

IoT Data Workflows Start at the Edge

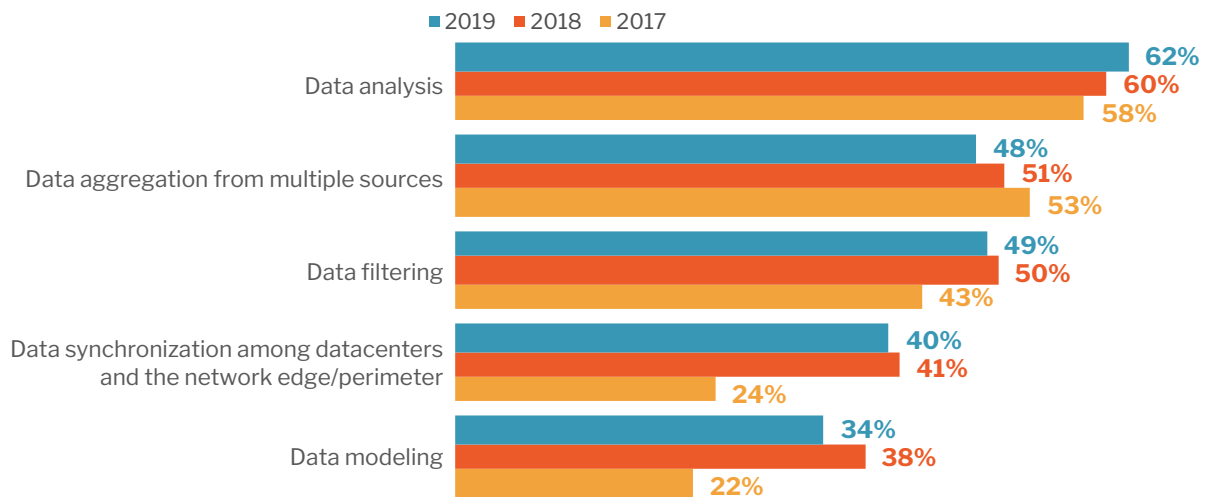
The 451 Take

We are well into the third era of the Internet of Things and now face third-era challenges. Whereas the first era focused on connecting the unconnected, and the second era was concerned with the conversion and normalization of the captured data, the focus of the third era is on maximizing the value of the unlocked data at the right physical location in the most secure, efficient and cost-effective manner possible. This requires a firm foundation of data transformation at the edge to disaggregate machine data and deliver timely, relevant information to stakeholders within enterprise IT, production operations and partners.

Trends: IoT Tasks Executed at the Edge

Source: 451 Research's Voice of the Enterprise: Internet of Things, Workloads & Key Projects 2019

Q: What data process(es) do you undertake at the network edge/perimeter?



The edge is the first 'point of contact' with machine data, and the proper security, segmentation, filtering and summarization are required to maximize value and minimize cost and latency. By creating an edge-driven data workflow, where IoT/machine data can be automatically processed and expedited to multiple data consumers, organizations enable self-service analytics to provide field and business decision-makers with the right data where and when it is most needed. This also drives efficiencies because stakeholders no longer need to search multiple systems for relevant data or deal with poor data quality issues. These automated, agile data governance frameworks require granular control and visibility into the large volumes of data being analyzed at the edge, near edge and in the cloud.

The first step in achieving this workflow is to gain access to the wealth of machine data's latent value. Connecting intelligently to the heterogeneous legacy systems, collecting, normalizing and cleansing the data captured, and directing that data via automated workflows empowers stakeholders throughout the organization. This is no trivial task because what constitutes *relevant* data to each internal and external stakeholder needs to be determined. The volumes of machine and other process and production context that can be inferred from telemetry is considerable.

The ability to declare corporate data management policies for the entire infrastructure of the company's data estate is thus key, ensuring that sensitive production information and other intellectual property is not exposed to third-party service providers such as vendors monitoring factory equipment, and shifts from a device-by-device model of network management to one of systemic policy management across the entire organization. Predesigned templates that incorporate best practices and policies for compliance and security of operational data will speed deployments and improve time to value.

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The 451 Take (continued)

An agile and secure data management and governance pipeline that enables real-time data-driven decisions by stakeholders across the organization is achievable with a combination of edge intelligence and analytics. A key obstacle for achieving this today is the absence of an out-of-the-box product that is easy to use for all edge data needs rather than an assortment of components that need to be manually assembled. Time to value is a key metric for successful IoT deployments, and security of these critical systems needs to be approached systemically rather than on a device-by-device level. Out-of-the-box products come pre-integrated and are secure by design.

Business Impact

ENABLE A CULTURE OF REAL-TIME AND DISTRIBUTED DATA ANALYSIS. Evolving the data estate from a mass of disconnected sources into a data pipeline enables factory and field personnel to make data-driven decisions on the spot, improving all aspects of business operations from quality, safety, cost and security. This agility is possible due to the high levels of automation of the traditionally manual processes of data aggregation, cleaning and normalization. This begins with a precise view of what data is required by each stakeholder to achieve their business objectives, and an end-to-end infrastructure that is configured to pipeline-specific data to specific applications and consumers.

SPEED TIME TO DEPLOYMENT AND, ULTIMATELY, TIME TO VALUE. The complexity of distributed edge systems and analytics from the edge to the cloud quickly surpasses the ability for humans to manage them manually. A combination of preparation, standard templates and automation will lower complexity, speeding time to value. The data generated by these distributed systems will be analyzed and acted upon at all levels of the topology, from the edge to the cloud, speeding decision-making across the organization.

PROTECT CRITICAL INTELLECTUAL PROPERTY. There is an abundance of new business models being tried in IoT, most prevalently 'pay per use,' where a manufacturer owns equipment and charges the end customer by unit consumed or produced. This requires vendor connectivity to the end asset and analytics of telemetry data from the machine to ensure there is no unscheduled downtime that would prevent operation (and potentially exceed service level agreements). However, machine data can also include the number of operations or production volumes, which are core intellectual property of the enterprise and not critical to machine maintenance. Segmenting critical machine telemetry from corporate IP will prove critical to enable these utility business models while not exposing the core intellectual property of the organization.

Looking Ahead

Pivoting from a posture of reacting to the abundance of IoT data with more staff and storage to one of leveraging intelligent edge technologies that direct the right streams to the right applications and decision-makers enables organizations to fully benefit from the value of their data. This simple, agile approach will result in higher utilization and value of organizational data, as well as faster data-driven decision-making where it is most needed. At the same time, transitioning from a heterogeneous and non-interoperable mélange of data sources to a homogenous data pipeline will facilitate faster analytics and simplify internal application development.



Success in the third era of IoT requires unlocking data at the right physical location in the most secure, efficient, and cost-effective manner possible. Out of the box solutions for overcoming the challenges of manual processes and human manageability at the edge have not been available. Cisco has introduced a solution, one that is simple and easy to use for all your IoT Edge needs – across IoT Networking, Compute, Edge Data and Security. Click [here](#) for more information.