

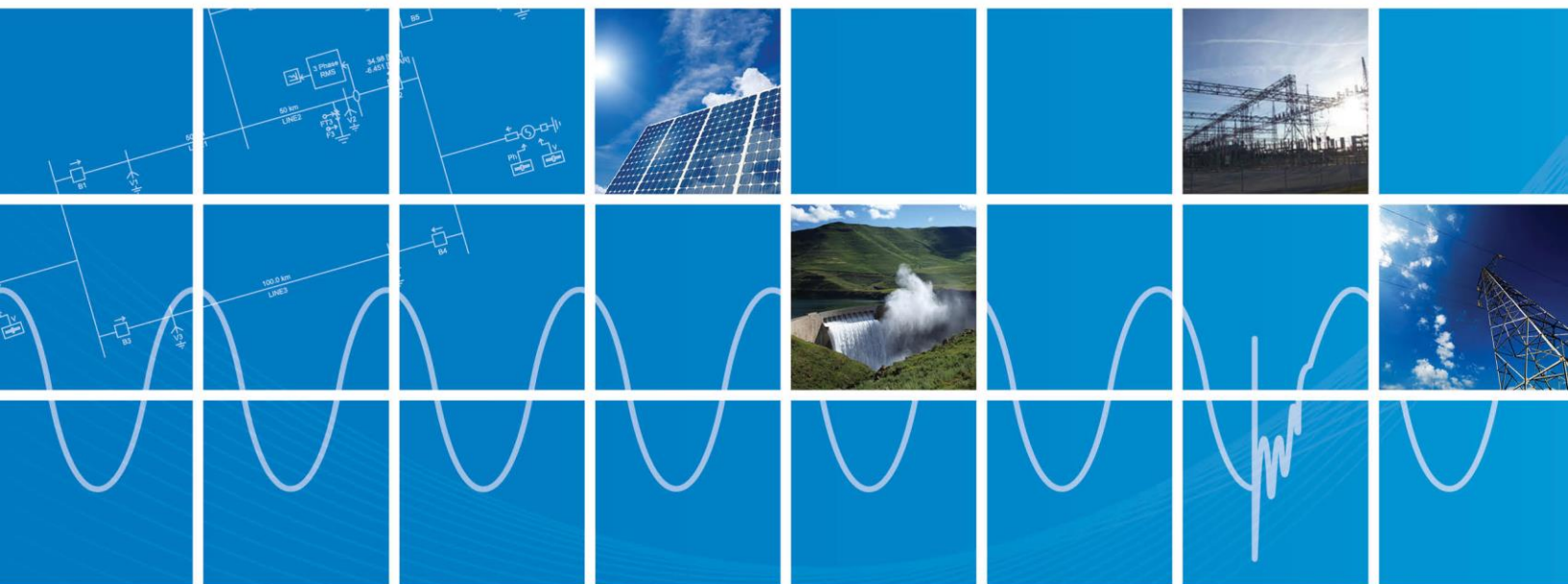


PSCAD – Best Certificate Licensing Practices

Written for PSCAD X4 and V5

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Revision 3





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1. Introduction

This document lists some important considerations when using certificate licensing with PSCAD X4 and V5, and suggests best certificate licensing practices.

2. Compatibility

Support for older versions is as follows:

- A V5 Professional Edition license certificate also supports PSCAD X4 v4.5 to v4.6.3 Update 5
- A V5 Educational Edition license certificate also supports PSCAD X4 v4.5.4 to v4.6.3 Update 5
- A V5 license certificate does not support 4.4 and older

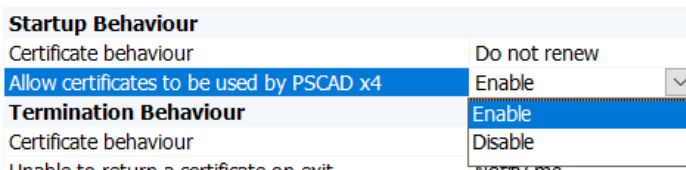
When running older PSCAD versions alongside V5, V5 must be correctly configured as specified in Section 3.

3. Certificate File Path

When a license certificate is activated, PSCAD saves the associated certificate file to a specified location on the licensed machine. PSCAD V5 saves the certificate to a new file path:

- The PSCAD x4 branch saves the certificates to the following public folder, which is accessible to all users logged in on that machine:
C:\Users\Public\Documents\Manitoba HVDC Research Centre\Licensing\Licenses
- The PSCAD v5 branch saves the certificates in the following user folder, which is accessible only to the logged in user who requested that certificate:
C:\Users\USERID\AppData\Local\Manitoba Hydro International\Licensing\Licenses

Because there are now two different certificate file locations, a new compatibility mode feature has been added in PSCAD V5, in Application Options | Certificate Licensing:



- “Enable” is selected to allow a V5 certificate to license supported PSCAD X4 versions (see Section 2). The V5 certificate will be saved to both license paths.
- “Disable” is selected when the V5 certificate will not be used to license older unsupported versions of PSCAD (see Section 2). The V5 certificate will only be saved to the V5 license path.

Warning - Ensure to exit and restart PSCAD in order for the new configuration to take effect !



4. Compatibility Modes

The following compatibility modes are supported by PSCAD v5 (see Section 3 for details):

Warning - Ensure to exit and restart PSCAD in order for the new configuration to take effect !

PSCAD v5 setting: All certificates to be used by PSCAD x4	Certificates are saved to
Enable	the public \Licenses folder for use by PSCAD x4 the user's private \Licenses folder for use by PSCAD v5
Disable	the user's private \Licenses folder for use by PSCAD v5

5. Recommended Product Configurations

For proper certificate licensing operation, correctly configure PSCAD x4 and v5 according to the table below, depending on how each are used.

Situation	Recommended PSCAD x4 Configuration	Recommended PSCAD v5 Configuration
I am manually running just PSCAD x4 or earlier	Configure PSCAD x4: <ul style="list-style-type: none"> To renew the certificate on startup as desired To return or retain the certificate on exit as desired 	
I am using Python to launch PSCAD x4 to perform many simulations	Configure PSCAD x4: <ul style="list-style-type: none"> To not renew the certificate, so as to reduce the startup time to retain the certificate on exit, so as to reduce the exit time 	
I am manually running PSCAD 4.6.3 or earlier, and PSCAD v5	Ensure that you are using: <ul style="list-style-type: none"> PSCAD 4.6.3 Update 4 or 5, released in 2020 as it can use PSCAD v5 certificates. Earlier versions of PSCAD x4 are not able to. We want PSCAD v5 to fully manage the certificates used by v5 and x4. Configure PSCAD x4: <ul style="list-style-type: none"> To not renew the certificate on start up, and To retain the certificate on exit 	We want PSCAD v5 to fully manage the certificates used by v5 and x4. Configure PSCAD v5: <ul style="list-style-type: none"> To Allow certificates to be used by PSCAD x4 to Enable To renew the certificate on startup if desired, To return or retain the certificate on exit as desired
I am using Python to launch PSCAD v5 and am using a v5 certificate dedicated to automated simulations. Other users might be running PSCAD x4 on that machine	In this situation, we want PSCAD v5 simulations to be independent of any PSCAD x4 licensing activity. As PSCAD x4 will not be using PSCAD v5 certificates, you do not need to upgrade PSCAD x4 to Update 4 or 5. Configure PSCAD x4:	In this situation, we want PSCAD v5 simulations to be independent of any PSCAD x4 licensing activity. Configure PSCAD v5: <ul style="list-style-type: none"> To Allow certificates to be used by PSCAD x4 to Disable as this will improve startup time by skipping synchronization of x4 and v5 certificates

	<ul style="list-style-type: none"> To renew the certificate on startup as desired To return or retain the certificate on exit as desired 	<ul style="list-style-type: none"> To not renew the certificate, so as to reduce the startup time To retain the certificate on exit, so as to reduce the exit time
I am manually running only PSCAD v5		Configure PSCAD v5: <ul style="list-style-type: none"> To <i>Allow certificates to be used by PSCAD x4 to Disabled</i> as this will improve startup time by skipping synchronization of x4 and v5 certificates To renew the certificate on startup if desired, To return or retain the certificate on exit as desired
I am using Python to launch PSCAD v5 to perform multiple simulations		Configure PSCAD v5: <ul style="list-style-type: none"> To <i>Allow certificates to be used by PSCAD x4 to Disabled</i> as this will improve startup time by skipping synchronization of x4 and v5 certificates To not renew the certificate, so as to reduce the startup time, To retain the certificate on exit, so as to reduce the exit time

6. Recommended Individual Settings

Setting: *Allow certificates to be used by PSCAD x4*

Recommended Setting	Used in these situations
Enable	Only if you are running PSCAD v5 and PSCAD x4 (requires PSCAD 4.6.3 Update 4 or 5) and you want all instances to use the same certificate
Disable	<ul style="list-style-type: none"> You are only running PSCAD x4 (any version) You are only PSCAD v5 You are running PSCAD v5 and x4, but don't want PSCAD v5 to share its certificates with PSCAD x4

Setting: *Startup Behaviour | Certificate behaviour*

Recommended Setting	Used in these situations
Renew automatically	<ul style="list-style-type: none"> You do not share your certificate with anyone else You are required to do so by your company which owns that certificate
Do not renew	<ul style="list-style-type: none"> You need to share your certificate with colleagues, and you always return the certificate on exit You are using Python to launch and run many sequential instances of PSCAD, and you want to reduce the startup time You are using Python to launch multiple concurrent instances of PSCAD, and you want to reduce the startup time

Recommended Setting: *Termination Behaviour | Certificate behaviour*

Recommended Setting	Used in these situations
Return certificate	<ul style="list-style-type: none"> You need to share the certificate with other colleagues You are required to do so by your company which owns that certificate
Retain certificate	<ul style="list-style-type: none"> You are the only one using that certificate, it is not being shared with other colleagues, so there is no point in returning it just to have to request it again the next time PSCAD starts You are manually launching multiple instances of PSCAD. If you incorrectly specified <i>Return certificate</i>, then the first instance to exit will return the certificate, and all other instances using that certificate will become unlicensed You are using Python to launch and run many sequential or concurrent instances of PSCAD and you want to reduce the exit time You will be using PSCAD in a location which has unreliable or no internet access

Setting: *Workspace | Session | Start Page (PSCAD v5)*

Options | Workspace | New Session | Start Page (PSCAD x4)

This is not a licensing setting, but it will affect the PSCAD startup time.

Recommended Setting	Used in these situations
Open	<ul style="list-style-type: none"> You want to be notified of the latest news or announcements related to PSCAD
Hide	<ul style="list-style-type: none"> You are manually launching PSCAD, and don't want to be notified of the latest news or announcements related to PSCAD Your institution has blocked or restricted internet access, and you don't want PSCAD to waste time trying to access an internet website that will fail and timeout You are using Python to launch and run many sequential instances of PSCAD, and want to reduce the startup time You are using Python to launch multiple concurrent instances of PSCAD, and want to reduce the startup time

7. Launching Multiple Instances of PSCAD

If launching multiple instances of PSCAD, this should be done in the following order:

- Launch the first instance of PSCAD, then activate the license.^[1]
- Launch the second instance of PSCAD, and this instance will use the same license as the first instance.

1. **Important note:** If the first instance of PSCAD is not licensed before the second instance is launched, then successive instances of PSCAD will consume additional licenses. Also, each license, except for the last one, will be overwritten by the next received license, and will be effectively non-returnable. Only the last received license will be returnable.



DOCUMENT TRACKING

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0	Initial	25/June/2020
1	Renamed the document Updated content and organization	02/Feb/2021
2	Correction to Section 2	06/Sep/2022
3	Added Section 7	20/Dec/2022