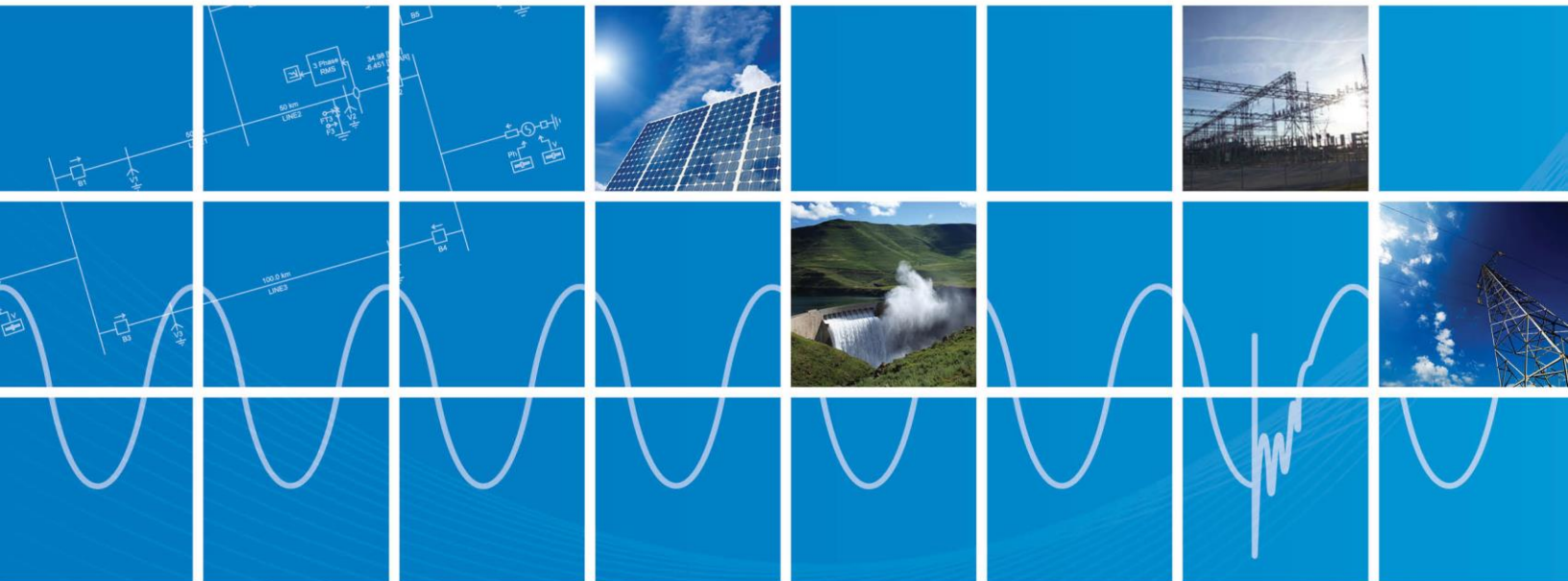![Manitoba Hydro International logo]

Resolving Certificate Licensing Issues

Written for resolving certificate licensing issues for the following MHI products:

- PSCAD™ V5

- PSCAD™ X4: Version 4.5 and Version 4.6

- FACE v2.0 – Field and Corona Effects

- Enerplot v1.0

- PRSIM v1.0

- The PSCAD Initializer v1.0

August 28, 2023
Revision 9

Contents

1. Introduction

1.1 Overview

This manual presents known issues and solutions related to certificate licensing. It is intended to be a continuously developing diagnostic tool as licensing evolves. If you encounter any issues that are not covered herein, please forward the details to our (support@mhi.ca).

The information in this manual is applicable to certificate licensing for the following software:

- PSCAD^{TM} V5
- PSCAD^{TM} X4: Version 4.5 and Version 4.6
- FACE v2.1 – Field and Corona Effect
- Enerplot v1.0
- PRSIM v1.0
- The PSCAD Initializer v1.0

This manual is broken down into the following categories:

- Section 2: Certificate Licensing Issues
- Section 3: Issues with Tools Supporting Certificate Licensing
- Appendix A: Using the Fortran Medic Utility
- Appendix B: Requirements for using Certificate Licensing
- Appendix C: Testing Certificate Licensing connectivity
- Appendix D: Viewing the licensing log file

1.2 Related Support Documents

Refer to this article for other, related, support documents.

2. Certificate Licensing Issues

2.1 Advanced Licensing Results in "Proxy Authentication Required (407)"

Problem

When attempting to acquire a license certificate, you encounter the following error:

Proxy Authentication Error (407)

Log File Evidence

ERROR: ProtocolException:
ERROR: Cause: The remote server returned an unexpected response: **(407) Proxy Authentication Required**.
ERROR: Method: Void HandleReturnMessage(System.Runtime.Remoting.Messaging.Imessage, System.Runtime.Remoting.Messaging.Imessage)
ERROR: WebException:
ERROR: Cause: The remote server returned an error: **(407) Proxy Authentication Required.**
ERROR: Method: System.Net.WebResponse GetResponse()
ERROR: Status: ProtocolError
ERROR: Server:
ERROR: ResponseUri: http://licensing.pscad.com/Licensing/NormalService
ERROR: ResponseCode: **ProxyAuthenticationRequired (407)**

Solution 1

- Have your IT remove the proxy authentication requirement for pscad.com.

- Attempt to activate a certificate.

Note
Refer to Appendix B for certificate licensing requirements.

Solution 2

- Determine the HTTP Proxy address, port and settings.

- Launch PSCAD and go PSCAD | Options | Advanced Licensing.
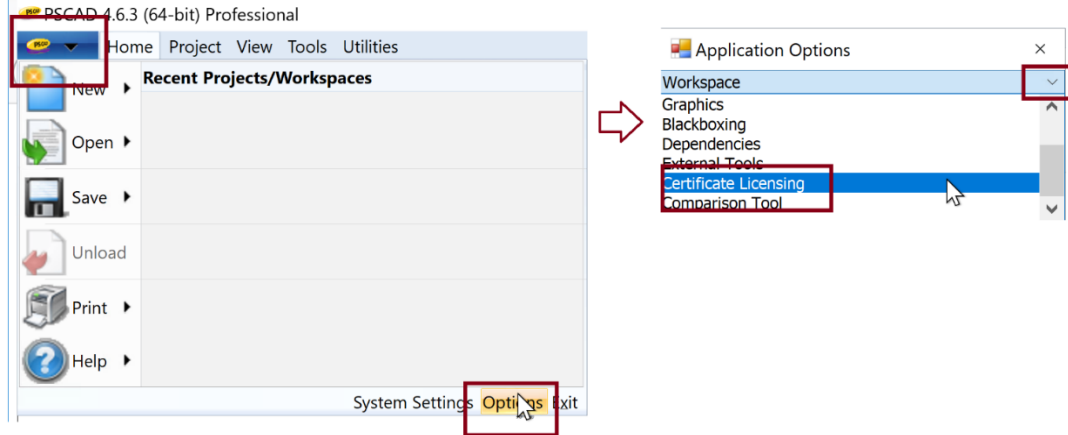
- Modify the Proxy Server (HTTP) settings as required, then select OK.
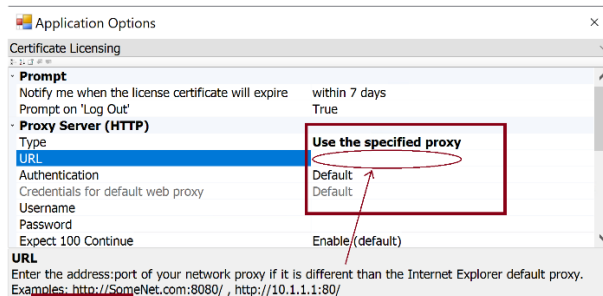
- Select "Ok" to apply the change.
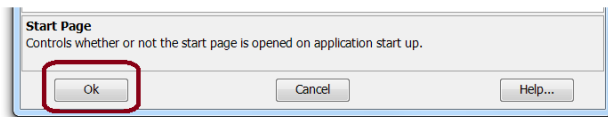
- Attempt to activate a certificate.

2.2   Receiving an "Unable to obtain the license certificate" Error

Problem 1

If the time or date on your computer is incorrect, the following message will display when trying to license software:
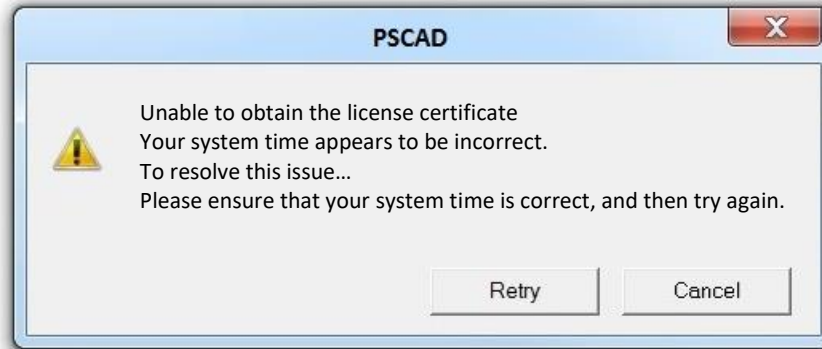
Solution 1

Correct your system as per the instructions in this article.

> **Note**
> Refer to Appendix B for certificate licensing requirements.

Problem 2

When the user attempts to activate a license certificate for the Free Edition, the request is refused, and the following information is displayed in a dialog box:

Cause 1

The Windows operating system, Vista, is not compatible with PSCAD. This is determined as per the PscadLmgr.txt file, in which the following data is displayed:

Advanced Licence Manager <version (date)> starting on Windows Vista (6.00.6000)
…
ERROR: Error processing request.
ERROR: Exception:
ERROR: Cause: License does not support this Windows version.

Solution 1

Update operating system to a minimum of Windows 7 (SP1).

Cause 2

The user does not have access to the license in their MyCentre account.

Solution 2

Contact support@mhi.ca to request access.

2.3   Receiving an "Unable to determine login status" Error Message

Problem

When logging in to PSCAD using your MyCentre login credentials, the following error message displays:
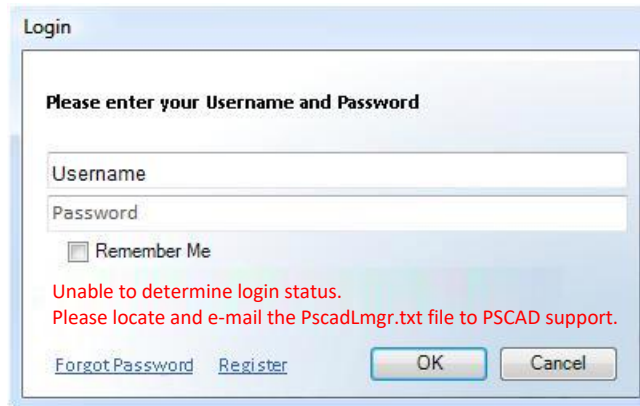
And the PscadLmgr.txt file reveals an error message similar to the following:

Hostname contains non-English characters. User: *USERNAME*, Host: *HOSTNAME*
Error: Login failed. Cannot convert UnknownType object to System.String

Cause

The machine host name contains non-English characters.

Solution

Switch the machine name to one which is composed of English characters.

>   **Note**
>   Refer to Appendix B for certificate licensing requirements.

2.4 PSCAD Client Cannot Contact the Server

Problem

PSCAD cannot ping the Server, nor activate a license from the Server.

Cause

You are not able to access off-site websites, or our License Server, without all outgoing traffic going through your mandatory corporate proxy server. Therefore, PSCAD is not able to access our License Server.

And, if you run our ProxyDetector utility, it will attempt to reach our License Server via your default proxy server. An error similar to the following may display:

<pre style="color:red">
Exception:
    Cause: The HTTP request was forbidden with client authentication scheme 'Anonymous'.
    Type: System.ServiceModel.Security.MessageSecurityException
    Method: Void HandleReturnMessage(System.Runtime.Remoting.Messaging.Imessage,
    System.Runtime.Remoting.Messaging.Imessage)
    TargetSite: Void HandleReturnMessage(System.Runtime.Remoting.Messaging.Imessage,
    System.Runtime.Remoting.Messaging.Imessage)
WebException:
    Cause: The remote server returned an error: (403) Forbidden.
    Method: System.Net.WebResponse GetResponse()
    Status: ProtocolError
    Server:
    ResponseUri: http://licensing.pscad.com/Licensing/PingService
    ResponseCode: Forbidden (403)
</pre>

Background

In order to secure web traffic, IT personnel or applications will install one or more certificates generated by trusted certificate authorities on web-facing servers.

When web clients, such as PSCAD or the ProxyDetector want to communicate with, or through, a server, they request a list of certificates stored on the server, then verify the certificate chain of trust and open up a secure communications channel with the desired endpoint.

It appears that the primary cause of the error that you are encountering is that a server between the ProxyDetector and our License Server is trusting too many certificate authorities, and as a result, sends only a truncated (partial) list of certificates to our web client, such as PSCAD or the ProxyDetector, which then cannot verify the chain of trust. This is a known Windows issue, as described in the following link:

https://support.microsoft.com/en-us/kb/2801679   SSL/TLS communication problems after you install KB 931125

This error may be due to a server on your site, most likely your proxy server.

Solution

The following are possible workarounds:

1. Have your IT administrator of the proxy server review the certificate authorities trusted for client authentication and remove those certificates that do not really need to be trusted.

2. Have your IT department remove the proxy requirements for all web traffic destined for:

   - http://licensing.pscad.com:80/Licensing/NormalService
   - http://licensing.pscad.com:80/Licensing/FreeService
   - http://licensing.pscad.com:80/Licensing/PingService

   This would allow the licensing web traffic to completely bypass the proxy server.

3. Take your laptop offsite or home, and acquire a license certificate. As the acquired certificate expires in 28 days, you would need to do this at least once every 28 days or less.

   Note
   Refer to Appendix B for certificate licensing requirements.

2.5   Receiving a "Communication with the server failed. (417) Expectation failed" Error Message

Problem

When trying to activate certificate licensing using correct MyCentre login credentials, the following error message is displayed:
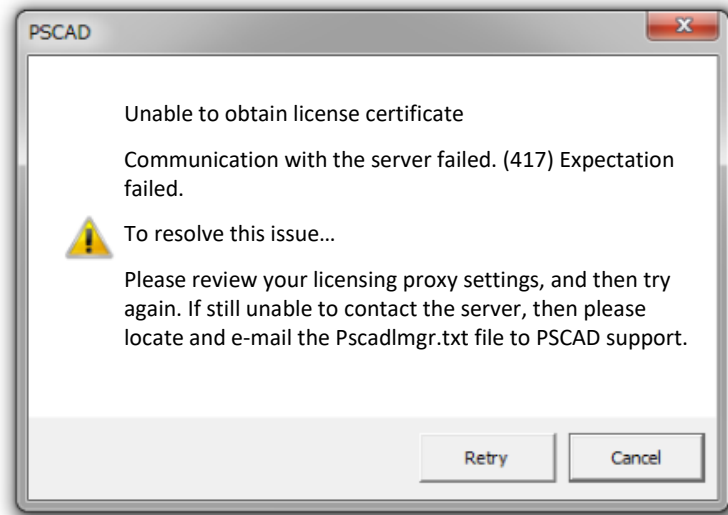
When the Retry button is pressed, the Login dialog box displays, and the user enters correct MyCentre login credentials. However, the following error then displays:
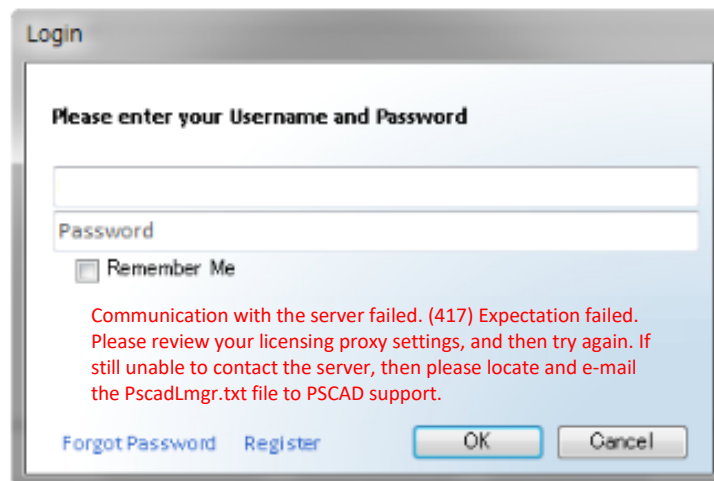
And, the PscadLmgr.txt log file displays the following messages:

Attempting to contact server using HTTP.(Fri(Fri May 20 12.58.03 2016) Connecting...

Endpoint = http://licensing.pscad.com:80(Fri May 20 12.58.03 201(Fri May 20 12.58.03 2016)   Active binding: WSHttpBinding

ERROR: ProtocolException:

ERROR: ProtocolException:

ERROR: Cause: Unexpected response from the remote server has been returned: (417) Expectation Failed.

ERROR: Method: Void HandleReturnMessage(System.Runtime.Remoting.Messaging.Imessage, System.Runtime.Remoting.Messaging.Imessage)

ERROR: WebException:

ERROR: Cause: The remote server returned an error: (417) Expectation Failed

ERROR: Method: System.Net.WebResponse GetResponse()

ERROR: Status: ProtocolError

ERROR: Server: squid

ERROR: ResponseUri: http://licensing.pscad.com/Licensing/FreeService

ERROR: Http code = 26417

Aborting...

Attempting to contact server using TCP..(Fr(Fri May 20 12.58.03 2016) Connecting...

Endpoint = net.tcp://licensing.pscad.com

    Active binding: NetTcpBinding

ERROR: Exception:

ERROR: Exception:

ERROR: Cause: net.tcp://licensing.pscad.com:443/Licensing/FreeService could not connect. The duration of the connection attempt was 00:00:21.0444369. TCP Error Code 10060: Because the connection already called did not properly respond after a period of time, it was unable to connect. Or because connected host has failed to respond, established connection failed. 198.163.208.32:443.

ERROR: Type: System.ServiceModel.EndpointNotFoundException

ERROR: Method: Void HandleReturnMessage(System.Runtime.Remoting.Messaging.Imessage, System.Runtime.Remoting.Messaging.Imessage)

ERROR: TargetSite: Void HandleReturnMessage(System.Runtime.Remoting.Messaging.Imessage, System.Runtime.Remoting.Messaging.Imessage)

ERROR: SocketException:

ERROR: Cause: Because the connection already called did not properly respond after a period of time, it was unable to connect. Or because connected host has failed to respond, established connection failed. 198.163.208.32:443

ERROR: ErrorCode: 10060

ERROR: SocketErrorCode: TimedOut

ERROR: NativeErrorCode: 10060

ERROR: Meth ERROR: Tcp code = 10060

ERROR: Failed to contact server

Cause

A proxy server in the customer's network is blocking communication with our server, preventing the activation of certificate licensing.

Solution 1

Bypass the proxy server in your network, to allow the certificate licensing to work.

Solution 2

- Launch PSCAD, and display the Application Options dialog box (from the PSCAD Start menu, select "Options"):
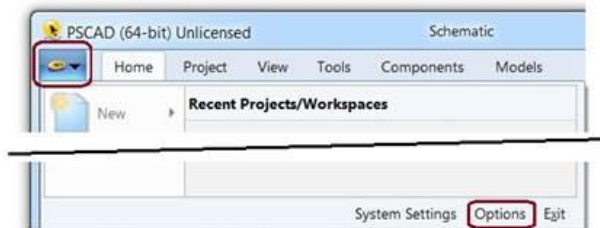
- Select the Certificate Licensing page from the drop-down menu:
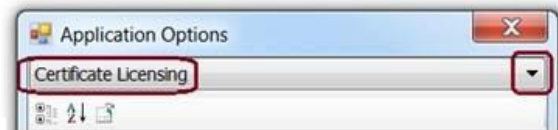
- Change the Expect 100-Continue to "Disable":
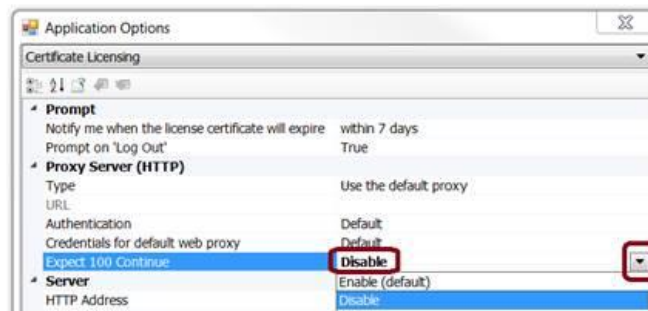
- Select OK to apply the change:
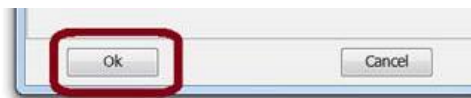
- Close PSCAD.
- Launch PSCAD, and see if it becomes licensed.

Note

Refer to Appendix B for certificate licensing requirements.

2.6 Receiving "User <Username> is not authorized for <PSCADVersion>" Error Message

Problem

The user is unable to run authorized software via MyUpdater. Messages similar to the following display in MyUpdater:

> Error: Unable to get session info from Update Server on UpdateServer.pscad.com:80
> Cause: User<> is not authorized for <PSCAD 461 x64>
> Unable to upload file(s)
> Unable to start session. Unable to import a blank SessionCookie.
> Attempting to renew your <PSCAD 461 x64> license
> Unable to extend PSCAD 461 x64 license…
> Cause: User <> is not authorized for <PSCAD 461 x64>
> Attempting to start <PSCAD 461 x64>
> Launching <Pscad.exe>
> Using elevated privileges.

Cause

This MyUpdater user is not logged in. Therefore, any MyCentre products for which the user is authorized may be launched from MyUpdater, but may not be installed or updated.

Solution

Log in to MyUpdater (select "Log in" from the "Account" tab).

> **Note**
> Refer to Appendix B for certificate licensing requirements.

2.7   Receiving "Failed to contact the server" Error Message

Problem

When attempting to log in to PSCAD using MyCentre login credentials, the following error message is displayed:
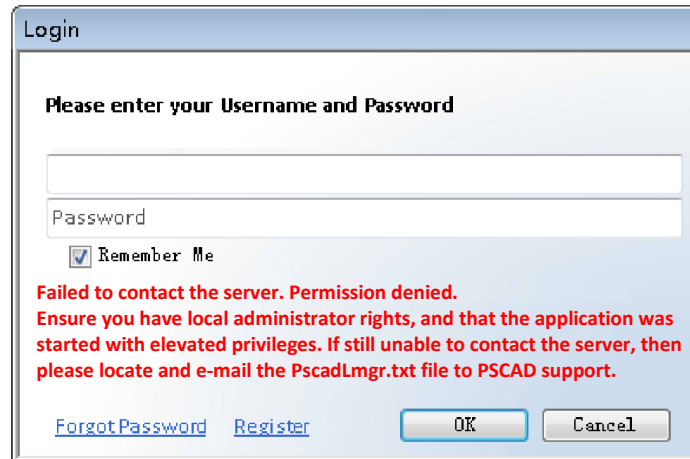
Cause

Communication to our certificate licensing server is being blocked by the user's anti-virus and/or firewall software.

Solution

Ensure that the requirements as listed in Appendix B are met.

2.8 Receiving "You need to be online and logged into your account" Error Message

Problem

When attempting to update software using MyUpdater, the following error message is displayed:
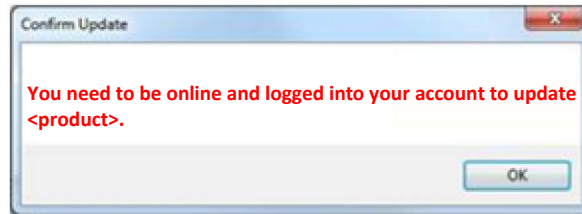
Cause

Communication to our certificate licensing server is being blocked by something in the user's network, for example a proxy server.

Solution 1

Bypass the proxy server in your network, to allow communication between MyUpdater and our sofware server.

Solution 2

Contact our support desk to see whether there is an alternative method of software installation. Ensure to include your MyCentre user account name or certificate number, and a description of the issue.

> **Note**
> Refer to Appendix B for certificate licensing requirements.

2.9 Certificate Licensing is randomly released

Problem

Certificate licensing is suddenly released for no reason a few minutes after activation. When licensing is re-activated, the same issue occurs.

Possible Cause

The computer sometimes loses track of where the Common Documents folder is, which is required for licensing:

C:\Users\Public**Documents**\Manitoba HVDC Research Centre\Licensing\Licenses

C:\Users\<user_id>\AppData\Local\Manitoba Hydro International\Licensing\Licenses

Solution

Ask your IT staff to help to ensure this path is always available.

2.10   Receiving an "Unable to contact the server" Error Message

Problem

The following error displays when trying to log in to PSCAD:
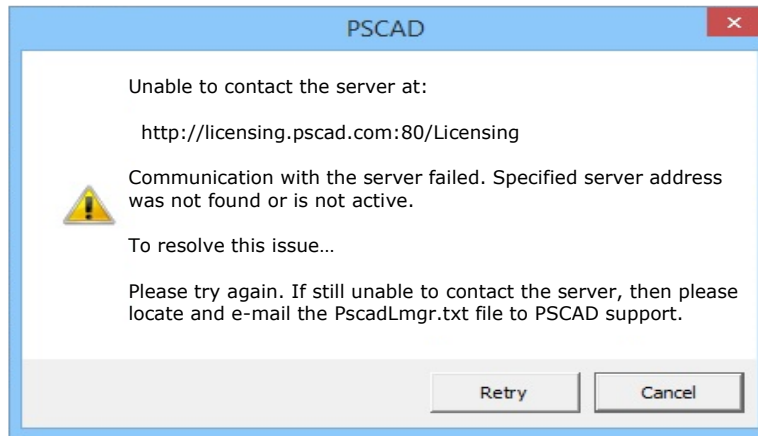
And the following logging information is listed in the PscadLmgr.txt file:

Attempting to Login

…

Attempting to contact server using HTTP…

Connecting…

Endpoint = http://licensing.pscad.com:80/Licensing

   Active binding: WSHttpBinding

ERROR: Exception:

ERROR: Cause: There was no endpoint listening at http://licensing.pscad.com/Licensing that could accept the message. This is often caused by an incorrect address or SOAP action. See InnerException, if present, for more details.

…

ERROR: WebException:

ERROR: Cause: The remote server returned an error: (404) Not Found.

…………………………

Attempting to contact server using TCP...

Connecting...

Endpoint = net.tcp://licensing.pscad.com:443/Licensing

   Active binding: NetTcpBinding

ERROR: Exception:

ERROR: Cause: There was no endpoint listening at net.tcp://licensing.pscad.com:443/Licensing that could accept the message. This is often caused by an incorrect address or SOAP action. See InnerException, if present, for more details.

…

ERROR: Tcp code = 21005

ERROR: Failed to contact server

Cause

In the PSCAD application, the license server addresses are set incorrectly. Therefore, PSCAD attempts to contact the license server using the wrong addresses, thus communication fails.

The Fortran Medic can detect if these addresses are set incorrectly. For more information, refer to Appendix A.5, Item 2.

Solution

Fix the setting in PSCAD as follows:

- Launch PSCAD.

- Display the Application Options dialog (you do <u>not</u> need to be logged in to display this):
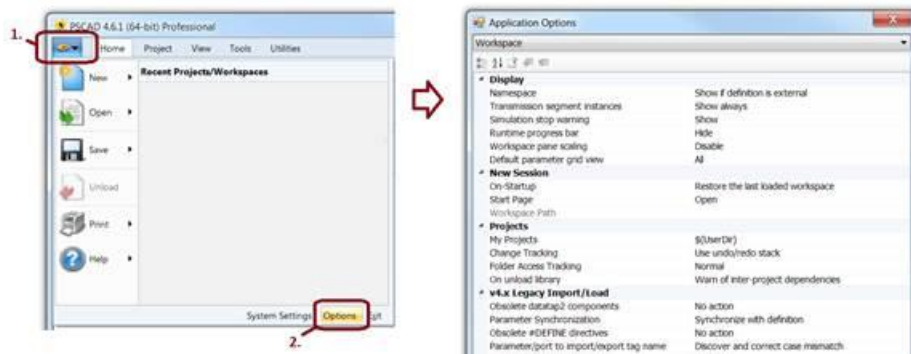
- Display the Certificate Licensing page:
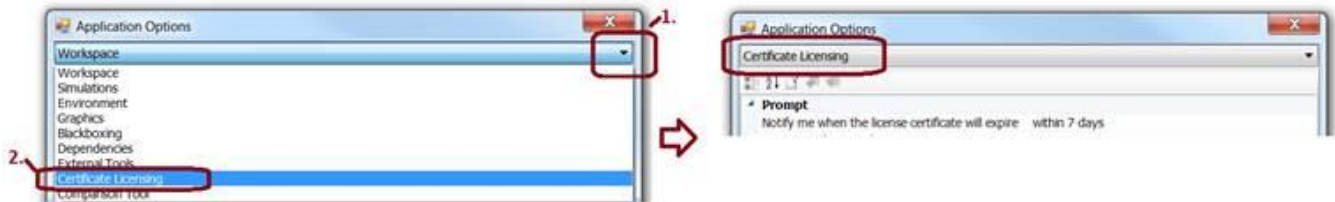
- Ensure that the two Server fields are set to the correct addresses as shown in the screenshot below:
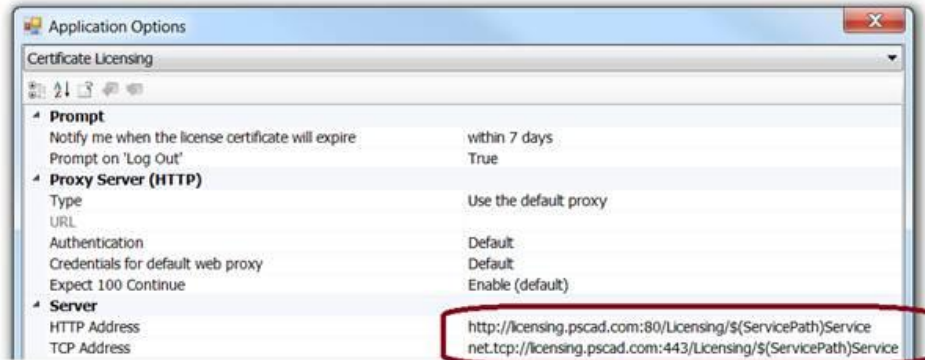
Note
You may simply copy/paste the following text in these fields:

> **First field**:
> http://licensing.pscad.com:80/Licensing/$(ServicePath)Service
>
> **Second field**:
> net.tcp://licensing.pscad.com:443/Licensing/$(ServicePath)Service

- Select "OK" to save the changes and exit the Application Options:
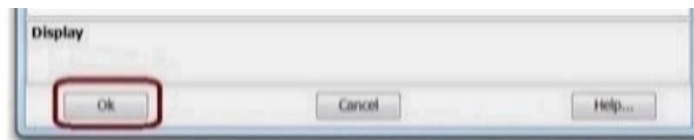
- Try logging in to PSCAD:

- If login is successful, select "Acquire Certificate":
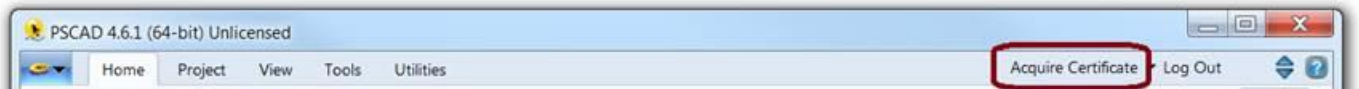
- A certificate should now be activated on your machine. This certificate will be valid for a period of 28 days, or refreshed to a new 28 day period whenever PSCAD is launched with online connection.

2.11 Receiving an "Unable to obtain the license certificate" Error Message

Problem

When trying to activate a certificate license, licensing fails, and the following error displays:
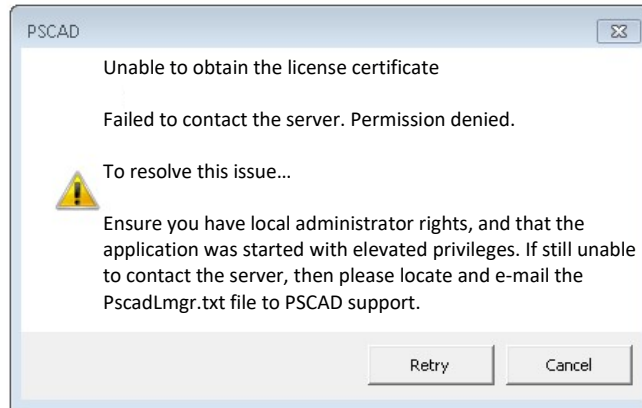
Consequently, the PSCADLmgr.txt log file lists the following messages:

Attempting to Request License Groups for pscad Free

User privileges   = Admin

Domain   =

Application type   = 32-bits

Proxy type   = Default

Proxy address   = <not set>

Proxy authentication = Default

Proxy credentials   = Default

Expect100Continue   = True

Attempting to contact server using HTTP...

Connecting...

Endpoint = http://licensing.pscad.com:80/Licensing/FreeService

Active binding: WSHttpBinding

ERROR: Exception:

ERROR: Cause: There was no endpoint listening at http://licensing.pscad.com/Licensing/FreeService that could accept the message. This
is often caused by an incorrect address or SOAP action. See InnerException, if present, for more details.

ERROR: Type: System.ServiceModel.EndpointNotFoundException

ERROR: Invoking Type: System.Runtime.Remoting.Proxies.RealProxy

ERROR: Method: Void HandleReturnMessage(System.Runtime.Remoting.Messaging.Imessage,
System.Runtime.Remoting.Messaging.Imessage)

ERROR: WebException:

ERROR: Cause: Unable to connect to the remote server

ERROR: Method: System.IO.Stream GetRequestStream(System.Net.TransportContext ByRef)

ERROR: Status: ConnectFailure

ERROR: SocketException:

ERROR: Cause: An attempt was made to access a socket in a way forbidden by its access permissions 198.163.208.32:80

ERROR: ErrorCode: 10013

ERROR: SocketErrorCode: AccessDenied

ERROR: NativeErrorCode: 10013

ERROR: Method: Void DoConnect(System.Net.EndPoint, System.Net.SocketAddress)

ERROR: Http code = 10013

Aborting...

Attempting to contact server using TCP...

Connecting...

Endpoint = net.tcp://licensing.pscad.com:443/Licensing/FreeService

Active binding: NetTcpBinding

ERROR: Exception:

ERROR: Cause: Could not connect to net.tcp://licensing.pscad.com:443/Licensing/FreeService. The connection attempt lasted for a time span of 00:00:00. TCP error code 10013: An attempt was made to access a socket in a way forbidden by its access permissions 198.163.208.32:443.

ERROR: Type: System.ServiceModel.CommunicationException

ERROR: Invoking Type: System.Runtime.Remoting.Proxies.RealProxy

ERROR: Method: Void HandleReturnMessage(System.Runtime.Remoting.Messaging.Imessage, System.Runtime.Remoting.Messaging.Imessage)

ERROR: SocketException:

ERROR: Cause: An attempt was made to access a socket in a way forbidden by its access permissions 198.163.208.32:443

ERROR: ErrorCode: 10013

ERROR: SocketErrorCode: AccessDenied

ERROR: NativeErrorCode: 10013

ERROR: Method: Void DoConnect(System.Net.EndPoint, System.Net.SocketAddress)

ERROR: Tcp code = 10013

ERROR: Failed to contact server

Aborting...

Furthermore, our Licensing Connection Tester (Appendix C) does not detect any issue with the connection.

Furthermore, our latest Fortran Medic tool does not detect an incorrect URL setting in PSCAD for our certificate license server (see Appendix A.5, Item 2).

Cause

Protection software is blocking this connection. Specifically, the K7Ultimate Anti-virus has been known to block connection and cause these errors.

Solution

- Disable the anti-virus software to activate the certificate, then re-able the software, or

- Somehow white-list PSCAD operations in the anti-virus software.

2.12   Receiving a "Failed to save the license certificate" Error Message

Problem

When trying to activate a certificate license, licensing fails, and the following error displays:
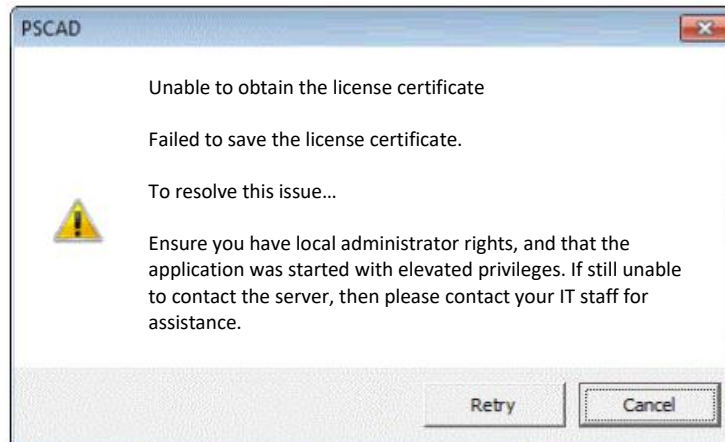
Cause 1

The user does not have permission to create a required file for certificate licensing in the Common Documents folder. If the file cannot created, then certificate licensing will not work. See Appendix A.6 Item 6 for the listing of required filepaths for certificate licensing.

For example, normally, a user with Windows "user" privileges would be able to create files in this folder. However, a network group policy overrides this, and specifies that users must have Windows "administrator" privileges to create files in this folder.

Solution 1

Use the Fortran Medic utility to configure for a Windows "User" to have full permissions in the Common Documents folder as per Appendix A.5 Step 6, or

Obtain assistance from your IT staff to allow a Windows "user" to have full permissions in the Common Documents folder.

Or

Provide Windows administrator privileges to the user, so the user may create a file in the Common Documents folder. Then, the user should always launch the MHI product with Windows Administrator privileges (right-click on the link to launch the product, then select the option to "Run as administrator").

Cause 2

If the following messages are listed in the PscadLmgr.txt file (this log file may be displayed as instructed in Appendix D.2):

> Attempting to contact server using HTTP...
> Connecting...
> Endpoint = http://licensing.pscad.com:80/Licensing/NormalService
> Active binding: WSHttpBinding
> Succeeded
> Processing request...
> License is already owned by this user.
> Saving certificate to C:\Users\Public\Documents\Manitoba HVDC Research Centre\Licensing\Licenses
> ERROR: Unable to save certificate.
> ERROR: Cause: This implementation is not part of the Windows Platform FIPS validated cryptographic algorithms

...then a setting on your computer is not allowing a required encryption algorithm.

Solution 2

This issue may be fixed using the Fortran Medic utility as follows:

- Run the latest Fortran Medic utility as per Appendix A.2.

- When the utility has finished gathering information, scroll down to the "**Licensing**" heading (towards the bottom of the utility). One of the following three messages will be displayed:

  ```
  Use only FIPS compliant algorithms
  Value: 1 (Enabled)
  Conflicts
  This computer is not configured to support a required algorithm
  ```

  Or

  ```
  Use only FIPS compliant algorithms
  Status: <Registry value not found>
  Conflicts
  This computer is not configured to support a required algorithm
  ```

  Or

  ```
  Use only FIPS compliant algorithms
  Value: 5
  Status: <Registry value is invalid>
  Conflicts
  This computer is not configured to support a required algorithm
  ```

- Right-click on the error message, and the following dialog box will display:

Confirm Registry Action

A required encryption algorithm is not allowed as this computer is configured to only use FIPS compliant algorithms.

As a result:
- The MyUpdater will not be able to display your authorized products
- PSCAD will not be able to use certificate licensing
unless you select to allow non-FIPS-compliant algorithms.

To resolve this issue, this utility needs to create/update the following registry value:

   Folder: HKEY_LOCAL_MACHINE (32-bit registry)
   Key: System\CurrentControlSet\Control\Lsa\FIPSAlgorithmPolicy
   Name: Enabled
   Value: 0

Select OK to allow non-FIPS-compliant protocols
Select Cancel to leave the registry value unmodified

                  OK   Cancel

- Select "OK" to allow the Fortran Medic utility to make the change to your computer.
- Retry activating a PSCAD certificate license.

2.13 Receiving an "Unable to save certificate…Access is denied" Error Messages

Problem

When trying to activate a certificate license, licensing fails, and any of the following three messages will display:

Failed to save the license certificate.
Ensure you have local administrator rights, and that the application was started with elevated privileges.
If still unable to contact the server, then please contact your IT staff for assistance.

Or

Failed to load the license certificate.
Ensure you have local administrator rights, and that the application was started with elevated privileges.
If still unable to contact the server, then please contact your IT staff for assistance.

Or, in the PscadLmgr.txt file (see Appendix D.2 to display this text file)

Processing request…
License is already owned by this user.
Saving received certificate to C:\Users\Public\Documents\Manitoba HVDC Research Centre\Licensing\Licenses
ERROR: Unable to save certificate
ERROR: Access is denied
Failed to obtain a license certificate

Cause

PSCAD is launched with "user" privileges. However, the customer's group policy is set to only permit "administrators" to create files in the Common Documents folder. The group policy does not permit a "user" to create files in the Common Documents folder.

Solution

Launch PSCAD with administrator privileges so that the file may be created:

- Close all instances of PSCAD.

- Launch PSCAD as an administrator – Right-click on PSCAD v46 link, and select "Run as administrator" from the menu:
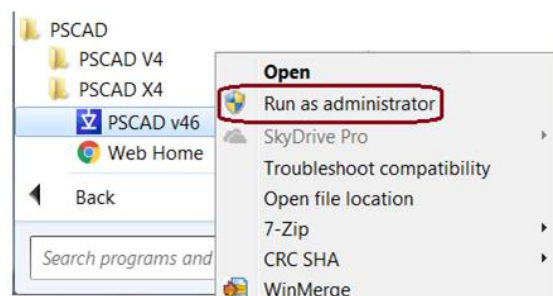
- Test the licensing.

2.14   Receiving a "Proxy authentication is required" Error Message

Problem

When trying to log in and activate a certificate license in the PSCAD application, the following message displays:
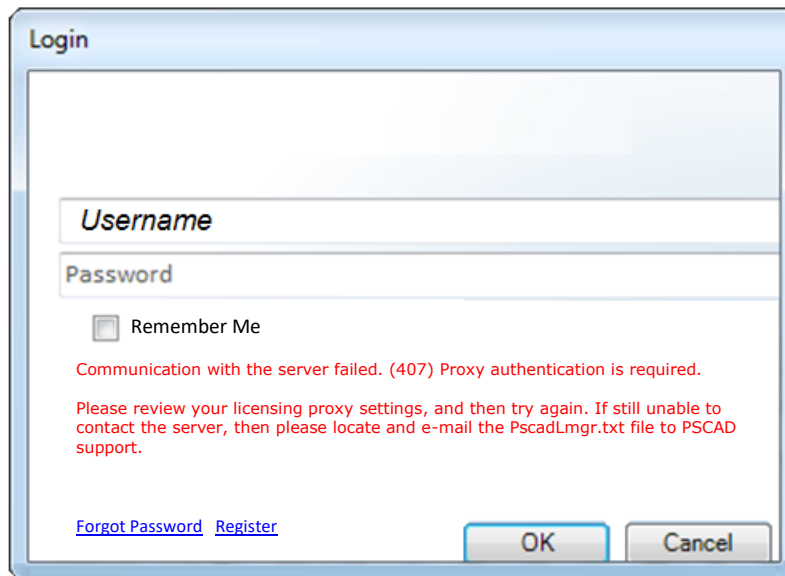
The PscadLmgr.txt file lists messages similar to the following:

Attempting to Login
…
Attempting to contact server using HTTP...
Connecting...
Endpoint = http://licensing.pscad.com:80/Licensing/NormalService
Active binding: WSHttpBinding
ERROR: Exception:
ERROR: Cause: There was no endpoint listening at http://licensing.pscad.com/Licensing/NormalService that could accept the message. This is often caused by an incorrect address or SOAP action. See InnerException, if present, for more details.
…
ERROR: WebException:
ERROR: Cause: Unable to connect to the remote server
…
ERROR: Status: ConnectFailure
ERROR: SocketException:
ERROR: Cause: The connection request failed because the connected computer did not respond within a certain time or because the established connection to the host does not work anymore 198.163.208.32:80
ERROR: ErrorCode: 10060
ERROR: SocketErrorCode: TimedOut
ERROR: NativeErrorCode: 10060
…
ERROR: Http code = 10060
Aborting...

Attempting to contact server using TCP...
Connecting...
Endpoint = net.tcp://licensing.pscad.com:443/Licensing/NormalService
Active binding: NetTcpBinding
ERROR: Exception:
ERROR: Cause: Could not connect to net.tcp://licensing.pscad.com:443/Licensing/NormalService. The connection attempt lasted for a time span of 00:00:21.0104202. TCP error code 10060: The connection attempt failed because the connected computer did not respond within a certain time or because the established connection to the host does not work anymore 198.163.208.32:443.
…
ERROR: SocketException:
ERROR: Cause: The connection attempt failed because the connected computer did not respond within a certain time or because the established connection to the host does not work anymore 198.163.208.32:443

ErrorCode: 10060
ERROR: SocketErrorCode: TimedOut
ERROR: NativeErrorCode: 10060
…
ERROR: Tcp code = 10060
ERROR: Failed to contact server
Aborting...

When the Certificate Licensing Connection Tester Utility is run (Appendix C), messages similar to the following are generated:

Certificate Licensing Connectivity - Test Summary
000   settings were able to configure the local client.
000   settings were able to connect to the server.
Connectivity and Operation - Analysis
Network ping appears to be blocked.
Unable to contact the server without using a proxy.
Licensing is not able to contact the server.

Cause

The user's network is blocking communication to both of our server IP addresses:

- http://licensing.pscad.com:80/Licensing (preferred)
- net.tcp://licensing.pscad.com:443/Licensing (fallback)

In order to activate certificate licensing, PSCAD must be able to reach one of the above addresses.

Solutions

1. Preferred solution: Ask your IT staff to allow access to one of the above IP addresses, so that you can activate the license through your company's network.

2. Alternative solution: Move your laptop to a different network (e.g. home), and try to activate the certificate from there. If licensing works, configure PSCAD to "retain" the license (see screenshots below), then return the machine to your work network and continue to use this certificate.
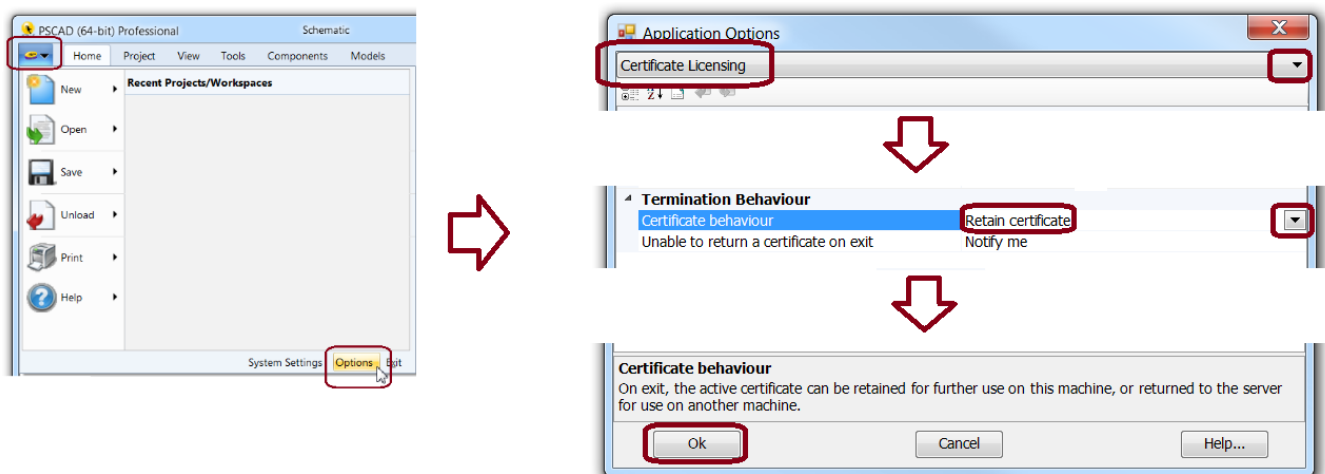
Note
If you are sharing this license certificate with other users, this is not the preferred solution, because the license certificate will not be available for other users, but will remain activated on your machine.

2.15 Receiving an "Unable to obtain the certificate" Error Message

Problem

When trying to activate a certificate in the PSCAD application, the following error displays:

Unable to obtain the certificate

When the PscadLmgr.txt file is displayed (as per Appendix D.2), the following messages display:

Saving received certificate to C:\Users\

ERROR: Unable to save certificate.

ERROR: Cause: Access is denied.

Cause

The user does not have permissions for the following locations, therefore, a certificate may be not saved to the user's machine:

C:\Users\Public\Public Documents

Solution (1) – For any version

Obtain permission to create and write to the above location.

Solution (2) – For PSCAD v4.6.3+

If using PSCAD v4.6.3 and later, configure PSCAD to use a folder for which you have permissions, as follows:

- In a location in which you have permissions, create a new folder. For example: C:\PSCAD\Licensing

- Add the following path to the folder: Manitoba HVDC Research Centre\Licensing\Licenses. In the above example, the path will become: C:\PSCAD\Licensing\Manitoba HVDC Research Centre\Licensing\Licenses

- Determine your preferred PSCAD launch shortcut (e.g. desktop, Windows Start menu, Task Bar).

- In the PSCAD launch shortcut, modify the command line argument to point PSCAD to the new folder. Using the above example, this would be added as shown:
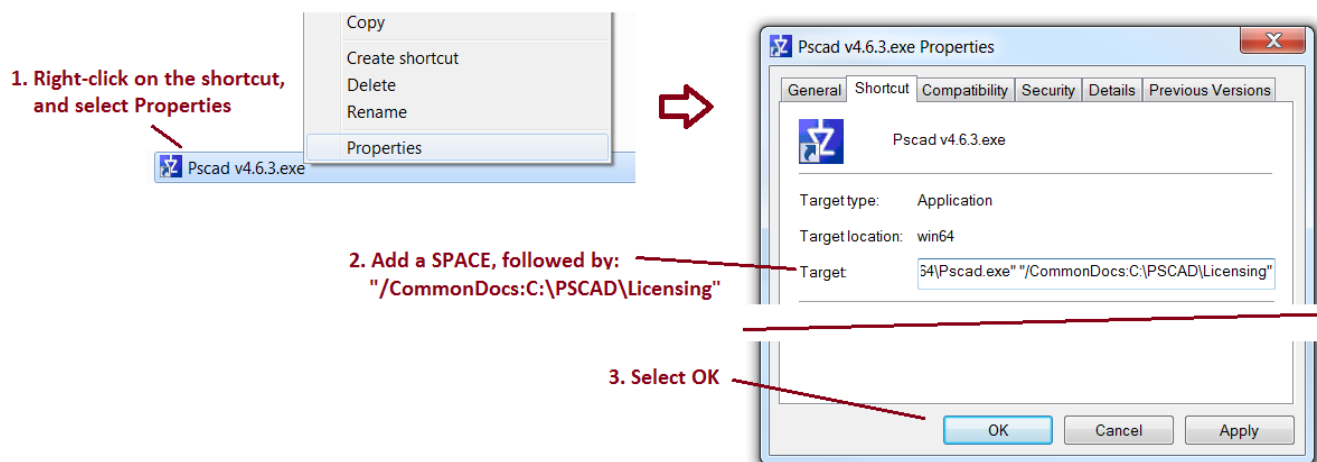
- Whenever PSCAD is launched using this shortcut, the licensing file will be stored in the new folder.

Note about Solution (2):

The alternative folder must be specific to a machine. You cannot use a public folder accessible to all machines as then all users would share a common user profile settings, which could be modified by any user.

Example of a valid path:

    \\SomePublicFolder\Machine1\CommonDocuments [used only by Machine1]

    \\SomePublicFolder\Machine2\CommonDocuments [used only by Machine2]

Example of an invalid path:

    \\SomePublicFolder\CommonDocuments   [used by all machines]

2.16   User is unable to activate and save a License Certificate

Problem

A user has access to certificate licensing, and has apparently checked out a certificate on his machine. However, the certificate cannot be used to run PSCAD on that user's machine, and the certificate is now considered to be checked out and not available for any other user.

In the lmgr.txt file, the following messages display:

> Saving received certificate to [SOME FILE PATH]
>
> ERROR: Unable to save certificate.
>
> ERROR: Cause: Access is denied.

Cause

The certificate is seemingly checked out to a machine, and this is logged in MyCentre. However, PSCAD was unable to save the license file for the Certificate Licensing to this user's machine, because the user does not have the required permissions to do this. Specifically, the user does not have read/write/create/delete permissions for the following location:

> C:\Users\Public\Documents\Manitoba HVDC Research Centre\Licensing\Licenses

Solution
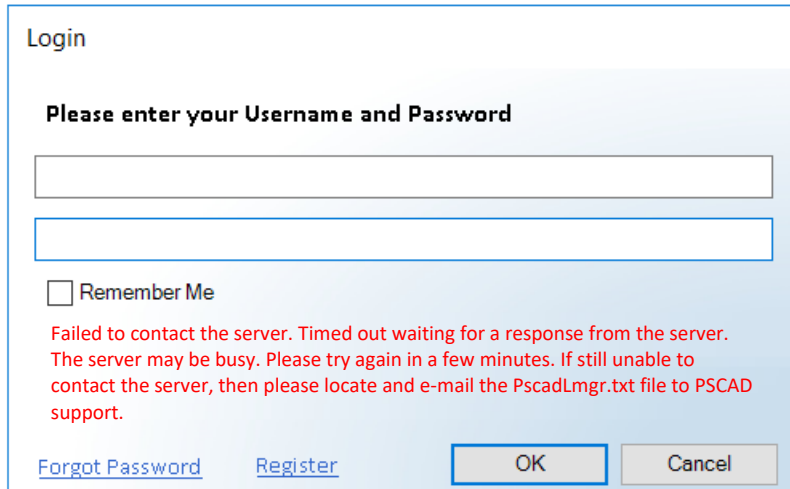
The user must be granted the required permissions as indicated above.

The user may contact our (support@mhi.ca) and request that the certificate be returned to the server, so that it may be re-activated. When communicating with the Support Desk, please ensure to include your PSCAD license number.

2.17   User is unable to log in or to activate a License Certificate

Problem

When attempting to log in to MyCentre through PSCAD, the following error displays:

Also, when a connection test is run, an error related to connection to server 50300 is displayed:
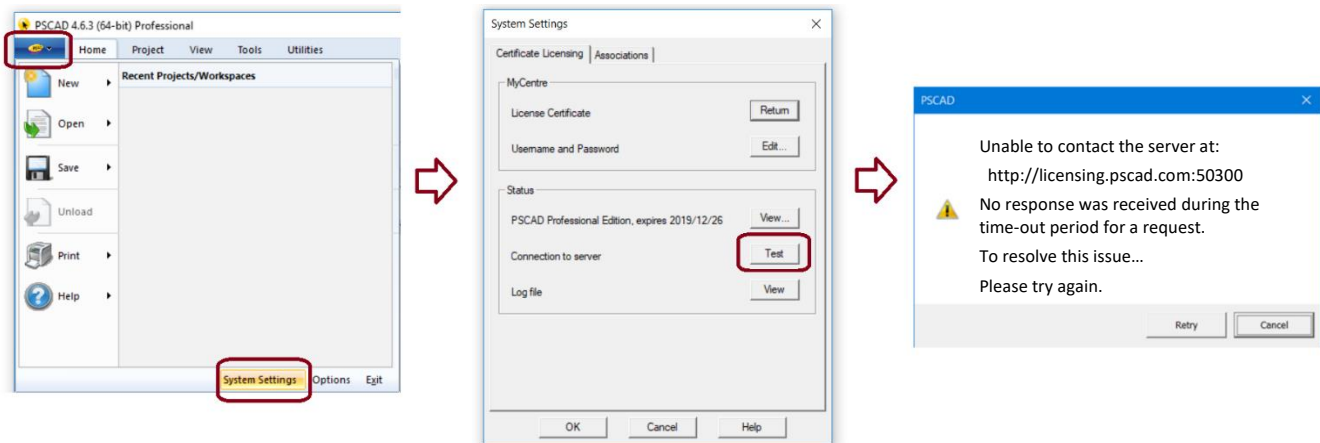
Also, messages similar to the following may display in the PscadLmgr.txt file:

(Sun Nov 25 10.44.43 2018) Endpoint = http://licensing.pscad.com:**50300**/Licensing/NormalService
(Sun Nov 25 10.44.43 2018)   Active binding: WSHttpBinding
…
(Sun Nov 25 10.45.05 2018) ERROR: Failed to contact server
…
(Sun Nov 25 10.45.05 2018) Endpoint = net.tcp://licensing.pscad.com:**50301**/Licensing/NormalService
(Sun Nov 25 10.45.05 2018)   Active binding: NetTcpBinding
…
(Sun Nov 25 10.45.26 2018) ERROR: Failed to contact server

Cause

PSCAD is somehow configured incorrectly, and trying to connect to the wrong port for the certificate licensing server (50300). This causes the login error.

The wrong port can become configured if an earlier version of PSCAD that used that port is installed. For example, PSCAD v4.5.1 comes configured for port 50300. If v4.5.1 is installed on a machine, sometimes the newer versions installed thereafter become configured automatically for the same, incorrect port.

Solution (1) – For PSCAD V5

- Automatic Correction (Using the Fortran Medic utility):
  Refer to Appendix A.5 Items 8 and 9 to use the Fortran Medic utility to correct your setup.

- Manual Correction (In the PSCAD application):
  Replace the addresses in the Licensing Options screen.

  http://licensing.pscad.com:80/Licensing/$(ServicePath)Service
  net.tcp://licensing.pscad.com:443/Licensing/$(ServicePath)Service
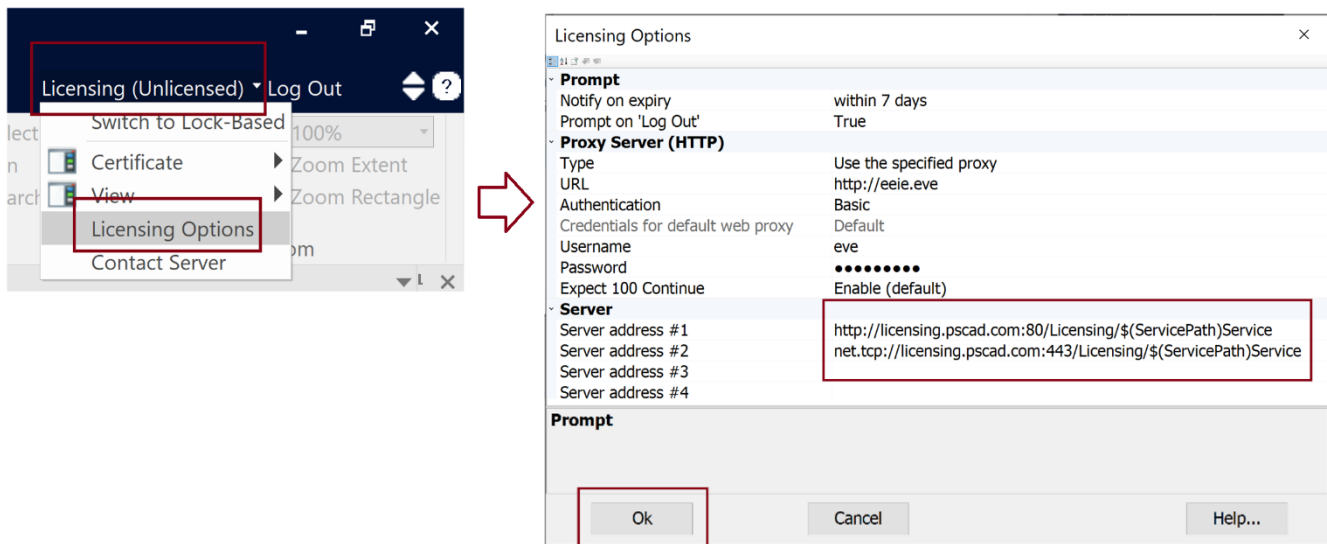
- It is recommended to uninstall the earlier version of PSCAD (e.g. v4.5.1) if you do not need this version. To help reduce the possibility that this issue will recur.

Solution (2) – For PSCAD X4

- Refer to Appendix A.5 Items 8 and 9 to use the Fortran Medic utility to correct your setup.
  Note – The Medic utility can now fix this issue for PSCAD v4.5, v4.6, v5.x

- Or, correct the two server addresses in PSCAD if required:

  ° Launch PSCAD.

  ° Ensure the certificate licensing server addresses are set to the following addresses. If not, copy and paste in the correct addresses:

    http://licensing.pscad.com:80/Licensing/$(ServicePath)Service
    net.tcp://licensing.pscad.com:443/Licensing/$(ServicePath)Service
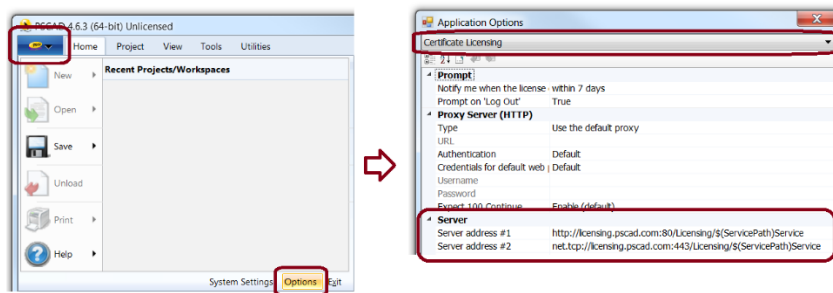
- Login and licensing should now work.

- It is recommended to uninstall the earlier version of PSCAD (e.g. v4.5.1) if you do not need this version. To help reduce the possibility that this issue will recur.

If the issue persists, and if multiple versions of PSCAD v4.6 are installed, uninstall all versions of PSCAD v4.6, and delete any desktop and taskbar shortcuts to PSCAD v4.6.

- Browse to the following folder:

  C :\Users\[username]\AppData\Local\Manitoba HVDC Research Centre\PSCAD

  Note
  If the AppData folder is hidden, it may be displayed as shown:
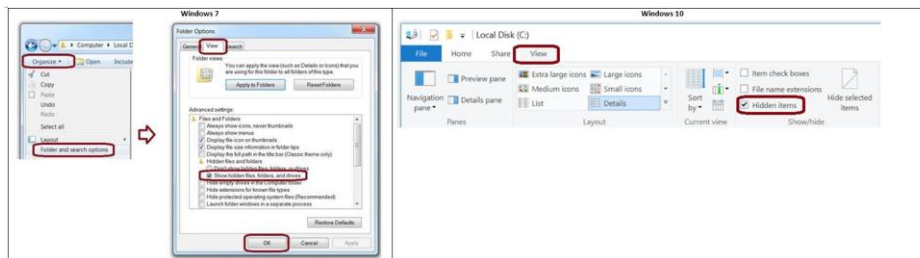
Continued…

- In the above-listed folder, if the user_profile_46.xml file is present, move the file to a new temporary sub-folder. PSCAD 4.6.3 can then install the correct Certificate License Server address default settings.

- Re-install PSCAD 4.6.3.

- Launch PSCAD 4.6.3, and it should create and save the correct default settings file.

If the issue persists after trying the above suggestions, please send in the following to our (support@mhi.ca):

- Your licensing log file:

- Your Medic log file as per Appendix A.3.

2.18   Receiving a "A crytographic error occurred" Error Message

Problem

When attempting to activate a license certificate, the following error displays:
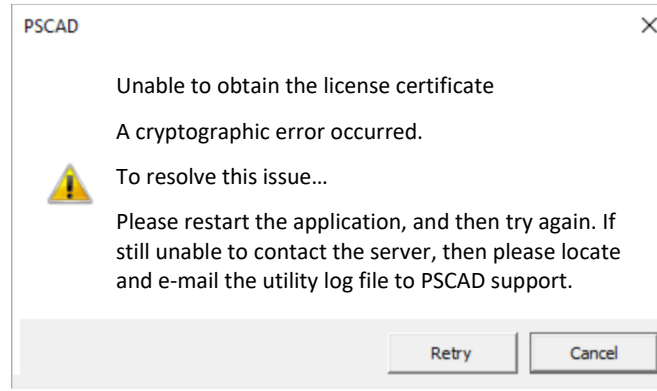
And when the Fortran Medic utility is run as per Appendix A.2, the message as listed in Appendix A.5 Item 11 <u>might</u> display.

Cause

The machine is missing TLS communication protocol, which is required to communicate with our license server.

Licensing therefore fails.

Solution 1

Configure your machine to have TLS communication protocol. Refer to the following resources for this:

- Appendix E refers to a list of the supported TLS protocol for each MHI product.

- This <u>article</u> provides instructions on using our Fortran Medic utility to configure the appropriate TLS protocol (see also Appendix A.6 Item 2).

Solution 2

In some cases, simply launching the application with Windows Administrator privileges resolves the matter:

- Close all instances of the application (e.g. PSCAD, or PRSIM, etc…).
- Right-click on the application launch link, and select "Run as administrator".

Further Help

If the above suggestions do not resolve the matter, please request assistance from the <u>MHI support desk</u>. To expedite assistance, please include a screenshot of the error and the logging information as specified in this <u>article</u>.

2.19   User is Unable to Activate, Return, or Renew a License Certificate when Connected over VPN

Problem

When a user is connected over VPN, and is attempting to activate, return, or renew a license certificate for one of the MHI products (e.g. PSCAD, FACE, Enerplot...), this action fails.

> **Note**
> This issue assumes that the customer is already logged in to MyCentre.

The product licensing log file shows messages similar to the following:

> Attempting to contact server using http://licensing.pscad.com:80/Licensing/$(ServicePath)Service
>
> …
> ERROR: Cause: There was no endpoint listening at http://licensing.pscad.com/Licensing/NormalService that could accept the message. This is often caused by an incorrect address or SOAP action. See InnerException, if present, for more details.
>
> …
> ERROR: Cause: A connection attempt failed because the connected party did not properly respond after a period of time, or established connection failed because connected host has failed to respond 172.22.1.61:80
> ERROR: ErrorCode: 10060
>
> …
> Attempting to contact server using net.tcp://licensing.pscad.com:443/Licensing/$(ServicePath)Service
>
> …
> ERROR: Cause: A connection attempt failed because the connected party did not properly respond after a period of time, or established connection failed because connected host has failed to respond 172.22.1.61:443
> ERROR: ErrorCode: 10060
>
> …
> ERROR: Failed to contact the server. Timed out waiting for a response from the server.
> Unable to [activate / return / renew] the license certificate. Failed to contact the server. Timed out waiting for a response from the server.

Background – Failed Attempt to Activate a Certificate:

When connected over VPN, the customer launches one of the MHI products, and attempts to activate a certificate.

The licensing log file displays messages similar to those listed above, and a corresponding message is displayed in the particular application:

- In the PSCAD application, a message is displayed indicating that the Start Page cannot connect to the MyCentre Server, and an error is displayed:
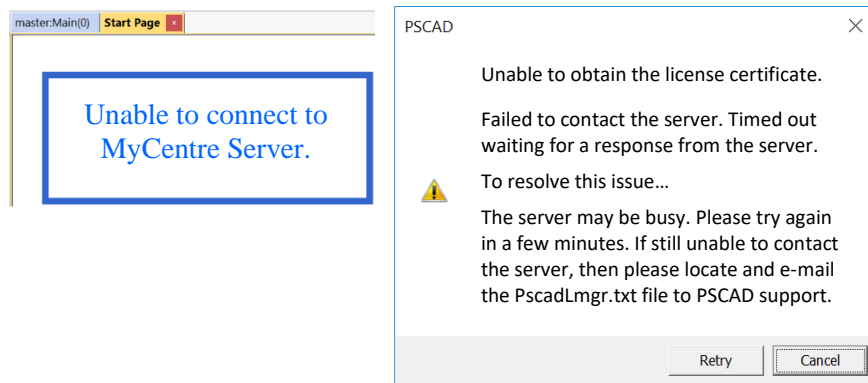
<u>Background – Failed Attempt to Return a Certificate:</u>

When not connected over VPN, a customer logs in to MyCentre, launches one of the MHI products, checks out a certificate, then closes the products with the certificate "retained". On a following day, the customer connects over VPN, launches the product, and the product remains licensed. An attempt to return the certificate fails. The licensing log file displays messages similar to those listed above.

The licensing log file displays messages similar to those listed above, and a corresponding message is displayed in the particular application:

- In the PSCAD application, a message is displayed indicating that the Start Page cannot connect to the MyCentre Server, and an error is displayed:
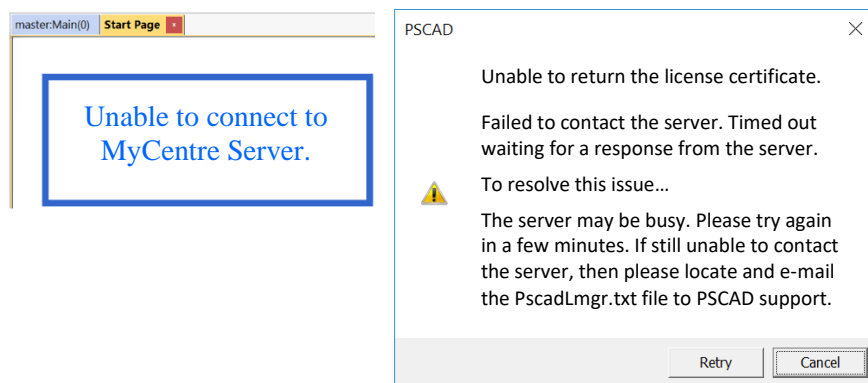
<u>Background – Failed Attempt to Renew a Certificate:</u>

When not connected over VPN, a customer logs in to MyCentre, launches one of the MHI products, checks out a certificate, then closes the products with the certificate "retained". On a following day, the customer connects over VPN, launches the product, and the product remains licensed, however, the renewal fails. The licensing log file displays messages similar to those listed above.

Cause

VPN connection somehow blocks communication to the license server.

Solution

Restart the machine, ensure VPN is disabled, and activate or return the certificate.

2.20   Receiving an Error Message "Unable to obtain the license certificate" when attempting to activate, renew or return a certificate

Problem

When a user is attempting to activate, return, or renew a license certificate for one of the MHI products (e.g. PSCAD, FACE, Enerplot, ...), this action fails.

A message is displayed, for example, the following is posted in PSCAD for a failed activation:
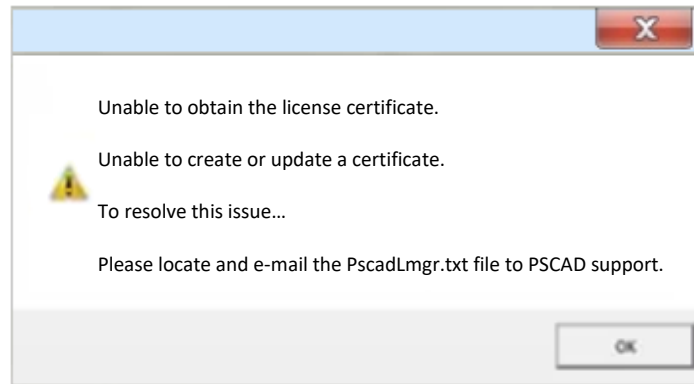
Also, the licensing log file displays the following error:

Attempting to Request License Groups for [product]
…
Failed to obtain a license certificate

Cause 1

User does not have full permissions on creating/modifyng the certificate filepath, which is required for using certificate licensing:

C:\Users\Public\Documents\Manitoba HVDC Research Centre\Licensing\Licenses

Further evidence, when the Fortran Medic utility (Appendix A.1) is run, an error indicating that the user does not have full permissions on the above path is specified in the "Certificate Licensing" section.

Solution 1

One of the following options may resolve this:

- User may try launching PSCAD with Windows Admininstrator privileges (from the Windows Start menu, browse to the PSCAD link, right-click on the link, select "More", then select "Run as administrator"), or
- User may obtain full creation/modification permissions on the above filepath (contact your IT Team if applicable).

Cause 2

Protection software is preventing the user from being able to modify the following path:

C:\Users\Public\Documents\Manitoba HVDC Research Centre\Licensing\Licenses

One known protection software that blocks this, is BitDefender.

One other note is that the Fortran Medic utility (see Appendix A.1) detects the following error:

Certificate is saveable

Failed

Unable to create or update a certificate.
Access to the path 'C:\Users\Public\Documents\Manitoba HVDC Research
Centre\Licensing\Licenses' is denied.

Solution 2

Configure your protection software to allow the user full permissions to the above path, or

Simply turn off the protection software temporarily, when activating, renewing or returning a certificate.

2.21   Receiving an Error Message "Unable to obtain the license certificate...All such certificates are currently in use" when attempting to activate a certificate

Problem

When a user is attempting to activate a license certificate for one of the MHI products (e.g. PSCAD, FACE, Enerplot, ...), this action fails.

A message is displayed, for example, the following is posted in PSCAD for a failed activation:
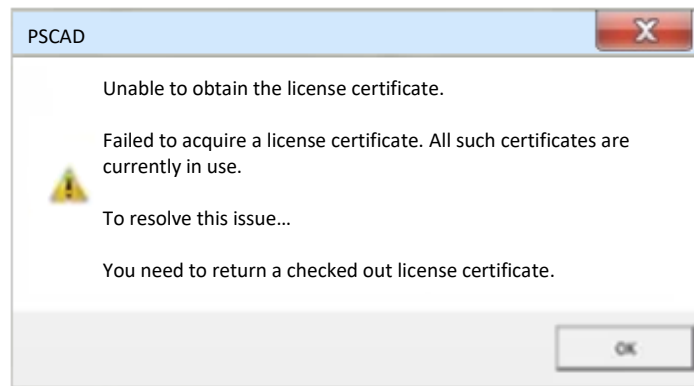
Cause (1)

All license certificates for this product are checked out already on other machines, and none are available.

Solution (1)

Determine to whom licensing is checked out, and request that they launch PSCAD and return the certificate:

- To use MyCentre to determine who has checked out a license, log in to MyCentre, and browse to the workgroup | licenses. For details on using MyCentre, refer here:
  rhttps://www.pscad.com/knowledge-base/article/651
- To return the certificate, the user must launch PSCAD on the machine on which the license is checked out, then select the option to return the certificate.

Cause (2)

The machine name had been changed after the certificate was checked out, therefore the certificate was deemed to be invalid, and licensing was halted.

In this case, note that MyCentre records indicate that the license is currently checked out on that user's machine.

Solution (2)

- Send in an e-mail to the (support@mhi.ca), requesting that the license be returned. Ensure to provide the license number in your request.
- Delete the following file from the machine:

    C:\Users\Public\Documents\Manitoba HVDC Research Centre\Licensing\Licenses\74.xml

- Once you have received confirmation that the license has been returned, try to activate the license certificate.

2.22   Receiving an Error Message "Communication with server failed. Unable to use WCF to connect..." when attempting to activate a certificate

Problem

When attempting to activate a license certificate for PSCAD, FACE, Enerplot, ...), this action fails, with the following error:

Communication with the server failed. Unable to use WCF to connect to server.

Please locate and e-mail the PscadLmgr.txt file to PSCAD support.

Also, the following messages display:

The type 'Microsoft.VisualStudio.Diagnostics.ServiceModelSink.Behavior, Microsoft.VisualStudio.Diagnostics.ServiceModelSink, Version=4.0.0.0, Culture=neutral, PublicKeyToken=b03f5f7f11d50a3a' registered for extension 'Microsoft.VisualStudio.Diagnostics.ServiceModelSink.Behavior' could not be loaded.
(C:\Windows\Microsoft.NET\Framework64\v4.0.30319\Config\machine.config line 232)

Cause

According to online documentation, this can occur when a machine has one or more of the following is installed:

- Visual Studio 2010
- Visual Studio 2012
- Visual Studio 2013
- Visual Studio 2015

And then one or more of the above software become partially or completely uninstalled, or removed.

Solution (1)

1. Perform the following:

   a. Download the run the <u>latest</u> Fortran Medic as per Appendix A.2.
      Note
      Older versions of the Medic (August 2020 and older) will not work.

   b. When the Medic displays the results, scroll down to the "Certificate Licensing" heading, then look for the "VSDiag_RegWcf" subsection.

   c. If any instances of this utility were detected on your machine, the Medic will list any Visual Studio folders which contain this utility. For example, the following was detected on a test machine:

   ```
   VSDiag_RegWcf.exe
     C:\Program Files\Microsoft Visual Studio 10.0\Common7\IDE\vsdiag_regwcf.exe
     C:\Program Files (x86)\Microsoft Visual Studio 14.0\Common7\IDE\vsdiag_regwcf.exe
   ```

   d. If any instances of this utility were detected in Step (c) above, then perform the following for each instance:

      - Launch a Windows Command Prompt with Administrator privileges.

- In the Command Prompt, browse to one of the folders listed by your Medic.

- In the Command Prompt, type in the following, then press Enter.
  Vsdiag_regwcf.exe -u
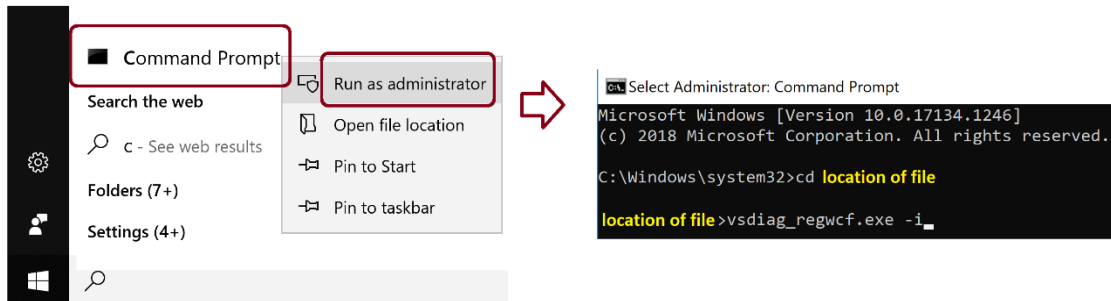
e. Reboot your machine.

f. Launch PSCAD and try to activate a certificate.

Solution (2)

This solution will locate and modify the .NET Framework machine.config files to remove all ServiceModeSink references and then reboot.

The second method is to edit the machine.config files to remove any and all references to the ServiceModeSink assembly (dll) which apparently cannot be found and loaded on your machine. This action is only possible if the Medic has detected that the machine.config files have references to the offending ServiceModeSink assembly.

There are generally two machine.config files of interest here:

- C:\Windows\Microsoft.NET\Framework\v4.0.30319\Config\machine.config

- C:\Windows\Microsoft.NET\Framework64\v4.0.30319\Config\machine.config

a. Check if the above files have any ServiceModelSink references as follows:

   Note
   This step will require Windows Administrator privileges on your machine.

   - Download the run the <u>latest</u> Fortran Medic with <u>Windows Admininstrator privileges</u> (see note (ii) below) as per Appendix A.2.
     Notes
     (i) Older versions of the Medic (August 2020 and older) will not work.
     (ii) When the Windows User Account displays, select "Yes".

- When the Medic is finished, scroll down to the **Certificate Licensing** section. Scroll down a bit more, to information similar to the following:

b. If one or both files have the **references found** status, then the Medic might be able to be used to help resolve the issue.

c. On the Medic menu, select *Help | Advanced help | ServiceModeSink issue | Fix*

   Warning
   Please carefully read the displayed instructions and disclaimers.
   You may want to have an IT person present.
   Proceed with caution if you want to.

d. The Medic implements the fix as described below. You do **not** need to manually rename or copy anything:

   - Copies the existing machine.config file to a machine.config.cached_original

   - Loads the existing machine.config file and remove the ServiceModelSink nodes from the file, then save the modified content as machine.config.cached_modified

   - Replaces the machine.config file with the machine.config.cached_modified file

e. If the Medic is able to replace the original files with the modified files, reboot your machine, launch PSCAD and try to activate licensing.

   Note
   If you need to revert (cancel) the above fix, then do the following:
   1. On the Medic menu, select *Help | Advanced help | ServiceModeSink issue | Revert to defaults*
   2. Then reboot your machine.

2.23   Certificate Licensing Selection Dialog is Blacked Out

Problem

When attempting to activate a license certificate, the selection dialog is blacked out:
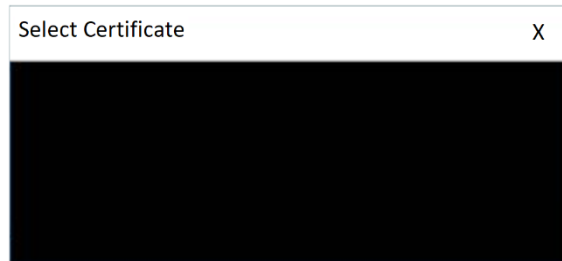
And when the Medic Utility is run as per Appendix A.3, the status of of this file will display within the PSCAD installation. In the example below, the file is present:

Cause

The Windows MFCMIF80.dll is missing or too old.

Solution

Reinstall PSCAD.

2.24   My PSCAD V5 License Can Activate v5 Licensing, but not v4 Licensing

Problem

My PSCAD V5 License can activate v5 licensing, but not v4 licensing.

Applicability

- PSCAD only (not applicable for any other MHI products)

- Educational and Professional Editions of PSCAD (not applicable for the Free or Beta editions)

Cause 1

You are using a verson of PSCAD that is not supported with your V5 license:

- PSCAD v4.6.3 Update 3 and older is not supported with a V5 license.

- PSCAD v4.6.3 Update 4 and newer is supported with a V5 license; however, V5 must be configured to "share" the licensing with X4 as per Solution 2, below.

For more information on backward compatibility for a V5 license, please refer to this article.

Solution 1

Contact our sales desk (sales@pscad.com) to update your PSCAD software to v4.6.3 Update 5, and configure V5 to share the licensing with X4 as per Solution 2, below.

Cause 2

You are using a version of PSCAD that is supported with your V5 license (i.e. v4.6.3 Update 4 and newer), but PSCAD V5 is not configured to share the licensing.

Solution 2

Configure PSCAD V5 to share the licensing with v4.6.3 Update 4 and newer as per Step 1 of this article.

Cause 3

You are using a version of PSCAD X4 that is supported with your V5 license (i.e. v4.6.3 Update 4 and newer), but licensing fails. This occurs because somehow, an expired certificate is blocking PSCAD X4 from seeing and using a valid certificate.

This can occur if the following sequence has been performed:

- A version of PSCAD X4 that is not compatible with a V5 license (i.e. v4.6.3 Initial to v4.6.3 Update 3) was run on this machine using an X4 license.

- Then, PSCAD v5 was launched and run using a V5 license.

- Then, a version of PSCAD X4 that is compatible with a V5 license (i.e. v4.6.3 Update 4 or 5) was launched on this machine, and licensing failed.

Solution 3

- Launch PSCAD V5.

- If prompted to acquire any certificates, decline.

- If PSCAD loads and finds a certificate, return it:
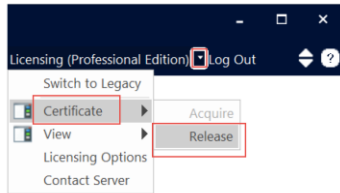
- Configure PSCAD V5 to share its certificates with PSCAD x4 as per Step 1 of this [article](#).

- Exit PSCAD V5.

- Launch PSCAD v4.6.3.

- If prompted to acquire any certificates, decline.

- If PSCAD v4.6.3 loads and finds a certificate, return it:

- Exit PSCAD v4.6.3.

- Browse to the following folder, and delete all *.xml files from this folder:
  C:\Users\Public\Documents\Manitoba HVDC Research Centre\Licensing\Licenses

- Launch PSCAD v4.6.3, and you should be able to activate certificate licensing.

2.25   I have a License Certificate Checked Out But Cannot License a PSCAD Instance

Problem

I have an expired Professional License Certificate on my machine and I ask for and acquire a PSCAD Educational Edition on my machine, but when I launch PSCAD, I am unable to use the Educational Edition license.

My PscadLmgrd.txt log file (Appendix D.2) displays information similar to the following:

<div style="color:red">

Advanced Licence Manager V1.46.0 (x64) (Mar 4 2021) starting on Microsoft Windows NT 6.2.9200.0

Computer name: ***

Log file: C:\ProgramData\Manitoba HVDC Research Centre\LicenseManager\PscadLmgr.txt

***: Asking for <PSCAD 5 Professional>

ERROR: Unable to load license certificate for PSCAD 5 Professional

CAUSE: License has expired.

ERROR: No licence certificate found for <PSCAD 5 Professional> or equivalent

</div>

Applicability

- PSCAD v4.5.3 to 4.6.3 Update 5

- PSCAD v5.0.0 (fixed as of v5.0.1)

Cause

The expired Professional license is preventing PSCAD from seeing and using the newly acquired Educational license.

Solution 1 – Upgrade your Software

Upgrade to PSCAD v5.0.1 or newer.

Solution 2 –

Perform the following steps to resolve the issue:

Close all instances of PSCAD, x4 and V5.

- If PSCAD V5 is experiencing this issue, then:

    ° Set your Windows browser to be able to view "hidden folders".
    ° Browse to the following hidden folder:
       C:\Users\[YourUser]\AppData\Local\Manitoba Hydro International\Licensing\Licenses
    ° Delete the following file: 84.xml
    ° Start PSCAD V5 and it should see the Educational certificate and be able to use that.

- If PSCAD X4 is experiencing this issue, then:

    ° Browse to the following folder:
       C:\All Users\Public\Documents\Manitoba Hydro International\Licensing\Licenses
    ° Delete the following file: 74.xml if it exists, if not, then 84.xml if it exists
    ° Start PSCAD X4 and it should see the Educational certificate and be able to use that.

2.26   Receiving an Error message "Your Windows policy is configured for FIPS (Federal Information Processing Standards)…"

Problem

When attempting to activate certificate licensing, this fails, and the following message displays:
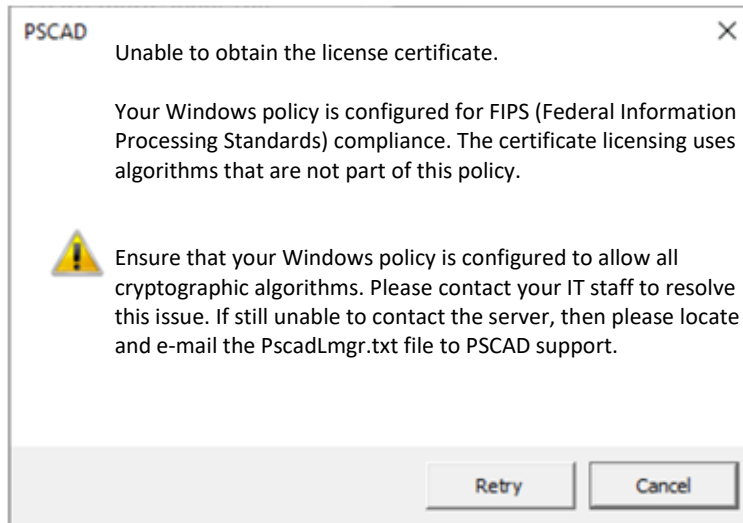
Cause

Your windows policy is configured for FIPS (Federal Information Processing Standards). However, PSCAD uses a different cryptographic algorithm. Therefore, licensing fails.

Solution 1 - Permanently Disable FIPS from this Machine

See Appendix A.5, Item 10 for instructions on using the MHI Fortran Medic utility to disable FIPS.

Solution 2 – Temporarily Disable FIPS from this Machine

Only disable FIPS whenever using MHI Products (PSCAD, Enerplot…) with certificate licensing.

If this solution will be used, the following suggestions can help to reduce the number of FIPS compliance issues:

- Disable FIPS compliance only until you have acquired and saved the certificate; it can then be re-enabled.
- When logging in, select *Remember Me*, to reduct the number of times you have to log in.
- Configure your product to not renew the certificate.
- Configure your product to retain the certificate on exit.
- Do not exit your product, since launching the product could acquire or renew the certificate.

Solution 3 - Run Certificate Licensed Products on a Machine that is not Configured for FIPS

Use a different machine, one that is not configured for FIPS.

2.27   Certificate Licensing Not Working Even Though TLS 1.2 is Enabled for Supported MHI Products

Problem

Even though TLS 1.2 is enabled on my machine, as supported with the following products, my machine still reverts back to using TLS 1.0, therefore certificate licensing fails:

- PSCAD v4.6.3 (Update 4) and newer
- PSCAD V5
- PRSIM v1.0.0
- Initializer v1.0.0
- Enerplot version 1.0.1 and newer
- FACE version >2.0

Solution

Try to enable TLS 1.2 using the Fortran Medic utility as per this article.

If the issue is not resolved, try addding registry keys to your machine to enable TLS 1.2 as per this article.

> **Note**
> Refer to Appendix E for a listing of supported TLS protocols for MHI Products.

2.28   Receiving a "Cryptographic Error" Message

Refer to Section 2.18

2.29   Receiving an "Access Denied" Error Message

Problem

When attempting to activate or release a license, licensing fails with the following message: *Access Denied*.

Note – Refer to Section 2.48 for similar issue.

Cause

The user is missing required folder permissions (e.g. cannot save or delete the license file). Therefore, the activation or release of licensing fails.

Solution

Configure your machine to allow full folder permissions. Refer to the following resources for this:

- This article provides links to product system requirements for each product / version. Please display the corresponding document, and view the Certificate Licensing section.

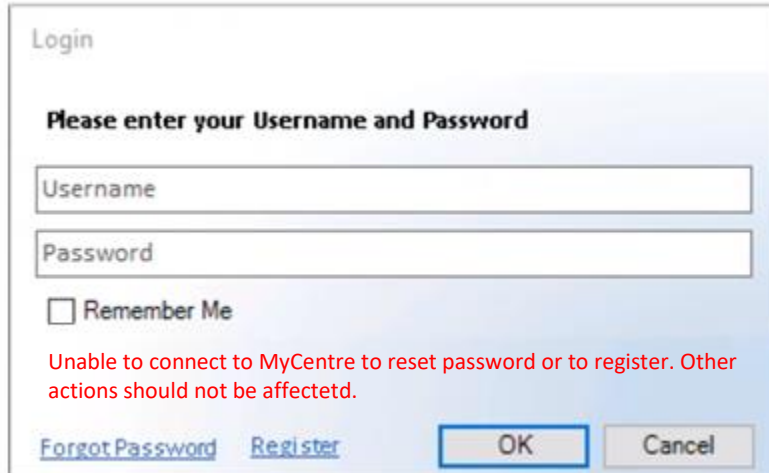- This article provides instructions on using our Fortran Medic utility to configure the folder permissions.

Further Resources

If the Fortran Medic Utility is not permitting you to perform these changes, please refer to Section 3.1.

2.30   Receiving an "Unable to connect to MyCentre to reset password or to register…" Error Message

Problem

When attempting to log in through an MHI product to activate licensing, the following error displays:

Cause

Something on your machine or in your Network (e.g. proxy server, firewall…) is blocking communiation between your machine and MyCentre registration and password reset.

Solution

You should be able to enter your MyCentre login credentials and succssfully activate any licensing as authorized.

This error is not indicating any issue with activating licensing.

2.31 Receiving a "The client and server cannot communicate, because they do not possess a common algorithm" Error Message

Problem

When attempting to activate certificate licensing, this fails, with errors similar to the following:
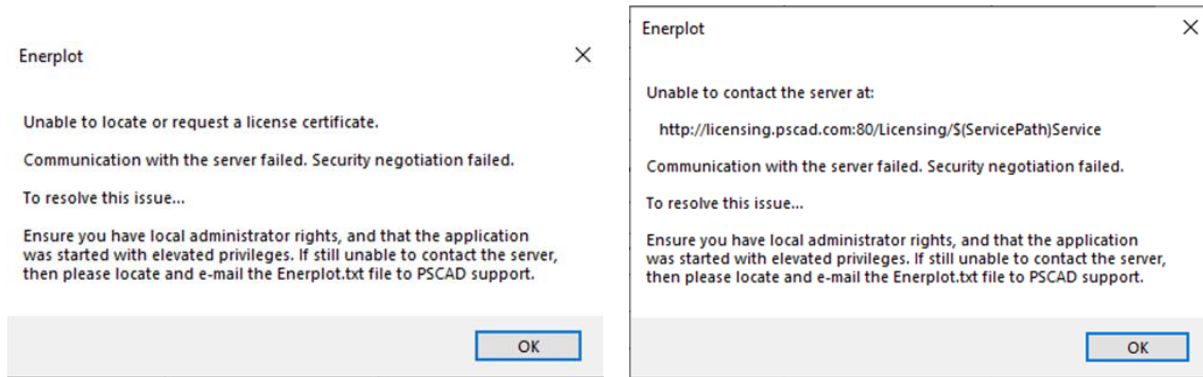
When the licensing log file is displayed (Appendix D.2), messages similar to the following display:

Attempting to contact server using WSHttp...
Connecting...
Endpoint = http://licensing.pscad.com:80/Licensing/NormalService
Active binding: WSHttpBinding
ERROR: Exception:
ERROR: Cause: SOAP security negotiation failed. See inner exception for more details.
ERROR: Type: System.ServiceModel.Security.SecurityNegotiationException
ERROR: Invoking Type: System.Runtime.Remoting.Proxies.RealProxy
ERROR: Method: Void HandleReturnMessage(System.Runtime.Remoting.Messaging.Imessage, System.Runtime.Remoting.Messaging.Imessage)
ERROR: Exception:
(Thu Aug 12 15.52.46 2021) ERROR: Cause: The client and server cannot communicate, because they do not possess a common algorithm
ERROR: Type: System.ComponentModel.Win32Exception
ERROR: Failed to contact server.
ERROR: Error: Communication with the server failed. Security negotiation failed.
Aborting...

When the Fortran Medic utility is run, messages as shown in Appendix A.5 Item 13 are displayed.

> **Note**
> See Section 2.36 for similar issue

Affects

Affects any MHI Products that do not support TLS 1.2. Refer to Appendix E to view supported products.

Cause

This issue occurs on Machines on which TLS 1.0 is blocked, but running MHI Products which only support TLS 1.0.

TLS 1.0 is being deprecated and blocked by many clients for security reasons.

Note
Refer to Appendix E for a listing of supported TLS protocols for MHI Products.

Solution 1 (Preferred) – Update your Software

Update your software to a version of PSCAD that supports TLS 1.2, or example, PSCAD v5.0.1 Update 1 or better. If you do not have this software, please contact our sales desk, ensuring to include your license number.

Solution 2 (Second Preference) – Properly Configure your Machine Using the Fortran Medic Utility

- Launch the Fortran Medic with elevated rights (see Appendix A.2).

- From the Help menu, select Advanced Help | Enable SystemDefaultTlsVersions for certificate licensing

- From the Help menu, select Advanced Help | Enable TLS 1.2 (for PSCAD 4.6.3 Update 4 and better, and non-PSCAD software).

- From the Help menu, select Advanced Help | Enable TLS 1.0 (for PSCAD 4.5.1 to 4.6.3 Update 3)

  Note
  If TLS 1.0 is banned by your organization's group policy, then this last suggestion may fail.
  If so, your organization's IT team will need to un-ban TLS 1.0

Refer to this article for further details on making these changes using the Fortran Medic utility.

Solution 3 – Have your IT Team enable TLS 1.0

Have your IT team enable TLS 1.0 on your machine.

Solution 4 – Set PSCAD to use TLS 2.0 on Every Launch

if you launch PSCAD 5.0.1 and before you do anything else, you do the contact server test, then it will use TLS 1.2 for the lifetime of that instance. So you can continue to use PSCAD v5.0.1 Update 0, but every new instance of PSCAD must be launched as follows:

1. Initial Setup
There are some things to set up Initially, only once:

- Launch PSCAD.

- If you have any licenses checked out to you, ensure you are logged in, and return the licenses:
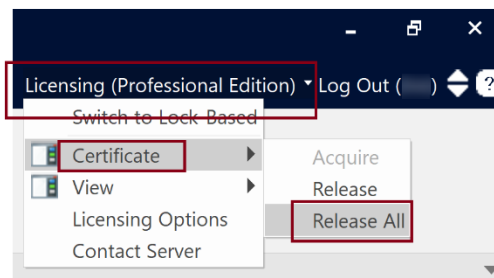
- Configure the licensing behaviour as shown (Do not renew, Retain certificate):
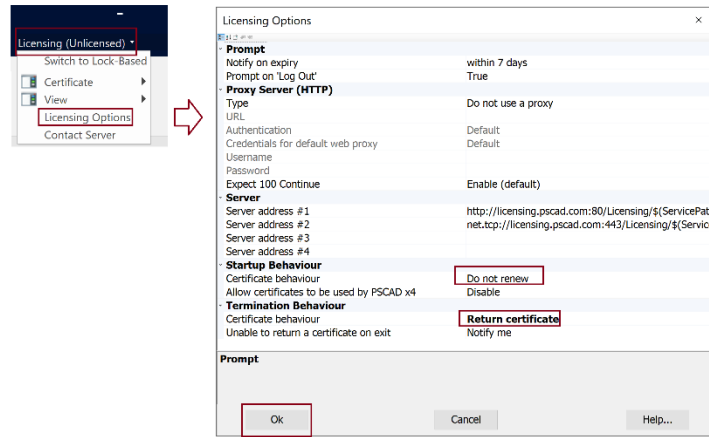
- Log out:
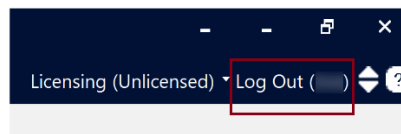
- Close PSCAD.

2. Everytime You Launch PSCAD Thereafter:

- Launch PSCAD.

- When the login dialog displays automatically, close out of this dialog.

- Conduct the "Contact Server" function, and ensure that the server was successful contacted over TLS.
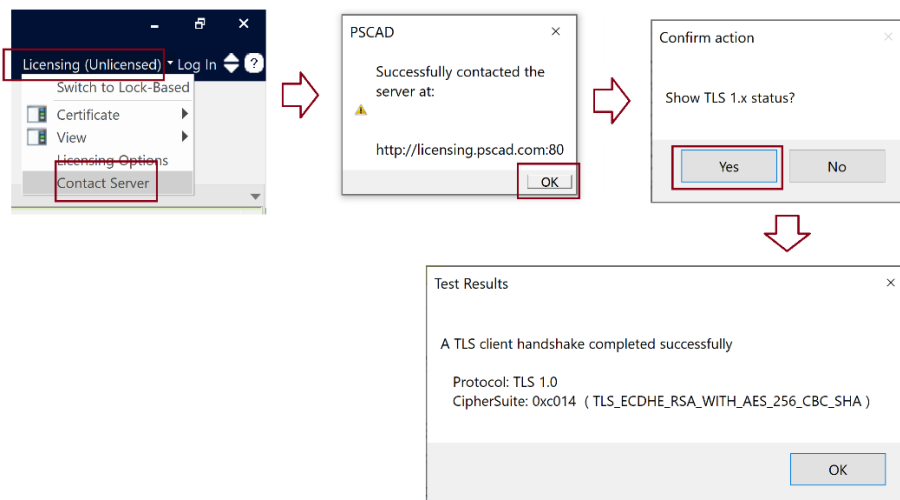
- After the last step, PSCAD will be configured to use TLS 1.2 for the duration of this single instance of PSCAD; PSCAD will not try to use TLS 1.0.

- Log in, ensuring that the "Remember me" is <u>de-selected</u>:
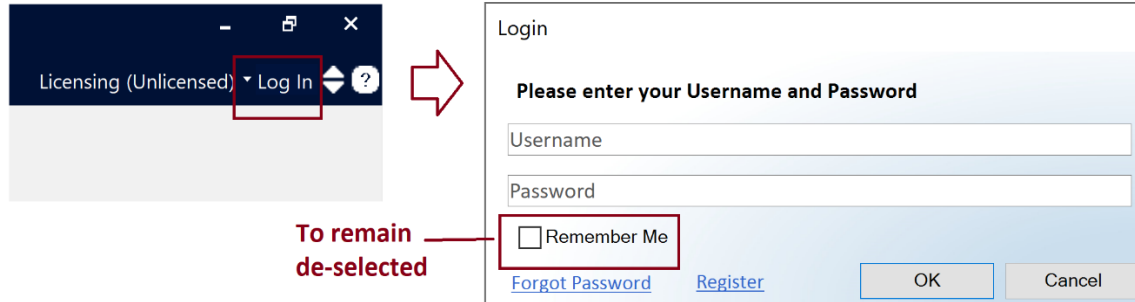
- Acquire the license:
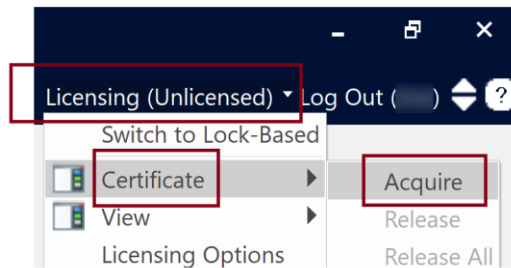
- When done with PSCAD, close PSCAD, and the license will be returned, and you will be logged out.

2.32 Receiving a "The specified command is not supported by the server" Error Message

Problem

When attempting to activate certificate licensing, this fails, with the following error message:
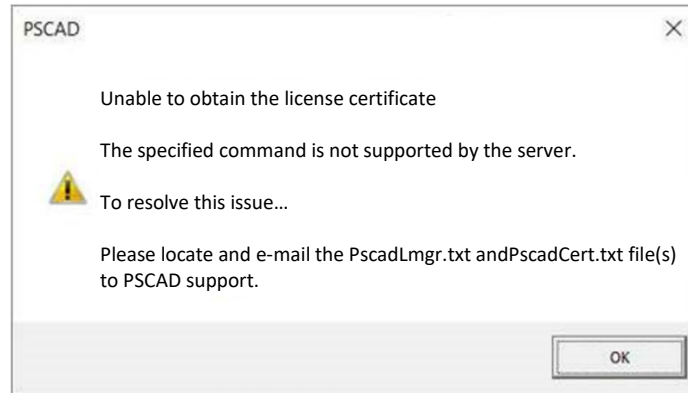
Also, when the Fortran Medic utility was downloaded and run as per Appendix A.2, the message as listed in Appendix A.5 Item12 was displayed.

Cause

For one customer, the issue was related to a proxy server in their Network. In order for PSCAD to be able to communicate through their proxy server to reach the MHI licensing server, the customer had to configure PSCAD accordingly in the Licensing Options dialog.

The customer had set the "Type" to "Use the specified proxy", as shown below, which produced the above error.
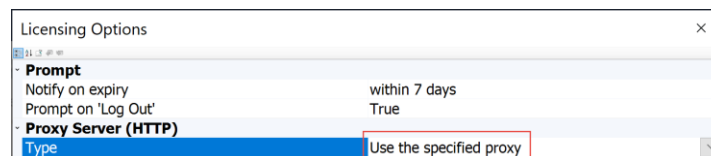
Solution

The customer changed the "Type" to "Use the default proxy", and the matter was resolved:
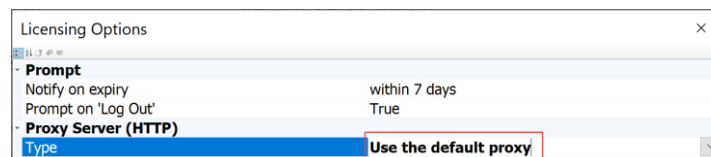
2.33   Unable to Return or Renew My License Certificate, and Multiple Licenses Becoming Consumed

Problem

A customer is able to acquire and use a license certificate to run the MHI product. However, the licensing does not behave properly:

- The customer cannot return the license to the MHI server.
  Consequently, the license cannot be made available to other customers or on other machines.

  And

- The certificate checkout period does not renew to a new 28-day checkout period.
  Consequently, the checkout expiry period counts down to zero days, after which time it is released back to the server "naturally", and is only then available to other customers or on other machines.

  And

- Additional requests for a license result in additional licenses being checked out on the same machine.
  Consequently, multiple licenses are consumed on the one machine, and therefore not available to other customers or on other machines.

See Section 2.37 for a similar event.

Known Versions

PSCAD v4.6.3 Update 1 and Update 5.

Cause

The cause is unknown.

Solution

- Ensure your machine has sufficient permissions and protocols for using Certificate Licensing as per this [article](#).

- If the checkout period is not expired yet, request that the license be force-released (support@mhi.ca).

- Delete the license certificate file 74.xml from this path (if present):
  C:\Users\Public\Documents\Manitoba HVDC Research Centre\Licensing\Licenses\

- If using a version older than PSCAD v4.6.3 Update 3, consider updating to v4.6.3 Update 5 or newer.
  To request a download, contact our sales desk (sales@pscad.com), ensuring to include your license number in your request.

2.34   Certificate is Expired, User is Unable to Acquire an Updated Certificate

Problem

When running PSCAD 4.6.x, the user is unable to get a license certificate.

The licensing log file (PscadLmgr.txt) contains the following messages:

> Attempting to locate and load an installed certificate for PSCAD Pro
> Unable to use an installed certificate for Pro
> Error: Unable to validate certificate file: 74
> Error: License has expired.

Affected Versions

PSCAD 4.6.0...PSCAD 4.6.3 Update 3, Pro Edition

Cause

The above-listed older versions of PSCAD did not correctly handle the process of expired certificates.

Solution 1 – Same PSCAD Version, Delete your License File

If it is necessary to continue to use the older version of PSCAD (v4.6.3 update 3 or older), then do the following:

a. Close all instances of PSCAD 4.6.x.

b. Browse to the following folder:

C:\Users\Public\Documents\Manitoba HVDC Research Centre\Licensing\Licenses

c. Delete the license file:

      -If this is a Professional Edition license, delete this file if it exists: 74.xml

      -If this is an Educational Editon license, delete this file if it exists: 62.xml

d. Restart PSCAD and try to acquire a license certificate.

Solution 2 – Update your PSCAD Version

Upgrade to PSCAD 4.6.3 Update 5, released Sept 20, 2020, (or newer) for improved handling of expired certificates.

2.35   You Are Able to Acquire a PSCAD v5 EDU Certificate, but Not to Actually Use It

Problem

When running PSCAD v5.0.0, you are able to acquire a PSCAD v5 EDU certificate, but PSCAD is unable to actually use it because it is incorrectly trying to load and use a PRO certificate.

The licensing log file (PscadLmgr.txt) contains the following messages:

> Attempting to Request a License From Group for pscad 5.0.0 Pro
> …
> Processing request...
> Certificate details
>   License ID: [License ID number]
> Checkout Expiry: …
>   Status = success
> …
> Processing request...
> License is already owned by this user.
> …
> Advanced Licence Manager V1.46.0 (x64)…
> …
> [Machine Name]: Asking for <PSCAD 5 Professional>
> ERROR: Unable to load license certificate for PSCAD 5 Professional
> CAUSE: License has expired.
> ERROR: No licence certificate found for <PSCAD 5 Professional> or equivalent.

Cause

The V5 PRO certificate is expired, and this is blinding PSCAD v5.0.0 from properly detecting and using the EDU license.

Affected Versions

PSCAD 5.0.0 Release, PSCAD 5.0.0 Update 1, PSCAD 5.0.0 Update 2

Solution 1

Upgrade to PSCAD 5.0.1 Release or better

Solution 2

- Exit all running PSCAD instances.

- Manually delete any PSCAD licenses (62.xml, 74.xml, 84.xml, 94.xml,…) in the following folder:

  C:\Users\<USER_ID>\AppData\Local\Manitoba Hydro International\Licensing\Licenses

- Launch PSCAD 5.0.0, and you should be able to acquire and use an Edu certificate.

2.36   Receiving a "Communication with the server failed. Security negotiation failed" Error Message

Problem

When attempting to activate a license certificate, the following message displays, and the licensing fails:
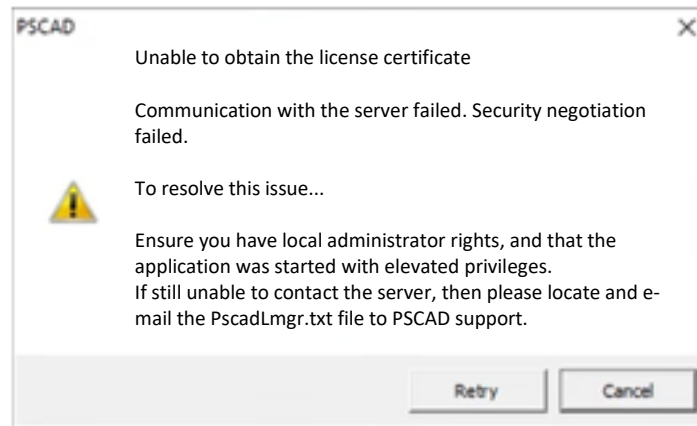
Also, when the Fortran Medic utility is run on this machine as per Appendix A.2, the errors as displayed in Appendix A.5 Item 15 display.

Also, in the product's licensing log file, one or more of the following messages may display:

- SOAP security negotiation failed.

- The client and server cannot communicate, because they do not possess a common algorithm

- Communication with the server failed. Security negotiation failed.

Note
See Section 2.36 for similar issue

Cause

It is most likely related to TLS 1.0 and 1.1 being blocked, and the .NET Framework not being configured to allow Windows to select the best TLS protocol to be used, causing certificate licensing to fail.

Note
Refer to Appendix E for a listing of supported TLS protocols for MHI Products.

Solution

a.   Close all instances of PSCAD .

b.   Download the latest FortranMedic from this verified link:
      http://updater.pscad.com/utilities/FortranMedic.zip

c.   Extract both (2) files from the ZIP file.

d.   Right click on FortranMedic.exe and select *Run as Administrator*.

e. Execute the following Help | Advanced Help functions:
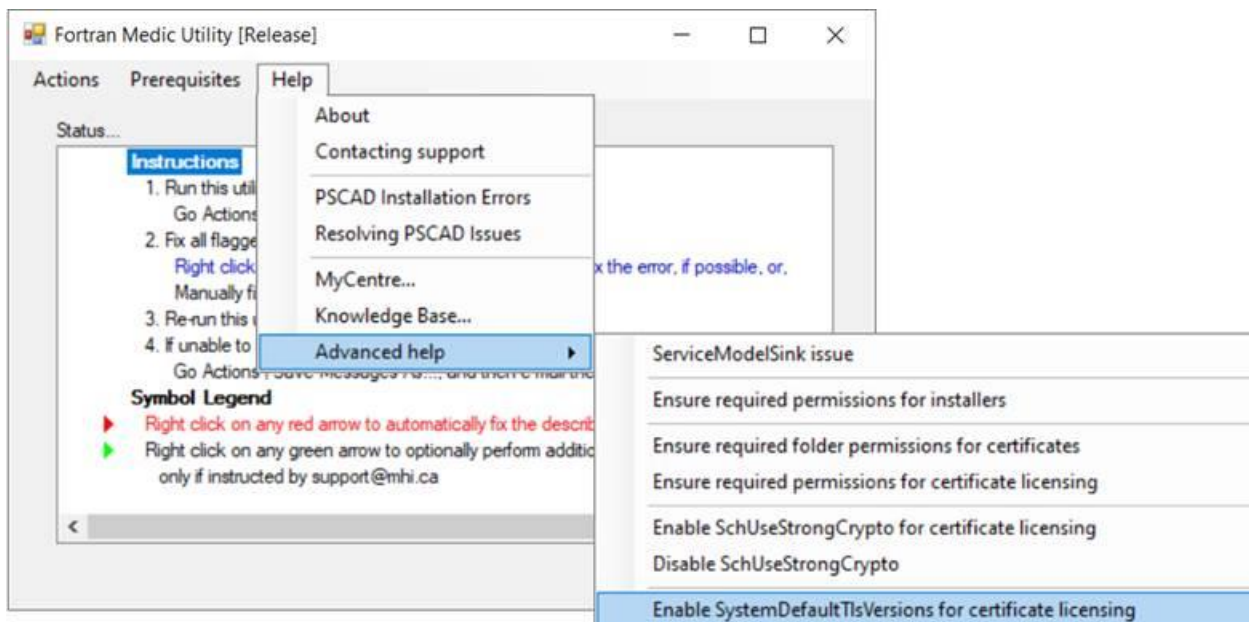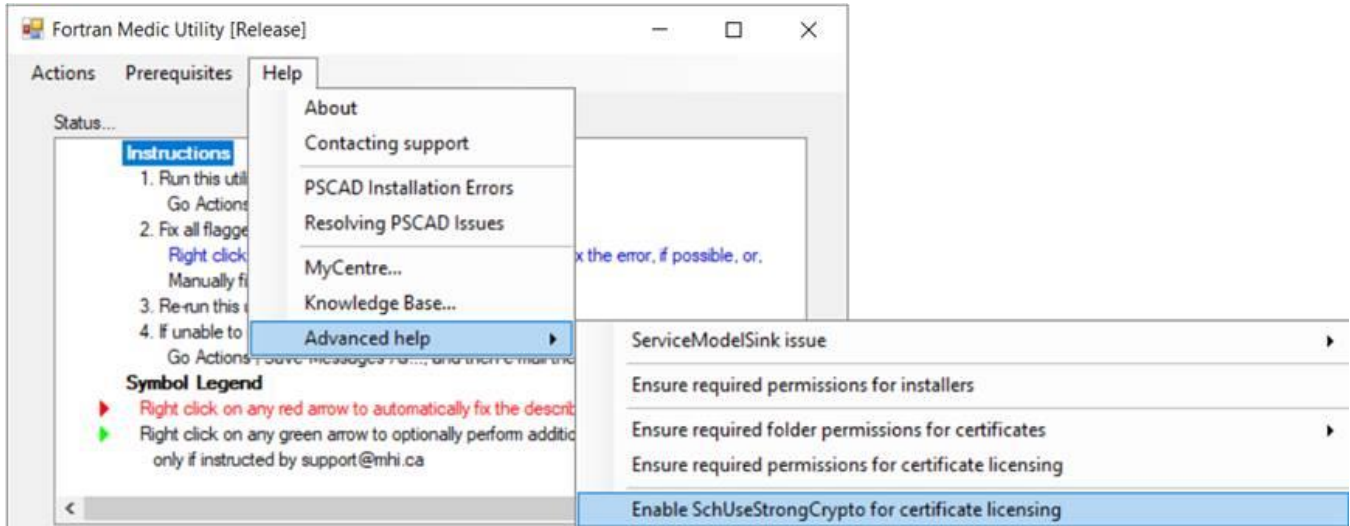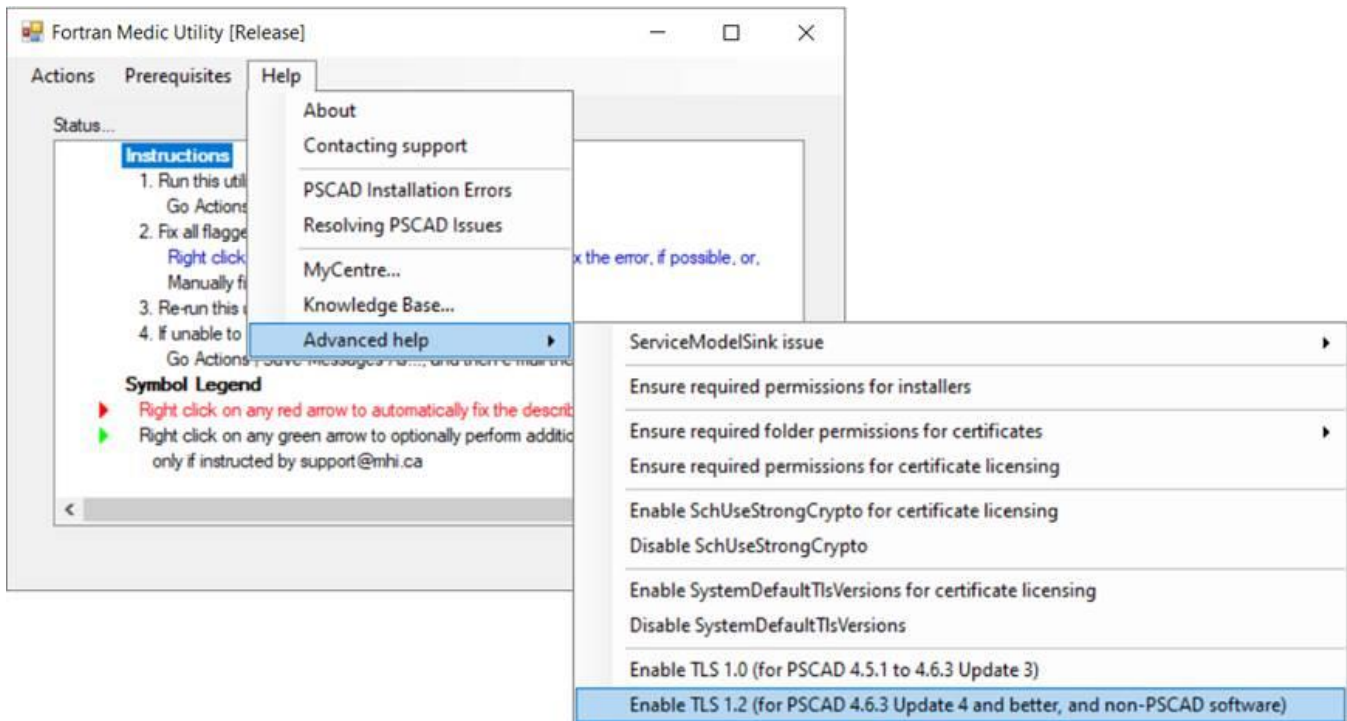
f. Right-click on the PSCAD shortcut, and select *Run as Administrator.*

g. From the Licensing menu in the top right side of the application, select *Contact Server.*

h. For PSCAD 5.0.1 and better only, when asked if you want to Show the TLS 1.x status, select Yes and you should see something like the following:

> A TLS client handshake completed successfully
>
> Protocol: TLS 1.2
> CipherSuite: 0xc030 (TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA384)

Note
PSCAD 5.0.1 or better must be launched as Windows elevated to be able to see the negotiated Protocol and Cipher Suite.

Note
An upcoming feature will provide these functions in a single function.

2.37 Multiple Licenses Are Consumed on a Machine, and Some of Them Cannot Be Used or Returned

Problem

A user unexpectedly activates multiple licenses on their machine, and is not able to use and release them all.

See Section 2.33 for a similar event.

Cause

This issue requires that both of the following conditions be met:

1. The user account meets one or both of the following situations:

   a. The user account is linked to two or more workgroups that each contain one or more licenses for that product.
      For example, two workgroups each containing one license for PSCAD.

      (and / or)

   b. The user account is linked to only one workgroup, but it contains multiple types of that product.
      For example, one workgroup contains one license for PSCAD with 8 parallel simulations, and one license for PSCAD with 64 parallel simulations.

2. The user launches multiple, unlicensed instances of the product (e.g. PSCAD) before activating any licenses.

The following example illustrates how this licensing issue occurs with PSCAD:

- Suppose a user account is linked to two workgroups, each containing two licenses for PSCAD:
  WorkGroup 1 – Contains Licenses 11 and 12
  WorkGroup 2 – Contains Licenses 22 and 23

- The user launches two instances of PSCAD, without licensing either of them.

- For one of the instances of PSCAD (we will call this PSCAD Instance1), the user selects the option to activate a license, and a listing of available licenses is displayed. There would be two WorkGroups, each with two "Available" licenses, similar to the following:
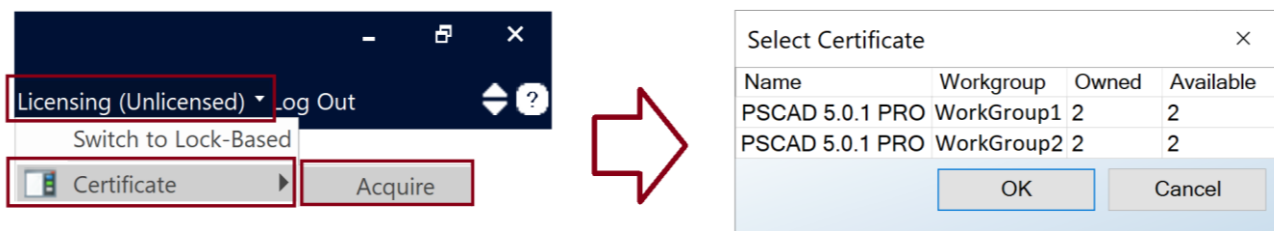
- Suppose the user selects to activate from Workgroup 1. The following would occur:

  - The first license in WorkGroup 1 would be granted, namely License #11.

  - The corresponding license file would be generated and saved to the machine, to this location:
    C:\Users\<MachineUsername>\AppData\Local\Manitoba Hydro International\Licensing\Licenses\

    Note – For each version, the PSCAD license file name is uniquely numbered.
    For example version v5.0.1 is labelled as "*84.xml*", and v4.6.3 is labelled as "*74.xml*".

  - In our license server, License 11 would be recorded as checked out and unavailable to others.

  - The other instance of PSCAD would remain unlicensed.

- Then, suppose the user selects to activate a license for the other open instance of PSCAD (call this PSCAD Instance2). The listing of available licenses would be displayed. Only one license would be available in WorkGroup 1, and two in WorkGroup 2, similar to the following:


Note
If the user selects WorkGroup1 in the above step, then the licensing issue will not occur. PSCAD Instance2 will simply use the same license, #11. No additional license will be checked out. Displaying the *Available Certificates* will show only one license is in use, for both instances:

- However, if the user selects WorkGroup 2 in the above step, then PSCAD Instance2 would consume a second license, with the following results:

  ° The first license in WorkGroup 2 would be granted, namely License #22.

  ° The corresponding license file would be generated and saved, **over-writing** the existing license file that was created for License #11, in the location below. As a result, the first license can not be returned.
  C:\Users\<MachineUsername>\AppData\Local\Manitoba Hydro International\Licensing\Licenses

  ° In our license server, both Licenses 11 and 22 would be recorded as checked out and unavailable to others.

  ° Displaying the Available Certificates would show two licenses checked out, one from each WorkGroup:
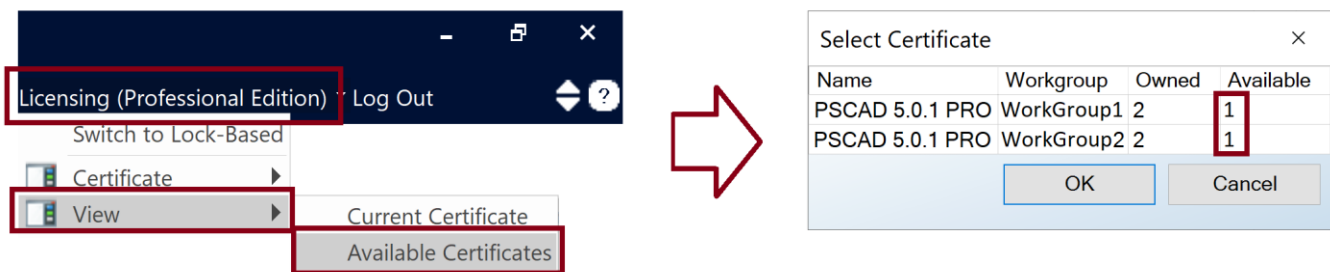
- Consequently, License 22 could be returned because the license file for this license is present, but License 11 cannot be returned. License 11 is "stuck".

Solution

To avoid this issue, please ensure to license the first instance of the product (e.g. PSCAD) before launching additional instances.
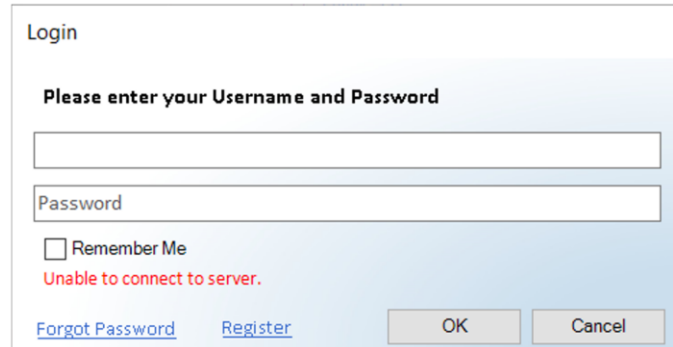
However, if this issue does occur, the following are three options to resolve the matter:

- You should be able to return both licenses by following this procedure:

  ° In PSCAD Instance2, release the license.
  (in the above example, that would have been WorkGroup 2, License #22)

  ° Close all instances of PSCAD.

  ° Launch PSCAD, and when prompted to select a WorkGroup, select the WorkGroup with the "stuck" license.
  (in the above example, that would be WorkGroup 1)

  ° PSCAD will then generate a new license file for the stuck license.
  (in the above example, that would be License #11)

  ° You should then be able to release the license.

- Wait for the license checkout period to expire.

- Contact our support desk for assistance with releasing the license. Please ensure to include the license number in your request.

2.38   Receiving Error "Unable to connect to server" When Trying to Log in Through PSCAD

Problem

When attempting to log in to PSCAD, login fail, and an error similar to the following displays:

Cause

The *Unable to connect to server* error can indicate something is blocking PSCAD from communicating over the Internet with the certiricate licensing server.

This can be due to something in the customer's Network, like a proxy server. Or else external access is simply blocked.

Because of the above block, PSCAD is unable to reach either of the following licensing addresses, therefore login fails:

      http://licensing.pscad.com:80/Licensing/$(ServicePath)Service

      net.tcp://licensing.pscad.com:443/Licensing/$(ServicePath)Service

Solution

If a proxy server is blocking communication with the above locations, it may be possible to configure PSCAD to communication through the proxy server. Information on this is listed in this article.

Or, perhaps your IT team may be able to simply whitelist the above locations.

2.39   Receiving Error "PSCAD is unable to load the settings for this user…" When Trying to Activate a License Certificate

Problem

When attempting to activate a license certificate, a message similar to the following displays:
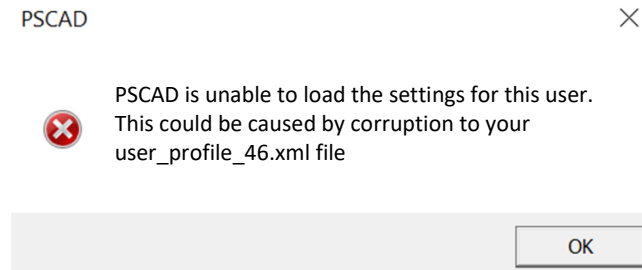
Cause

There may be corruption to your *user_profile_XX.xml* file, which is located in one of the following locations:

C:\Users**<YourWindowsUserID>**\AppData\Local\Manitoba HVDC Research Centre**<Product>**\

C:\Users**<YourWindowsUserID>**\AppData\Local\Manitoba Hydro International**<Product>**

Solution

Delete your user profile file as shown in the above link, and retry licensing.

If the matter persists, please send in the following to our support desk:

- A description of the issue and screenshots of messages.

- A Fortran Medic log file as per Appendix A.3.

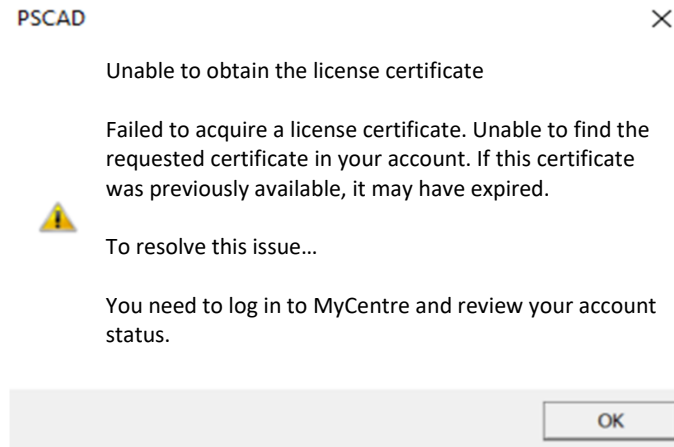**2.40   Receiving Error "Unable to find the requested certificate in your account" When Trying to Activate a License Certificate**

Problem

When attempting to activate a license certificate, messages similar to the following display:

Cause 1

User is linked to a valid license, but is trying to run a version that is not supported with that license.

For example, the license supports PSAD v5.0.1, but the user is trying to run v5.0.2.

Solution 1

Download and run the authorized version. This can be determined by viewing your licenses in MyCentre.

Cause 2

User is not linked to a valid licenses, but is trying to run that product.

Solution 2

If your facility has valid licensing for this product, contact your WorkGroup Administrator to obtain access to the license. To obtain help determining the Administrator, please contact our sales desk or support desk.

If your facility does not have valid licensing for this product, please contact our sales desk for a quotation.

2.41   Receiving Message "Failed to obtain a license certificate. Status code = 23026" in the PscadLmgr.txt Log File

Problem

When attempting to activate a license, the licensing fails, and the following message displays in the *PscadLmgr.txt* log file:

"Failed to obtain a license certificate. Status code = 23026"

Cause

The user reviewed the licenses to which they have access, but did not select a license to activate, as per the steps below. Consequently, licensing failed.

- The user launches the product (e.g. PSCAD), and selects the option to activate a license.

- The *Select Certificate* dialog displays the availability of their licenses.

- Instead of selecting and activating a license, the user cancels out of the dialog.
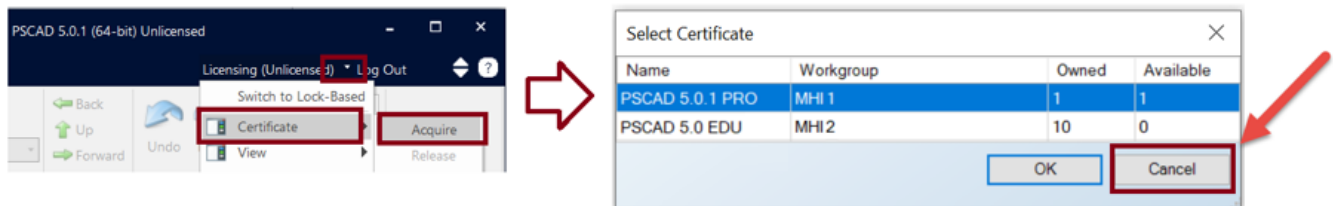
It should be noted that the *Select Certificate* dialog will only display if the user is linked to multiple workgroups and/or there are different types of licenses within one workgroup.

Conversely, the *Select Certificate* dialog will not display when there is no choice to be made, if the user is linked to one workgroup, containing the same license types. If so, the system will just activate an available license.

Solution

Retry activating the license, ensuring to select the workgroup or license type, then selecting "OK" in the *Select Certificate* dialog.
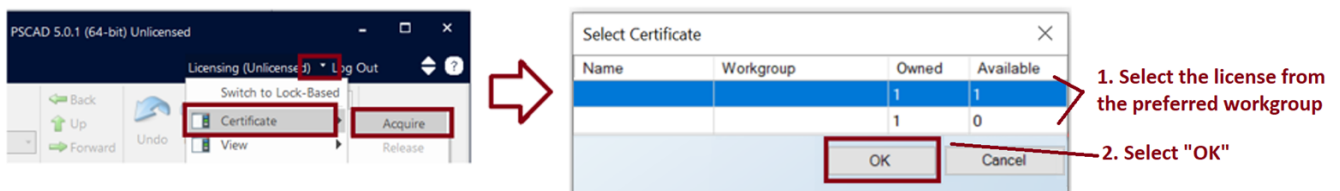
2.42   Receiving Error Message "Unable to connect to MyCentre. Error code 10" When Trying to Log in Over PSCAD

Problem

When PSCAD v4.6.3 Update 4 or Update 5 is launched, the following error message displays:
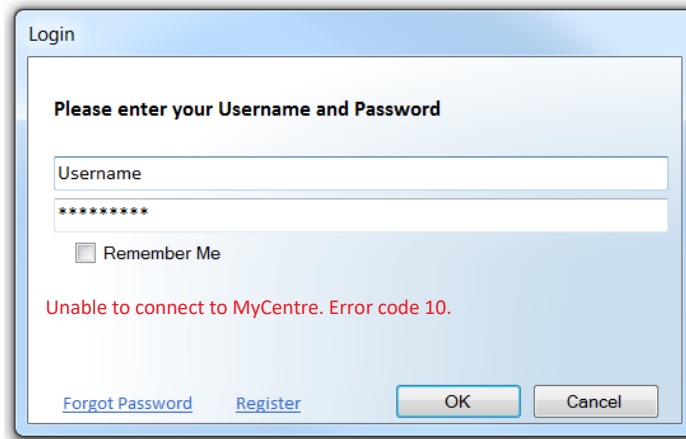
Cause

The machine is not configured to use TLS 1.2 protocol.
This protocol is required to be able to use certificate licensing for the above listed versions of PSCAD.
Consequently, the machine cannot communicate with our license server, so the customer cannot log in, and thereby cannot activate a license.

Solution

The machine needs to be configured for TLS 1.2 as per Steps 1, 4, 6, of this article.

2.43   Receiving Error Message "Failed to contact the server. Timed out waiting for a response from the server"

Problem

A user tries to log in from an MHI Product (e.g. PSCAD) and a message similar to the following displays:

Cause

Something in your Network is blocking the MHI Product from reaching the MHI license server over the Internet. As a result, the MHI product cannot connect with the license server in order to activate the license.
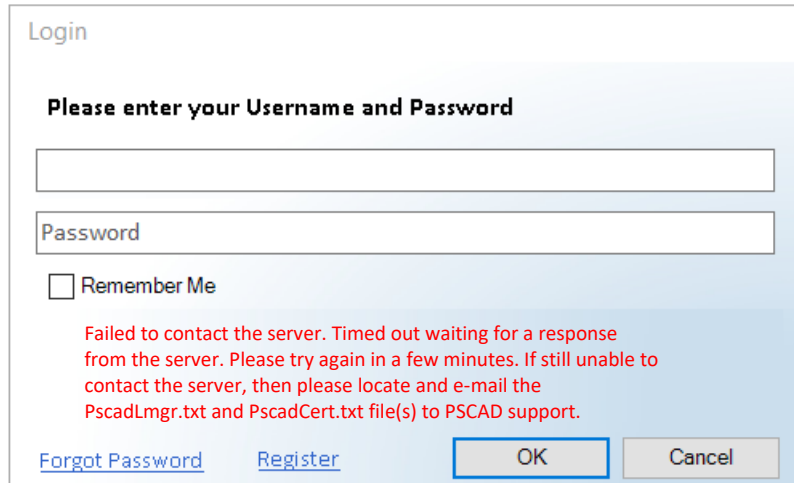
- For example, a Proxy Server.

- For example, your firewall.

Solution

Ask your IT team to look into the following possible solutions:

1. Whitelist the following two locations for our license server so that PSCAD can communicate with the license server:

    http://licensing.pscad.com:80/Licensing/$(ServicePath)Service

    net.tcp://licensing.pscad.com:443/Licensing/$(ServicePath)Service

2. If there is a Proxy Server in your Network, either allow the MHI Product to bypass the Proxy Server, or configure the MHI Product to communicate through the Proxy Server.

    This article can help to determine the Proxy Server address, as well as to configure your MHI Product to communicate through the Proxy Server.

2.44   Receiving Error Message "An unhandled exception has occurred" When Trying to Activate a FACE License

Note – a similar issue is documented in the FACE Troubleshooting manual, posted to this article.

Problem

A user launches FACE, and a message similar to the following displays:

FACE - Application Error

An unhandled exception has occurred (2). See debug log for more details.

Application.ThreadException:

Caused by...

Exception:
Cause: Object reference not set to an instance of an object.
Type: System.NullReferenceException
Invoking Type: WinFACE.Views.CircuitsGridPanel
Method: Void SelectionChangeHandler(System.Object, PropertyChangedValueEventArgs)

Select abort to quit
Select Retry or Ignore to continue

Abort   Retry   Ignore

The user selects "Ignore" in the above dialog, and attempts to activate a license. The following error message displays:

Error

Unable to locate or request a license certificate.

Certificate licensing is not completely configured prior to use.

To resolve this issue...

Please contact the PSCAD development team for support.

OK
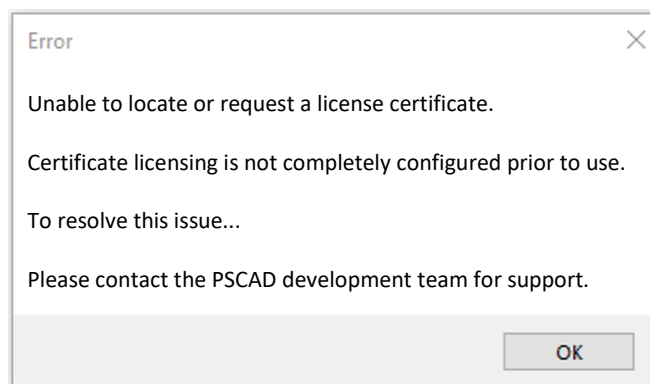
The user selects "OK" in the above dialog, and attempts to activate a license.

The following error message displays:

```
Fatal Application Error                                    ×

An unhandled exception has occurred (3). See debug log for more details.

Domain.UnhandledException:

Caused by..

Exception:
        Cause: Error creating window handle.
        Type: System.ComponentModel.Win32Exception
        Invoking Type: System.Windows.Forms.NativeWindow
        Method: Void CreateHandle(System.Windows.Forms.CreateParams)




                                              OK
```
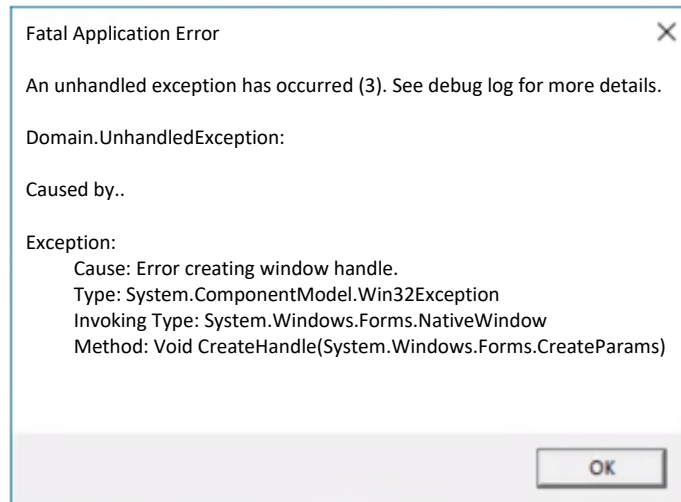
Cause

The following folder somehow goes into a bad state, and blocks login and licensing activities.

   C:\Users**<YourWindowsUserID>**\AppData\Local\Manitoba HVDC Research Centre\FACE

Solution

Close all instances of FACE, then delete the *FACE* folder in the above path, including all the contents of the *FACE* folder.

2.45   Receiving Error Message "Failed to contact the server. The connection was closed by the server"

Problem

A user tries to log in from an MHI Product (e.g. PSCAD) and a message similar to the following displays:

Cause

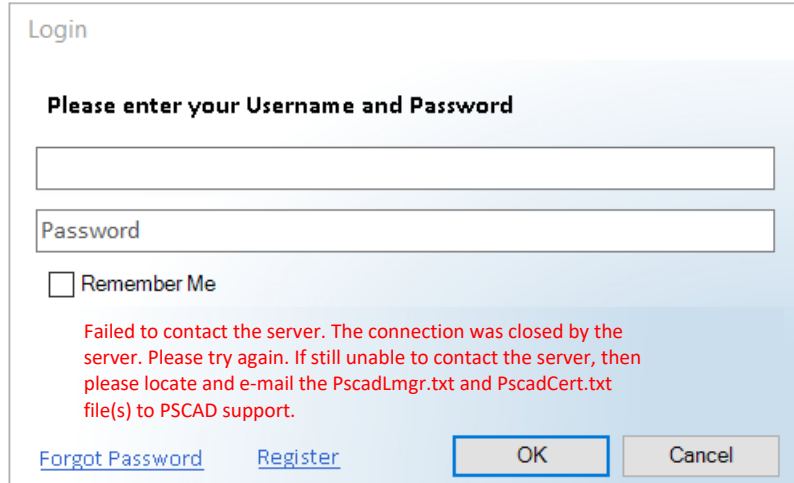Something in the customer's Network seems to be blocking PSCAD from reaching our license server over the Internet. As a result, the MHI product cannot contact the license server to activate the license.

- For example, a Proxy Server.

- For example, the firewall.

Solution

- Whitelist our two license servers:

    ◦ http://licensing.pscad.com:80/Licensing/$(ServicePath)Service

    ◦ net.tcp://licensing.pscad.com:443/Licensing/$(ServicePath)Service

- If there is a Proxy Server, either allow PSCAD to bypass the Proxy Server, or configure PSCAD to communicate through the Proxy Server.

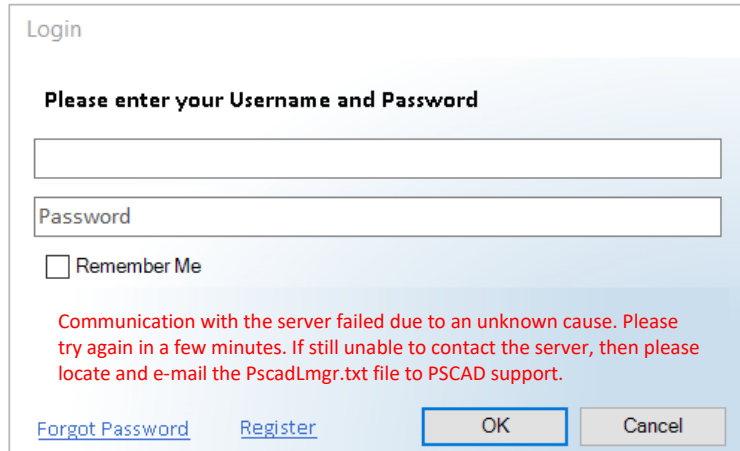   This article can help to determine the Proxy Server address, as well as to configure PSCAD to communicate through the Proxy Server.

- Ensure TLS Protocol is enabled on your machine, as this is used to communicate with our License Server over the Internet. Refer to this article for instructions for downloading and using our newest Fortran Medic utility to configure TLS Protocol on your machine.

2.46 Receiving Error Message "Communication with the server failed due to an unknown cause"

Problem

A user tries to log in from an MHI Product (e.g. PSCAD) and a message similar to the following displays:

Login

Please enter your Username and Password

Password

☐ Remember Me

Communication with the server failed due to an unknown cause. Please try again in a few minutes. If still unable to contact the server, then please locate and e-mail the PscadLmgr.txt file to PSCAD support.

Forgot Password   Register   OK   Cancel

Cause 1

One possibility is that the MHI Product is somehow pointing to the wrong (old) location for our license servers.

Solution 1

Follow the instructions in Section 2.17 to check and fix this if necessary.

Cause 2

Another possibility is that there is something in your Network is blocking the external communcations, and therefore the MHI Product cannot connect with our license server:

- For example, a Proxy Server

- For example, the firewall

Solution 2

Ask your IT team to look into the following two possibilities:

- Ensure the MHI Product can communicate through the Firewall. The license servers are located as shown below, these locations could be white-listed:

    http://licensing.pscad.com:80/Licensing/$(ServicePath)Service
    net.tcp://licensing.pscad.com:443/Licensing/$(ServicePath)Service

- If there is a Proxy Server, either allow the MHI Product to bypass the Proxy Server, or configure PSCAD to communicate through the Proxy Server.

Continued…

This [article](#) can help to determine the Proxy Server address, as well as how to configure the MHI Product to communicate through the Proxy Server.
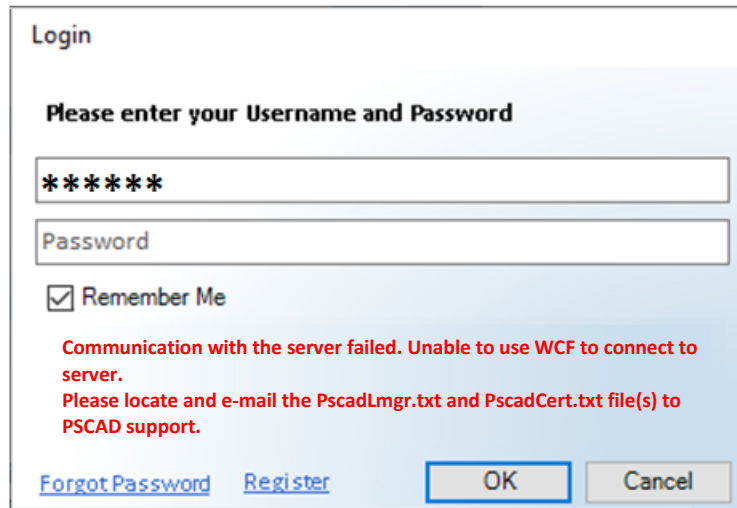
For ongoing licensing issues, please feel free to send the following to the MHI support desk (support@mhi.ca):

- A description of the issue, along with any screenshots of errors and messages.

- Your licensing log file(s) as per Appendix D.2.

- Your Fortran Medic log file as per this [article](#).

2.47   Receiving Error Message "Communication with the server failed. Unable to use WCF to connect to server"

Problem

A user tries to log in from an MHI Product (e.g. PSCAD) and a message similar to the following displays:

Cause

TBD

Solution

TBD

2.48   Receiving Error Message "Communication with the server failed. (503) Server not available" When Trying to Release a License

Problem

A user tries to release a license certificate, and a message similar to the following displays:

Communication with the server failed. (503) Server not available

The user is directed to review the PscadCert.txt file license log file, which provides the following messages:

```
Attempting to Release license for pscad 5.0.0 Pro
...
Attempting to contact server using http://licensing.pscad.com:80/Licensing/$(ServicePath)Service
Connecting...
Endpoint = http://licensing.pscad.com:80/Licensing/NormalService
  Active binding: WSHttpBinding
ERROR:  Exception:
ERROR:    Cause: The HTTP service located at http://licensing.pscad.com/Licensing/NormalService is unavailable.  This could be because the service
                 is too busy or because no endpoint was found listening at the specified address. Please ensure that the address is correct and try
                 accessing the service again later.
ERROR:    Type: System.ServiceModel.ServerTooBusyException
ERROR:    Invoking Type: System.Runtime.Remoting.Proxies.RealProxy
ERROR:    Method: Void HandleReturnMessage(System.Runtime.Remoting.Messaging.Imessage, System.Runtime.Remoting.Messaging.Imessage)
ERROR:  WebException:
ERROR:    Cause: The remote server returned an error: (503) Server Unavailable.
ERROR:    Method: System.Net.WebResponse GetResponse()
ERROR:    Status: ProtocolError
ERROR:    Server:
ERROR:    ResponseUri: http://licensing.pscad.com/Licensing/NormalService
ERROR:    ResponseCode: ServiceUnavailable (503)
ERROR:    Code = 26503
Aborting...
ERROR:    Failed to contact server
ERROR:    Communication with the server failed. (503) Service not available.
Attempting to contact server using net.tcp://licensing.pscad.com:443/Licensing/$(ServicePath)Service
Connecting...
Endpoint = net.tcp://licensing.pscad.com:443/Licensing/NormalService
  Active binding: NetTcpBinding
ERROR:  Exception:
ERROR:    Cause: The socket connection was aborted. This could be caused by an error processing your message or a receive timeout being
                 exceeded by the remote host, or an underlying network resource issue. Local socket timeout was '00:00:59.7683138'.
ERROR:    Type: System.ServiceModel.CommunicationException
ERROR:    Invoking Type: System.Runtime.Remoting.Proxies.RealProxy
ERROR:    Method: Void HandleReturnMessage(System.Runtime.Remoting.Messaging.Imessage, System.Runtime.Remoting.Messaging.Imessage)
ERROR:  SocketException:
ERROR:    ErrorCode: 10054
ERROR:    SocketErrorCode: ConnectionReset
ERROR:    NativeErrorCode: 10054
ERROR:    Method: Int32 ReadCore(Byte[], Int32, Int32, System.TimeSpan, Boolean)
ERROR:    Code = 10054
Aborting...
ERROR:    Failed to contact server
ERROR:    Failed to contact the server. The connection was closed by the server.
```

Cause 1

Permissions for using Certificate Licensing are missing. Specifically, folder/file permissions are required for the temporary license file.

Note – Refer to Section 2.29 for similar issue.

Solution 1

Configure your machine to allow full folder permissions. Refer to the following resources for this:

- This [article](#) provides links to product system requirements for each product / version. Please display the corresponding document, and view the Certificate Licensing section.

- This [article](#) provides instructions on using our Fortran Medic utility to configure the folder permissions.

Note - If the Fortran Medic Utility is not permitting you to perform these changes, please refer to Section 3.1.

Cause 2

Your Network Firewall is blocking access to our server.

Your PSCAD machine must be able to reach our license server at one or both of the following locations:

http://licensing.pscad.com:80/Licensing/$(ServicePath)Service

net.tcp://licensing.pscad.com:443/Licensing/$(ServicePath)Service

Solution 2

Have your IT team whitelist the above addresses in your Network firewall.

Cause 3

Your Network Proxy Server is blocking communication with our server.

This [article](#) provides the steps to first determine the proxy address (if there is a proxy server), and then how to configure PSCAD to communicate through the proxy server.

2.49   Receiving Error Message "Unable to return the license certificate" When Trying to Release a License

Problem

A user tries to release a license certificate, and a message similar to the following displays:

- For PSCAD v5.0.0…v5.0.2:
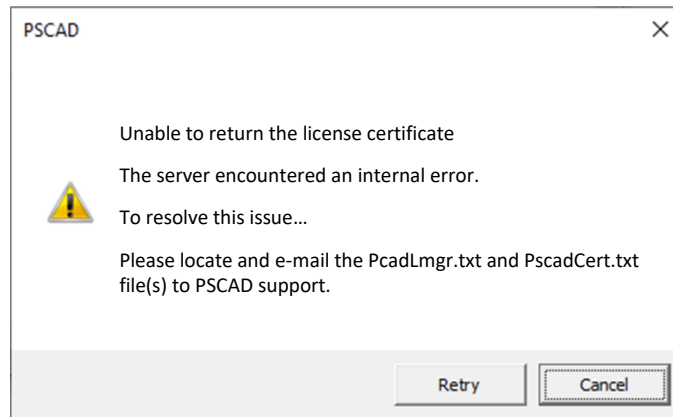
- For PSCAD v5.0 Beta, v5.0 Dev, v5.1 Beta, v5.1 Dev, and better than v5.0.2:
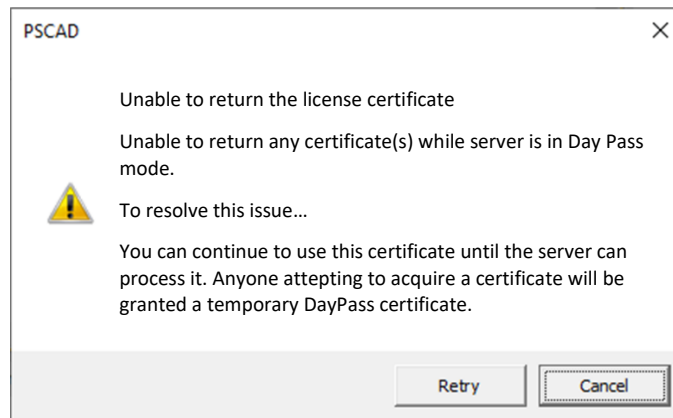
Cause

When the license server is affected by a power outage, certificate licensing switches to "Day Pass mode".

During this mode, temporary "day pass" licenses for running PSCAD are provided, but no licenses are allowed to be returned back to the server.

If a user attempts to return either a day pass license or their own license, this will be denied, and the above error will display.

Solution

The license must remain retained on the user's machine until licensing is no longer in day pass mode.

2.50   License is Selected for Activating, but Product Remains Unlicensed

Problem

A user tries to activate a license certificate, but the product remains unlicensed. There are no error messages.

When the PscadLmgr.txt log file is displayed, the messages are similar to the following:

> Attempting to Request License Groups for pscad 5.0.2 Pro
> MyCentre account:
>   Username   = <SomeMyCentreUser>
> …
> Attempting to contact server using http://licensing.pscad.com:80/Licensing/$(ServicePath)Service
> Connecting...
> Endpoint = http://licensing.pscad.com:80/Licensing/NormalService
>   Active binding: WSHttpBinding
> Defaulting AppContext compatibility switches
>   Succeeded
> Processing request...

Cause

The user selected the option to view their available licenses, and to then select one of them, similar to the following image. The assumption being that this would activate the selected license:

- In PSCAD V5:
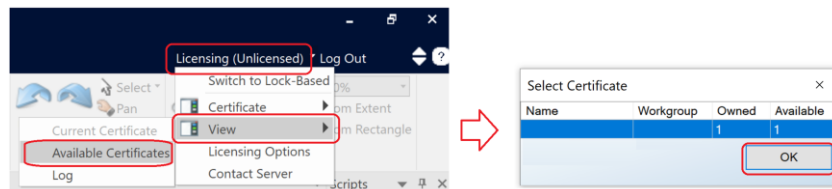
- In PSCAD X4:
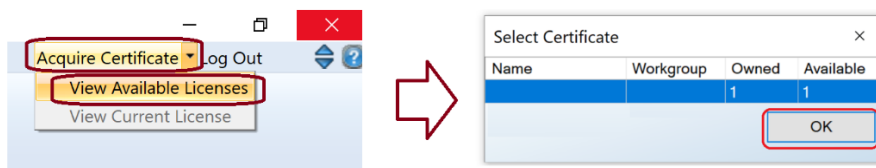
In fact, the viewing tool does not select and activate a license, it simply displays licenses for which this user is authorized.

Solution

The user can activate a license through the "acquire" tools, as shown below:

- For PSCAD V5:
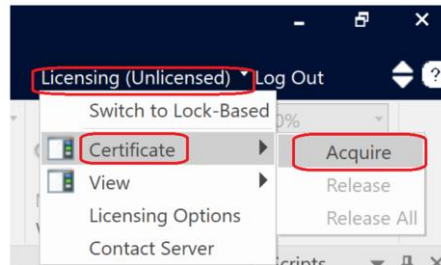
- For PSCAD X4:
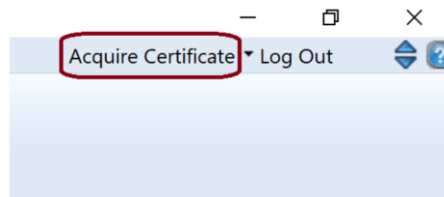
Note – PSCAD must be set to use Certificate Licensing in order to perform the above steps.

3.   Issues with Tools Supporting Certificate Licensing

3.1   Receiving "Actual permissions fail…" Error Message When Attempting to Enable File Permissions Using the Fortran Medic Utility

Problem

When the Fortran Medic Utility is launched with elevated privileges, and you attempt to enable file permissions as per this article, you encounter the following error:
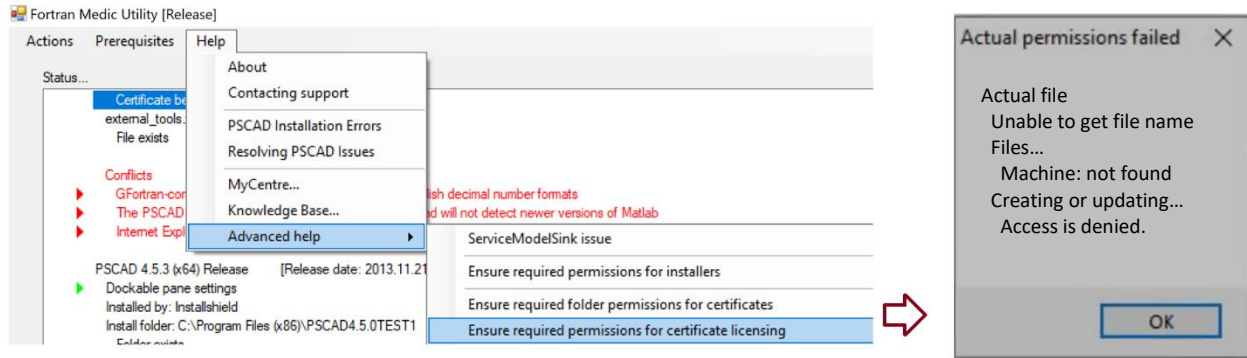
After selecting "OK" in the above dialog, the Medic Utility displays messages similar to the following:

```
Ensure user has sufficient file permissions to use certificate licensing
  Actual file
    Unable to get file name
    Files…
      Machine: not found
    Creating or updating…
      Access is denied.
  …
  Errors
  Error: Access is denied.

  Type: System.Security.Cryptography.CryptographicException
  Invoking Type: System.Security.Cryptography.CryptographicException
  Source: mscorlib
  Method: Void ThrowCryptographicException(Int32)
  Stack:
    at System.Security.Cryptography.CryptographicException.ThrowCryptographicException(Int32hr)
    at System.Security.Cryptography.Utils._CreateCSP(CspParameters param. Boolean randomKeyContainer.SafeProvHandle&hProv)
    at System.Security.Cryptography.Utils.CreateProvHandle(CspParameters parameters. Boolean randomKeyContainer)
    at System.Security.Cryptography.Utils.GetKeyPairHelper (CspAlgorithmType key Type. CspParameters parameters...
    at System.Security.Cryptography.RSACryptoServiceProvider.GetKeyPair()
    at System.Security.Cryptography.RSACryptoServiceProvider..ctor(Int32 dwKeySize, DspParameters parameters, Boolean
    useDefaultKeySize)
    at n.b(String A_0)
    at n.d(String A_0)
    at bh.a(String A_0)
    at bh.a()
    at af.e()
  Failed
```

And, if the Fortran Medic is run as per Appendix A.2, the error as shown in Appendix A.5 Item 14 will display.

Continued…

Solution

If you have Norton 360 or Norton Data Protection installed, then you need to do one of the following:

Option 1

- Add the Fortran Medic to Norton's exclusion list, or Norton's whitelist of programs it won't block

- Then turn off Norton, and even though it says it is not running, it will actually run in silent mode, but it will now ignore the Fortran Medic utility and allow it to operate properly

Option 2

- Completely uninstall Norton 360, then reboot,

- Ensure Norton 360 is no longer listed in the Windows Programs and Feature Control Panel

Then, perform the following:

- Open a file browser, and browse to the following (hidden) folder: C:\ProgramData\Microsoft\Crypto\RSA

- You should see the following 2 folders:
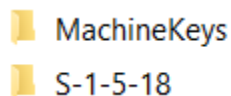
  📁 MachineKeys
  📁 S-1-5-18

- Right click on the *MachineKeys* folder, then select *Properties | Security*, and you should see something like the following (note that you might have more users than what is shown below).

  Group or user names:
  👥 Everyone
  👥 Administrators (M
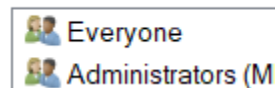
- Select *Edit.*

- If the *Everyone* user is not listed, then do the following to add that user:

  ° Select *Add*…

  ° Type in *Everyone*, select *Check Names*, as shown below, then OK,

  Enter the object names to select (examples):
  Everyone
  [Check Names]
  [Advanced...]   [OK]   [Cancel]
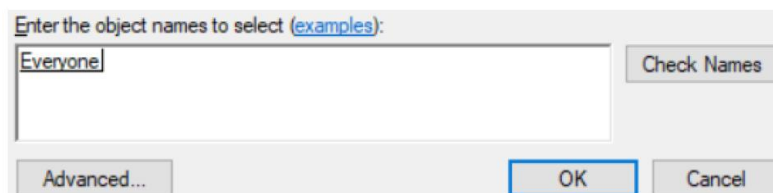
Continued…

- ○ Now select *Everyone* in the Group list, then in the *Permissions for Everyone* list, select *Full control*, then *Apply.*

Group or user names:

> 🖳 Authenticated Users
> 🖳 Everyone

Permissions for Everyone	Allow
Full control	☑
Modify	☑
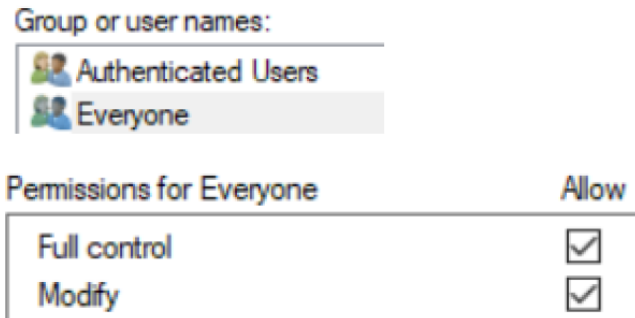
- Select *Administrators*, then select *Full Control*, then *Apply*.

- Select *OK* to close the *Permissions for …* dialog, then select *OK* to close *the MachineKeys Properties* dialog.

- Reboot your machine, then log in again.

- Launch the Fortran Medic utility with elevated privileges.

- Select *Help | Advanced help | Ensure required permissions for certificate licensing*.

- This time, you should see the following dialog, which indicates that permissions are properly set:

> Actual permissions passed ✕
>
> Actual file
>   Unable to file name
>   Files…
>   Machine: not found
>   Creating or updating…
>   Done
>   Get updated permissions….
>   Everyone: FullControl
>   Everyone: FullControl
>   BUILTIN\Administrators: FullControl
> Files..
>   Machine: exists
>   User: not found
>
> OK
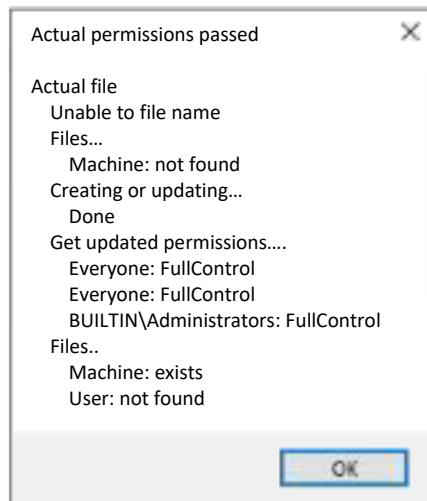
Appendix A   Using the Fortran Medic Utility

A.1   Overview

The Fortran Medic utility is our standard mechanism for gathering and displaying information about a user's machine that is relevant to installing, launching, licensing, and running the software (see Appendix A.2).

This utility does not perform any reporting back to MHI, other than allowing a user to generate a text log file and forward it to our Support Desk to assist with troubleshooting (see Appendix A.3).

This utility does not modify anything on a machine without a user's explicit permission, which is obtained by clicking on the green or red arrows and confirming the recommended action (see Appendix A.4).

Many of the issues that may be detected by the utility are related to MHI products and relevant third-party software installations,compatiblity, integration of Intel compilers with Microsoft Visual Studio, lock-based and certificate licensing, and protection software that may be preventing MHI product usage (see Appendix A.5 for some of the more common issues).

Appendix A.6 lists some of the functions in the Fortran Medic Utility.

A.2   Running the Fortran Medic Utility

The utility may be run as follows:

a. Download the latest "FortranMedic" from our website:

> http://updater.pscad.com/utilities/FortranMedic.zip

b. Unzip the downloaded file, save it to a local drive, and run the unzipped "FortranMedic.exe" file.

   To run the Medic without Windows Administrator privileges, select "No" when prompted by the Windows User Account Control. (The Medic will not be able to be used to make any changes to your machine)

   To run the Medic with Windows Administrator privileges, select "Yes" when prompted by the Windows User Account Control. (The Medic will be able to be used to make changes to your machine)

c. When the Medic opens, click on the "Actions" menu and select "Start". The utility will retrieve information about your computer.

A.3   Generating the Log File

The utility log file may be generated as follows:

a. Run the utility as per Appendix A.2.

b. Click on the "Actions" menu and select "Save Messages". The FortranMedic message window will display the location of the saved messages text file on your computer.

c. Send this log file to support@mhi.ca, along with any other relevant details.

A.4   **Fixing Issues using the Utility**
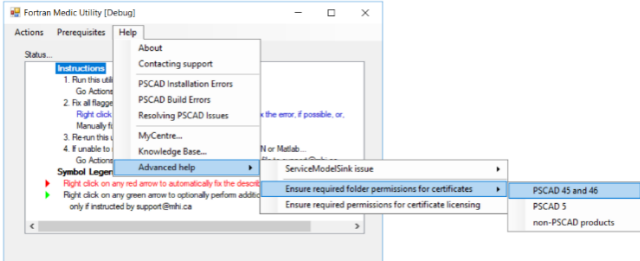
The utility may be used to fix issues as follows:

a.   Run the utility as per Appendix A.2.

b.   Right-click on any red arrow to display a menu to fix it.

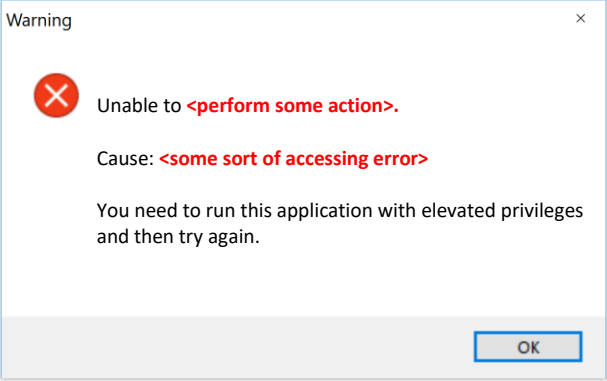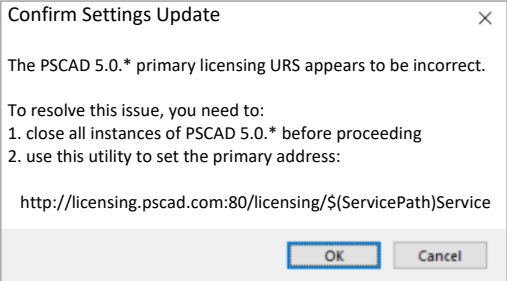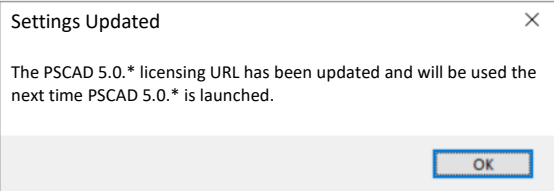c.   Right-click on any green arrow to optionally perform additional actions only if instructed by support@mhi.ca.

Specific errors within this utility are listed in Appendix A.5.

A.5   Errors Listed in the Utility
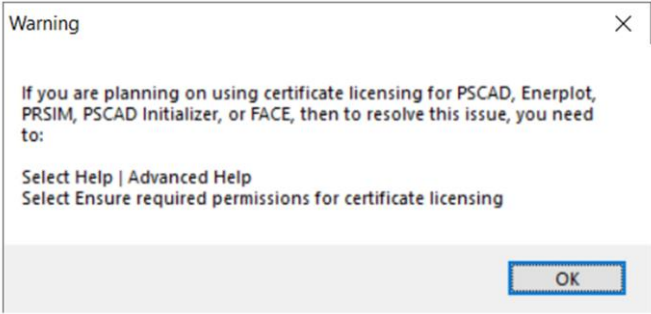
The following table lists common errors within the utility along with solutions:
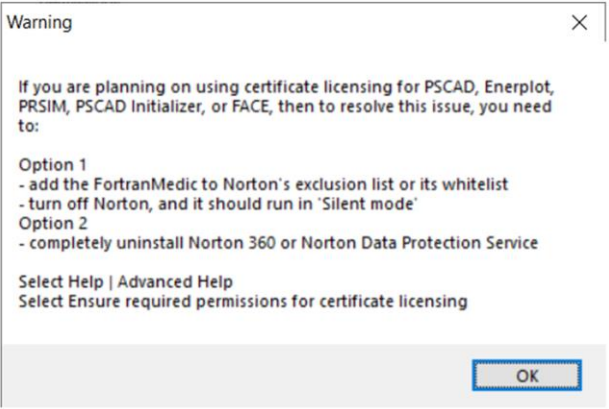
	Error	Solution
1.	**Machine Info** Conflicts Your system clock is not synchronized to global network time.	Your computer time is different from the global time by more than three minutes. Set the correct time, date, and time zone as per Section 2.2 Problem 1.
2.	**Licensing** PSCAD 4.x URL 1: http://licensing.pscad.com:80/Licensing/ $(ServicePath)Service_some_error_in_path	If this path is listed, this path must be incorrect, and may be fixed sas per Section 2.10.
3.	Folder Info … Other folders… User profile files are not creatable or saveable ▶ Unable to delete file.	This message is displayed if the Medic detects that PSCAD is not able to create and write to the user profile files in the user application folder. Right-clicking on the error displays the following message: **Warning** PSCAD is unable to create a user profile file in the following folder: C:\Users\[yourusername]\AppData\Local\Manitoba HVDC Research Centre\PSCAD To resolve this issue, you need to do the following: 1. Whitelist this folder in your firewall/anti-virus settings, or 2. Ensure you are using PSCAD 4.6.3 or better, and User folder redirection to specify an alternative folder OK To perform Solution 2 in the above dialog, refer to Section 2.15 Solution (2). To see the message that is displayed when the Medic does detect that PSCAD is able to create and write to the user profile files, see Appendix A.6 Item 1.
4.	**Licensing**… Certificate Licensing Contact Server Failed Unable to contact the server. You are most likely using a network connection which requires you to first log in using a browser.	This message is displayed if the Medic detects that the PSCAD application is unable to reach the certificate licensing server. This issue must be resolved if the user will wish to activate PSCAD licensing or log in to MyUpdater. Appendix B lists the IP addresses that the PSCAD machine must be able to connect to.

| 5. | Licensing

…

Certificate Licensing

…

PSCAD (v3, v4, x4)

…

C:\Users\Public\Documents\Manitoba HVDC Research Centre\Licensing\Licenses

▸   Folder does not exist (but is most likely required)

▸   …

PSCAD (v5 and better), Enerplot, PRSIM, Initializer, FACE

…

C:\Users\<USER ID>\AppData\Local\Manitoba Hydro International\|Licensing\Licenses

▸ Folder does not exist (but is required) | Right-clicking on the "Folder does not exist" message as shown left will display the dialog box as shown below. Select OK to allow the Medic to 1. create any missing portions of the path listed to the left, and 2. to apply full permissions on this path for the current user.

Confirm folder action ✕

This folder with FullControl permissions for this user is required for certificate licensing of:
<PRODUCTS>

Select OK to ensure folder exists with Full Control for this user
Select Cancel to ignore this warning

[OK] [Cancel]

Note – Also see additional method for using the Fortran Medic utility to only do the second item listed above, to allow the user to have full permissions, as per Appendix A.5 Item 6, below. |
| 6. | Licensing

…

Certificate Licensing

…

PSCAD (v3, v4, x4)

…

C:\Users\Public\Documents\Manitoba HVDC Research Centre\Licensing\Licenses

▸ Folder exists (with insufficient permissions)

…

PSCAD (v5 and better), Enerplot, PRSIM, Initializer, FACE

…

C:\Users\<USER ID>\AppData\Local\Manitoba Hydro International\Licensing\Licenses

▸ Folder exists (with insufficient permissions) | The user does not have full permissions on the filepath. Full permissions on the filepath are required when using certificate licensing for running MHI products. See Section 2.12 for more details.

To use the Fortran Medic utility to restore full permissions on the filepath:

• Ensure you have Windows Administrator privileges on your machine.
• Ensure you have launched the Medic utility with Windows administrator privileges (right-click on the downloaded/extracted FortranMedic.exe file (Appendix A.2), and select "Run as administrator"). Direct the Medic to restore full permissions on the required filepath according to the product you are using:

Note - "non-PSCAD products" refers to PRSIM, Enerplot, FACE, Initializer. |

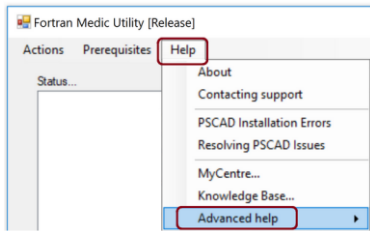| 7.	User attempts to perform any changes to their machine using the Fortran Medic utility.	A dialog similar to the following displays: **Warning** × ❌ Unable to **<perform some action>.** Cause: **<some sort of accessing error>** You need to run this application with elevated privileges and then try again. OK The Fortran Medic utility was not launched with Windows Administrator privileges, therefore the Medic cannot make any changes to this machine. To allow the Medic to make changes to this machine, close the Medic, and relaunch the Medic with Windows Administrator privileges as specified in Appendix. A.2.

8.	**Licensing**
	…
	Certificate Licensing
	…
	PSCAD 5.0.*
	  URL 1: http://licensing.pscad.com:50300/Licensing/$(ServicePath)Service
	   ▶ Error: incorrect server port
	  URL 2: net.tcp://licensing.pscad.com:50301/Licensing/$(ServicePath)Service
	   ▶ Error: incorrect server port
		Right-clicking on an error displays a message similar to the following:
		
		Confirm Settings Update ×
		
		The PSCAD 5.0.* primary licensing URS appears to be incorrect.
		
		To resolve this issue, you need to:
		1. close all instances of PSCAD 5.0.* before proceeding
		2. use this utility to set the primary address:
		
		  http://licensing.pscad.com:80/licensing/$(ServicePath)Service
		
		OK Cancel
		
		Selecting OK allows the Utility to correct the path, and a message similar to the following displays:
		
		Settings Updated ×
		
		The PSCAD 5.0.* licensing URL has been updated and will be used the next time PSCAD 5.0.* is launched.
		
		OK

9.	**Licensing** … **Certificate Licensing** … PSCAD 5.0.* ▶ Error: no licensing server address specified	Right-clicking on the error displays a message requesting your permission to allow the Utility to correct the path to the license server. Selecting OK allows the Utility to correct the path, and a message indicating the change has been made will display.
10.	**Licensing** **…** **Certificate Licensing** … Use only FIPS compliant algorithms Value: 1 (Enabled) … Conflicts ▶ This computer is not configured to support a required algorithm.	The Medic utility can be used to disable FIPS. Under the Certificate Licensing heading as shown to the left, you will see the *Use only FIPS compliant algorithms* is enabled (value = 1), and the error in red further down in the medic will display. Right-click on the red error arrow, and select the option to enable PSCAD required algorithms and disable FIPS. Refer to Section 2.26 for further information.
11.	**Certificate Licensing** … Files and Folder … Conflicts ▶ This computer is not explicitly configured to support a required protocol (TLS 1.0)	This error is indicating that TLS Protocol is not explicitly specified. However, it is implicitly allowed, and therefore Certificate Licensing is expected to work. Right-clicking on this conflict should provide the option to explicitly configure your machine to allow TLS Protocol. Background: A supported version of TLS Protocol is required when using certificate licensing, for communication between MHI Products and our license server. References: • The supported versions are specified as per Appendix E. • Appendix A.6 Item 2 shows another way to configure for TLS protocol. • Section 2.18 lists the licensing error and solution for this matter.

12.	**Certificate Licensing**
	
	 License Server
	
	   http://...:80
	
	   Failed
	
	   Communication with the server failed. (4070) Proxy authentication is required.
	
	   net.tcp://...:443
	
	   Failed
	
	     Failed to contact the server. The connection was closed by the server.
		There is a proxy server in your Network that is blocking communication between the MHI product on your computer (e.g. PSCAD) and the MHI license server. The MHI product can be configured to communicate through the proxy server in order to reach the MHI license server to activate, return or renew a license.
		
		 Instructions for configuring the MHI product are in this <u>article</u>.
		
		 This error is seen in Section 2.32.

13.	**Network Information**
	
	 ...
	
	 Support Protocols
	
	   TLS 1.0\Client
	
	     DisabledByDefault:
	
	     Enabled: false
		For certain versions of PSCAD, TLS 1.0 must be enabled to activate certificate licensing.
		
		 Note–- Refer to Appendix E for a listing of supported TLS protocols for MHI Products.
		
		 If TLS 1.0 is not enabled, the Fortran Medic utility will detect this, and display the status of TLS as "False", as shown to the left.
		
		 See Section 2.31 for details.

14.	**Certificate Licensing** ... File permissions: <container file not determinable>	Rght-clicking on the error shown in the left column will display one of the dialogs below. Refer to Section 3.1 for more information.

		Warning × If you are planning on using certificate licensing for PSCAD, Enerplot, PRSIM, PSCAD Initializer, or FACE, then to resolve this issue, you need to: Option 1 - add the FortranMedic to Norton's exclusion list or its whitelist - turn off Norton, and it should run in 'Silent mode' Option 2 - completely uninstall Norton 360 or Norton Data Protection Service Select Help | Advanced Help Select Ensure required permissions for certificate licensing OK

15.	**Certificate Licensing**
	License Server
	 http://...:80
	  Failed
	   Communication with the server failed. Security negotiation failed.
	  Failed
	   Communication with the server failed. Security negotiation failed.
		The Fortran Medic utility was unable to contact the primary and secondary license servers.
		If you will be using certificate licensing, this issue must be resolved.
		See Section 2.36 for further information.

A.6 Functions Listed in the Medic

The following table lists some of the functions within the Medic:

	Function	Action

1.	**Folder Info …**
	Other folders…
	User profile files are saveable
	  Yes
		This message is displayed if the Medic detects that PSCAD is able to create and write to the user profile files in the user application folder.
		
		  Or, see Appendix A.5 Item 3 if the Medic detects that PSCAD is not able to perform the above.

2.	*Help* menu … *Advanced Help*: *Fortran Medic Utility [Release]* Actions Prerequisites Help Status… About Contacting support PSCAD Installation Errors Resolving PSCAD Issues MyCentre… Knowledge Base… Advanced help	These tools are used to configure the required permissions and protocols on your machine to allow certificate licensing. References: • This [article](#) provides information on how to use these tools. • For required TLS protocols: Refer to Section 2.18, Appendix A.5 Item 11, and Appendix E. • For required folder permissions: Refer to Section 2.29
3.	**Time Info** Time (Local culture) Local: YEAR-MO-DT XX:XX:XX (no formatting overrides) Local: YEAR-MO-DT XX:XX:XX GMT: YEAR-MO-DT XX:XX:XX	**Time Info** Time (Local culture) Local: YEAR-MO-DT XX:XX:XX (no formatting overrides) → **Customer's time** Local: YEAR-MO-DT XX:XX:XX → **Time at MHI** GMT: YEAR-MO-DT XX:XX:XX → **Greenwich Mean time (GMT)**

Appendix B   Certificate Licensing – Requirements

Requirements for certificate licensing are posted to the [Knowledge Base](#).

Appendix C Testing Licensing Connectivity for Certificate Licensing

If connectivity is the suspected cause of a certificate licensing issue, the Proxy Detector Utility may be used to test the connectivity. The resulting log file may then be forwarded to our Support Desk for analysis.

- Download the following ZIP file:

  http://updater.pscad.com/utilities/ProxyDetector.zip

- Extract (unzip) ALL FILES to a temporary folder.

- Run the "ProxyDetector.exe" file from the new temporary folder.

- When the utility displays, click on Actions | Start licensing connectivity tests.

- When the following screen displays, simply select "Accept":
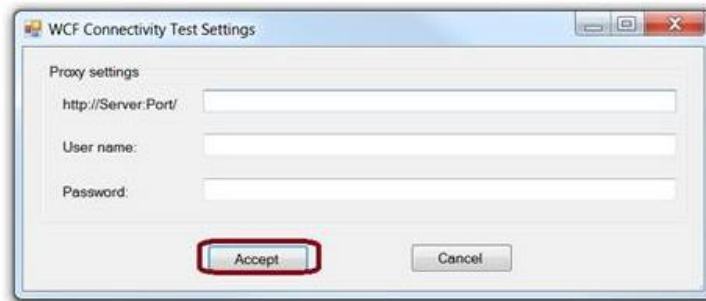
- Save the messages and send in the generated log file (support@mhi.ca):
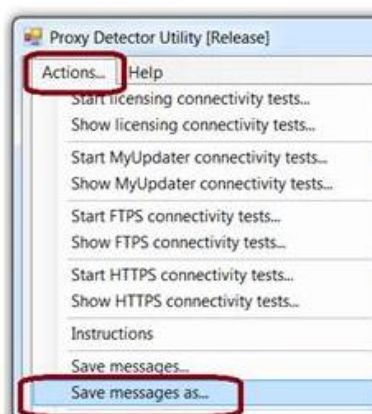
Appendix D Licensing Log Files

D.1   Overview

There are two licensing log files that log licensing activities on a machine. These log files may be used to review and troubleshoot licensing issues.

- PscadLmgr.txt: This file was first designed to log lock-based licensing (legacy licensing).
  When Certificate Licensing was released, this log file was adapted to also log activities for this second type of licensing.

- PscadCert.txt: This file was designed after Certificate Licensing was released, in order to log additional certificate licensing activites.
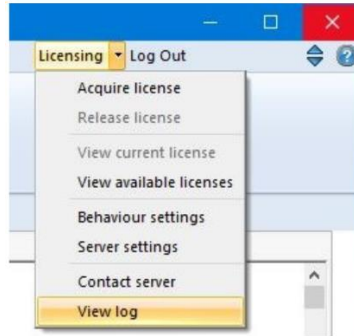
D.2   Displaying the Licensing Log Files

a. The PscadLmgr.txt file may be displayed as follows:

- For PSCAD V5, PRSIM, and the PSCAD Initializer:
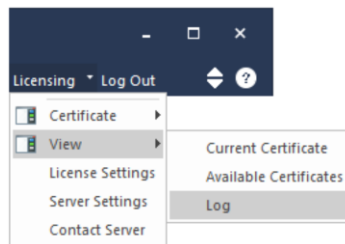
- For PSCAD X4:
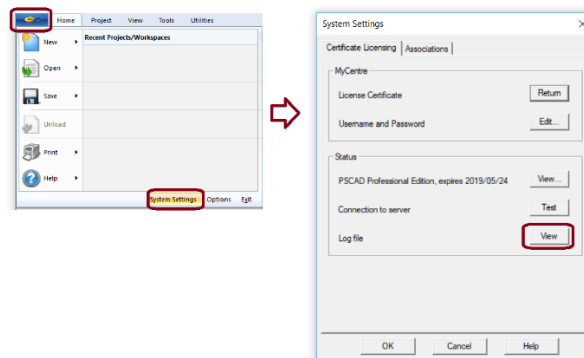
- For Enerplot and FACE:

b. Both the PscadLmgr.txt file and the PscadCert.txt file may be browsed to in one or more of the following locations:

- C:\Users\All Users\Manitoba HVDC Research Centre\LicenseManager

- C:\ProgramData\Manitoba HVDC Research Centre\LicenseManager

- C:\Users\<username>\AppData\Local\Manitoba HVDC Research Centre\LicenseManager
  If this full path is not visible in File Explorer, then File Explorer will need to be configured to display this path.

D.3   Sending in your Licensing Log File to the Support Desk

The licensing log file may be sent in to our Support Desk as follows:

a. Display the PscadLmgr.txt file as per Appendix D.2.

b. Send in your license log file as specified in this article, along with a description of the issue.

Appendix E TLS Protocol Support

When using certificate licensing, TLS protocol is required, to allow communication between the MHI product and our license server.

For a listing of supported TLS Protocols for all associated MHI Products and versions, please refer to this [article](#).

DOCUMENT TRACKING

Rev.	Description	Date
0	Initial All content, except Appendix D was either moved over or copied over from the *Resolving PSCAD Issues* document. Appendix D is new content.	25/Apr/2019
1	Updates to Sections 1.1 and 2.17, and to Appendices A.1, B and D2; New Item 5 added to Appendix A.5	31/Aug/2020
2	New Section 2.18	15/Sep/2020
3	Update to Section 2.17; New Sections 2.19, 2.20 and 2.21	17/Sep/2020
4	New Section 2.22 New Step 6 added to Appendix A.5	13/Oct/2020
5	New Section 2.23, and New Item 7 added to Appendix A.5; Update to Sections 2.12 and 2.21; Update to Appendices A.2 and B, Update to Items 5 and 6 of Appendix A.5	02/Nov/2020
6	New Section 2.24; New Items 8 and 9 added to Appendix A.5; Update to Section 2.17	21/May/2021
7	Modified Solution 1 of Section 2.2 New Sections 2.25, 2.26, 2.27, 2.28, 2.29 and 2.30 Added Item 2 to Appendix A.6	09/Oct/2021
8	Added Sections 2.31, 2.32, 2.33, 2.34, 2.35, 2.36; Added new Section 3 and 3.1; Update to Sections 1.1, 2.17 (Solution 1); Added New Items 12, 13, 14, 15 to Appendix A.5; Update to Appendix A.5 Item 11; Update to Appendix A.6 Item 2	11/Jul/2022
9	Update to Sections 2.6, 2.17, 2.18, 2.22, 2.27, 2.28, 2.29, 2.31, 2.33, 2.36, 3.1; Update to Appendix A.5 Items 5, 8, 11, 13, and Update to Appendix A.6 Item 2; Update to Appendices D.1, D.2, D.3; Added Sections 2.37, 2.38, 2.39; 2.40, 2.41, 2.42, 2.43, 2.44, 2.45, 2.46, 2.47, 2.48, 2.49, 2.50, Appendix A.6, Item 3, and Appendix E;	28/Aug/2023