Matrix 3 Troubleshooting & How-To Guide "Log4j" Security Vulnerability

General Overview

Matrix 3 is a software-based Fluid Management System that runs on one or more of your facilities computers (PC's). This guide only applies to the Graco Matrix 3 Fluid Management System and walks you through issues and the solutions to remedy them.

Throughout this guide, there will be colored text entries, they are:

Links – These are links to other support resources that may be needed to accomplish the task you are working on.
Green Text – These are navigational commands directing you to skip to or reference another section in the guide. If the command is underlined, clicking it will direct you to the location it describes.
Red Text – These are STOP points where you will need assistance from IT, Graco or your Graco distributor.

Specific troubleshooting topics can be found in the instruction manuals below. This guide will provide more theory of operation and detail on addressing specific issues. Click the links or type the numbers into the Graco.com search box.

313046 - Meters
313008 - Transceivers
312964 - Tank Level Monitors
312417 - Pump Air Controls
313013 - Matrix 3 Oil Bars
313104 - Basic Software
313106 - Professional Software (includes 3rd Party Interface capability)
313108 - Premier Software (includes 3rd Party Interface capability)
313112 - Premier Software with CDK Interface
313114 - Premier Software with Reynolds & Reynolds Interface
334786 - Premier Software with Procede/Excede Interface
3A4999 - Premier Software with DealerTrack Interface (As an addendum to the Premier Software Manual)

Notes:

- All PC related references used in this guide are based on the Microsoft Windows 10 Operating System conventions, other versions of Windows operating systems may vary.
- Troubleshooting efforts may require help from your IT/IS staff or vendor. Having them available is highly recommended.
- If you need Matrix software, contact Graco and they will get you a direct download link. All PC's must be running the same version of Matrix software, delete or discard any different versions you have.
- Check for new and updated content by visiting graco.com/matrixsupport, scroll down to the "Guides" section.
- If you find you still need help, contact a Graco Tech Assistance Agent by using the information found at the bottom of each page of this guide.

"Log4j" Security Vulnerability

Overview

A software security vulnerability was identified in certain versions of "Apache log4j" files used by many software programs including Matrix 3. The "Remote Code Execution" severity level is listed as "Moderate". Affected versions are from 2.0-beta7 to 2.17.0, excluding 2.3.2 and 2.12.4 (details found here)

Matrix 3 systems do run a log4j file, but it is an older version that is not affected by the vulnerability (log4j-1.2.14.jar). IT professionals may request updated Matrix software to bring it up to the most current version however, Graco Matrix software is obsolete (2018) and further development has ceased, another option is outlined below.

Mitigation

If IT is requiring some sort of resolution, there are the following options:
1. If there is only one PC running Matrix, remove it from the company network and operate as a stand-alone PC.
2. If there are more than one PC running Matrix, place them on a separate network with no web access.
3. Run Matrix in a virtual machine with restricted access to the network.
4. Remove the log4j-1.2.14.jar files from the system altogether.

Note: If option 4 is the preferred choice, Matrix will no longer create and display log files. These are not required for Matrix to run, but may be useful if troubleshooting an issue. See below for instructions for restoring them.

Mitigation Option 4 Process

There are older versions of Matrix that will not function if these files are deleted, upgrading Matrix will solve this.
1. Before starting the upgrade, determine what version and level is running (including any DMS integration), or visit graco.com/matrixsupport and find the "Identifying Matrix 3 Software" guide for help identifying it.
    a. If you are running 3.0.x to 3.2.1, stop here and contact Graco, this must be updated manually by Graco first
    b. If you are running 3.3.1 to 3.7.9, you can run the upgrade live, skip to #2 below
    c. If you are running any 3.9.x version (less than 3.9.40), you can:
        i. Continue without upgrading, skip to #3 below
        ii. Upgrade to 3.9.40
2. Upgrade Matrix to 3.9.40, go to software.gracomatrix.com and find the Matrix 3.9.40 file with the matching level (Basic, Professional, Premier or one of the "Interface" versions of Premier, and download it
    a. Run the new software logged into the PC **as an administrator**
    b. Choose the "Upgrade" option
    c. Clients (if present) need to be uninstalled first then installed choosing the "Custom" option
3. Remove the 5 instances of the log4j-1.2.14.jar file from the Matrix Server from the paths below:
    a. C:\Program Files (x86)\Graco\Matrix 3\Client\lib\log4j-1.2.14.jar
    b. C:\Program Files (x86)\Graco\Matrix 3\Common\log4j-1.2.14.jar
    c. C:\Program Files (x86)\Graco\Matrix 3\Server\lib\log4j-1.2.14.jar
    d. C:\Program Files (x86)\Graco\Matrix 3\XcvrClient\lib\log4j-1.2.14.jar
    e. C:\Program Files (x86)\Graco\Matrix 3\XcvrServer\lib\log4j-1.2.14.jar

Restoring log4j Files

In the event you run into an issue where you need to restore the log file capability of Matrix to help resolve an issue, you can temporarily restore the log4j files

Contact Graco LED Tech Assistance at 800-533-9655, option 2 or LEDtech@graco.com

1. Stop the bottom Matrix service (Matrix 3 MySql) on the Matrix Server (it will force the others to close)
2. Put the file back into each of the 5 respective locations
3. Start the Matrix Transceiver Service (automatically starts the other two)
4. Take action to recreate the failure once again
5. Look at the log files to try to determine the cause of said issue (C:\Program Files (x86)\Graco\Matrix 3\Logs)
6. Stop all 3 Matrix services on the Matrix Server again
7. Delete all 5 files
8. Start the Matrix Transceiver Service (automatically starts the other two)
9. Resume operation

Note: Graco recommends keeping a copy of the log4j file in a safe (and isolated) location in case it is needed. Also, include this document in the same location for convenience.