



# Browserless/API Two Factor Authentication (Public Key Infrastructure – PKI)

As of March 14, 2022

- Production PKI Cutover dates have been deferred. An updated schedule will be shared in April

| Product - Action Required  | Dates   | Who May Be Affected  |
|--|---|--|
| <p><b>Browserless/API Two Factor Authentication (Mandatory)</b></p> <ul style="list-style-type: none"> <li>• Obtain valid PKI certificates from approved Certificate Authorities</li> <li>• Rewrite Browserless/API authentication code OR use PJM provided command line interface(CLI)</li> <li>• Make sure 2-Way SSL Connections, Client Certificates &amp; Connection Renegotiation are enabled at Firewall &amp; Security devices for outgoing PJM SSO traffic</li> <li>• <b>Opt in now</b></li> </ul> | <ul style="list-style-type: none"> <li>• <b>Train: Completed</b></li> <li>• <b>Production: March – April (tentative)</b></li> </ul> | <p><b>Browserless users of</b></p> <ul style="list-style-type: none"> <li>• Markets Gateway</li> <li>• InSchedule</li> <li>• Power Meter</li> <li>• FTR Center</li> <li>• Capacity Exchange</li> <li>• DR Hub</li> <li>• MSRS</li> </ul> |





**Legend**

- Start Date
- ◆ End Date

## Change impacts only Browserless transfers

Web  
Browser

- **Source:** Web browsers
- **Authentication Mechanism:** Password + Soft Token(One Time Password)

Browserless

- **Source:** Machine to Machine
  - Interactions with PJM web service Application Programming Interfaces (APIs) via custom code or PJM Command Line Interface (CLI)
- **Authentication Mechanism:** Password + Certificate using Public Key Infrastructure (PKI)



# Tools In Scope for Browserless PKI/Two-Factor Authentication

InSchedule

DR Hub

MSRS

Power  
Meter

FTR  
Center

Market  
Gateway

Capacity  
Exchange



# 2022 Dates for Mandatory PKI/Two-Factor cutover

| Product           | Train                           | Production |
|-------------------|---------------------------------|------------|
| InSchedule        | January 6 at 4 p.m. (complete)  | TBD        |
| Power Meter       | January 6 at 4 p.m. (complete)  | TBD        |
| FTR Center        | January 13 at 4 p.m. (complete) | TBD        |
| DR Hub            | February 2 at 4 p.m. (complete) | TBD        |
| Capacity Exchange | January 13 at 4 p.m. (complete) | TBD        |
| MSRS              | January 20 at 4 p.m. (complete) | TBD        |
| Markets Gateway   | January 18 at 4 p.m. (complete) | TBD        |

- PKI Certificates and PKI/Two-Factor Browserless/API [FAQs](#)
- PKI Authentication [Guide](#)
- Exporting public [keys](#)

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**Tool Security Changes**



**Member Hotline**

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**PROTECT THE  
POWER GRID  
THINK BEFORE  
YOU CLICK!**



Be alert to  
malicious  
phishing emails.

**Report suspicious email activity to PJM.**  
(610) 666-2244 / [it\\_ops\\_ctr\\_shift@pjm.com](mailto:it_ops_ctr_shift@pjm.com)



- If a user accesses the tools only through the User Interface (UI), is a PKI certificate needed? **No.**
- If a user accesses the tools using both the UI and browserless interfaces, is a PKI certificate needed? **Yes.**
- Do system accounts (used to access browserless interfaces) need a PKI certificate? **Yes**
- If a user access browserless interfaces using multiple usernames, is a separate PKI certificate needed for each username? **Yes.**
  - If that user creates a SUMA account for those multiple usernames, how many PKI certificates are needed? **One (1) for the SUMA username**
- Can PKI certificates be shared between different usernames? **No. It is username specific.**

- If a user access multiple PJM tools with the same username, how many PKI certificates are needed? **One (1). It is username specific, not tool specific.**
- Do all usernames under an account need to use a PKI certificate at the same time? **No. PKI certificate is username specific, each username can start independently.**
- The username in Train is different from the username in Production, can I use the same PKI certificate? **Yes.**
- Once a PKI certificate is added to a username, does it work for all PJM Tools under that user or only certain ones? **Impacts all PJM Tools.**
- What happens if a user attempts to access a browserless interface without a certificate? **The user will get authentication errors.**
- Do the all PKI certificates have to be from the same vendor? **No.**

- Do users need to go through the 'opt-in' period? **No. However, it will allow for a sense of certainty about how this implementation works before it becomes mandatory.**