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MACH2

Mach2 IT Prerequisites

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(For the most recent version visit: <http://korsengineering.com/ITPrerequisites>)

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1 OVERVIEW

The intent of this document is to present the **minimum** requirements for you to successfully run, and for Kors to successfully support Mach2. It is the customer's responsibility to provide the necessary hardware, software, and network infrastructure required.

2 INSTALLATION REQUIREMENTS

2.1 SERVER REQUIREMENTS

A server is required for hosting the Mach2 application. The following is a list of the **minimum** requirements for that server. The complexity and scope of your implementation can dramatically increase these requirements.

- It can be a physical or virtual machine that resides on the facility network. Cloud based hosting is not supported.
- It must be dedicated to the Mach2 application only. No other applications such as SQL Server can be installed on this server.
- For upgrades to be supported by Kors Engineering, a new server will be required to ensure the new system is completely set up and tested before the old one is retired. This will allow the new server to comply with any new or updated requirements.
- System Specifications
 - Processor: Intel Xeon CPU E5-4655 x64
 - RAM: 16 GB
 - Hard disk: 64 GB, more may be required, depending on archiving
 - Ethernet Port: Wired 100 Mbit– Gigabit preferred
 - Operating system: Windows Server 2016 or 2019
 - IP address: A static address is required
- Kors Engineering requires an administrative account (local is preferred)
- Antivirus Considerations
 - Full system file scans cannot be run during Mach2 production hours. They must be scheduled while the Mach2 application is not in use.
 - Real time traffic analysis is not recommended due to the increase in latency that results from it. It can dramatically affect the user experience.
 - The Mach2 Application and Station directories should be excluded from real-time file monitoring. This can have a negative impact on application performance and stability.

2.2 CLIENT REQUIREMENTS

- Operating system
 - Windows 10 Pro/Enterprise (64-bit)
- Internet Browser
 - Google Chrome
- Device must be able to access the Mach2 server over the network.

2.3 ACCESS REQUIREMENTS

Access from the Mach2 server to the following devices and/or systems are required:

- The PLC(s) and/or controller(s) of the machines to be integrated
- Line printers (serial number tag printers and/or container label printers)
- The server must be able to access the following as an anonymous user:

Purpose	Domain	Port(s)
Mach2	mach2demo.com	80, 443
Mach2	update.korsengineering.com	80, 443, 3025
Mach2	licensing.korsengineering.com	80, 443
Mach2	foxhole.korsengineering.com	3373, 5373
Mach2	Firewall must have exceptions allowing traffic	302, 443
Kepware	licensing.kepware.com	80, 443
Niagara	axlicensing.tridium.com	80, 443
Plex	api.plex.com	443
Plex	testapi.plex.com	443
Plex SOAP API	api.plexonline.com	80, 443
Plex SOAP API	test.api.plexonline.com	80, 443
Plex HTTP API	cloud.plex.com	443
Plex HTTP API	test.cloud.plex.com	443
Plex COLO HTTP API	yourcompanycode.on.plex.com	443
Plex COLO HTTP API	yourcompanycode.test.on.plex.com	443

3 KORS ENGINEERING SUPPORT REQUIREMENTS

3.1 OVERVIEW

As part of the initial download and installation of Mach2, Kors Engineering configures what is referred to as a station. By default, when the Mach2 software is first loaded, the station is not running. To configure and start the station, a commissioning tool running on the Kors development PC is required.

For station configuration, development efficiency, and support of the Mach2 project by the Kors Engineering staff, remote access to the Mach2 server is required. This remote access allows Kors Engineering to download, set-up, configure, and troubleshoot the Mach2 application quickly without being physically at the facility.

A screen sharing connection does NOT allow the Kors engineers the ability to complete the necessary set-up, configuration, and troubleshooting functions. Only some functions are possible using a screen sharing connection and using them is extremely slow and cumbersome so it should only be used in extreme emergency conditions such as production is down, and all other connection options are unavailable.

3.2 CONNECTION REQUIREMENTS

- RDP (Remote Desktop Protocol) must be enabled to manage the installation, licensing, and support of Niagara and Kepware.
- Ports 3011 & 5011 must allow traffic to manage the Niagara platform, which includes station backups, copying, saving, etc.
- Ports 1911 & 4911 must allow traffic to manage the Mach2 station, which includes access to create and modify functionality.
- Because proxy servers typically cause issues and prevent the above functions from operating properly, they are not supported.
- Intrusion Prevention or Detection Systems (IPS/IDS) can interfere with or totally prevent communication with the Mach2 server. Exceptions must be created for the traffic described above.
- The ability to transfer files directly between the Kors development PC and the Mach2 server must not be inhibited by any method either hardware or software.
- The connection account credential should be valid for enough time to complete the project, or at least 90 days.

3.3 CONNECTION QUALITY

- Stable & Reliable
For the connection to be stable and reliable, it needs to have as few nodes or components as possible. This means it cannot have multiple hops, multiple remote desktops, or multiple VPN links. It must be one connection from the network that contains the Mach2 server to the Kors Engineering network.
- Speed
The connection needs to be fast enough to support the connection protocols below, load web pages without timeouts, and transfer files in reasonable period of time.
- Latency
The connection needs to have low enough latency to ensure no loading delays, no input lags, and no mouse cursor "shadow" when in use.

3.4 CONNECTION OPTIONS

3.4.1 TeamViewer

Kors has selected TeamViewer as its primary connection method. We need a direct connection to the Mach2 server, so TeamViewer needs to be installed on that server. It must be configured for "Unattended Access" and have the "VPN Driver" installed. Here is the required installation link: <https://get.teamviewer.com/mach2>

If you have installed using a different link, please uninstall and reinstall using this link.

3.4.2 Alternative Options

- A. A VPN connection provided by the customer to the facility network providing access to the Mach2 server. This cannot be just an RDP connection; it must provide unrestricted access to the ports on the server.
- B. A NAT route setup in the facility firewall to the Mach2 server on the TCP ports listed above to route the appropriate traffic. It is suggested to only allow access from the Kors external IP address (216.234.118.66).

4 PRINTER ACCESS

If label printing is a requirement of the project, then Kors Engineering will need access to the printers located on the production line from the Mach2 server.

These printers must be connected directly to the facility network via an Ethernet cable and accessible using a static IP address.

Any routing, set-up, and/or networking will need to be completed such that Kors Engineering can print a label using a print string from the Mach2 server.

5 CONTROLLER ACCESS

A controller is defined as but not limited to a PLC, torque tool, loop controller, or IO module used for operation of the machine and capable of interfacing with the Mach2 application. The controller(s) used for the operation of the machine(s) associated with the workcenter to be integrated needs to be connected to the network and assigned a static IP address. Any routing or setup required needs to be completed by the customer to allow unrestricted network communication between the Mach2 server and the controller.

6 EMAIL

If email notifications from the Mach2 application are required for the project, a dedicated email account must be setup. The username, password and configuration information for that account must be provided.

7 IP ADDRESSES

The IP addresses for the controllers, printers, and the Mach2 server must be provided.

8 ACRONYM GLOSSARY

Acronym	Definition
IP	Internet Protocol
NAT	Network Addressing Translation
IDS	Intrusion Detection System
IPS	Intrusion Prevention System
PLC	Programmable Logic Controller
Mach2	The engine used to create the integration system. Responsible for local storage and data collection from factory floor equipment and automated data transportation to/from POL
TCP	Transmission Control Protocol
VPN	Virtual Private Network