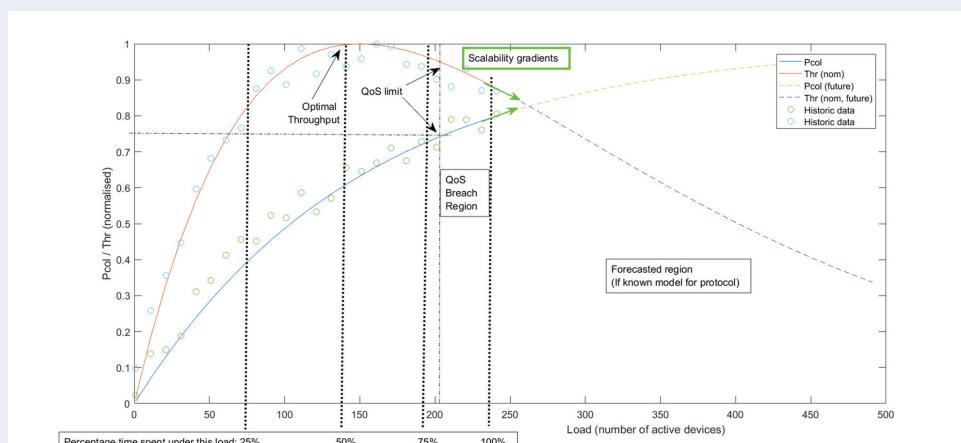


Scalability analysis of IoT

An essential aspect of IoT systems is to create a scalable system.



When the first pilots have been conducted and the proof of concept and the business model are established, it is time to scale. However, many parts of the technical and organizational implementation can be hard to scale, if not done properly. With the scalability analysis you will get a 360-degree check of the scalability of your system.

What does the service contain?

First, we investigate the IoT device. When installing thousands of devices, it is essential that they do not break, when being operated in the real world and function as intended. The device investigation covers:

- **Environmental design review:** Is the device robust against vibrations, shocks, humidity, temperature, water and dust ingress.
- **Power design review:** The device needs to have sufficiently low power consumption to last in the entire expected lifetime of the product.
- **EMC design review:** Is the device robust against voltage spikes and surges and radiated electromagnetic fields.
- **Manufacturing design review:** Have you setup your device production to be scalable and with low cost?
- **Cyber security:** Have you ensured that you have basic level of cyber security implemented on the device and do you have a process to update to maintain cyber security after installation?

When having considered the IoT device, it is time to investigate the network and device management. The network investigation covers:

- **Coverage analysis:** Do you have the sufficient link budgets to cover the intended area?
- **Network capacity:** Do you have the necessary data throughput capacity and medium access protocols in the network, if it scales to x1.000 or x10.000 devices?
- **Congestion:** Will the network be more influenced by interference and collisions, when the number of devices increases?
- **Device management:** Is the device groups organized for scalable access and do you have the necessary tools to monitor network performance?
- **Connectivity pricing:** Is the price of your connectivity solution close to market values or can price reductions be obtained, and is it easy to change operators?

When the network is analyzed, the last part will be the back-end:

- **Data capacity:** Is your server or cloud solution able to handle x1.000 or x10.000 the amounts of data?
- **Vendor lock-in:** Will you be locked to a specific provider, or is it easy to transfer the system to another cloud provider?

- **Cyber security:** Is your backend server cyber secure, and are you compliant with privacy requirements?

The last part of the investigation will be to evaluate the organization:

- **Support:** Do you have the proper number of support employees, and is it easy to hire and train new personnel?
- **Maintenance:** Do you have the proper technical expertise and system recovery experts to supervise the operation of the system?

The final output is a report highlighting your maturity with respect to the scalability of your IoT system and organization.