



NIST IoT for Cybersecurity Program

IoT Definitions
January 2023

- *IoT Device* from NIST IR 8259 and P.L. 116-207, IoT Cybersecurity Improvement Act of 2020
- *IoT System* from NIST IR 8316
- *IoT Component* from NIST IR 8316
- *IoT Environment* from NIST IR 8316
- *IoT Product* from NIST IR 8425

There are many definitions for IoT, so we picked one and moved on



NIST IR 8259 uses this definition

At least one **transducer** for interacting directly with the **physical world**
(e.g., a sensor or actuator)

&

At least one **network interface** for interfacing with the **digital world**
(e.g., Ethernet, Wi-Fi, Bluetooth, Long-Term Evolution [LTE], Zigbee, Ultra-Wideband [UWB])

This definition is used in U.S.
Public Law 116-207, IoT
Cybersecurity Improvement Act
of 2020

An IoT device has...

At least one transducer for interacting directly with the physical world
(e.g., a sensor or actuator)

&

At least one network interface for interfacing with the digital world
(e.g., Ethernet, Wi-Fi, Bluetooth, Long-Term Evolution [LTE], Zigbee, Ultra-
Wideband [UWB])

An IoT product is an **IoT device** and any additional **product components** that are necessary to using the IoT device beyond basic operational features.

- Source: NIST IR 8316 *Internet of Things (IoT) Component Capability Model for Research Testbed* (<https://doi.org/10.6028/NIST.IR.8316>)
- **3.2.1: IoT Component:** Basic building blocks of IoT Systems; interact with other IoT components to form systems; have at least one network interface; if has sensing / actuating capabilities, then an *IoT Device*
- **3.2.2: IoT System:** Composed of networked IoT components; must interact with a physical entity of interest via sensors and/or actuators
- **3.2.3: IoT Environment:** set of available IoT components; connecting networks; any associated services that provide the mechanisms for discovery, composition, and orchestration

Profile of the IoT Core Baseline for Consumer IoT Products (September 2022)

Product Definition

- Defines Consumer IoT product scope:
 - IoT Device(s), plus any mix of:
 - Specialty hardware (e.g., gateway)
 - Companion applications (e.g., mobile app)
 - Backend support (e.g., cloud services)
- Profiles IR 8259A/B Core Baselines
- Provides supporting information regarding source materials, common IoT vulnerabilities, insights & takeaways from profiling process

