

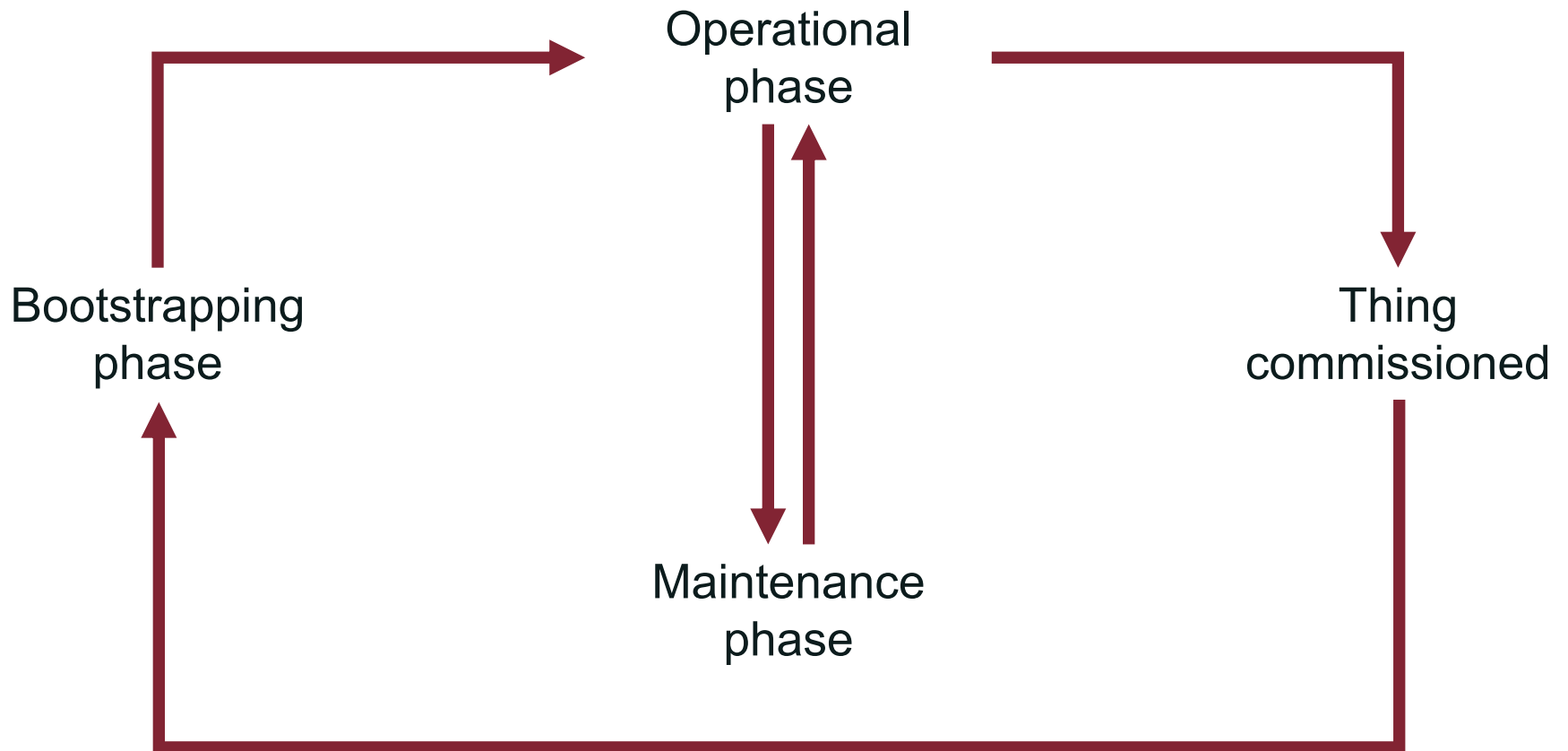
How Security impacts on the lifecycle of a thing.

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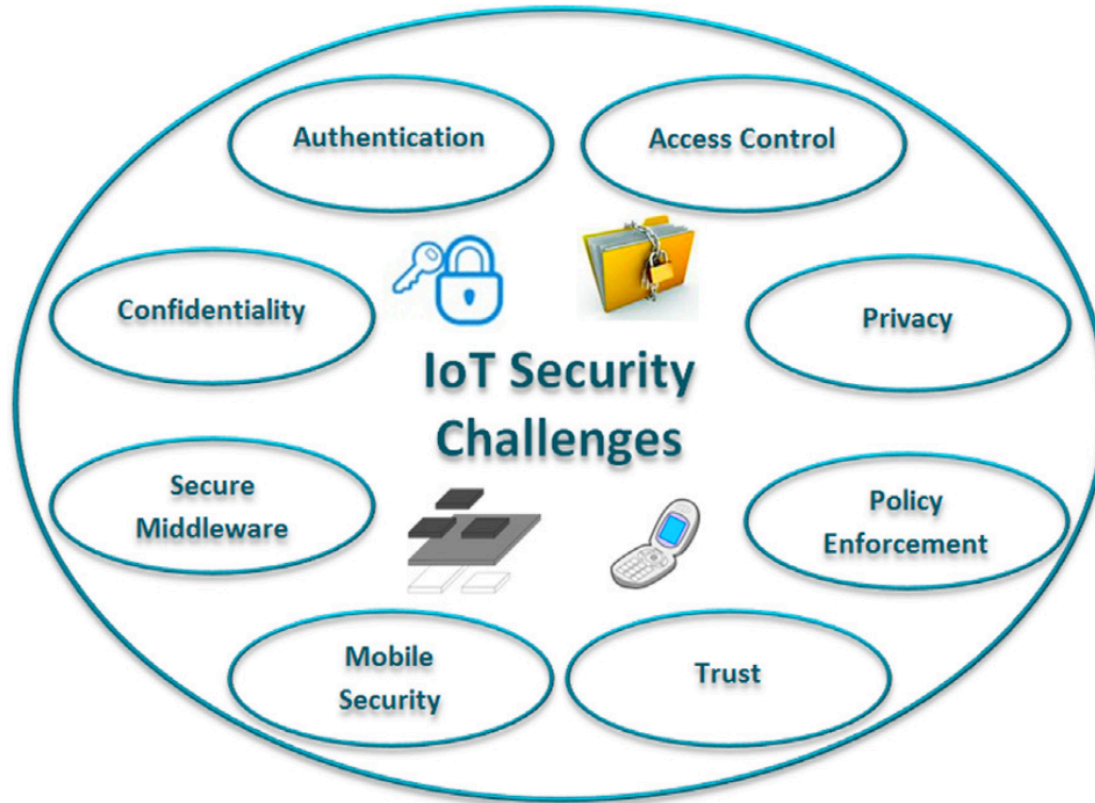


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Lifecycle of a thing



Main security issues



Bootstrapping phase

- Things from different vendors
- Authentication and key agreement
- Essential to set up secure communication for the operation phase
- Ensure Authentication, Access control, Privacy

Bootstrapping phase

Centralized

- A single entity manages the devices and the keying material
- Preconfigured key and certificate held by a thing
- Single point of failure

Distributed

- Allows to create ad-hoc network
- Need sort of handshake to agree a common secret between two things
- No single point of failure

Operational phase

- End-to-End security
- Group membership and security
- Mobility
- Ensure Confidentiality, Mobile security, Trust, Policy enforcement

Trust

- No definite definition in literature
- Difficult to establish a metrics
- Level of trust between things
- Used to exclude malicious nodes

Policy enforcement

- Force an application to a defined set of actions
- **Policies:** operating rules
- What policy languages fits best?

Maintenance phase

- Essential to guarantee the correctness of the service
- Software updates
- Security patch

References

- Security Challenges in the IP-Based Internet of Things
- Security, privacy and trust in Internet of Things: The road ahead