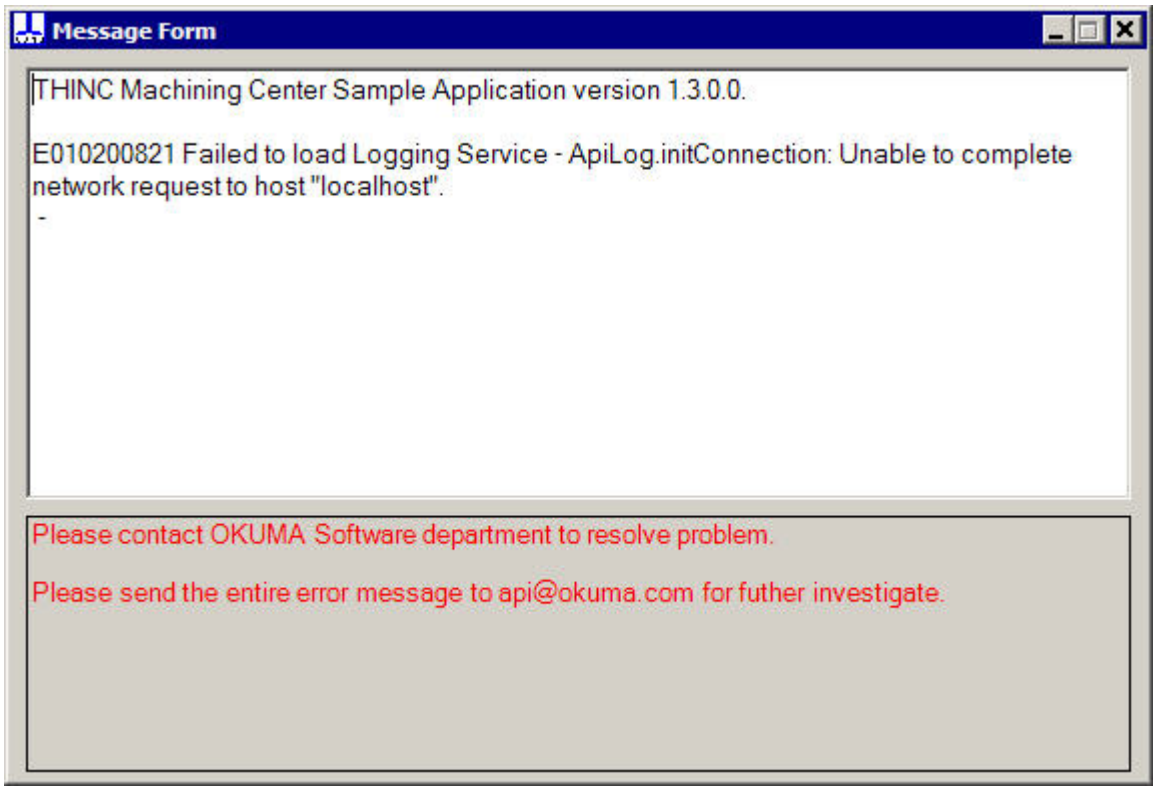
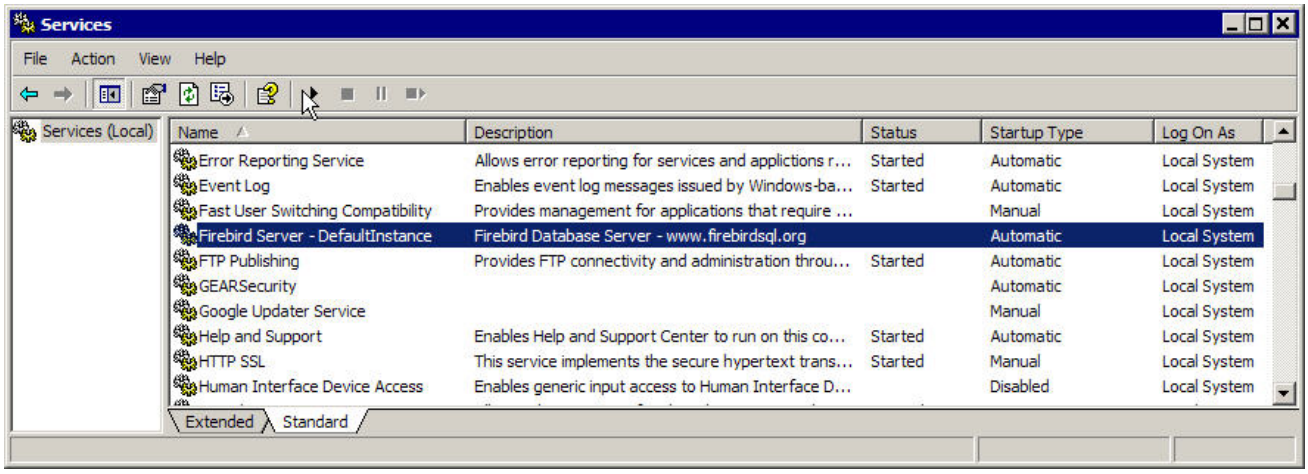


The error message shows that the Logging Service server is not running on the local machine (localhost):

- Operation: Failed to load Logging Service
- Problem: ApiLog.initConnection: Unable to complete network request to host “localhost”

Solution:

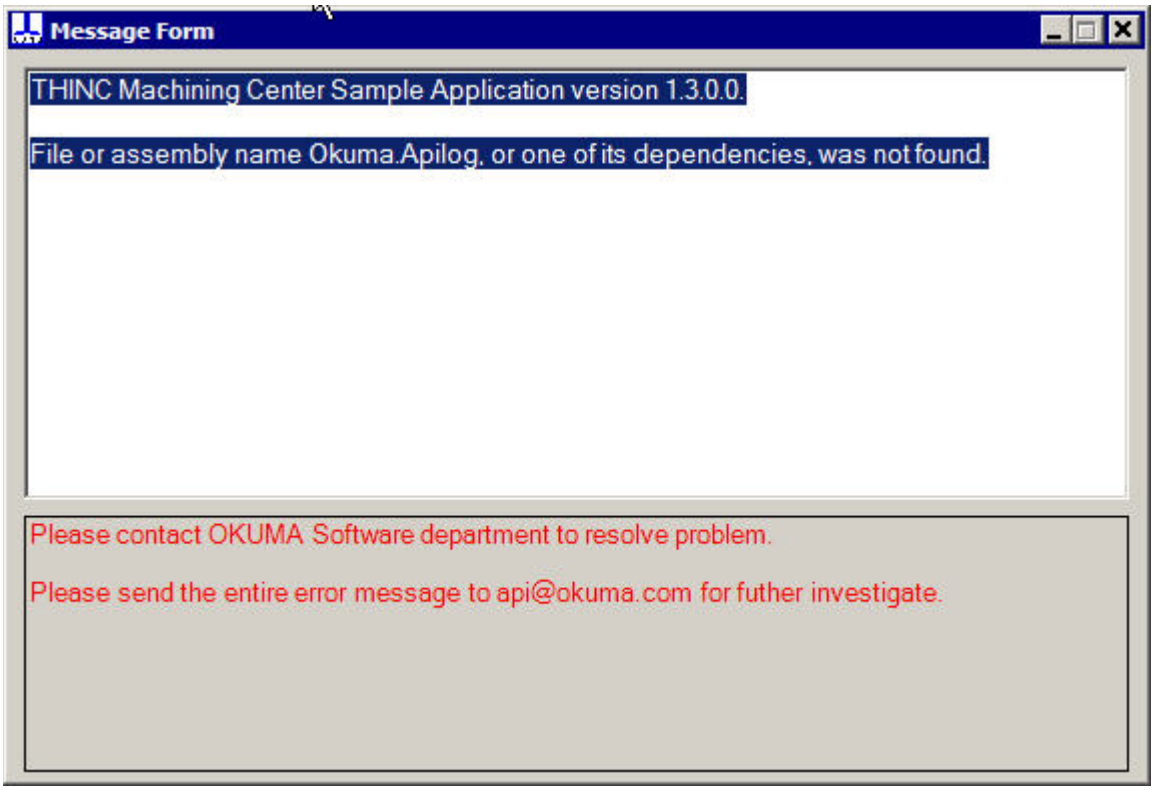
Make sure that FireBird server status is running. If not, start the FireBird server from Service Windows



Or

Re-install or install THINC-API libraries to the latest version.

4.5.2.2 Logging Library



The error message shows that a dependency library for THINC-API library cannot find in GAC (Global Assembly Cached \Windows\assembly) folder:

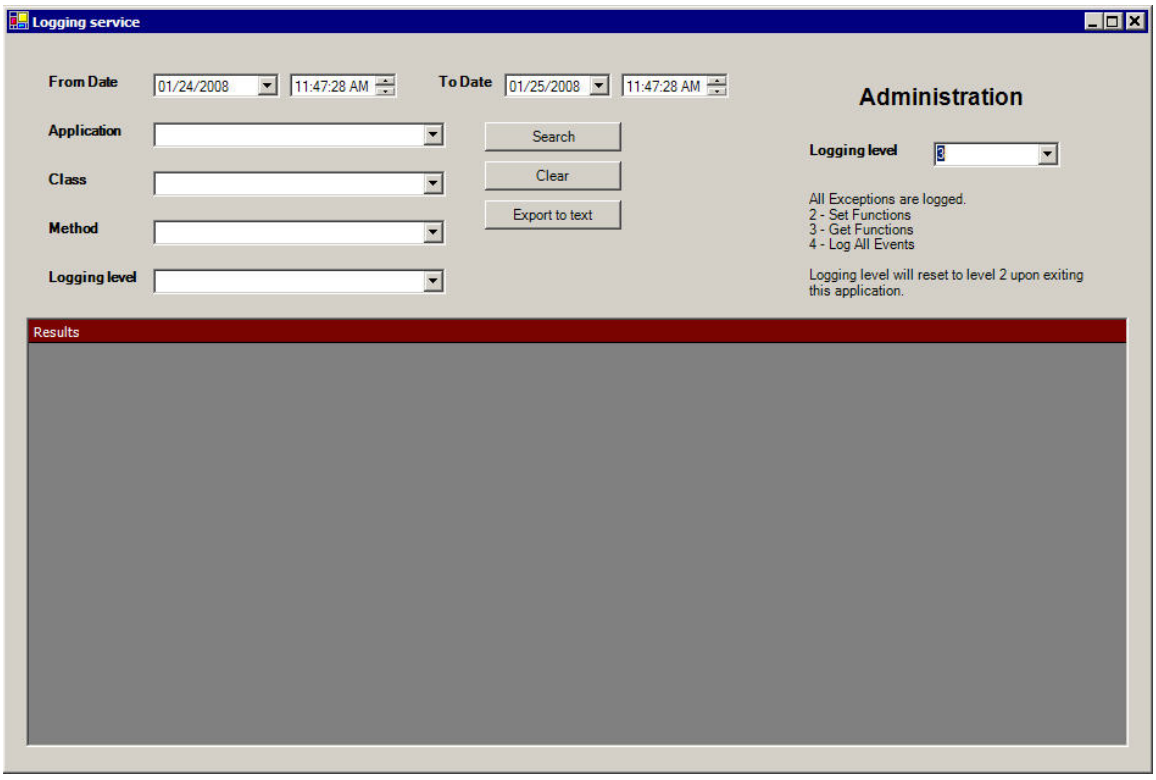
- Problem: File or assembly name Okuma.ApiLog or one of its dependencies, was not found.

Solution: Install THINC-API to the latest version.

4.5.2.3 Logging Service Client Application

The Logging Client application is a utility that allows one to view all logging records logged by THINC-API libraries at different logging level.

A successful loading of LoggingServiceClient application is shown below:



LoggingServiceClient application could fail to load up correctly if the logging database file is missing or Logging Service does not start yet.

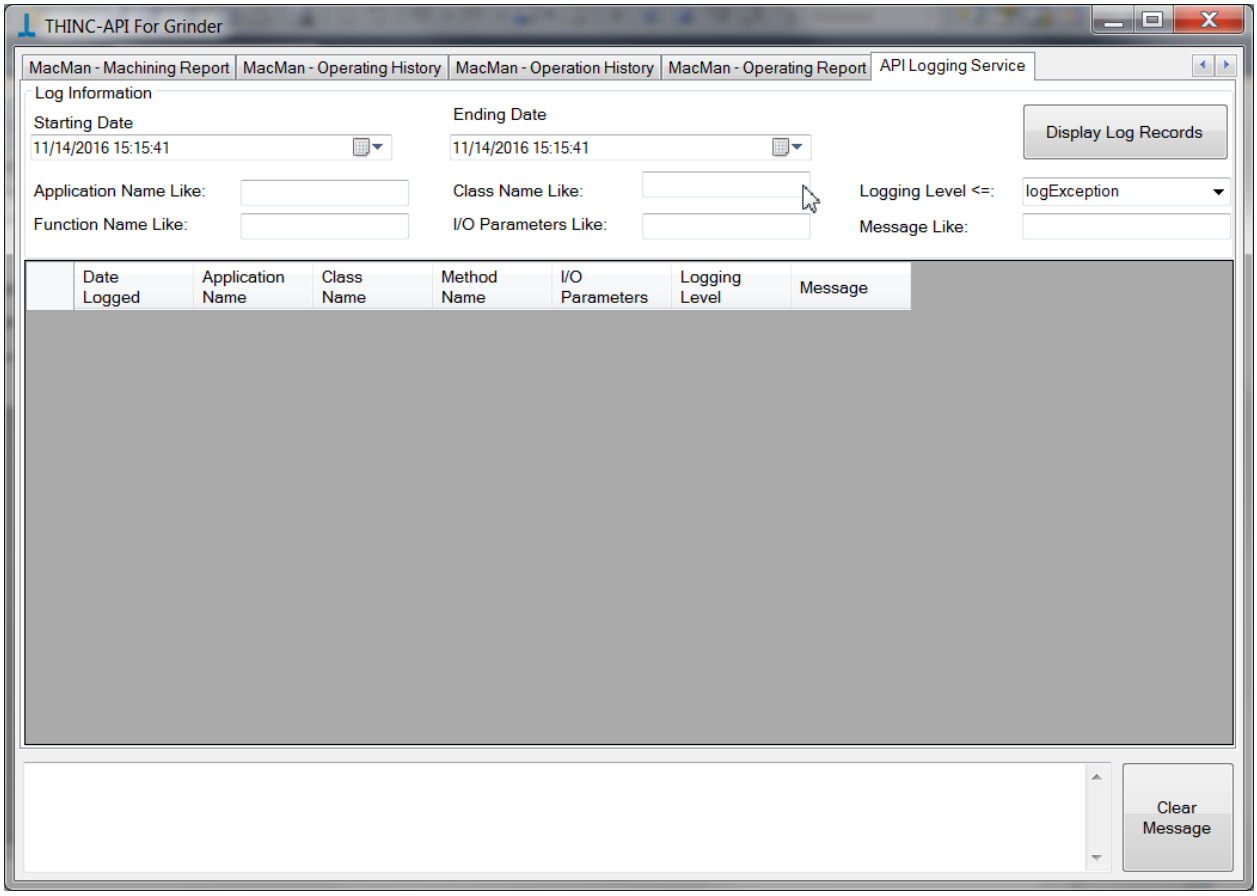
Please refer to section 4.4.2.1 and 4.4.2.2 for correcting the problems.

4.5.2.4 Logging Service for .NET Framework 4.0 THINC-API libraries

THINC-API libraries compiled with .NET Framework will not use Okuma.ApiLog.dll library any more. It will use Okuma.ApiLog2.dll instead.
The following libraries and application are used for logging service and installed in D:\Program files\Okuma\LoggingService2 folder:
Okuma.Api.LogService.WinHost.exe
Okuma.Api.LogService.dll
System.Data.SQLite.dll
ApiLog2

O2FLASH		Started	Automatic (...	Local Syst..
Office Source Engine	Saves install...		Manual	Local Syst..
Office Software Protection Platform	Enables the ...	Started	Manual	Network S.
OfficeScan Common Client Solution Frame...	Manages a...	Started	Manual	Local Syst..
OfficeScan NT Listener	Receives co...	Started	Automatic	Local Syst..
OfficeScan NT Proxy Service	Scans netw...		Manual	Local Syst..
OfficeScan NT RealTime Scan	Performs Re...	Started	Automatic	Local Syst..
Offline Files	The Offline ...		Disabled	Local Syst..
OKUMA API Logging Service Win Host	Logging Ser...		Automatic	Local Syst..
Okuma API Notifier	Detects that...		Automatic	Local Syst..
OkumaWinSvcHostedCalcService	OKUMA WC...		Disabled	Local Syst..

The logging service client application is part of Lathe, Machining Center, and Grinder Test application as shown below:



5. Repair/Uninstall THINC-API

5.1 Repair/Un-install

If THINC-API already installed, the setup will ask for either Repair or Remove the current THINC-API installation.

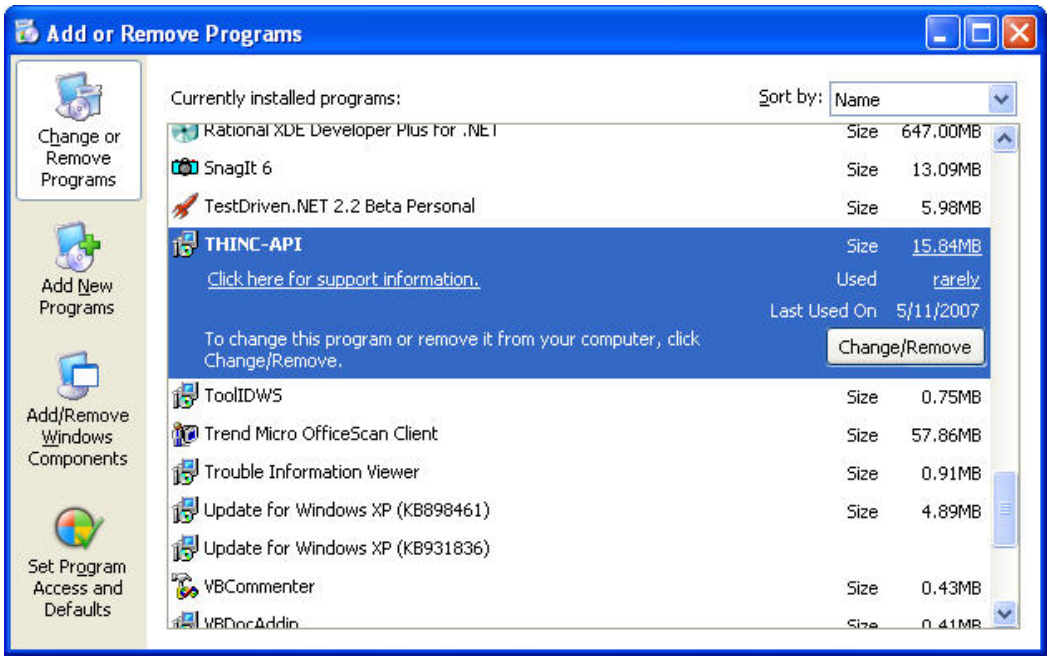
5.1.1 Repair

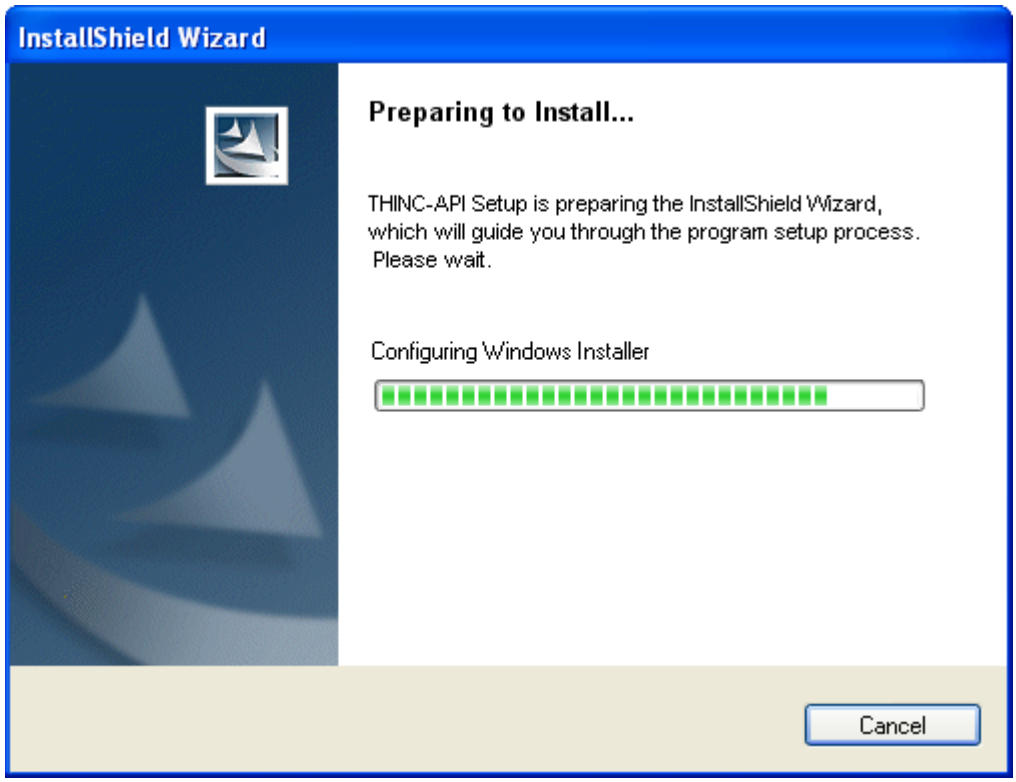
The setup will try to re-install all files current being installed on machine.

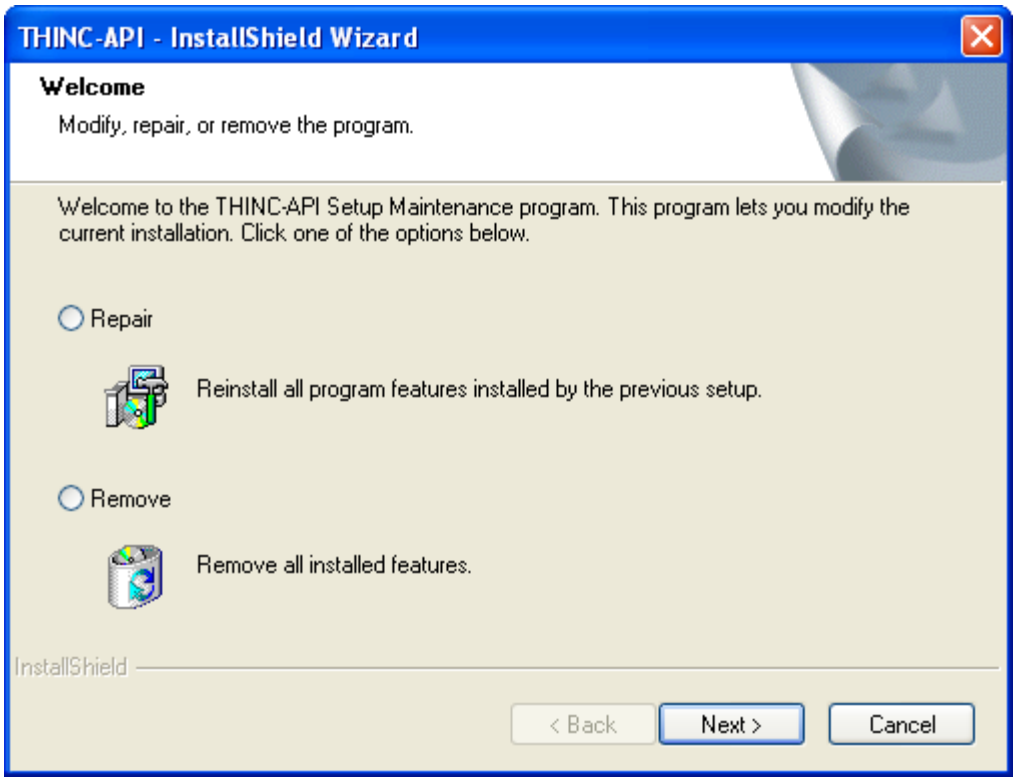
5.1.1.1 Run Setup

Run the THINC-API from Add or Remove Programs or source of media

Note: The original source of THINC-API setup must be available and accessible from Windows drive.







Select the “Repair’ option and press Next to continue the process

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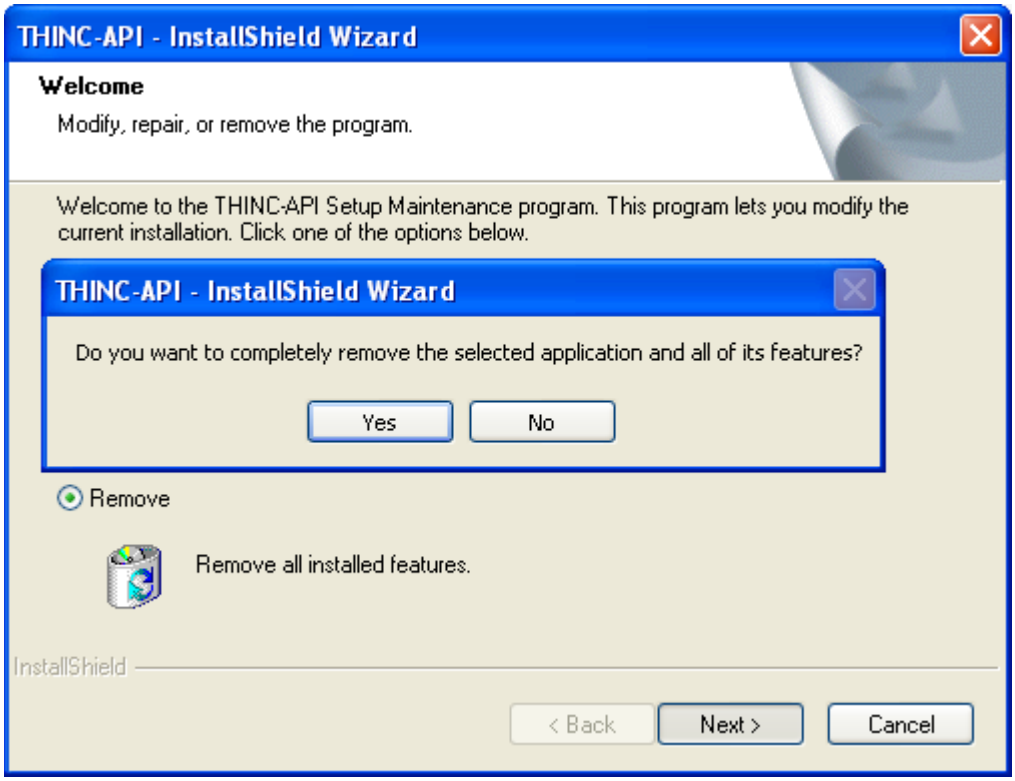
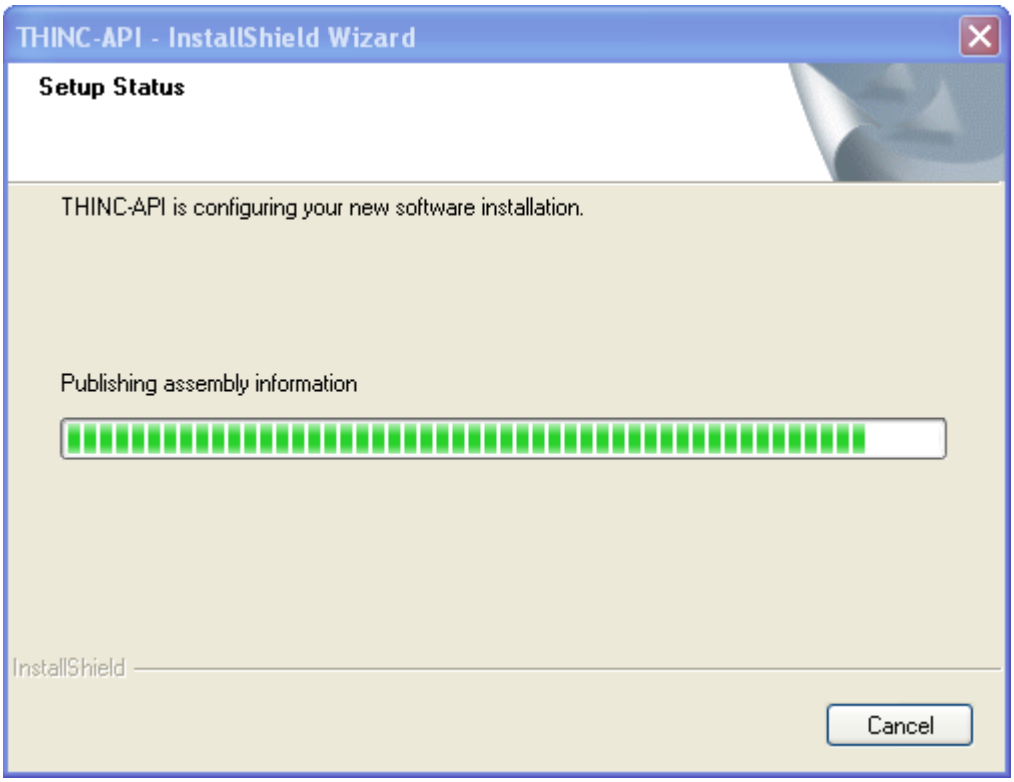
If you select ‘Remove’ and press Next, the installation will ask for your confirmation to remove current THINC-API installation.



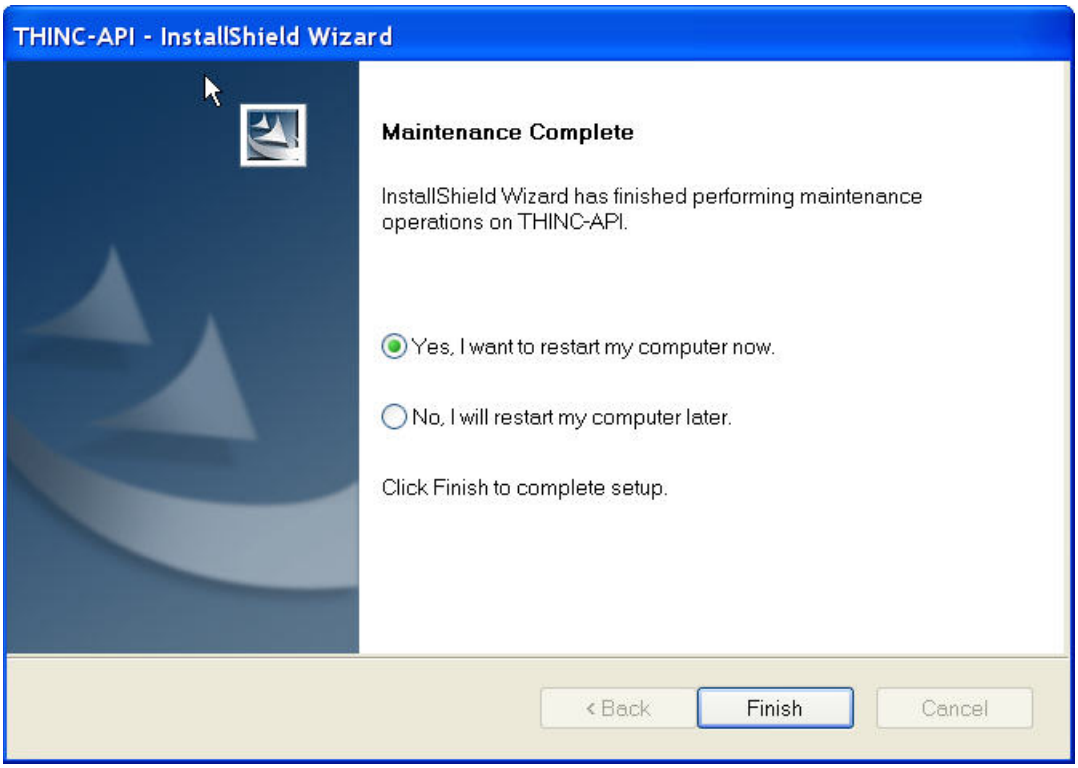
Click Yes to continue with the installation process or click No to review/change any settings.

5.1.1.2 Setup



At any time, you can press Cancel button to terminate the installation.

5.1.1.3 Finish

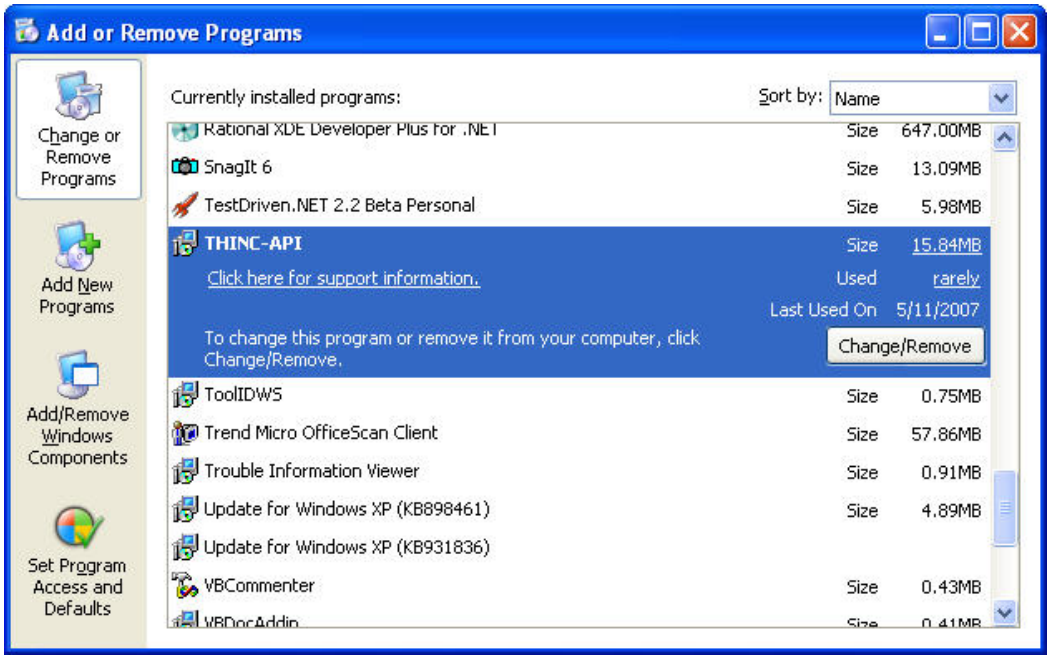


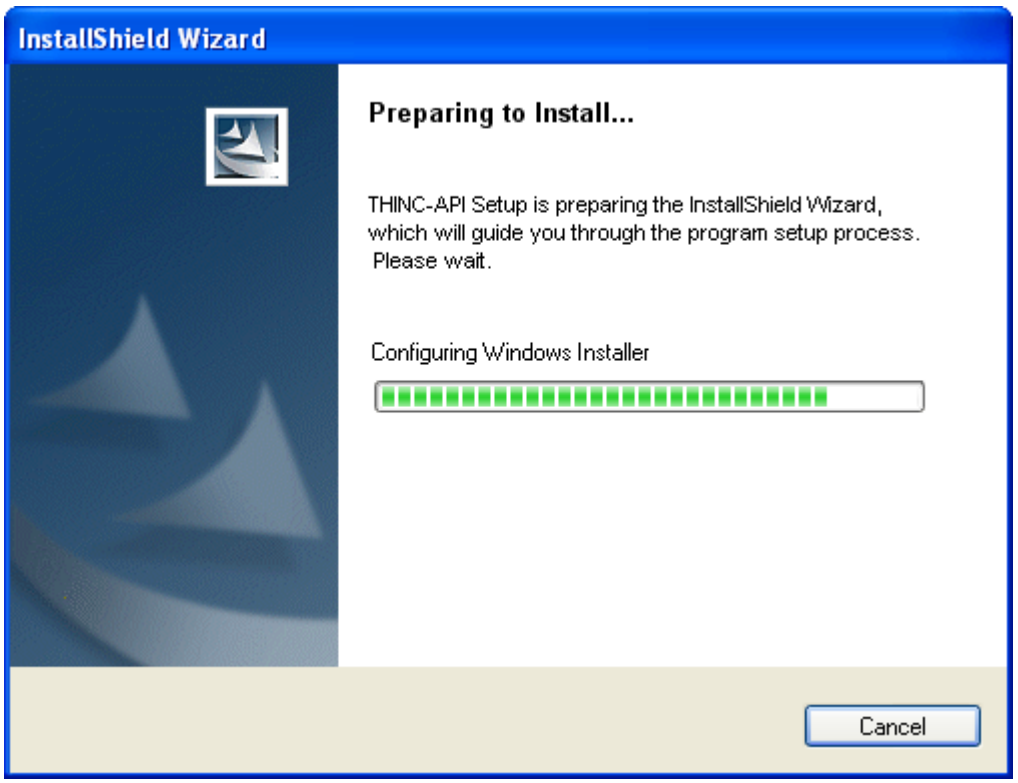
Click Finish to just finish the installation process.

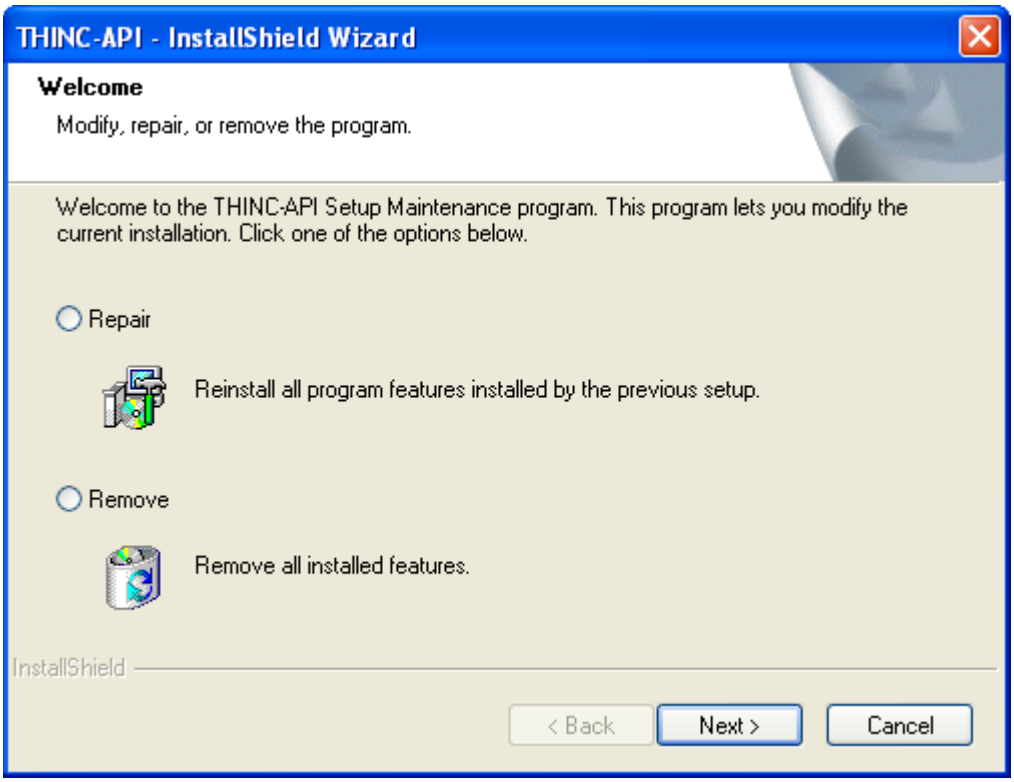
5.1.2 Uninstall

5.1.2.1 Run setup

Run the THINC-API from Add or Remove Programs

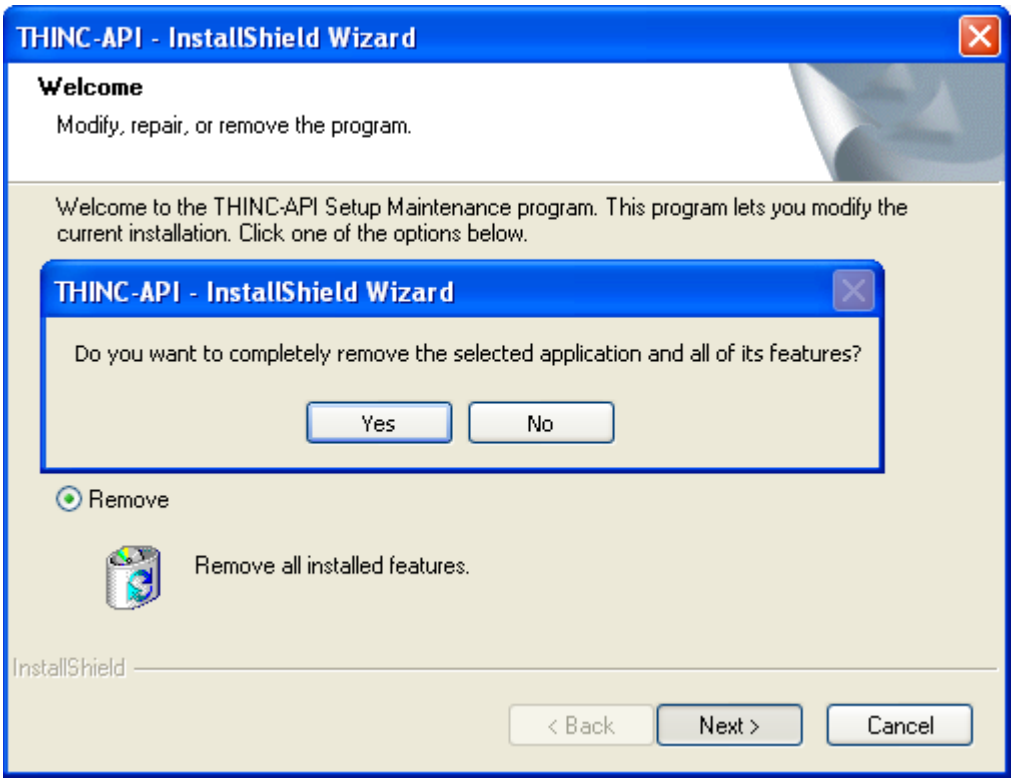

Add or Remove Programs
Change or Remove Programs
Add New Programs
Add/Remove Windows Components
Set Program Access and Defaults
Currently installed programs:
Sort by: Name
Rational XDE Developer Plus for .NET
Size 647.00MB
SnagIt 6
Size 13.09MB
TestDriven.NET 2.2 Beta Personal
Size 5.98MB
THINC-API
Size 15.84MB
Click here for support information.
Used rarely
Last Used On 5/11/2007
To change this program or remove it from your computer, click Change/Remove.
Change/Remove
ToolIDWS
Size 0.75MB
Trend Micro OfficeScan Client
Size 57.86MB
Trouble Information Viewer
Size 0.91MB
Update for Windows XP (KB898461)
Size 4.89MB
Update for Windows XP (KB931836)
VBCommenter
Size 0.43MB


InstallShield Wizard
Preparing to Install...
THINC-API Setup is preparing the InstallShield Wizard, which will guide you through the program setup process. Please wait.
Configuring Windows Installer
Cancel



Select ‘Remove’ and press Next.

The installation will ask for your confirmation to remove current THINC-API installation.



Click Yes to continue with the installation process or click No to review/change any settings.

5.1.2.2 Setup Status

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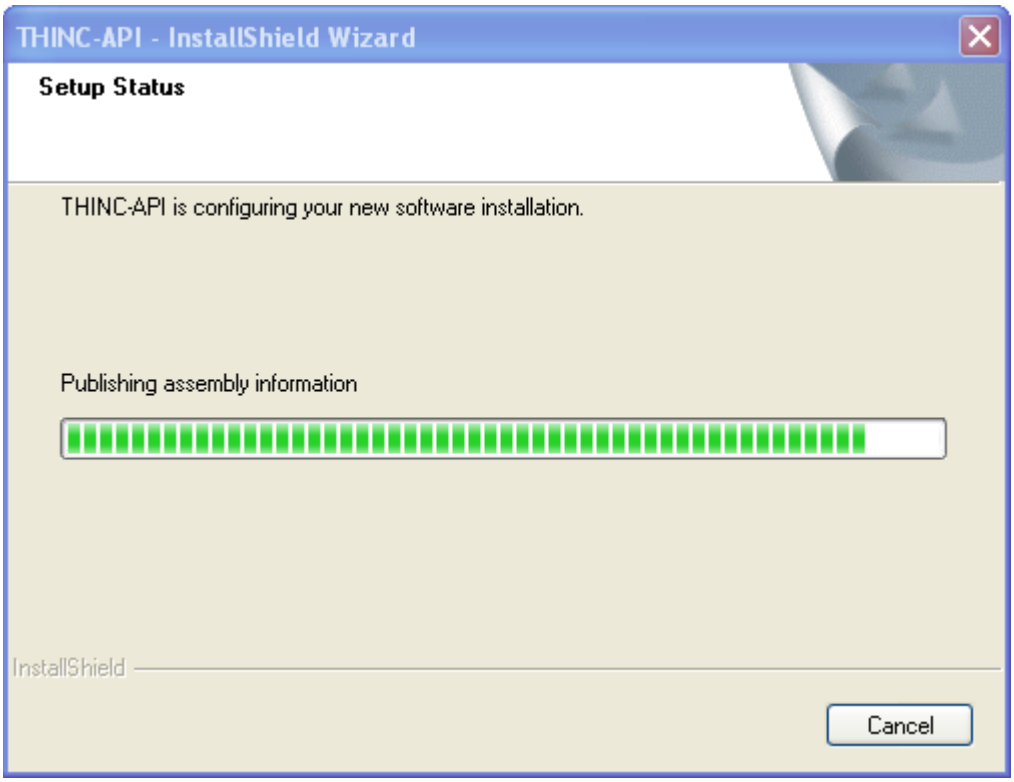
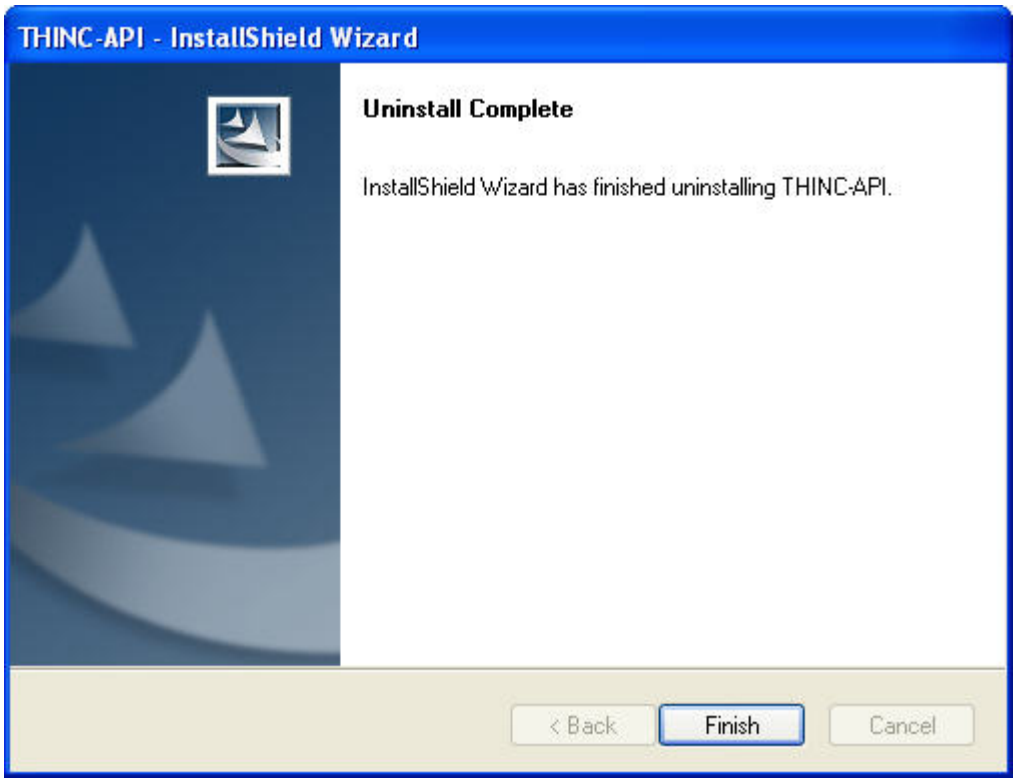


At any time, you can press Cancel button to terminate the installation.

5.1.2.3 Finish



Click Finish to just finish the installation process.

6. Installation Files

The following files are considered ***THINC-API libraries*** which are included in the subfolder ***program files\Okuma\THINC API\Bin:***

- Okuma.CLDATAPI.dll
- Okuma.CLCMDAPI.dll
- Okuma.CLDATAPI.xml (Visual Studio Brower Help files)
- Okuma.CLCMDAPI.xml (Visual Studio Brower Help files)

- Okuma.CMDATAPI.dll
- Okuma.CMCMDAPI.dll
- Okuma.CMDATAPI.xml (Visual Studio Brower Help files)
- Okuma.CMCMDAPI.xml (Visual Studio Brower Help files)

- Okuma.CGDATAPI.dll
- Okuma.CGCMDAPI.dll
- Okuma.CGDATAPI.xml (Visual Studio Brower Help files)
- Okuma.CGCMDAPI.xml (Visual Studio Brower Help files)

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6.1 Machine Installation

6.1.1 Lathe

6.1.1.1 GAC Folder

THINC-API libraries:
- Okuma.CLDATAPI.dll
- Okuma.CLCMDAPI.dll

Logging Service library:
- Okuma.Apilog2.dll
- Okuma.Api.LogService.dll
- Okuma.Api.LogService.Data.dll

Dependency library files for THINC-API:
- Okuma.Interop.LCMDAPI.dll

6.1.1.2 Okuma Folders

THINC-API Release notes:
D:\Program files\Okuma\THINC API \ LatheReleaseNote.pdf

THINC-API Installation Manual:
D:\Program files\Okuma\THINC API \InstallationManual.pdf

THINC-API license file:
D:\Program files\Okuma\Licenses\Okuma.api.lic
THINC-API license file:
D:\Program files\Okuma\Licenses\Okuma.api.xml

THINC-API Help file:
D:\Program files\Okuma\THINC API\Help\THINLathe.chm

THINC-API Sample application folder:
D:\Program files\Okuma\THINC API \THINCLathe

THINC-API libraries and Visual Studio Brower Help files:
D:\Program files\Okuma\THINC API \bin
- Okuma.CLDATAPI.dll
- Okuma.CLCMDAPI.dll
- Okuma.CLDATAPI.xml (Visual Studio Brower Help files)
- Okuma.CLCMDAPI.xml (Visual Studio Brower Help files)

Logging Service folder:
D:\Program Files\Okuma\LoggingService2
- ApiLog2
- Okuma.Api.LogService.dll
- Okuma.Api.LogService.WinHost.exe
- Okuma.Api.LogService.WinHost.exe.config
- System.DataSQLite.dll

6.1.2 Machining Center

6.1.2.1 GAC Folder

THINC-API libraries:
- Okuma.CMDATAPI.dll
- Okuma.CMCMDAPI.dll

Logging Service library:
- Okuma.Apilog2.dll
- Okuma.Api.LogService.dll
- Okuma.Api.LogService.Data.dll

Dependency library files for THINC-API:
- Okuma.Interop.MCMDAPI.dll

6.1.2.2 Okuma Folders

THINC-API Release notes:
D:\Program files\Okuma\THINC API \MCReleaseNote.pdf

THINC-API Installation Manual:
D:\Program files\Okuma\THINC API \InstallationManual.pdf

THINC-API license file for both Lathe & MC:
D:\Program files\Okuma\Licenses\Okuma.api.lic

THINC-API license file for both Lathe & MC:
D:\Program files\Okuma\Licenses\Okuma.api.xml

THINC-API Help file:
D:\Program files\Okuma\THINC API\Help\THINCMC.chm

THINC-API Sample application folder:
D:\Program files\Okuma\THINC API \THINCMC

THINC-API libraries and Visual Studio Brower Help files:
D:\Program files\Okuma\THINC API \bin
- Okuma.CMDATAPI.dll
- Okuma.CMCMDAPI.dll
- Okuma.CMDATAPI.xml (Visual Studio Brower Help files)
- Okuma.CMCMDAPI.xml (Visual Studio Brower Help files)

Logging Service folder:
D:\Program Files\Okuma\LoggingService2
- ApiLog2
- Okuma.Api.LogService.dll
- Okuma.Api.LogService.WinHost.exe
- Okuma.Api.LogService.WinHost.exe.config
- System.DataSQLite.dll

6.1.3 Grinder

6.1.3.1 GAC Folder

THINC-API libraries:
- Okuma.GGDATAPI.dll
- Okuma.CGCMDAPI.dll

Logging Service library:
- Okuma.Apilog2.dll
- Okuma.Api.LogService.dll
- Okuma.Api.LogService.Data.dll

Dependency library files for THINC-API:
- Okuma.Interop.GCMDAPI.dll

6.1.3.2 Okuma Folders

THINC-API Release notes:
D:\Program files\Okuma\THINC API \ReleaseNote.pdf

THINC-API Installation Manual:
D:\Program files\Okuma\THINC API \InstallationManual.pdf

THINC-API license file for Lathe, MC, and Grinder:
D:\Program files\Okuma\Licenses\Okuma.api.lic

THINC-API license file for Lathe, MC, and Grinder:
D:\Program files\Okuma\Licenses\Okuma.api.xml

THINC-API Help file:
D:\Program files\Okuma\THINC API\Help\THINCGrinder.chm

THINC-API Sample application folder:
D:\Program files\Okuma\THINC API \THINCGrinder

THINC-API libraries and Visual Studio Brower Help files:
D:\Program files\Okuma\THINC API \bin
- Okuma.CGDATAPI.dll
- Okuma.CGCMDAPI.dll
- Okuma.CGDATAPI.xml (Visual Studio Brower Help files)
- Okuma.CGCMDAPI.xml (Visual Studio Brower Help files)

Logging Service folder:
D:\Program Files\Okuma\LoggingService2
- ApiLog2
- Okuma.Api.LogService.dll
- Okuma.Api.LogService.WinHost.exe
- Okuma.Api.LogService.WinHost.exe.config
- System.DataSQLite.dll

6.2 Desktop Installation

All 3 libraries for Lathe, Machining Center, and Grinder can be installed when desktop installation is detected. The installation will consider desktop installation when there is no OSP-P folder on C drive.

All libraries and applications will be installed for each selection of machine types.

7. Installation for Custom Application

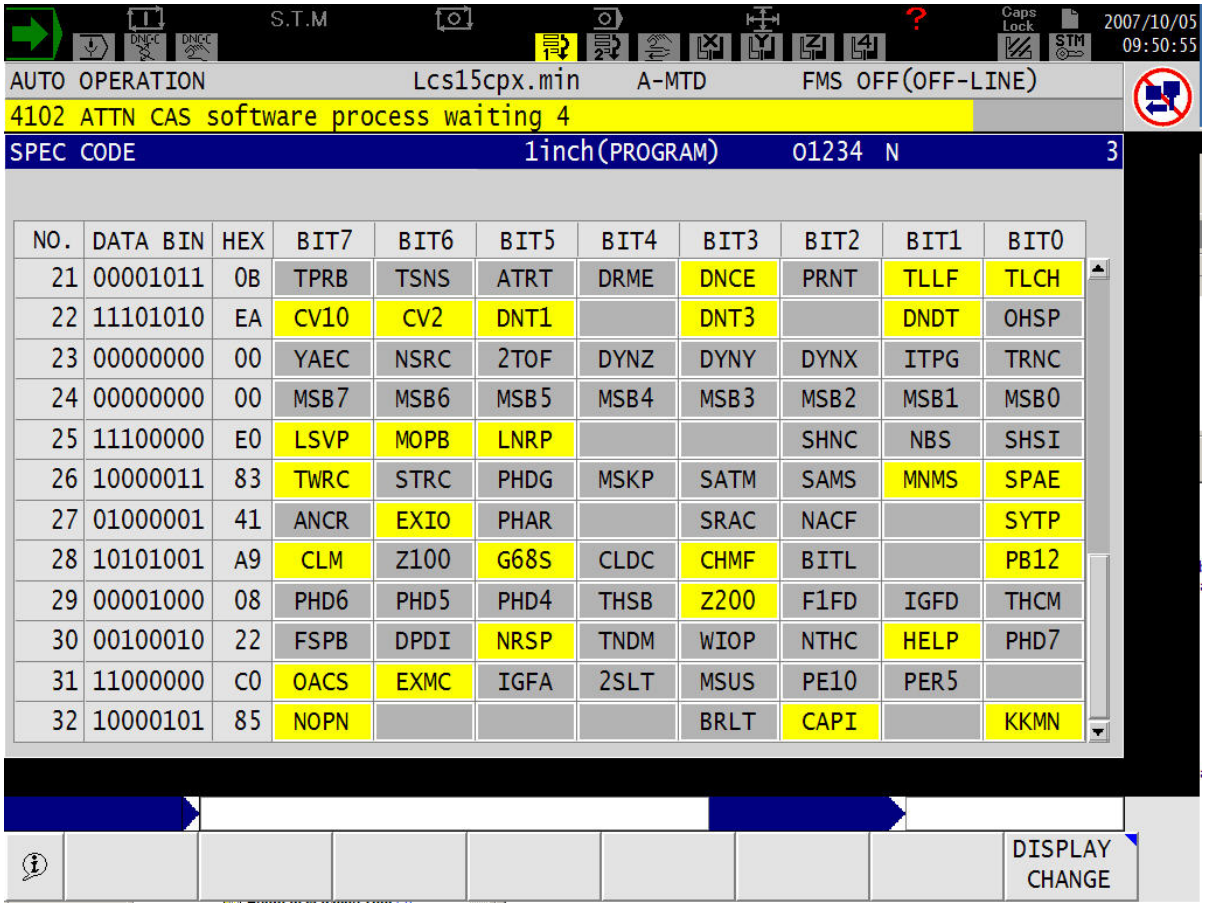
This section describes the process of installing custom applications developed with THINC API libraries. This process allows custom applications developed with any version of THINC-API to run on machine without affecting other custom applications running with different versions of THINC-API libraries.

In order for a custom application to run on machine, the following steps need to be done as listed below:

7.1 THINC-API Spec. Code

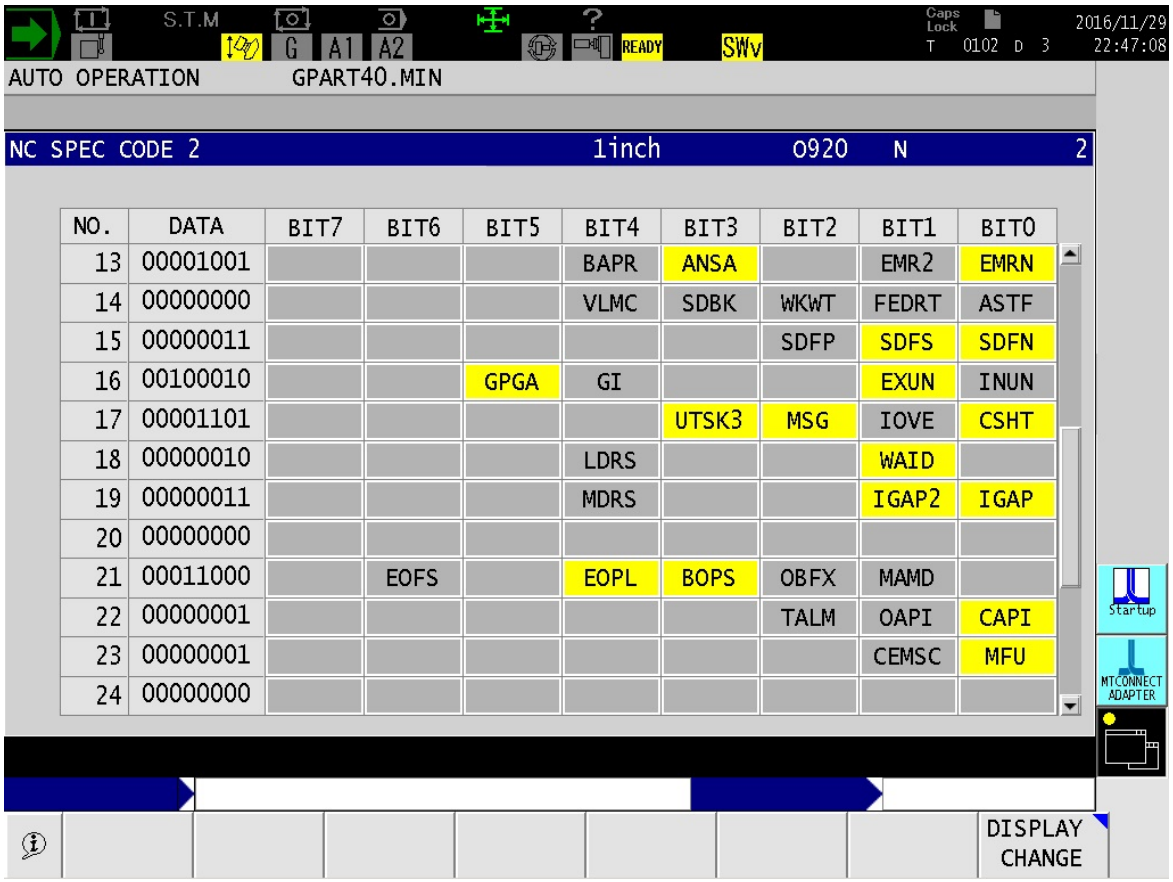
In order for THINC-API to function, a spec. code for THINC-API must be enabled on the machine. To enable THINC-API, it must be requested through distributor or Okuma Software Group. Currently, this process is done by installing the OSP System Software on the machine.

On Machining Center, THINC-API spec. code, CAPI on No 32, can be verified visually on the NC HMI screen as shown below:



NO.	DATA BIN	HEX	BIT7	BIT6	BIT5	BIT4	BIT3	BIT2	BIT1	BIT0
21	00001011	0B	TPRB	TSNS	ATRT	DRME	DNCE	PRNT	TLLF	TLCH
22	11101010	EA	CV10	CV2	DNT1		DNT3		DNDT	OHSP
23	00000000	00	YAEC	NSRC	2TOF	DYNZ	DYNY	DYNX	ITPG	TRNC
24	00000000	00	MSB7	MSB6	MSB5	MSB4	MSB3	MSB2	MSB1	MSB0
25	11100000	E0	LSVP	MOPB	LNRP			SHNC	NBS	SHSI
26	10000011	83	TWRC	STRC	PHDG	MSKP	SATM	SAMS	MNMS	SPAE
27	01000001	41	ANCR	EXIO	PHAR		SRAC	NACF		SYTP
28	10101001	A9	CLM	Z100	G68S	CLDC	CHMF	BITL		PB12
29	00001000	08	PHD6	PHD5	PHD4	THSB	Z200	F1FD	IGFD	THCM
30	00100010	22	FSPB	DPDI	NRSP	TNDM	WIOP	NTHC	HELP	PHD7
31	11000000	C0	OACS	EXMC	IGFA	2SLT	MSUS	PE10	PER5	
32	10000101	85	NOPN				BRLT	CAPI		KKMN

On Grinder, THINC-API spec. code, CAPI on No 22 bit 0, can be verified visually on the NC HMI screen as shown below:



NO.	DATA	BIT7	BIT6	BIT5	BIT4	BIT3	BIT2	BIT1	BIT0
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14	00000000				VLMC	SDBK	WKWT	FEDRT	ASTF
15	00000011						SDFP	SDFS	SDFN
16	00100010			GPGA	GI			EXUN	INUN
17	00001101					UTSK3	MSG	IOVE	CSHT
18	00000010				LDRS			WAID	
19	00000011				MDRS			IGAP2	IGAP
20	00000000								
21	00011000		EOFS		EOPL	BOPS	OBFX	MAMD	
22	00000001						TALM	OAPI	CAPI
23	00000001							CEMSC	MFU
24	00000000								

Note: There is no NC-HMI screen for verifying spec code on Lathe machine.

7.2 License

All ***THINC-API libraries*** require a valid license file to run on machine. The setup itself includes a time-out version of license file and is installed in D:\Program Files\Okuma\Licenses folder. Your custom application or demo application can be run in this trial period.
It is possible to have 2 type of license files can be coexisted in the license folder.

7.2.1 Flexnet License File

For Flexnet license file, the file name will be okuma.api.lic.
Note: This license file cannot support alphanumeric machine serial number.

Currently, the trial period is fixed to certain date in the license file.

For example:
This license file will be expired in Oct 1, 2008 for Okuma.CLDATAPI.All version 1.2. This license file can be used on any machine.

FEATURE Okuma.CLDATAPI.All okumausa 1.2 01-oct-2008 uncounted \
HOSTID=ANY TS_OK SIGN="00EB B55A 56DD A45F 75D6 F491 231F CD00 \
2BA2 A406 AE0F 932B C574 7230 959C"

FEATURE Okuma.CMDATAPI.All okumausa 1.2 01-oct-2008 uncounted \
HOSTID=ANY TS_OK SIGN="00D7 1F45 6055 FEBE 8654 2089 A431 B100 \
EE6E 0E40 BAED 4AA3 B350 78DA 8955"

FEATURE Okuma.CLCMDAPI.All okumausa 1.0 01-oct-2008 uncounted \
HOSTID=ANY TS_OK SIGN="00D6 079F E750 1E50 F866 794A 9058 3900 \
7BA4 97FD 199B 9809 7F19 DD09 41FD"

FEATURE Okuma.CMCMDAPI.All okumausa 1.0 01-oct-2008 uncounted \
HOSTID=ANY TS_OK SIGN="00B3 3BC6 ED99 A792 24E0 A99C B6D5 9000 \
CCF9 B436 0BDA 7283 CCAA 5BE6 E6FC"

FEATURE Okuma.ControlType.P200 okumausa 1.0 permanent uncounted \
HOSTID=SERIAL=105330 TS_OK SIGN="006A 4D47 5A17 E95C 4AC1 1494 852F DB00 A98 F8BE 5366 B02E 10E4 1220 2FCF"

The non-expired license file must be obtained through Okuma Software Group if you are a customer only. Each THINC-API library will check this license for correct version. The library version should be equal or less than the version in the license file to run.

Sample valid license file per machine serial number:

FEATURE Okuma.CLDATAPI.All okumausa 1.1 permanent uncounted \
HOSTID=SERIAL=105330 TS_OK SIGN="00C3 4CCD E2DB 439D 0F83 4805 \
9C14 DF00 291B D46A 71BD A96A 61A0 5A54 D18B"

FEATURE Okuma.CLCMDAPI.All okumausa 1.0 permanent uncounted \
HOSTID=SERIAL=105330 TS_OK SIGN="00A3 F5EF 4872 1C12 27C9 8E5B \
C5B9 4D00 5300 1FF5 D0B4 1371 DC59 4FB9 CEDD"

FEATURE Okuma.CMDATAPI.All okumausa 1.1 permanent uncounted \
HOSTID=SERIAL=105330 TS_OK SIGN="00B8 7E90 2B05 9535 94E4 92CB \
C8BB B100 89C1 3E47 820D E045 931C EC07 68A9"

FEATURE Okuma.CMCMDAPI.All okumausa 1.0 permanent uncounted \
HOSTID=SERIAL=105330 TS_OK SIGN="00B2 0B95 F2BC 0E10 D351 D60A \
60F8 E100 1904 FC87 685A 09D0 A1BC 1C45 8B52"

FEATURE Okuma.CGDATAPI.All okumausa 1.0 permanent uncounted \
HOSTID=SERIAL=105330 TS_OK SIGN="00B8 7E90 2B05 9535 94E4 92CB \
C8BB B100 89C1 3E47 820D E045 931C EC07 68A9"

FEATURE Okuma.CGCMDAPI.All okumausa 1.0 permanent uncounted \
HOSTID=SERIAL=105330 TS_OK SIGN="00B2 0B95 F2BC 0E10 D351 D60A \
60F8 E100 1904 FC87 685A 09D0 A1BC 1C45 8B52"

FEATURE Okuma.ControlType.P200 okumausa 1.0 permanent uncounted \

HOSTID=SERIAL=105330 TS_OK SIGN="006A 4D47 5A17 E95C 4AC1 1494 852F DB00 A98 F8BE 5366 B02E 10E4 1220 2FCF"

This license file is for machine having serial number 105330 only. It will not work on other machines having different serial number. It will support Okuma.CLDATAPI.dll library having a version that equals to or less than 1.1, and so for. This license file can support function calls for P200 or newer control types.

7.2.2 OAC License File

For OAC license file, the file name will be okuma.api.xml. All THINC-API library starting from public release version 1.26.0.0 can support OAC license file and can validate with machine using alphanumeric machine serial number. All THINC-API library files that can support OAC license file will only validate with OAC license file if license file is existed in the folder.

The license file itself contains similar license information per library as shown below:

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7.3 Installation

As normal case for all Windows installation program, THINC-API Setup will run through the installation if:

- THINC-API is not installed on the target machine.
- If existing version of THINC-API on machine is less than the installing version

For custom application developed with THINC-API:

- All and ***ONLY*** THINC-API libraries referenced by your application such as Okuma.CLDATAPI.dll, Okuma.CMDATAPI.dll, and Okuma.CGATAPI.dll must be included in your setup and installed in the same folder of your custom application.
- The libraries version referenced in your application must match (exact match since this library is signed with strong name) the libraries installed in your application folder.
- The THINC-API license file, Okuma.api.lic/Okuma.api.xml, installed on machine must support the THINC-API libraries version that your application are compiled with.

For example:
The machine has installed THINC-API and the version of Okuma.CLDATAPI is 1.1 as shown below
FEATURE Okuma.CLDATAPI.All okumausa 1.1 permanent uncounted \
HOSTID=SERIAL=105330 TS_OK SIGN="00C3 4CCD E2DB 439D 0F83 4805 \
9C14 DF00 291B D46A 71BD A96A 61A0 5A54 D18B"

Your custom application is compiled with Okuma.CLDATAPI version 1.2. In this case, the customer needs to obtain the latest THINC-API release and install on the machine.

For all cases, the latest release of THINC-API will cover all custom applications running on the machine and compiled with different version of THINC-API. The latest release of THINC-API always has the latest version of THINC-API libraries and the license file supports latest THINC-API libraries versions, also.

In all cases, the following files must not be included with the installation of custom applications developed with THINC-API libraries:

- ***LCMDAPI.exe***
- ***MCDMAPI.exe***
- ***GCMDAPI.exe***

7.4 Public Release

All custom applications developed with THINC-API must use the public release 1.0.0.0 or above. Any version before public release version will have compatibility issues with public release version and will not run correctly.

7.5 Best Practice

An application should verify all dependency libraries during run-time and encourages using the latest version of THINC-API release if possible. A re-compile of your application is a must to leverage new version of THINC-API features or bugs/defects fixes.
An application must install .NET framework version that it is compiled with.

The installation process comprises 2 steps:

1. Install THINC-API (.NET Framework 1.1/4.0 will also be installed if needed)
2. Install custom application (requires installing .NET Framework that application compiled with. It could be .NET Framework version 2.0. 3.0, and so on)
3. All exceptions generated by API and all set/add/cal functions will be logged. Therefore, the application must be designed to minimize unnecessary log by utilizing Object-Oriented Programming practices or preventing perform set/add/cal functions in a loop.

Example of bad practice:

```
Dim m_objTools As CTools
Dim intValue As Integer

m_objTools   = New CTools

…

Private  Sub UpdateThread()
```

```
While (blnRunning)
        m_objTools.SetSubSystem(SubSystemEnum: NC_AL)
        intValue = m_objTools. GetCurrentToolNumber  ()
        .
        .
        m_objTools.SetSubSystem(SubSystemEnum: NC_BL)
        intValue = m_objTools. GetCurrentToolNumber  ()
        .
        .
End While
End Sub
```

Example of good practice:

```
Dim m_objATurretTools As CTools
Dim m_objBTurretTools As CTools
Dim intValue As Integer

m_objATurretTools  = New CTools
m_objATurretTools .SetSubSystem(SubSystemEnum: NC_AL)

m_objBTurretTools  = New CTools
m_objBTurretTools .SetSubSystem(SubSystemEnum: NC_BL)

…

Private  Sub UpdateThread()

While (blnRunning)
        intValue = m_objATurretTools . GetCurrentToolNumber  ()
        .
        .
        intValue = m_objBTurretTools. GetCurrentToolNumber  ()
        .
        .
End While

End Sub
```

All custom applications also need to install into D:\Program Files folder only.

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