



WHITE PAPER

MANGO MINIMUM HARDWARE REQUIREMENTS

OVERVIEW

Mango from Radix IoT is a 100% browser-based, cross-platform software application that enables users to access, monitor, control and trend for historical analysis various sensing and subsystems across verticals. These can include, but are not limited to sensors, PLCs, subsystems, databases, or other web services all over multiple protocols simultaneously. Mango, a distributable software package, provides the runtime component as well as webserver allowing a rich interface, and a collection of optional data sources that can be deployed in the runtime and configured from the web interface allowing downstream management of the aforementioned devices. The Mango runtime includes integrated user access, alerts, data logging, alarming, scripting, and event management.

Although Radix IoT sells various appliances that run Mango, customers are welcome to install Mango on their own hardware. The following details the minimum hardware requirements for a successful installation of Mango. It should be understood however, that performance can be highly impacted by the number of data-points and the individual setup and configuration. For mission critical applications, it is recommended that anyone using their own hardware design contact Radix IoT support for design verification scoping.

REQUIREMENTS AT-A-GLANCE

Processor	Minimum Intel® Atom class processor Recommended Minimum Intel® Celeron or better with 1.1GHz Clock Speed or greater
RAM	Minimum 1GB Recommended <ul style="list-style-type: none">• 1 - 1,000 Points - 1GB• 1,000 - 10,000 Points - 8GB• 10,000 - 30,000 Points - 16GB Anything over 1GB should be DD33L with a clock speed minimum of 1866Mhz
Hard Drive	<ul style="list-style-type: none">• SSD Preferred• 500MB minimum for Mango• 1GB per 50 million values in Time Series Database
Operating System	Minimum Linux or Mac OSX 64 bit, Windows 10 or greater Recommended Ubuntu 20.04 LTS or Debian 11 (Bullseye) or above.
Java	AdoptOpenJDK 17
Databases Dependencies	<ul style="list-style-type: none">• None required• MySQL recommended for more than 1000 data points• If using TLS - add Clickhouse Database
Client Browser Support	Recommended Current versions of Chrome or Firefox Supported but not recommended <ul style="list-style-type: none">• Safari• Edge Not supported Internet Explorer
Internet	<ul style="list-style-type: none">• Not required• Recommended for Cloud connect and cloud publishing

STANDARD SYSTEM DESIGNS

For customers looking to use existing hardware, the following charts provide standard configurations that are typically available and provide examples for standard deployments.

Small (Up to 1,000 Points):

Processor/CPU	4 Core - 1.0 GHZ
System Memory	1GB
Local Storage	16 GB SSD
Network Connections	1 x 10/100/1000 Mbps – LAN 1 x 10/100/1000 Mbps – WAN
Base OS	Linux – Ubuntu 20.04, Microsoft Windows 10 or Mac OSX
Database	None
Required Software	Java / OpenJDK 17

Medium (1,000-10,000 Points):

Processor/CPU	4 Core - 1.5 GHZ
System Memory	8 GB DDR3L 1866Mhz
Local Storage	64 GB SSD
Network Connections	1 x 10/100/1000 Mbps – LAN 1 x 10/100/1000 Mbps – WAN
Base OS	Linux – Ubuntu 20.04, Microsoft Windows 10 or Mac OSX
Database	MySQL
Required Software	Java / OpenJDK 17

Large (10,000 – 30,000 Points):

Processor/CPU	8 Core - 2.5 GHZ
System Memory	16 GB DDR3L 1866Mhz
Local Storage	128 GB SSD
Network Connections	1 x 10/100/1000 Mbps – LAN 1 x 10/100/1000 Mbps – WAN
Base OS	Linux – Ubuntu 20.04, Microsoft Windows 10 or Mac OSX
Database	MySQL
Required Software	Java / OpenJDK 17

- This is intended to be a reference guide for customers deploying Mango on their own hardware/servers.
- Application performance can be affected by many factors outside of system resources.
- Local Storage based on logging at 1-minute intervals for 90 days.
- For sites/systems greater than 30,000 points please contact Radix IoT for design assistance.

PROTOCOLS

Common Protocols Supported:

... and many more. Refer to RadixIoT.com for more details.

- Modbus IP
- Modbus Serial
- BACnet IP
- BACnet MS/TP
- MQTT
- HTTP
- SNMP
- SQL
- ASCII File
- Serial
- MBus
- DNP3
- Data Files (XML, CSV, XLS, BIN)
- Mango Cloud Sync
- gRPC
- TLS

PHYSICAL CONNECTIVITY

The hardware used will define the physical and datalink layer (ISO Layers 1 and 2) of how the Mango installed device communicates with field-installed devices. Consideration must be given to topics such as how many serial ports are required, ethernet ports, or other ports available. It is important to realize that serial ports are generally BIOS controlled, and depending on the chipset of the hardware may be configurable only via the BIOS to RS232/RS422/RS485. Mango based on Linux can read and write to most prevailing serial and ethernet controllers in the market, however no guarantee can be applied to all hardware sets based on the large variants available in the marketplace.

On some hardware, additional ports and connections are available such as DIO (Digital Input and Output) and other electrical connections. Typically these other “on-board” features are not supported in Mango as they are considered proprietary in connectivity and require direct interface with the BIOS, that can vary significantly from vendor to vendor. Though it may be possible to connect these to Mango through custom means, no formal support is available from Radix IoT for this type of custom connectivity beyond the Mango community forum.

BACKHAUL CONNECTIVITY

Typically, Ethernet is used for backhaul connectivity to another physical Mango instance, or to a central Mango Cloud instance. Radix IoT hardware appliances do support cellular connectivity. Customers choosing to roll their own hardware and use cellular are highly recommended to use Linux as their OS base and be familiar with bash shell commands and the nmcli and mmcli packages. Given the diversity of cellular chipsets in the marketplace, Radix IoT can't provide configuration support for cellular or a guarantee of compatibility due to the range of available options. Those interested in cellular are encouraged to read the white paper on Mango cellular connectivity, which is based on the assumption of using a Quectel cellular chipset and consult the community forum.

INSTALLATION REQUIREMENTS

In all cases the hardware must have the operating system installed, as well as OpenJDK 17 before attempting to install Mango. It is highly recommended that for production systems Ubuntu 20.04 LTS is used as the base OS and all updates are performed prior to installing OpenJDK.

Information about the current installation procedure can be found at: <https://docs-v4.mango-os.com/installation-overview>

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