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Cisco's Extended Enterprise Solution

Securely extend the enterprise network to non-carpeted spaces

The Cisco® Extended Enterprise Solution captures business intent and extends it to the non-carpeted spaces of the enterprise, where the operations happen. The solution brings Cisco's market-leading intent-based networking, Internet of Things (IoT) networking, and Cisco Digital Network Architecture (Cisco DNA) all the way to the IoT edge. This document targets both IT and non-IT audiences to provide a high-level overview of the solution architecture and the building blocks.

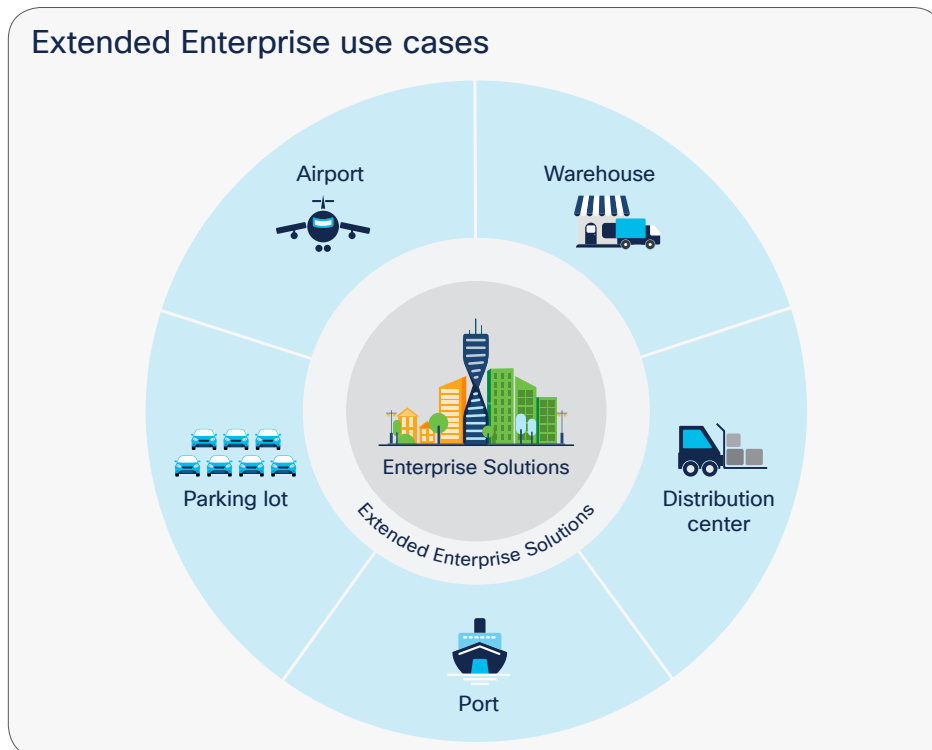| Head quarter/Data centers	Buildings/Campuses/Branches	Extended Enterprise

Warehouses   Airports   Outdoor spaces

Extended Enterprise use cases and business outcomes

The Extended Enterprise is where business operations happen in an enterprise. The Extended Enterprise network extends enterprise IT services and IoT build out to non-carpeted spaces. It provides secure connectivity for outdoor spaces such as warehouses, distribution centers, ports, campus parking lots, and airports.

However, connecting more devices to the enterprise network adds security risks and manageability issues. Cisco's intent-based, closed-loop architecture, which includes automation and analytics platforms, enables consistent security policy enforcement across carpeted and non-carpeted spaces. Cisco DNA Center can provide a single pane of glass for managing enterprise and Extended Enterprise networks.

Extended Enterprise use cases

- Airport
- Warehouse
- Enterprise Solutions
- Extended Enterprise Solutions
- Distribution center
- Parking lot
- Port

Capabilities

Cisco's Extended Enterprise Solution provides the following capabilities:

Simplicity	Security	Scalability	Consistent experience
Simple, centralized network management across the carpeted and non-carpeted spaces	Capture and translate business intent into network policies and consistently enforce the policies across the entire network	High availability, reliability and scale of extended networks to meet the needs of operations	Network assurance-visibility and analytics on the health of industrial network devices
Plug and play deployment of industrial networking in the non-carpeted spaces	Compliance to latest Security patches of industrial networking	Extended shared services to extended networks in non-carpeted spaces	Guided remediation and trouble-shooting of issues in the extended network
Simplify deployment of QoS across the extended network	Extend secure connectivity to outdoor non-carpeted spaces for users, traditional IT end points and things	Flexible industrial ethernet network foundation for rugged environments in non-carpeted spaces	Same user experience from enterprise to IoT edge

Business outcomes

By extending intent-based networking to the IoT edge, the Cisco Extended Enterprise Solution can transform your business and drive business outcomes.

Automate and go fast
Reduce costs with centralized operations extending to the outdoor/industrial network

Act with insight
Increase IT productivity by monitoring the complete network topology for easy troubleshooting

Protect the business
Address threats and vulnerabilities by expanding consistent policies out to rugged environments

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Cisco Validated Design

Cisco Validated Designs (CVDs) have been used to validate, architect, and configure next-generation technologies. Each is designed to help you accelerate digital transformation, innovate faster, and stay competitive.

The Extended Enterprise CVD is no exception. It provides a design foundation for incorporating a broad set of technologies, features, and applications. Every aspect has been thoroughly tested and documented, helping ensure a deployment that's fast, reliable, cost-effective, and predictable.
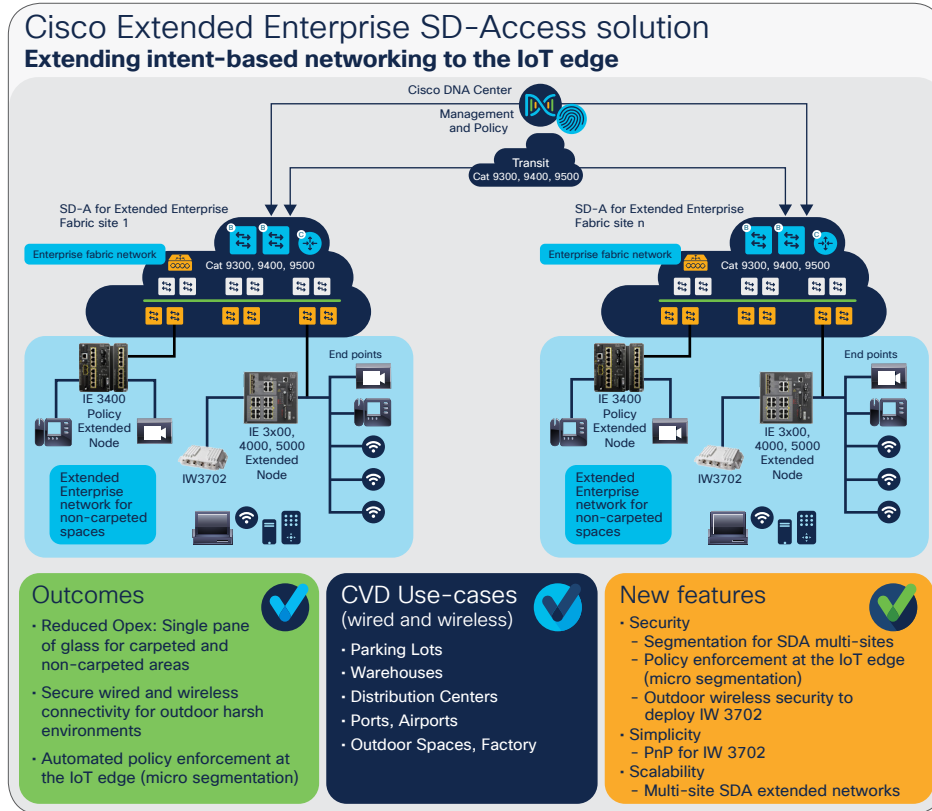
Extended Enterprise Solution features and benefits

Feature	Benefits
Cisco's intent-based networking all the way to the IoT edge with Cisco's industrial ethernet wired, industrial wireless and industrial routers	Extend network connectivity beyond the carpeted spaces; purpose built for harsh Extended Enterprise environments
Single pane of glass for managing carpeted and non-carpeted spaces – design, policy, provision and assurance for network devices	Simpler to manage, with security and policy compliance; scalable and repeatable operations across the entire enterprise
Consistent security policy enforcement across carpeted and non-carpeted spaces	Policy-based automation, simplified security for traditional IT and IoT devices
Plug and play for provisioning industrial ethernet switches, industrial wireless and industrial routers	Faster deployment, greater business agility
Guided remediation and automated troubleshooting with analytics and machine learning	Self-learning, self-defending, and self-healing network; faster operations, increased operational efficiency
High availability and reliability in non-carpeted spaces	Resilient operations, reduced operating expenses

Extended Enterprise Cisco Validated Design

Enterprises are looking to innovate and differentiate their offerings by digitizing their operations beyond the traditional carpeted spaces. In the Extended Enterprise, network connectivity needs to be extended beyond the traditional air-conditioned spaces to connect and manage IoT devices as well as traditional enterprise end devices being deployed in outdoor or extreme-temperature environments.

With digitization and a proliferation of IoT endpoints, enterprises are challenged to improve operational efficiency, provide new service offerings, and increase customer satisfaction. Delivering these business outcomes requires a new approach to networking, one that is intent based, to manage the challenges of scale and security faced by the enterprise.

Cisco Extended Enterprise SD-Access solution
Extending intent-based networking to the IoT edge

Outcomes ✓
- Reduced Opex: Single pane of glass for carpeted and non-carpeted areas
- Secure wired and wireless connectivity for outdoor harsh environments
- Automated policy enforcement at the IoT edge (micro segmentation)

CVD Use-cases
(wired and wireless) ✓
- Parking Lots
- Warehouses
- Distribution Centers
- Ports, Airports
- Outdoor Spaces, Factory

New features ✓
- Security
  - Segmentation for SDA multi-sites
  - Policy enforcement at the IoT edge (micro segmentation)
  - Outdoor wireless security to deploy IW 3702
- Simplicity
  - PnP for IW 3702
- Scalability
  - Multi-site SDA extended networks

Cisco's intent-based networking is an architecture based on automation and analytics to delivery policy from end to end at scale. Intent-based networking enables customers to capture business intent and activate it networkwide, in the campus as well as in the non-carpeted spaces where the operations happen. The business benefits of intent-based networking are simplicity, speed, and agility, an IT staff focused on delivering business value, and a reduced risk of noncompliance.

The Extended Enterprise CVD outlines the steps for both IT and operations teams to accomplish the business's goals by digitizing operations in the ruggedized spaces. It includes design guidance for implementing Extended Enterprise use cases with your existing Cisco DNA Center and SD-Access.

CVD building blocks

1. **Industrial infrastructure:** Intent-based networking for industrial ethernet wired and industrial wireless in non-carpeted spaces

Industrial networking purpose-built for harsh Extended Enterprise environments in non-carpeted spaces

1 Size weight form-factor

3 Resilient network topologies

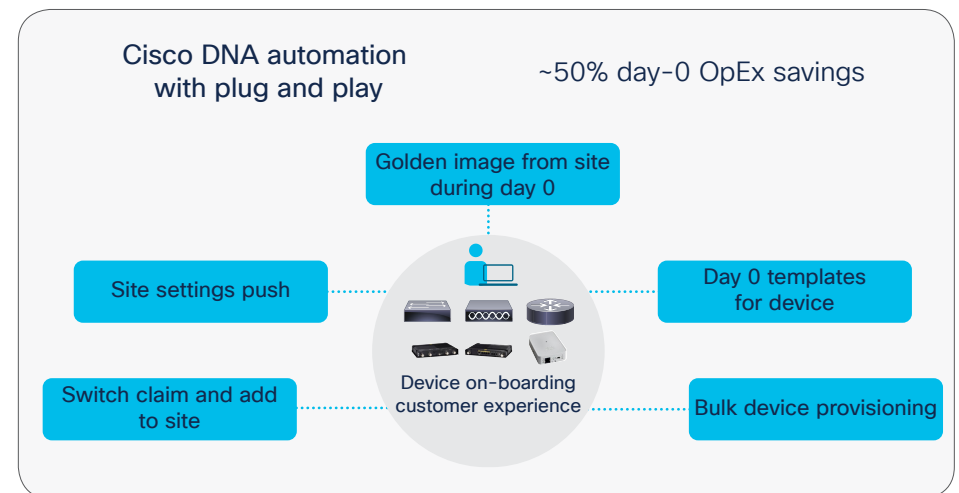**5** Fanless - 40 - 75° C self-cooled
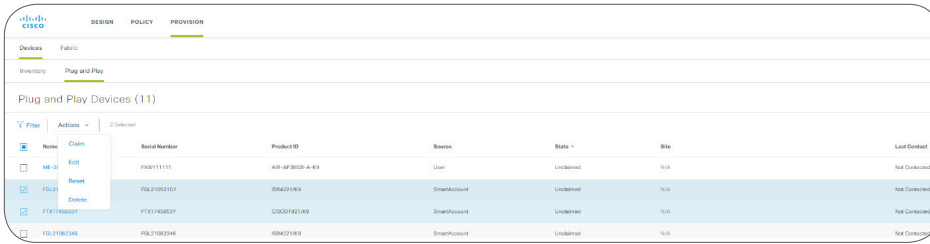
2 Shock and vibration

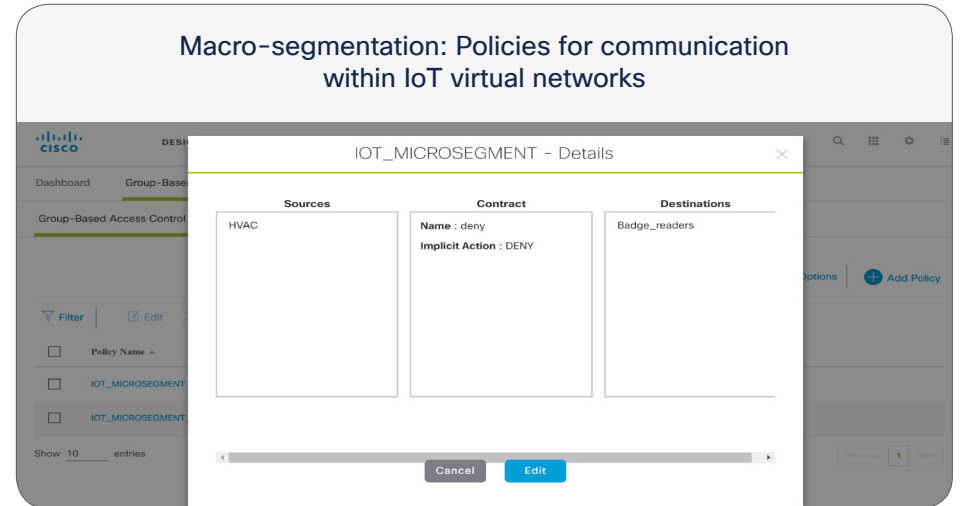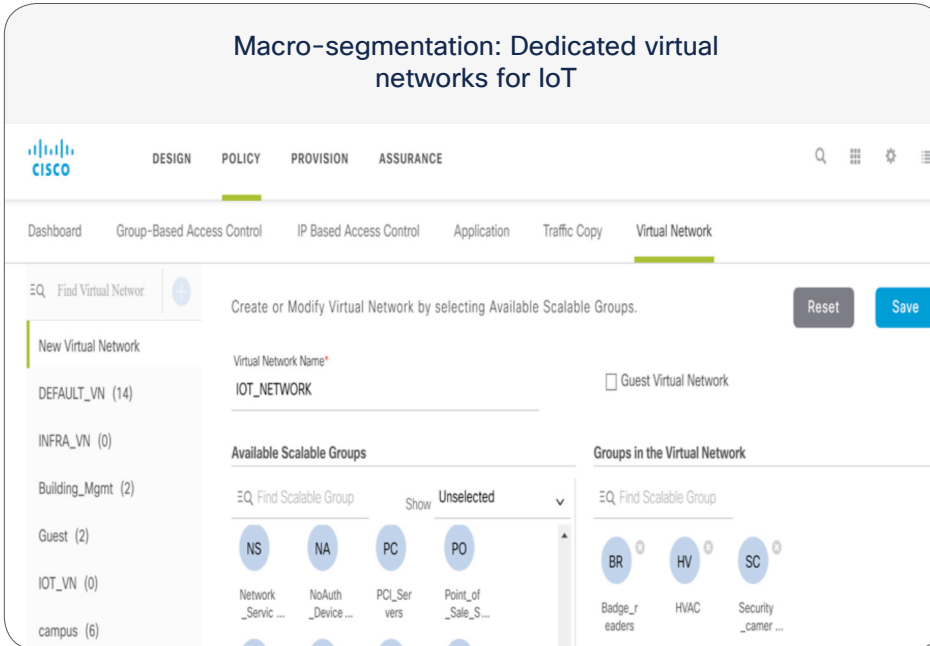**4** Din-rail or rack mounts

6 Industry certifications

2. **Reduced complexity:** Plug-and-play provisioning of industrial ethernet switches in non-carpeted spaces

Cisco DNA automation with plug and play   ~50% day-0 OpEx savings

Golden image from site during day 0

Site settings push

Day 0 templates for device

Device on-boarding customer experience

Switch claim and add to site

Bulk device provisioning

3. Security: Intent-based operations groupings provide consistent policy and access independent of network topology, in carpeted and non-carpeted spaces

Macro-segmentation: Dedicated virtual networks for IoT

Macro-segmentation: Policies for communication within IoT virtual networks

4. Scalable and repeatable operations across the entire enterprise with Cisco DNA Center

Single pane of glass for managing enterprise and Extended Enterprise networks

5. Guided remediation and automated troubleshooting with analytics and machine learning
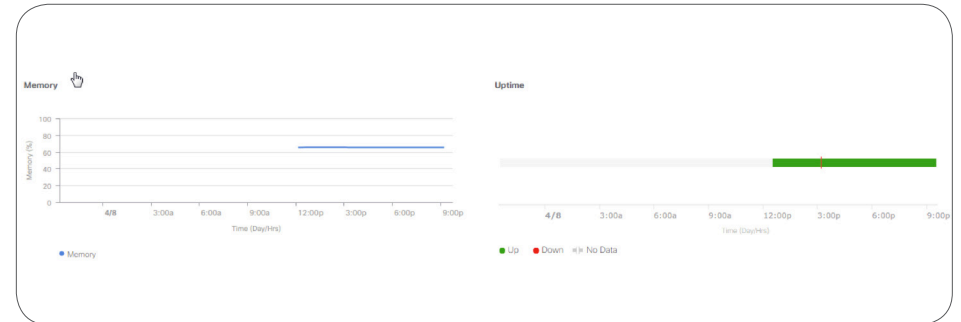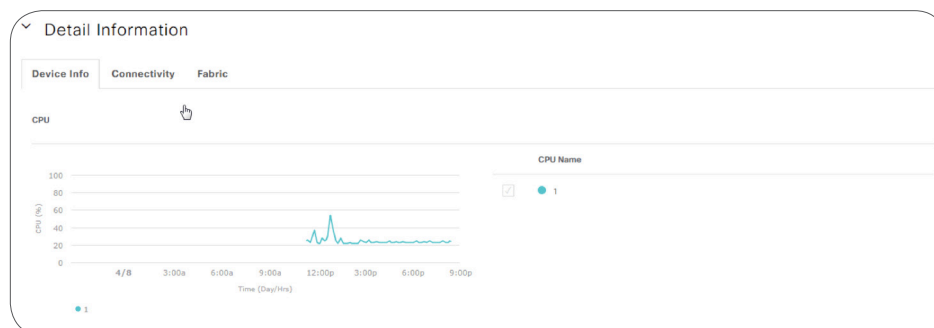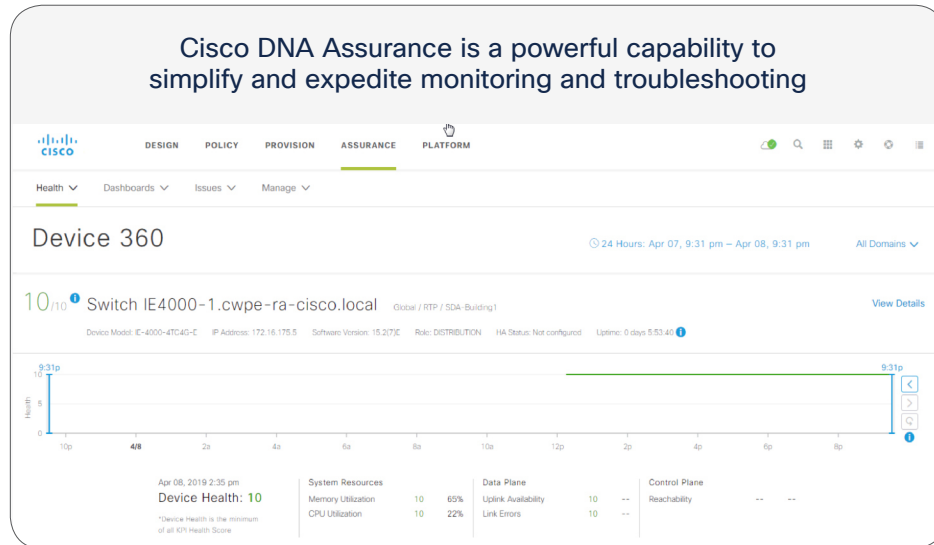
Value proposition of the Extended Enterprise CVD

Planning, testing, and implementing various components and shared services for an extended network can pose a large challenge for organizations. By using the Extended Enterprise CVD with a modular approach—which tests and validates the foundation infrastructure, security, automation, assurance, and shared services—you can reduce costs, risks, and operational issues, as well as speed deployment.

There are many ways an organization can benefit by deploying the Extended Enterprise CVD:

- Simplicity through a single pane of glass for carpeted and non-carpeted spaces – design, policy, provisioning, and assurance for network devices

- Consistent security policy enforcement across carpeted and non-carpeted spaces

- Reduced cost of deployment through plug-and-play provisioning of industrial ethernet switches

- Scalability provided by intent-based networking, assurance, guided remediation, and troubleshooting

- High availability and reliability in non-carpeted spaces for resilient operations

- Summarized and simplified design choices to accelerate deployment and operation of the extended network
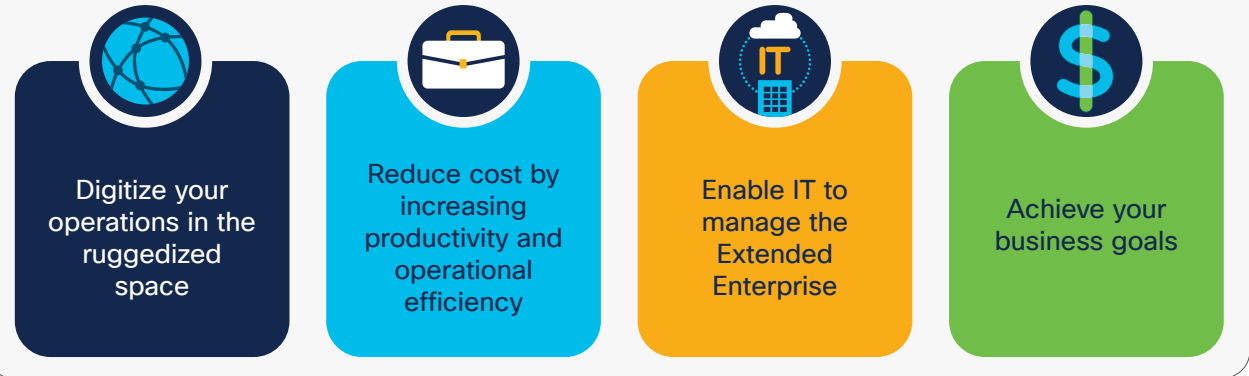
Why Cisco?

In today's world, the network connects everything. It has the potential to constantly adapt, protect, and inform across all IT and business processes. Cisco intent-based networking is an architecture based on automation and analytics to deliver policy from end to end at scale. It enables customers to capture business intent and activate it network wide, in the campus and in the non-carpeted spaces where the operations happen.

The following unique differentiators make Cisco the best choice to extend your enterprise:

- Cisco's industrial ethernet portfolio is number 1 in the managed industrial switching market

- Our industrial networking products bring intent-based networking all the way to the IoT edge, with a rich, industry-standard Cisco IOS® Software feature set

- Reduced costs with centralized operations extending to outdoor and non-carpeted spaces using Cisco DNA Center

- End-to-end security and consistent policy across the carpeted and non-carpeted spaces of an enterprise

- Complete portfolio across industrial ethernet, routing, and wireless

Access our Extended Enterprise CVD

The time to extend the enterprise is now

Digitize your operations in the ruggedized space	Reduce cost by increasing productivity and operational efficiency	Enable IT to manage the Extended Enterprise	Achieve your business goals

You can access the CVD by visiting the Extended Enterprise site: www.cisco.com/go/extendedenterprise or www.cisco.com/go/iotcvd.