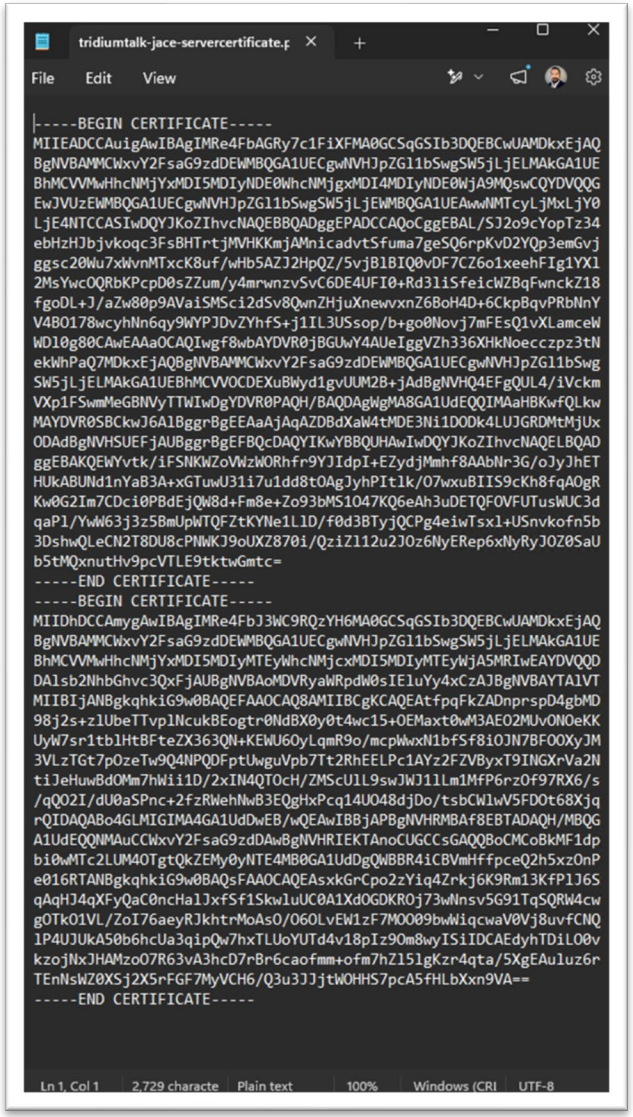

TRIDIUM


TRIDIUM talk
SECURE COMMUNICATION IN
niagara
PUTTING THE PIECES TOGETHER

CERTIFICATES AS FILES: WHAT IS A PEM?

- A certificate contains identity information and a public key.
- PEM is one way to transport it.



- PEM = Privacy-Enhanced Mail
- Text markers around Base64-encoded certificate data
- A PEM file may also contain an encrypted private key

Takeaway: *A certificate is the information establishing an identity, PEM is one way of representing and transporting that information.*

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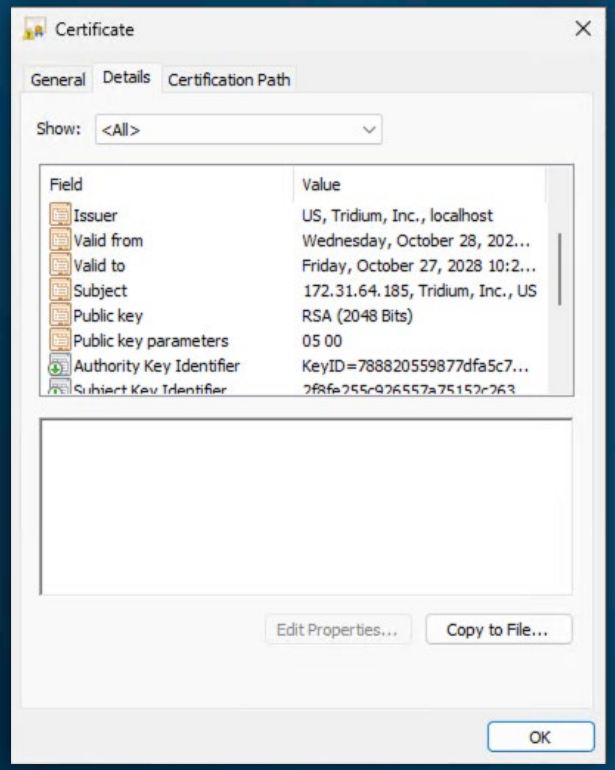
DECODED: THE IDENTITY BEHIND THE FILE

- SUBJECT / ISSUER
  - “Who am I? Who vouched for me?”
- VALIDTY / USAGE
  - When and for what purpose is it valid?
- PUBLIC KEY / SAN
  - Public key and valid hostnames / IP addresses.



Renaming .pem to .cer does not convert the encoding.

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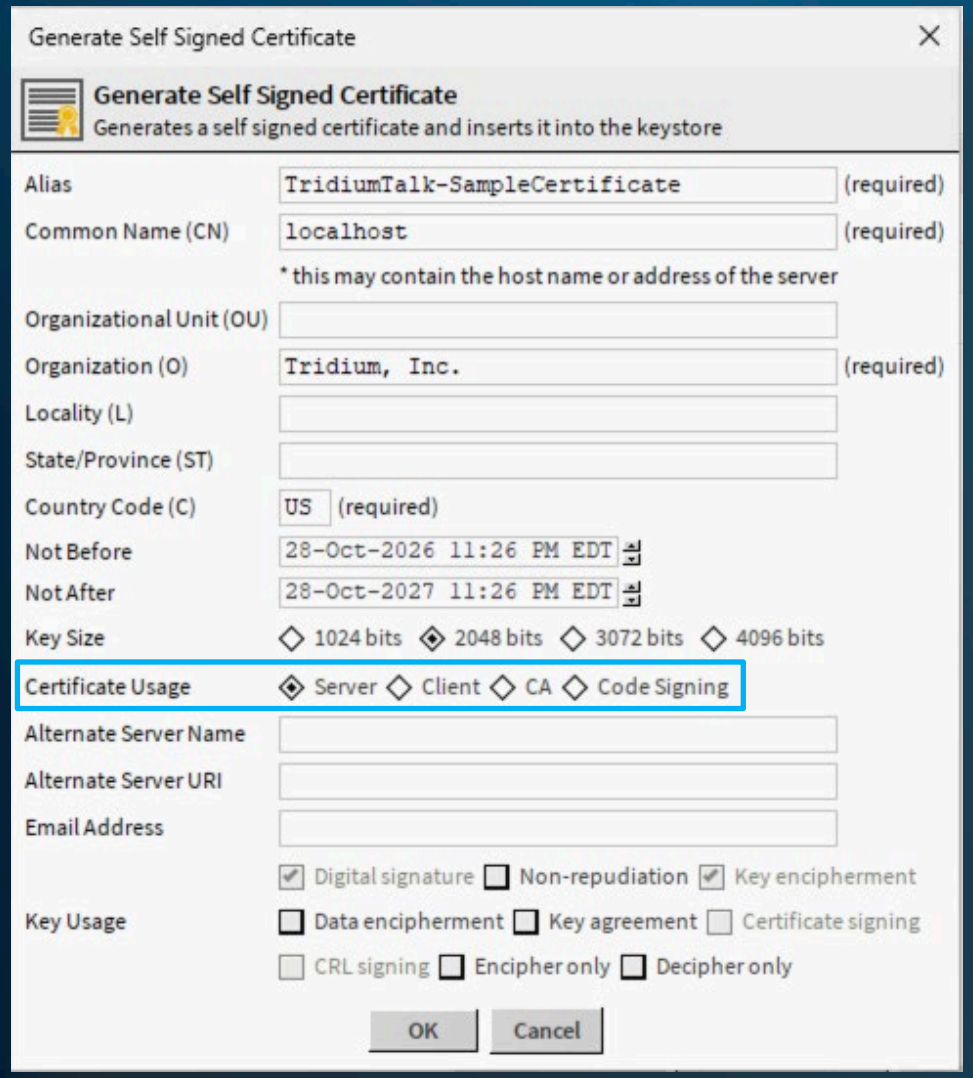
FOUR CERTIFICATE USAGES IN NIAGARA

- SERVER
  - Server identity presented by FoxS, HTTPS, or Platform TLS.
- CLIENT
  - Client identity when a server requires client authentication.
- CA (CERTIFICATE AUTHORITY)
  - Authority that issues and signs other certificates.
- CODE SIGNING
  - Identifies who signed software and helps detect modifications.



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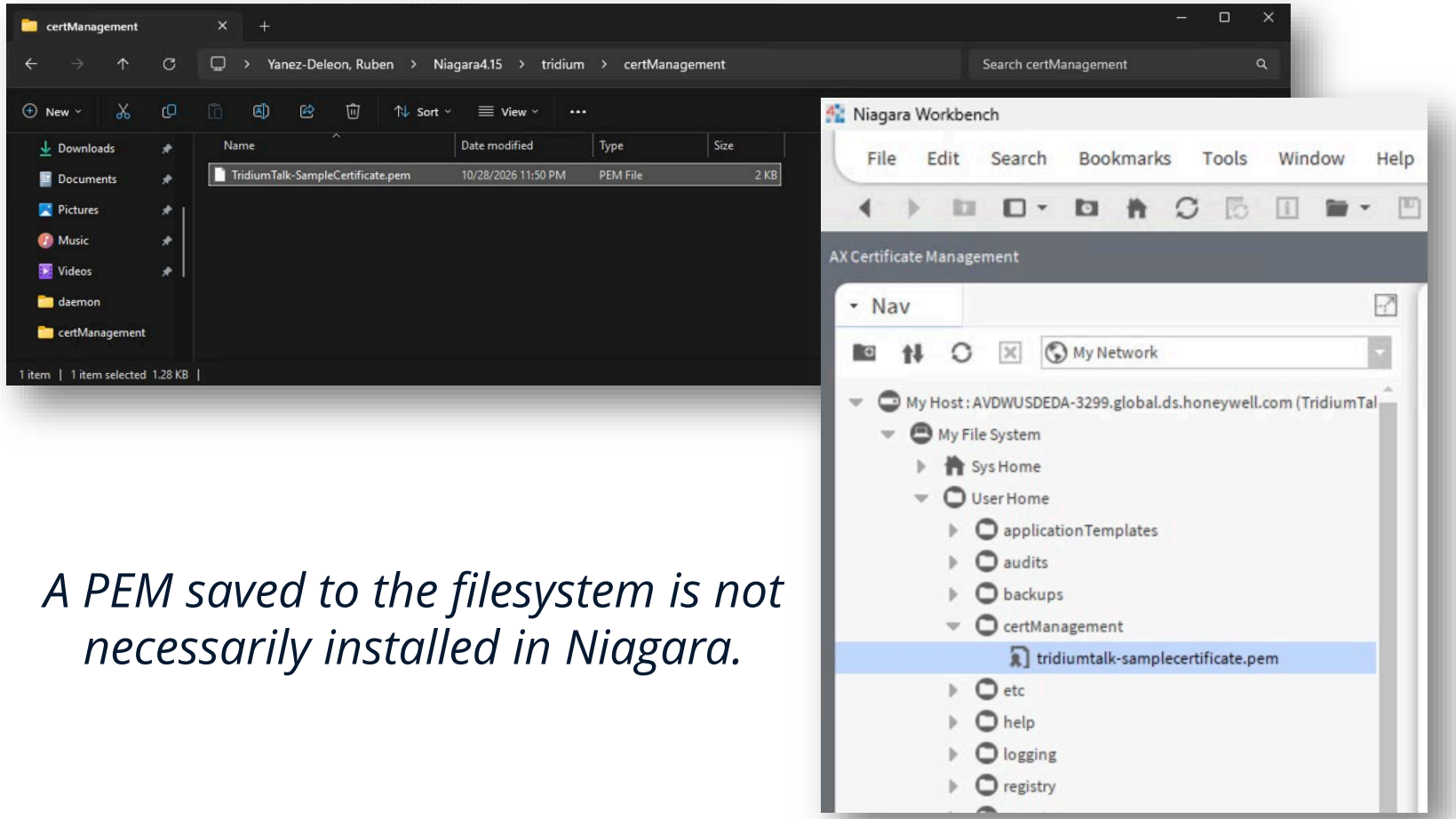
WHERE CERTIFICATE FILES LIVE



A PEM saved to the filesystem is not necessarily installed in Niagara.

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A KEYSTORE IS A MANAGED REPOSITORY



Simplified server-certificate example

PEM files help move certificate information. Keystores manage it.

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ONE SUPERVISOR COMPUTER



WORKBENCH
Separate certificate stores
Windows user context

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SUPERVISOR HOST
Platform daemon + station
Share host certificate stores

Same physical computer does NOT mean the same keystore.

ONE COMPUTER. TWO DISTINCT CERTIFICATE WORLDS.

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ONE SUPERVISOR COMPUTER



WORKBENCH
Own Certificate Management

SUPERVISOR HOST
Own Certificate Management



JACE HOST
Own Certificate Management

Workbench can administer a host remotely — not share its keystores.

EACH NIAGARA HOST HAS ITS OWN STORES

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ACCESSING CERTIFICATE MANAGEMENT

- WORKBENCH
  - Tools → Certificate Management
- JACE / SUPERVISOR PLATFORM
  - Platform → Certificate Management
- STATION
  - Config → Services → PlatformServices → CertManagerService

Ask: *“Whose certificate stores am I looking at?”*

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THE FOUR CERTIFICATE MANAGEMENT TABS

USER KEY STORE
My identities and private keys

SYSTEM TRUST STORE
Trusted by Java runtime

USER TRUST STORE
Trust I explicitly add

ALLOWED HOSTS
Host-specific exceptions

Four tabs do not mean four equivalent keystore files.

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NIAGARA-MANAGED STORAGE: N4 AND N5

NIAGARA 4	NIAGARA 5
User Key Store → keystore.jceks	User Key Store → keystore.niagaraks
User Trust Store → cacerts.jceks	User Trust Store → cacerts.pkcs12

System Trust Store is JRE-managed | Allowed Hosts uses exemptions.tes

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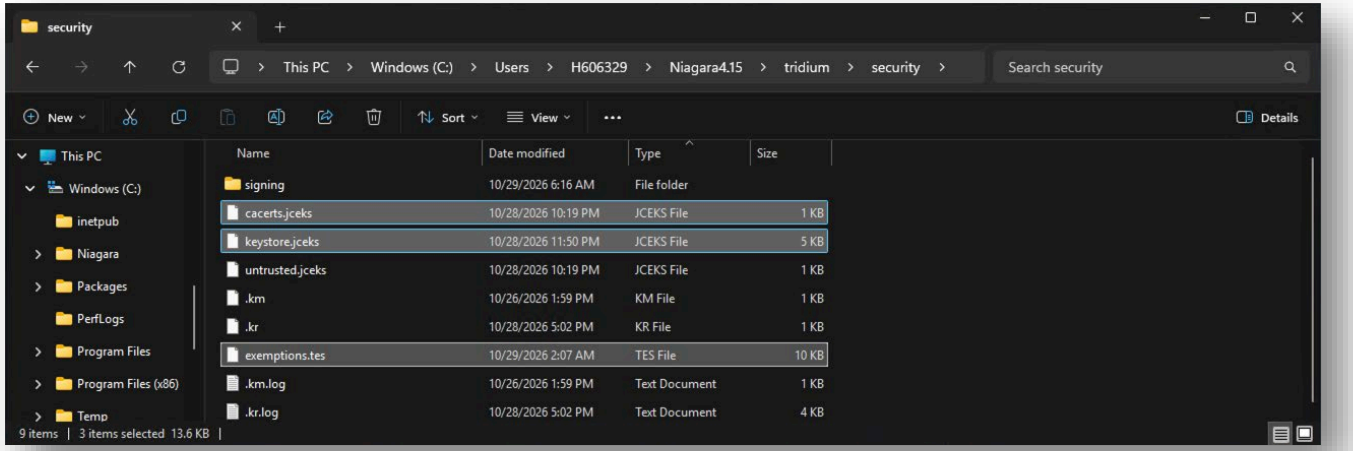
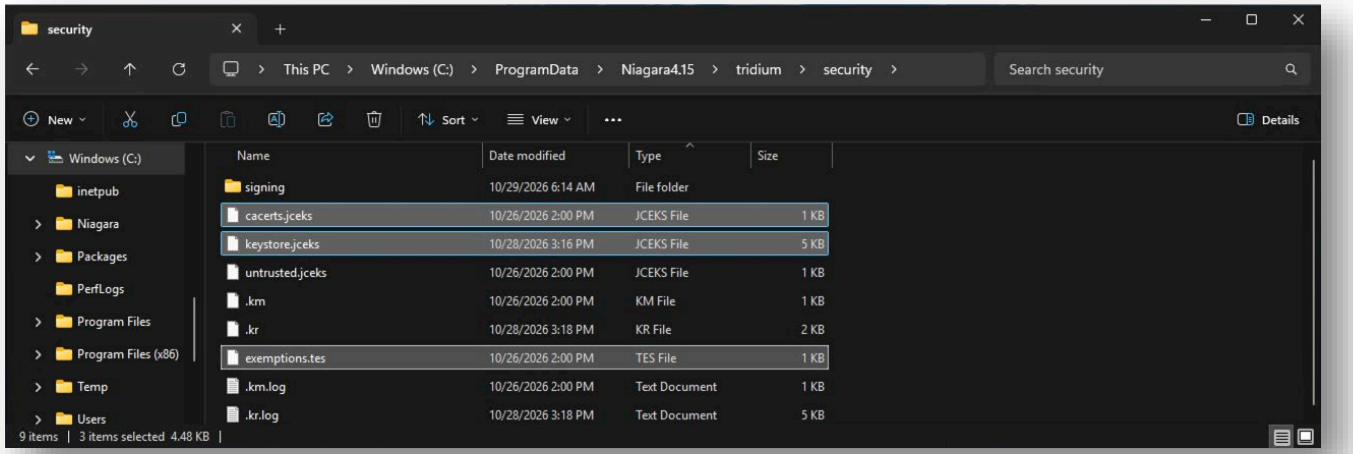
WORKBENCH

C:\Users\<username>\Niagara4.15\tridium\security



SUPERVISOR DAEMON

C:\ProgramData\Niagara4.15\tridium\security



WHERE NIAGARA'S KEYSTORE FILES LIVE

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LIVE DEMONSTRATION

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KEY TAKEAWAYS

1. A FILE IS NOT A KEYSTORE
   - PEM files move certificate information. Keystores manage it.

2. CERTIFICATE STORES ARE NOT AUTOMATICALLY SHARED
   - Workbench, Supervisors, and JACEs have distinct certificate-management environments.

3. STORED DOES NOT MEAN IN USE
   - Niagara services select certificates from their host's User Key Store.

4. SIGNED DOES NOT AUTOMATICALLY MEAN TRUSTED
   - The connecting client must validate the server's certificate and its issuing authority.

Where does it live? Who uses it? Who trusts it?

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