**What is IoT device Management?**

IoT devices once installed may need software updates or bug fixes. Sometimes it has to be replaced or repaired. This may result in downtime. In order to solve what can we do? We can effectively manage the devices using IoT Device management. IoT device management is the method of authenticating, configuring, monitoring, provisioning and maintaining the software and device firmware that offers its functional capabilities.

In order to maintain the security, health, and connectivity of the [IoT devices](https://www.educba.com/iot-devices/), effective device management is essential. Normally, Solutions along with broad device management will also be provided by IoT application vendors.

**Requirement for IoT management system:**

Given below are the four basic requirement of needed for IoT Management system:

**1. Provisioning and Authentication**

Provisioning is the process by which a device is enrolling in a system. It has two parts-

1. By registering the device, the establishment of an initial connection between a device and an IoT solution is done.
2. Based on the requirements of the particular solution, a configuration is done to the device.

Only after completing these steps, we can say that the device is fully provisioned.

##### Authentication

Authentication is a process by which devices with valid credentials only get enrolled. It helps in trusting the device by validating an actual device is used with a trusted software and trusted the user. Even though the process of Authentication differs in each and every device, the device that is deployed will be having a certificate or key that checks whether it is authentic. When a new device is installed, it authenticates by validating credentials and several unique data such as model number, serial number, etc.

#### 2. Configuration and Control

Whenever a new device is getting installed, there has to be some configuration done before start using. For example, a location tracker is the device that is installed in a truck and data is getting uploaded in the cloud every minute. Before start using that device, some settings have to be done in the device such as truck number, truck speed, truck driver name, etc.

Otherwise, it may create some confusion on the same.  Devices can be said as imperfect if this step is not done before start using. Even after deployment, the ability to control and configure devices is critical to ensure certain aspects such as functionality, performance, and protection from security threats.

Also, the user needs to remotely reset the device to attain a good state, error recovery, and implementation of new configurations. This will help in implementing control capability in the system.

#### 3. Monitoring and Diagnostics

Sometimes, there may be software bugs or certain other issues that can occur which in turn results in the downtime of the device. In order to solve the issues, the user needs to identify them first. For that, constant monitoring of devices is essential. Software’s with device management helps in diagnosing these issues by continuously logging. This software can also use certain cloud-hosted analytics to offer solutions.

#### 4. Software Updates and Maintenance

When a device is installed, it needs to be updated for the flawless working of the device. Sometimes there will be additional functionalities to be included. As already said, devices are increasing day by day. So it is hard to update all the devices manually. The ability to update and maintain remote device software securely is thus one of the most important components of good device management.

### Advantages of IoT Management

Following are the advantages listed below:

#### 1. Know your Device

IoT device management helps the product owners to track, manage, monitor, track, sustain and secure the connected devices. Since the platform is associated with dashboard, it is also easy to remotely access and allows the devices to manage, decommission and provision them.

#### 2. Less Operational Costs and Maintenance

With the help of device management, it is possible to undergo Predictive maintenance as an effective solution for periodic maintenance, and several other issues. Thus, the time consumed will be less and in turn, operation costs will be less.

#### ****3.****IT and OT Convergence

In order to have a successful business, it is essential to have parallel coordination of information technology (IT) and operational technology (OT). It helps in a seamless flow of information to work parallel in different projects.

**What is SNMP?**

Simple Network Management Protocol (SNMP) is a way for different devices on a network to share information with one another. It allows devices to communicate even if the devices are different hardware and run different software.

Without a protocol like SNMP, there would be no way for network management tools to identify devices, **monitor network performance**, keep track of changes to the network, or determine the status of network devices in real time.

## SNMP architecture

SNMP has a simple architecture based on client-server Model.

* The server, called manager, collect and process information about devices on network.
* The client, called agents, are any type of device or device component connected to the network. They include not just computer, but also network switches, phones, printers and so on.