Cisco Edge Fog Fabric

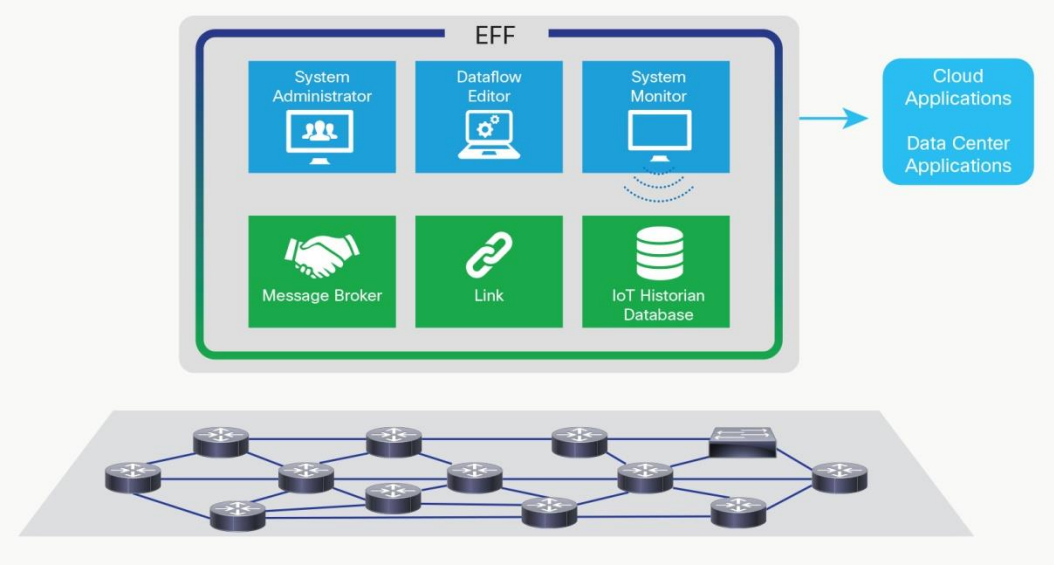
Cisco® Edge Fog Fabric (EFF) is an open architecture IoT platform for industrial customers. It enables a new class of IoT applications for advanced monitoring and diagnostics, improving overall equipment efficiency, real-time quality detection, proactive maintenance, and operational intelligence use cases.

Product Overview

Cisco EFF is a modular microservice architecture platform that enables immediate and intelligent processing and distribution of data. It is designed to process data where it is actively created. It provides a differentiated approach that filters, aggregates, and compresses data at the edge, in the fog, and/or in the data center or cloud as appropriate for the operations.

Cisco EFF includes several components that combine to create a modular, highly scalable, and secure system for deploying, managing, and running enterprise IoT solutions. Figure 1 depicts the EFF components.

Figure 1. Cisco EFF Components

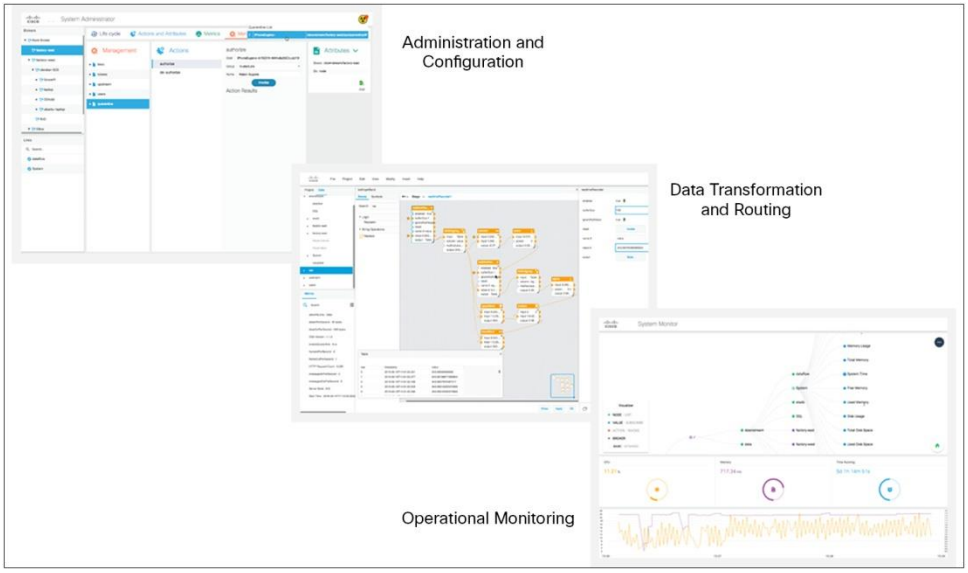


Cisco EFF key components includes system administrator, dataflow editor, system monitor, message broker, links, and historian database (Figure 2):

- **System administrator:** A graphical user interface for component provisioning, asset deployment, lifecycle management, configuration, and administration of EFF components.
- **Dataflow editor:** An easy-to-use drag-and-drop development tool for defining streaming data transformations and analytic logic.
- **System monitor:** A standalone tool for operators to obtain real-time functional status of a deployed EFF solution.

- **Message broker:** A software component that reliably routes messages between clients by providing publish-subscribe and request-reply message exchange with guaranteed QoS delivery.
- **Links:** A software component that enables communication between edge devices and broker and can be used for data acquisition and/or control.
- **IoT historian database:** A massively parallel (MPP), shared-nothing data management system optimized to run complex analytical queries over extremely large amounts of data on a cluster of commodity servers.

Figure 2. Cisco EFF Sample



Features and Benefits

Table 1 describes features and benefits.

Table 1. Features and Benefits

Feature	Benefit
System administrator	• Enables provisioning and asset deployment of EFF components • Enables configuration, administration, and lifecycle management of EFF components
Dataflow editor	• Easy drag-and-drop interface enabling visual programming • Graphical UI client enabling administrator to program the dataflow engine • Displays real-time values to aid in creation and debugging process
System monitor	• Obtain health information and a real-time view of the nodes and microservices
Message broker	• Reliable and flexible data delivery between clients • Runs at the edge, fog, and data center/cloud and has a very small footprint • Publish-subscribe and request-reply message exchange • Guaranteed QoS delivery
Links	• Enables communication between edge devices and message brokers • Communicates with the IoT device in using its native language • Bridges from native protocol to EFF protocol • Provides connectivity to the ParStream IoT historian • Support multiple languages such as Dart, Java, JavaScript, Python, Ruby, C, C++, and Scala

Feature	Benefit
IoT historian database	• Purpose built IoT historian database • Continuously import time series data with a high ingestion rate • Subsecond query response times on terabytes of data • Immediate and continuous analysis of real-time data as it's being loaded • Local real-time analytics and storage close to the source

System Requirements

The characteristics of the data (volume, velocity, and variety) and the processing desired drive the system requirements. For example, at the edge, where small amounts of compute resources are available, functions such as data transformations, filtering, and aggregations are typically performed. Table 2 provides the minimum system requirements at each layer of the EFF deployment architecture.

Table 2. System Requirements by Location

Edge (low compute)	Disk space	N/A
	Hardware	Single core
	Memory	256 MB
	Software	Red Hat 7.2, CentOS 7.2, Ubuntu 14.04 LTS, Windows 10, IOX
Edge/fog/data center (high compute)	Disk space	100 GB
	Hardware	Six core, 2.4 GHz
	Memory	2 GB/core
	Software	Red Hat 7.2, CentOS 7.2, Ubuntu 14.04 LTS, Windows 10

Recommended Cisco Hardware

EFF software supports running on top of a number of Cisco networking devices and servers, creating a distributed computing fabric. Additionally, EFF supports running on third-party IoT gateways and servers. Table 3 outlines the Cisco specific hardware recommended based on the network location.

Table 3. Recommended Cisco Hardware

Network Location	Cisco Hardware
Edge (low compute)	Industrial edge routers • IR 809/829 Industrial Ethernet switches • IE 4000 Integrated services router • ISR 4000 (with embedded Cisco UCS®)
Edge/fog/data center (High compute)	Cisco UCS C-Series rack servers • Cisco UCS C220 • Cisco UCS C240

Licensing

The Cisco EFF is licensed on a per-node and per-device basis. It is sold using a subscription software license model for 12-, 36-, and 60-month terms. The quantity ordered needs to reflect the number of nodes on which EFF components execute and devices with which EFF communicates. Within the subscription term, the customer is entitled to unlimited 24x7 technical support, software upgrades on all maintenance releases and patches, minor update releases, and major upgrade releases. Refer to Table 4 for the EFF product SKUs.

Customers can choose a subscription billing model of either prepaid for whole term or prepay with annual billing.

Table 4. Licensing Models

Top-Level PID	Subscription SKU	Licensing Model	Description
DATA-CONNECT-EFF			Top-level ATO for Cisco Commerce Workspace ordering
	DC-EFF-NODE	Smart software licensing	E-delivery license for node
	DC-EFF-DEVICE	Smart software licensing	E-delivery license for device

EFF is smart license enabled and requires the customer to set up a smart account with Cisco. Learn more about Cisco smart license at http://www.cisco.com/web/ordering/smart-software-licensing/index.html.

Services and Support

Cisco offers Basic technical support services covering problem resolution, customer success and adoption, and designated support management. Basic support entitles customers 24x7 support for break/fix issues by phone, web, or email. It includes access to the knowledge base, as well as software updates and upgrades. No additional products or fees are required to receive these services with EFF software subscription.

Refer to the service description for more detailed information regarding Cisco Software Subscription Support Services.

Cisco Capital

Financing to Help You Achieve Your Objectives

Cisco Capital can help you acquire the technology you need to achieve your objectives and stay competitive. We can help you reduce CapEx. Accelerate your growth. Optimize your investment dollars and ROI. Cisco Capital financing gives you flexibility in acquiring hardware, software, services, and complementary third-party equipment. And there's just one predictable payment. Cisco Capital is available in more than 100 countries. Learn more.

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