# Com'X 210/510 Security Certificate Installation Guide

Introduction	2
Additional resources	2
Safety Precautions	3
Creating a Com'X complaint certificate	3
Validate the private key file	3
Convert private key file	4
Generate Diffie-Hellman parameters file	5
Generate Com'X compliant certificate file	5
Installing Security Certificate	6
Install certificate file to Com'X	6
Check expiration date of SSL certificate file	7



# Introduction

For security purposes it is recommended to procure and install your own Public/Private SSL Certificate to harden your Com'X device. This guide details a multi-step process. The first part of the process involves creating a Com'X compliant certificate file from your SSL certificate & private key. The second part of the process instructs on how to install the certificate on a Com'X.

NOTE: This guide is applicable for Com'X firmware version 6.5 and above.

### **Additional resources**

Document	References
Com'X 200/Com'X 210/Com'X 510 Instruction Sheet	5406AD002 5406AD005 5406AD006 5406AD007
Com'X 510 User Manual	DOCA0098EN DOCA0098FR DOCA0098ES DOCA0098DE DOCA0098PT DOCA0098IT DOCA0098ZH DOCA0098RU
Com'X 210 User Manual	DOCA0036EN DOCA0036FR DOCA0036ES DOCA0036DE DOCA0036PT DOCA0036IT DOCA0036ZH DOCA0036RU
Com'X 210/510 Hardening Guide	7EN12-0328

## **Safety Precautions**

Installation, wiring, testing and service must be performed in accordance with all local and national electrical codes.

## **AWARNING**

# POTENTIAL COMPROMISE OF SYSTEM AVAILABILITY, INTEGRITY, AND CONFIDENTIALITY

- Change default passwords to help prevent unauthorized access to device settings and information.
- Disable unused ports/services and default accounts, where possible, to minimize pathways for malicious attacks.
- Place networked devices behind multiple layers of cyber defenses (such as firewalls, network segmentation, and network intrusion detection and protection).
- Use cybersecurity best practices (for example: least privilege, separation of duties) to help prevent unauthorized exposure, loss, modification of data and logs, interruption of services, or unintended operation.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

NOTICE

UNAUTHORIZED DATA ACCESS

- Immediately change the default password to a new, secure password.
- Do not distribute the password to unauthorized or otherwise unqualified personnel.

Failure to follow these instructions can result in equipment damage.

# Creating a Com'X complaint certificate

#### Validate the private key file

**Prerequisite**: Obtain an SSL Certificate from a trusted certificate authority. Save the Com'X certificate file (xxxxxx.cert) and private key file (xxxxxx.key) in a separate folder. This process requires the use of OpenSSL. Download and install OpenSSL by following the instructions provided on this website: https://tecadmin.net/install-openssl-on-windows/.

1. Open Command window as administrator:

- 2. Click button and type cmd.
- 3. Right click Command Prompt and select Run as administrator.



4. Enter openssl version in the command prompt and press Enter.

C:\>oper	nssl vei	rsior	1		
OpenSSL	1.0.2j	26	Sep	2016	

NOTE: This step ensures correct installation of OpenSSL.

- 5. Open the private key file using Windows Notepad or other text editor. The private key file typically ends with '.key' extension. The following steps assume the name of the key file is xxxxxxx.key as an example.
- 6. Close the private key file if the text begins with "-----BEGIN PRIVATE KEY-----".
- 7. Proceed to generate Diffie-Hellman parameters file.

#### Convert private key file

If the private key file content begins with "-----BEGIN RSA PRIVATE KEY-----", a conversion is required. Follow steps to convert an RSA private key to a private key.

1. Enter following command and press Enter.

```
openssl pkcs8 -topk8 -inform PEM -outform PEM -in
xxxxxx.key -out new xxxxxx.key -nocrypt
```

- 2. Open the new private key file (new\_xxxxx.key) in a text editor and verify the content begins with "-----BEGIN PRIVATE KEY-----".
- 3. If the text does not begin with "-----BEGIN PRIVATE KEY-----", go back to the step 1, and try again.

Comx_ssl_cert_private_converted.key - Notepad	-
File Edit Format View Help	
<pre>DEGIN PRIVATE KEYMITEvgIBADANBgkqhkiG9w0BAQEFAASCBKqwggSkAgEAAoIBAQDJwujLYQSG/ #r0ato/iy/uGBLqcutuwi700gyr+BISwLeutBHRJheShlQceVDAvFJAsyOcIXWF 1XKlci3tEEghyhYCblbYQb/EEAtXOR2sfcpc5fkYyr19wqrTlZwkmpgzjSFt/tu #az5KS6fxqEdsrC2hl9nnBDMfXcZzey2AJRAn99x6QenFCBUCKYVD5cv7bEzSQp pVzzesHwsEyqIaWya6ZzwbkI0rpOtTbBspG3SyN00wubDb0bmogDDZj9hv29EE zvyFdLwUdk0RmuqRY9CYuKassnxGMs/bxcKELf9QJqmQ00kGb9NTVGfh8Zq+OCE JMIQISRAQMBAAEcggEAJOjyiARRXPKGqu6yRFOHPLEONUgc/acGd7U0Bw29ohp yXYwyxzZTHYEyJTUJJb5ei011j4n50/grTnagcMdeM/xyyDwr1ZmzQEA0+gP6Y0AXBt</pre>	kSR

4. Close the new private key file.

NOTE: Check if an output file (new\_xxxxxx.key) is created from the above command. If it is, warnings from OpenSSL command can be ignored.

#### Generate Diffie-Hellman parameters file

1. Enter the following command and press Enter.

openssl dhparam -out dhparams.pem 4096



The dhparams.pem file will be generated after several minutes (up to 15 minutes or longer).

## Generate Com'X compliant certificate file

- 1. Create a new text file named [filename of your choice]. pem.
- 2. Copy and paste content from the new private key file (new\_xxxxxx.key). Text in this file begins with "-----BEGIN PRIVATE KEY-----".
- 3. Copy and paste content from SSL certificate file (xxxxxx.cert). Text in this file begins with "-----BEGIN CERTIFICATE-----".
- 4. Copy and paste content from Diffie-Hellman parameters file (dhparams.pem). Text in this file begins with "-----BEGIN DH PARAMETERS -----".

NOTE: Content to the .pem file must be pasted in the order shown below.

		comx -	Cop	y.pen	n - Not	epad													
1	rile	Edit	FOR	mat	view	нер													
	MII NFr i1X	BE Evgl Oato KlC	EGI EBA D/i i3t	N P DAN y/u EEg	RIVA Bgko QBLp hyh\	ATE Jhki OqcU (Cb1	KEY- G9w0 mVi7 bYQb	BAQE 09gY /EEA	FAASC +BI5v tXOR2	BKgw vLLeu 2sfcj	wggSl uLBHI pc5fl	kAgE RJhe kYyr:	AAo 5h10 19W0	IBAQI Q6eVI qrT1	DJwu DA∨f ZWkm	jLYC JKay pgzj	)SG/k /OcIX jSFt/	(SR (WF (tu	
	jN+ j5m 20e	Aga 9cm qrg El	v82 DAD DVi	iQa 4XT yTO PRI	VMa( X1CS M36k VATE	0A1P 596+ 6LB5 E KE	tL4a XedQ RYoC Y	Yb6g DTht J 	YC589 pdw+2	)GgKs ZUbnl	s S 0 8 1 b 7 i Z	kUQB: 1qQJ	zFzq yjh	gV12 PteSi	Mc2q n9LX	bbJk ccnF	boB7 IzX95	'xd SfC	
	MII MQs d3c	BI GuT( wCQ) uZG	EGI CB YDV Ina	N C aGg QQG WNl	ERTI AwIE EwJ\ cnQu	IFIC BAgI /UzE IY29	ATE- QD7t VMBM tMRs	qKKt GA1U wGQY	0/RWn EChMN DVQQE	n OZm- 4RG11 DExJU	+qV6 naUN JaGF	jgDAI lcnQ 3dGU	NBgl gSW gU11	kqhk 5jMR  NBIE	iG9w kwFw NBID	0BAC YDVC IwM1	QSFAD QQLE> GgwHł	)BC (B3 ncN	
	sJd Bxg C+R sTV 	0jy jAV fEi XpL) EI	CFd VRC VTtl VTtl K/t SGI	OkV dE7 MIe fiz CER N D	YOs] dxie yE52 vIDc TIF] H PA	EBOU 2JjS 2y+D dhk2 CAT ARAM	rfBE OUgH ZJFd oU5x E ETER	GnfJ MTEF /vtR gyVu  S	EG2Ky oOaKj lvldW cFoMc 	/X5ho jPu3o vtJVS duALI	qo3go et9t9 SPA50 DU/Za	ew8F: 95Nf Gmpv: asu8 75LW	IQJu t6Wq Ighi vyMF	uF9U gbT1ı b39Sı FZgZl	ilyy waI/ uGF5 RRut	iygH XHuQ MWRE raco	H3MJN QLV7L QLJ7E Q11	/dX .5A )fp	
I	VJy	JfW	12	IQu	WWw[	03e2	p9A4	y5id	Ko5Xr	nugLi	IVtD	LKtA	cFd4	4IIY	cnbk	Nwx1	wmc1	Iq	
	RU2 s9B	+P52 bF3l	2S8 Dai ND	wsX aXV DH	4∨+r 40gk PAR/	LcT cku MET	kML∨ BGFZ ERS-	0Eg4 Ebgt	gуМ7м у+с7[	NmU∨: DFZJC	Js7y Cuect	OVL6 DIGI	vtN: aNI:	5wdB zg53	DCEC 5P6F	IkO9 MCA0	)b3P> )I=	(WC	

5. Save the new compliant certificate file with a .pem extension.

## **Installing Security Certificate**

#### Install certificate file to Com'X

- 1. Open Com'X HMI and login as administrator.
- 2. Navigate to Settings > Security > Certificates.
- 3. Click Install a new certificate field and browse to select the compliant certificate (.pem) file.

Monitoring Control Diagnostics Settings	Dev	ice Settings	Measurements Table	Commissioning	Custom Library	Maintenance	
General Settings	^	Local w	eb server certificate				
Date/Time Settings	_	Installe	d certificate details:				
Network Settings	-					Begin date	09/15/2016 03:29:03 PM
Proxy Settings						Subject	CN+ComX,OU+Gateways & Energy Servers,O+Schneider-
Schneider Electric Services						land a second second	No file alexan
Contact Management	_					Install a new certificate	
Email Settings					Reset	certificate to factory default	Reset
O Publication		LITTOS	Dodeotico				
WI-FI Access Point Settings							
Site Settings	~					Enable HTTP's redirection *	Tes IND
Communication	~						
Security	^						
Firewall Management							
Certificates							
User Management	~						

4. Click Install.

The lock icon next to the Com'X URL in browser indicates successful installation.



5. Refresh page if the HMI is greyed out and displays "Application unreachable" after installing the new certificate.

### Check expiration date of SSL certificate file

The Com'X SSL certificate file (comx.cert) must be valid when using it to create a new Com'X compliant certificate file.

1. Click the lock icon next to the URL in a browser.



2. Click Certificate to view details.



3. Expiration date can be noted from the Valid from - to field.

Certifica	te Information
This certificate • Ensures th • Proves you • 2.16.840. • 2.23.140.	is intended for the following purpose(s): e identity of a remote computer ir identity to a remote computer 1.114412.1.1 1.2.2
* Refer to the cer	tification authority's statement for details.
Issued to:	Www.scrimeider-electric.com
Valid from	7/9/2019 <b>to</b> 9/7/2020

The certificate must be renewed before the expiration date. Once you receive the renewed certificate, repeat process outlined in this document to create and install a new Com'X compliant certificate.