

DATA ANALYTICS & SECURITY: HOW TO CREATE RECURRING REVENUE ON THE BACK OF YOUR IOT HARDWARE

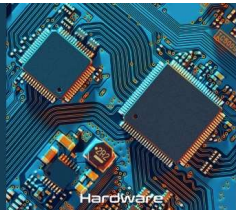


Ron Singh

Snr Dir Sales

Digi International EMEA

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Het ontwerpen van
innovatieve elektronica

Woensdag 20 maart 2024
1931 Congrescentrum 's-Hertogenbosch

A Business 100% Dependent on Material Goods For Revenues Runs Big Risks

- 2021-2023 saw companies face difficulties in their ability to manufacture products and get them to their customers, due largely to:
 - Shortages in semiconductors
 - Factory capacity constraints due to Covid-19
 - Transport difficulties, both in getting materials in for manufacture and shipping finished goods to customers
 - Increased costs on all of the above as well as energy
- More than often, those companies had little or no resilience in their business model(s) to mitigate this lack of hardware-based sales revenue with any kind of (Annual) Recurring Revenue

Not Just Automotive – Many Sectors Were Impacted...

TECH IN BUSINESS

Dell: Semiconductor shortage to “continue for a few years”

Eric Johnson 1 13th May 2023 (Last updated May 15th, 2023 12:48)

The eponymous CEO of Dell has joined the choir of top industry executives predicting that the ongoing global semiconductor shortage “will probably continue for a few years”. Michael Dell, who founded the company which bears his name in 1984, voiced his concerns as automakers and tech companies fear that global chip scarcities will hold back production and threaten bottom lines.

Dell’s annual orders of about \$70bn worth of semiconductors make it one of the biggest customers in the sector.

“The shortage will probably continue for a few years,” Dell said on Tuesday, [Reuters](#) reported. “Even if chip factories are built all over the world it takes time.”

Technology

Telecom Italia sees first effects of chip shortage on equipment supply

Reuters



Telecom Italia ([TLIT.MI](#)) is starting to see the first effects of the global chip shortage on its equipment supply, the head of Italy’s biggest phone group said on Thursday.

The worldwide shift to remote working and learning during the pandemic had boosted demand for laptops and other gadgets, exacerbating a global chip shortage.

“We are marginally starting to see some shortage on chips around the market,” Chief Executive Luigi Cusibito told analysts in a conference call.

He added the company had bought in advance modems which will enable customers to watch the upcoming season of football matches under a deal with sport streaming service DAZN “to avoid a supply chain issue”.

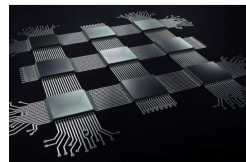
TECH NEWS

Semiconductor Shortage Hurts Network Equipment Makers and Customers

John Edwards

Semiconductors are scarce, and so are many types of network gear. The wait for things to get back to normal may be a long one.

By John Edwards
May 20, 2023



Trending

Semiconductor Shortage Hurts Network Equipment Makers and Customers
John Edwards | May 20, 2023

Do Private Data Centers Make Sense Anymore?
Andrew Pritchard | May 20, 2023

Essential Tech for a Modern

Cisco preps price increases as chip shortage drags on

By Diana Gasparetti | May 20, 2023 10:23am



Key Insights and Strategy founder and principal analyst Patrick Moorhead said the increases could impact products across the board. [Wall Street Daily](#) [Daily Energy](#) [Daily Energy](#) [Daily Energy](#)

Cisco CEO Chuck Robbins revealed the company is preparing to raise prices on certain products in light of ongoing inflation caused by a global chip shortage that is expected to persist into next year.

Washing machines among the latest computer chip shortage victims



A shortage of semiconductors means some home appliances are becoming scarce. In Bend, Johnson Brothers Appliance President David Johnson says if you're willing to wait, you'll get the appliance you want.

The chip shortage is driving up tech prices—starting with TVs

Some high-end televisions already cost 30% more than they did last summer.

By Robert Whelan | 6/15/2021, 12:15 PM



Nintendo Switch could face PS5-like restock shortage

By Shabana Arif | 2 days ago

Nintendo braces for impact of global semiconductor shortage

Comments (0)



(Image credit: Shutterstock)

Nintendo Switch supplies could soon dry up, with the console becoming as elusive to find as the PS5 or Xbox Series X.

That's according to company president Shuntaro Furukawa, who confirmed the news at a post-earnings call press conference. So if you've been on the fence about picking one up, that decision could be out of your hands in a few months.

Friday 25 May 2023 3:00 pm

Audi to idle 10,000 workers as chip shortage continues – report

Edward Thickness



It is the second time in a number of months that Audi will have to place staff on shorter hours due to the issue. [Getty Images](#)

German carmaker Audi will idle 10,000 staff for the second time in a matter of months due to the ongoing semi-conductor shortage.

APR 25, 2023

Tesla has raised Model 3 prices by \$2500 as the chip shortage drags on



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So What Are The Ways That You Could Create ARR (Annual Recurring Revenue) From Your Deployed Hardware?

- Create proactive service programmes e.g. preventative maintenance for your customers to buy based on the data you can collate
- Sell the data you've collected by to your customers that adds measurable value to their business in some way, shape or form
- Allow your customers to sell/lease the data and/or control of their finished hardware, off the back of what hardware you are selling them

Example 1 – Proactive Service Program

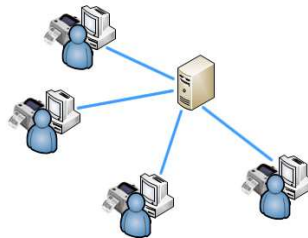
- Imagine you are an OEM, selling to customers for whom productivity down-time is a critical consideration...
- E.g. you build industrial inkjet printers producing bar-codes for the customers like Amazon or FedEx, who most often use multiple machines, running almost 24-hour shifts
- Depending on usage, a printer could fail every 3 to 7 months due to various reasons, such as clogged nozzles or tubes, overheating of motor or pump mechanisms etc.
- To accommodate this, you typically sell support agreements to customers, which involve an engineer visiting on-site to. The support agreements range in price vs. no# of visits, similar to servicing your car e.g.



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Example 1 – Proactive Service Program

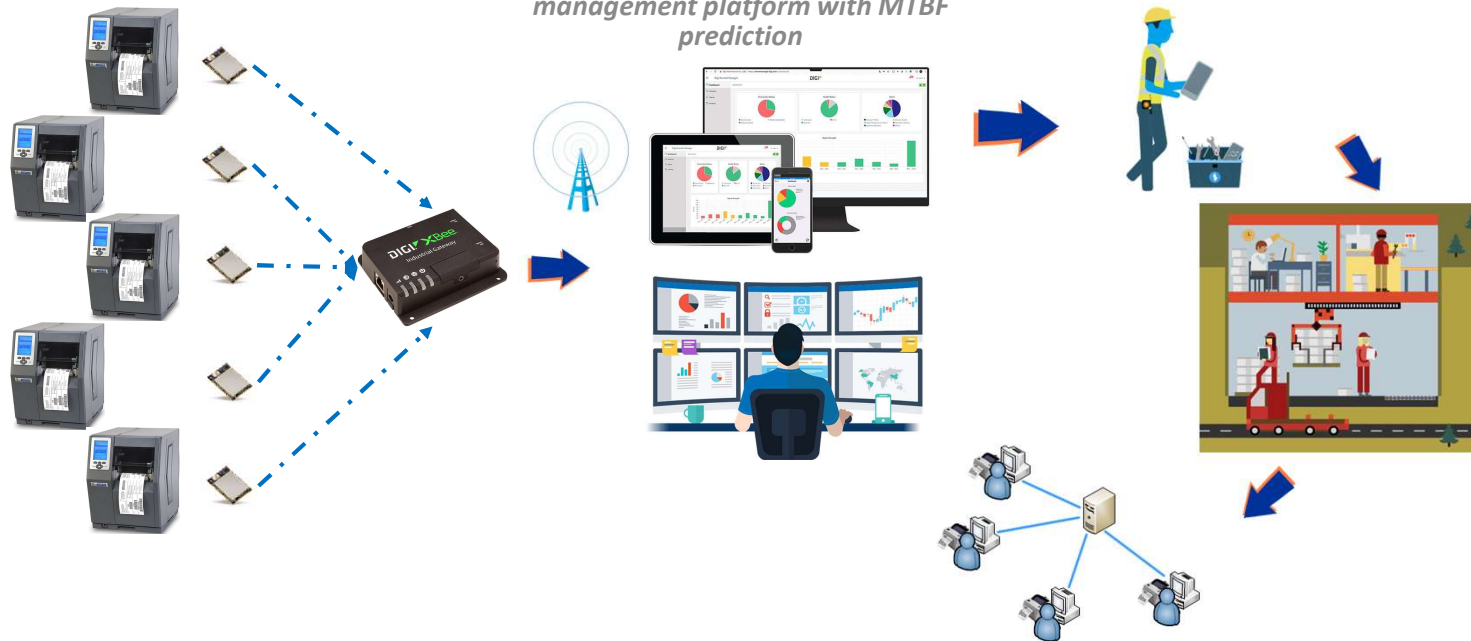
- Any additional visits / call-outs would be considered an emergency and charged at a premium
- Fixed service agreements involve taking each machine offline for around 6 hours to fully service it (so 25% day down-time), regardless of whether the machine was actually nearing a critical failure
- Typically customers have multiple machines with, so for a site with e.g. 4 inkjet printers, this would result in 24 hours of lost productivity, every three months
- Each inkjet printer has been designed with an array of sensors that can actually measure all the points of vulnerability that could cause failure, such as temperature, clogging etc..



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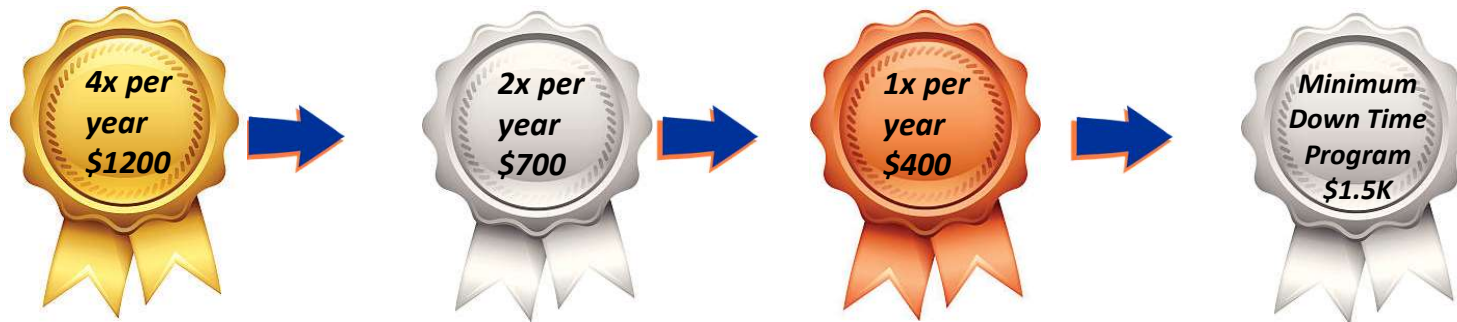
Example 1 – Proactive Service Program

Printers feed diagnostic analytics from sensors through network independent cellular gateways to remote management platform with MTBF prediction



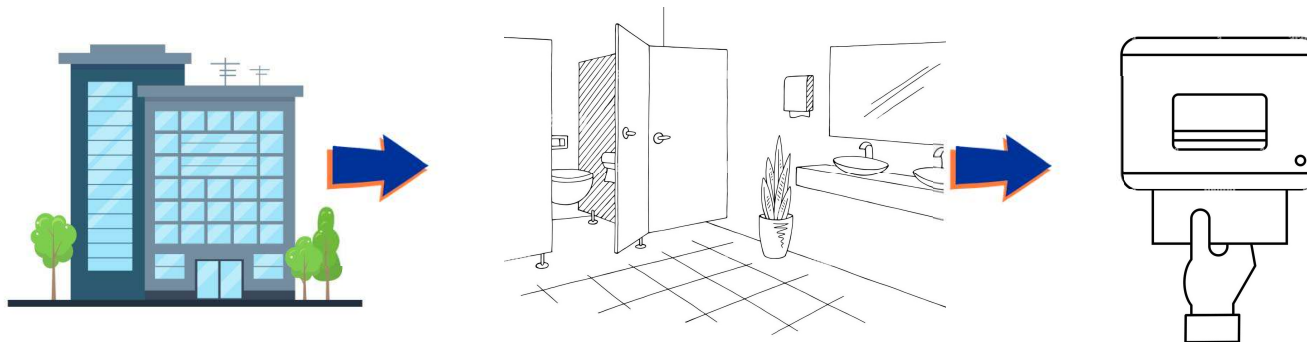
Example 1 – Proactive Service Program

- By utilising the data to anticipate MTBF, an additional higher price maintenance program can now be offered which:
 - Reduces scheduled maintenance calls taking machines offline unnecessarily
 - Reduces significantly the chances of unanticipated machine breakdown negatively impacting productivity



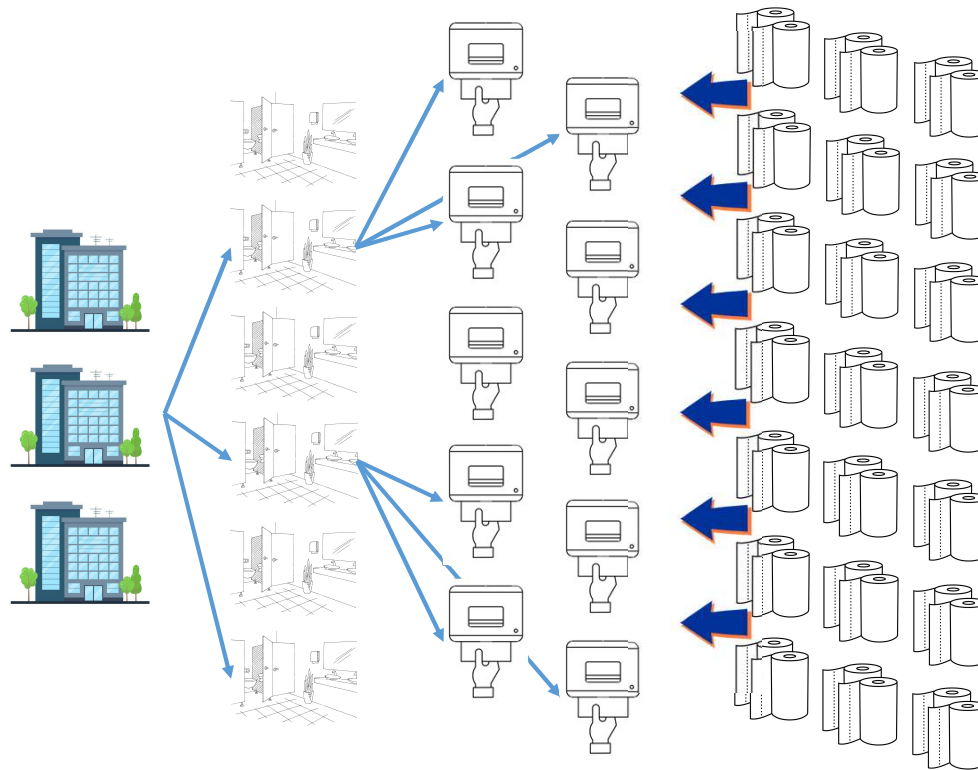
Example 2 – Utilising The Data You’ve Collected

- Imagine you are a paid-for service provider, with a consumable commodity in your service plan...
- E.g. you are contracted to maintain the cleanliness & hygiene in the bathrooms of multi-story serviced office blocks
- And this includes ensuring paper towel dispensers are kept full, for which you bill your customers for their consumption



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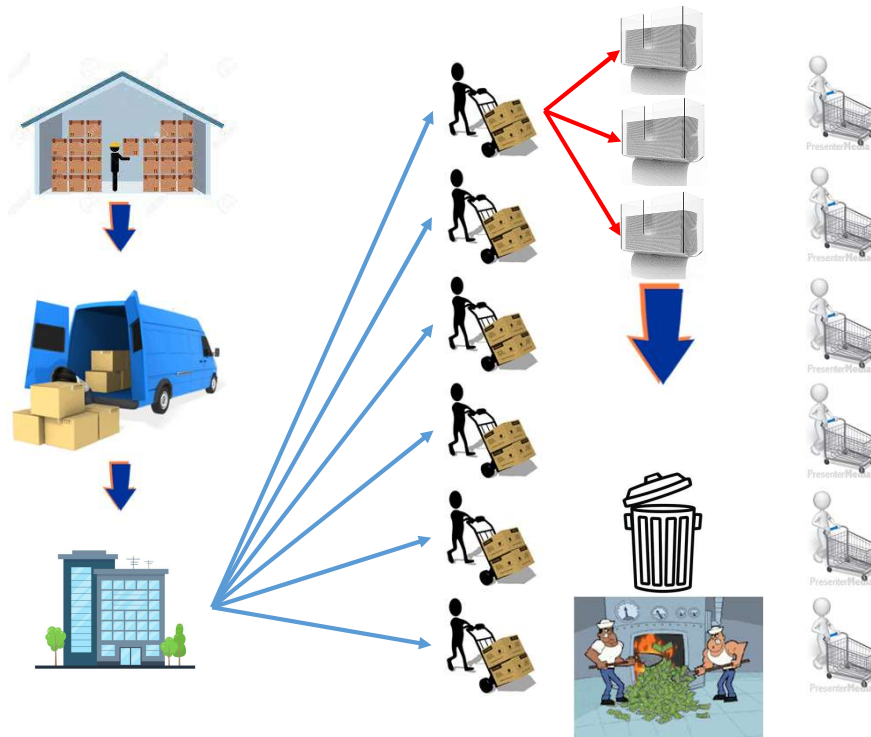
Example 2 – Utilising The Data You’ve Collected



Multiplying buildings by bathrooms and bathrooms by dispensers – that’s a lot of towel rolls to move on each weekly or daily stock check – to ensure 100% full!



Example 2 – Utilising The Data You’ve Collected



Having filled and scaled multiple floors, field-staff are minded to empty the dispensers whatever their contents, and refill so that they return empty.

EFFICIENT?



COST EFFECTIVE?



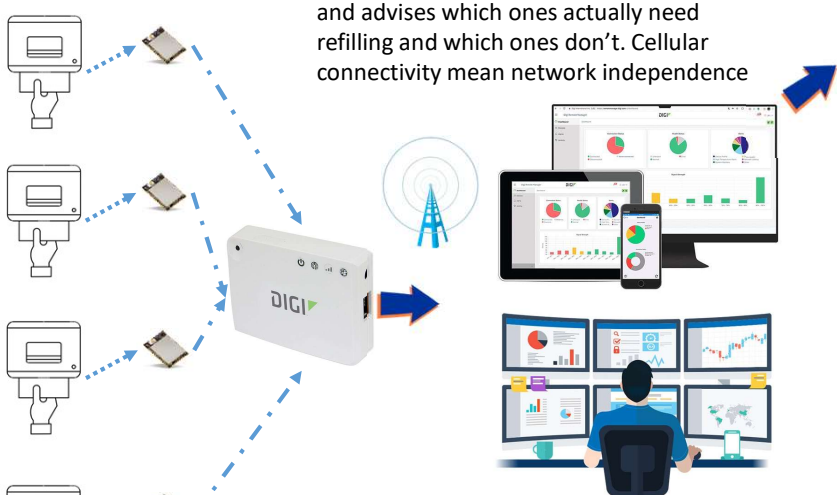
ENVIRONMENTAL?



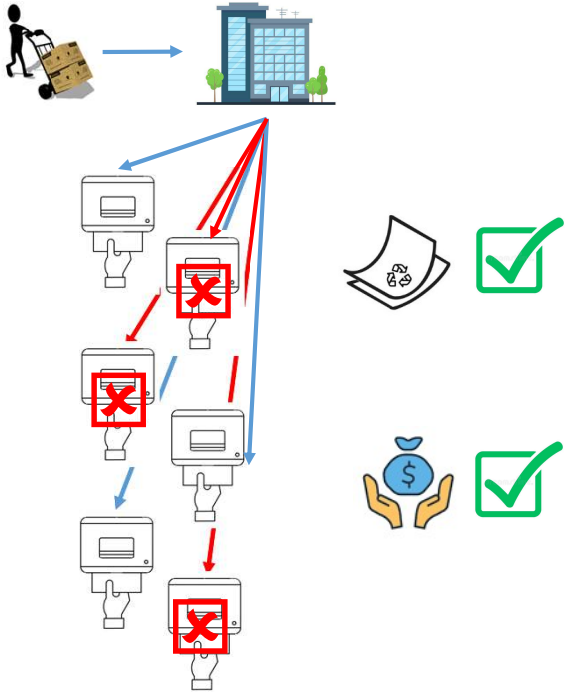
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Example 2

Remote Management Platform takes input from sensors in each individual dispenser and advises which ones actually need refilling and which ones don't. Cellular connectivity mean network independence



This data allows the field staff to optimise what they carry into each building / floor so only the mostly-empty dispenser are filled, thus minimising waste



Example 3 - Selling On The Data / Control

- Imagine you are the manufacturer of vending style coffee machines.
- Your purchasing customers are typically 3rd party food & drink service providers, who
 - rent out these machines to offices & factories,
 - with serviced premises agreements to ensure that ingredients & cups are replenished, waste containers are emptied etc.
- Your purchasing customer are asking for ways
 - to make machine management more efficient,
 - as well as create new revenue streams e.g. advertising,
 - and their renting customers are looking for ways also manage & control vending, such as pricing control.



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Example 3 - Selling On The Data / Control

- As an OEM of these coffee machines, there is:
 - A need to know at any time the connection status of machines deployed anywhere
 - An obligation to perform remote maintenance procedures in accordance with the service contracts agreed with their end customers.
 - A possibility to collect logs for the subsequent analysis of issues in order to verify customers' and end users' claims. This allows you to provide a comprehensive support service, as well as save time & effort in finding the root cause of potential problems reported by their customers.
 - A use of file system access, both for developers and IT staff; examples of use include remotely changing the recipes loaded in coffee machines or the order in which videos (typically advertising spots) appear as screen savers when machines are not in use
 - A use for a remote console, a feature which is highly appreciated by the customer - by both developers and IT staff – as it saves a lot of time and headaches.
 - A potential need for to create additional subaccounts within a parent account with access to a subset of devices, in order to have at least two levels of hierarchy in order to exploit cloud-based services business.



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Example 3 - Selling On The Data / Control

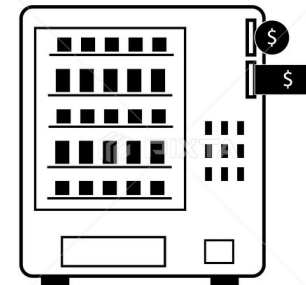
What's The Sort Of Data That Is Of Business Use?

For The (Buying) Customer:

Status of coffee machines (on, off, rebooting), as well as connectivity status.

Remote firmware and application updates.

Other technical information that can be obtained through the command line interface. This functionality is key for both their developers and IT staff.



For The Customer's (Renting) Customer:

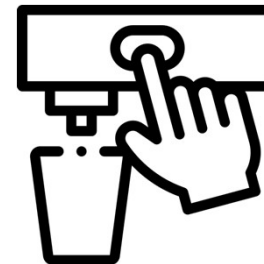
Status of coffee machines (on, off, rebooting, connected, disconnected).

Number and type of coffees sold during a customizable period of time.

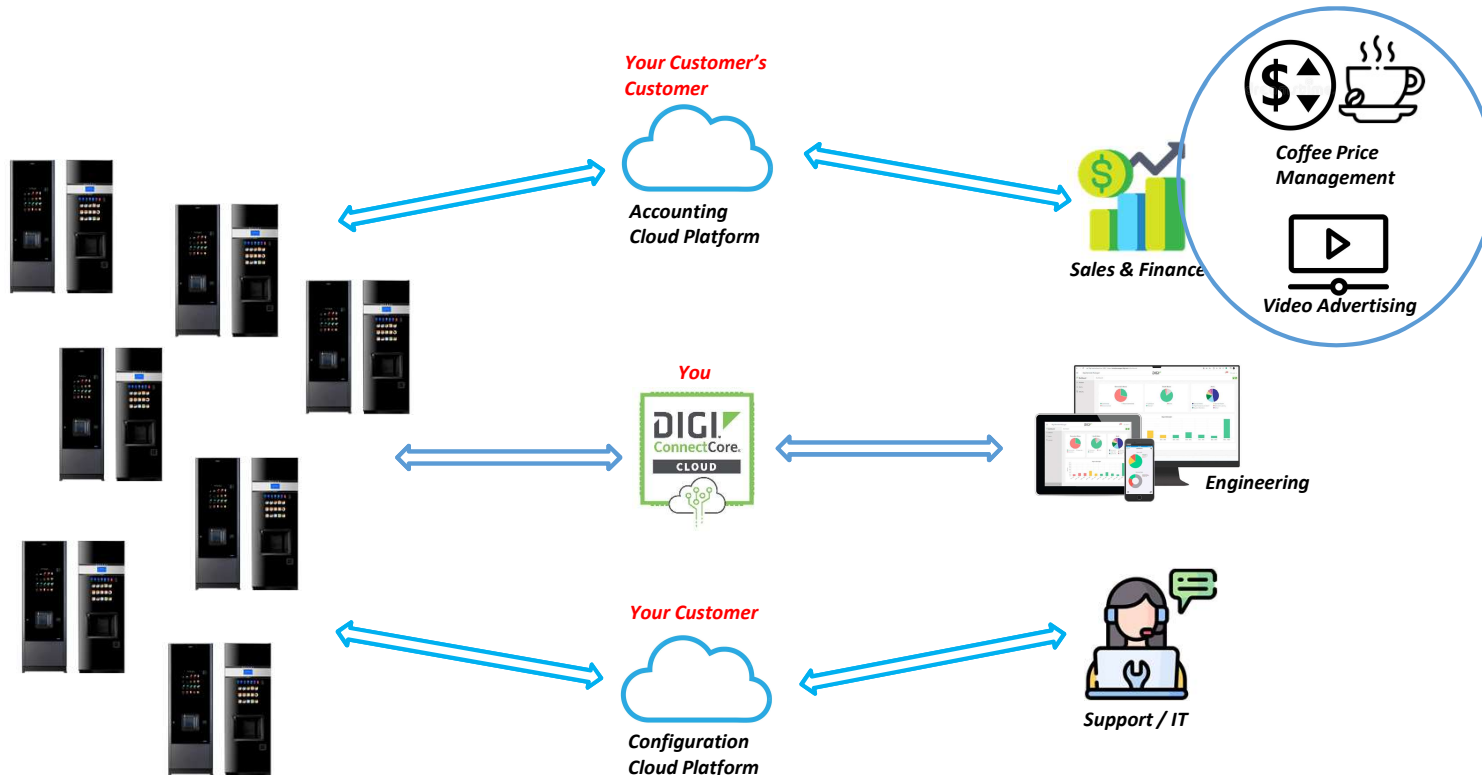
Record when coffee machines were turned on, off or rebooted manually or scheduled.

How often and when (date and time) filters in the machine were changed

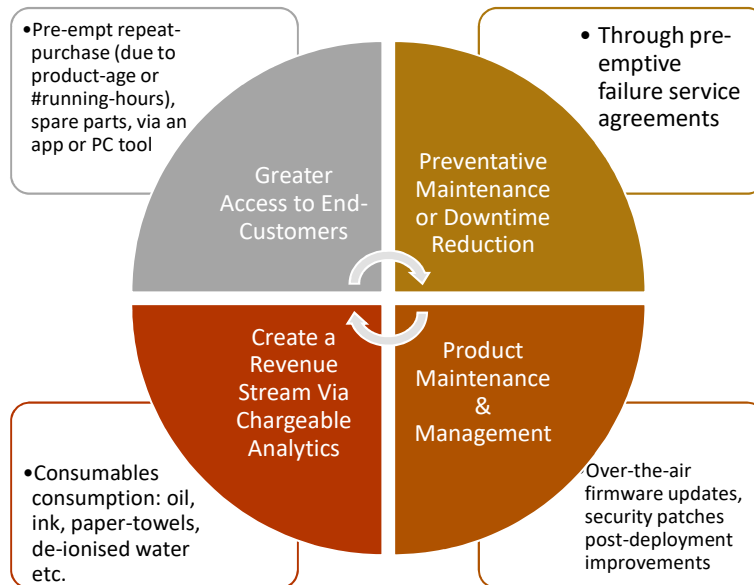
Information on refilling of ingredients (coffee, decaffeinated coffee, milk, etc.).



Example 3 - Selling On The Data / Control



Remote Management Benefits



• Key Features

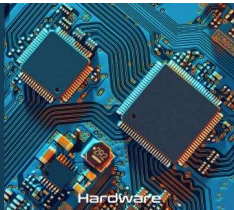
- Remote OTA Firmware Updates
- View and Group Devices
- Update Devices in Bulk
- Device Requests
- Automated Operations
- API Access
- File System Access
- Custom Data Streams
- Alarms and Alerts
- Subaccounts
- Remote CLI
- System Monitoring



SECURITY!

Making an IoT-Secure Product Is Hard...
... Maintaining It's Security Over It's Complete Life-Cycle Is
Infinitely Harder!

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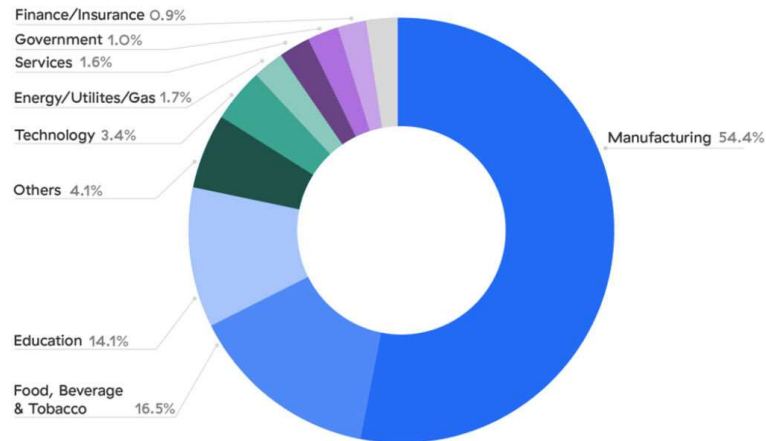
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IoT Malware Attacks Surge 400%

There has been a 400 per cent increase in IoT and OT malware attacks in the first six months of this year, according to a report from cloud security firm ZScaler.

The report provides an in-depth look at malware activity over a six-month period, analysing approximately 300,000 blocked attacks on IoT devices secured by the Zscaler Zero Trust Exchange platform.

The high number of attacks on IoT devices represents a 400% increase in malware compared with the previous year. The increasing frequency of malware attacks targeting IoT devices is a significant concern for OT security, as the mobility of malware can facilitate movement across different networks, potentially endangering critical OT infrastructure.



<https://www.iotm2mcouncil.org/iot-library/news/iot-newsdesk/iot-malware-attacks-surge-400/>

Security... So Who Even Hacks & Why?

Basically, from 10,000 ft., there are 6 kinds of malicious hacker:

The Champion – looking for acknowledgement & recognition amongst peers

The Anarchist – “some people just want to see the world burn”

The Vengeful – beware the disgruntled - very knowledgeable about your systems - ex-employee

The Fraudster – “show me the money!”

The Competitor – just wants your IP, could be located on the other side of the world

The Hactivist – politically driven to upset the status quo



Security Breaches Are Pervasive Across Many Markets...

Forbes

Nov 7, 2016, 9:00pm EST

Hackers Use DDoS Attack To Cut Heat To Apartments

Lee Mathews Senior Contributor @ Cybersecurity
Observing, pondering, and writing about tech. Generally in that order.

This article is more than 9 years old.

Residents of two apartment buildings in Lappeenranta, a city of around 60,000 people in eastern Finland, were literally left in the cold this weekend. The environmental control systems in their buildings stopped working, and it wasn't because of a blackout. It was actually a DDoS attack that took them down.

Jeep hackers at it again, this time taking control of steering and braking systems

By Jordan Golson | Aug 2, 2016, 1:45pm EDT
Via Wired

UNDERSTAND WHAT NICE MEANS FOR YOUR BUSINESS.

Forbes

Criminals Hacked A Fish Tank To Steal Data From A Casino

Lee Mathews Senior Contributor @ Cybersecurity
Observing, pondering, and writing about tech. Generally in that order.

This article is more than 4 years old.

Hackers are a resourceful bunch, and they'll look for any weakness that can be exploited to break in to a computer network. Once they're in, they'll use any available method to get the data they discover out.

Healthcare IT News

FDA to patients with St. Jude pacemakers: Update needed to keep hackers out of devices

Providers can update software to ensure a hacker can't access the device and remotely modify programming commands.

By Jessica Davis | August 29, 2017 | 04:00 PM

CNN politics SCOTUS Congress Facts First 2024 Elections

Federal investigators confirm multiple US water utilities hit by hackers

By Sean Ljunggren, CNN
3 minute read | Updated 10:48 PM EST, Fri December 1, 2023

REUTERS World Business Markets Sustainability Legal Breakingviews Technology Investigati

Iran petrol stations hit by cyberattack, oil minister says

Middle East
December 18, 2023 6:38 PM GMT - Updated 16 days ago



Municipal Water Authority of Allegheny tower in Allegheny

(CNN) — Following a recent cyberattack at a Pennsylvania water utility, federal officials have confirmed that multiple additional water utilities in the US running the same industrial equipment have been breached by hackers, two people briefed on the matter told CNN.



[1/3] People wait at a gas station during gas station disruption in Tehran, Iran, December 18, 2023. Majid Aljazeera/WANA (Web Acta News Agency) via REUTERS/Agence France Presse

DUBAI, Dec 18 (Reuters) - Iran's Oil Minister Javad Owji on Monday confirmed that a nationwide disruption to petrol stations was caused by a cyberattack.



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... And Cost, Either In Lost Productivity, Theft Or Ransom - And Massively Impact Market Valuation

Toyota to close Japanese factories after suspected cyber-attack

28 February 2022



Toyota will shut down all 14 of its factories in Japan on Tuesday after a possible cyber-attack.

News site Nikkei, which first reported the shutdown, said supplier Kojima Industries Corporation suspected it had been hit by a cyber-attack, causing a halt in production.

Japanese factories account for about a third of Toyota's production.

Chipmaker giant Nvidia hit by a ransomware attack

February 27, 2022 By Pierluigi Paganini

The chipmaker giant Nvidia was the victim of a ransomware attack that took down some of its systems for two days.

The chipmaker giant Nvidia was victim of a ransomware attack that impacted some of its systems for two days. The security breach is not connected to the ongoing crisis in Ukraine, according to a person familiar with the incident.



The incident also impacted the company's developer tools and email systems, but business and commercial activities were not affected.

"Our business and commercial activities continue uninterrupted," Nvidia said in a statement. "We are still working to evaluate the nature and scope of the event and don't have any additional information to share at this time."

Security

Okta confirms another breach after hackers steal source code

Carly Page @carlypage_ / 2:47 PM GMT • December 22, 2022

Comment



Innocuous Case In Point... A "Smart" Toilet...

Imagine you have your new installed Smart Toilet in operation...



...Suddenly!!!



Home > Extreme

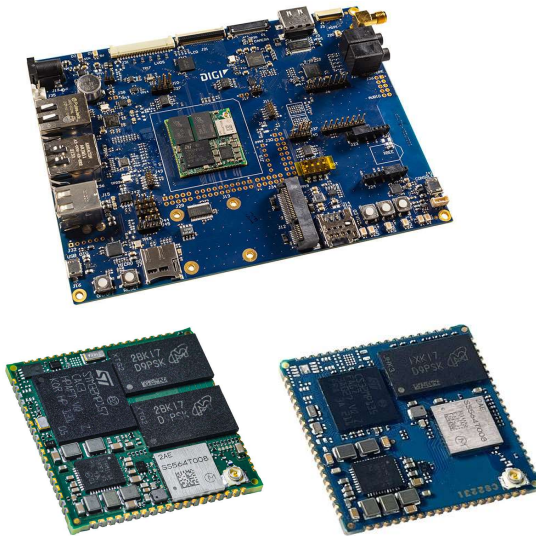
Smart toilet's bidet hacked via Bluetooth, gives new meaning to 'backdoor vulnerability'

Bestowing terrifying new definitions on the phrases "backdoor vulnerability" and "security hole," one of the world's most luxurious toilets has been exploited by hackers. The smart toilet is vulnerable via its built-in Bluetooth radio, allowing hackers to remotely open or close the lid, flush the toilet, or, perhaps most perturbingly, activate the built-in bidet function.

By Sebastian Anthony August 5, 2013



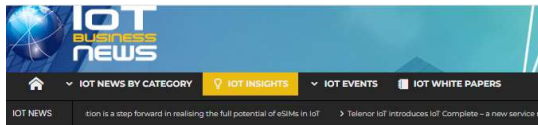
From An Embedded Perspective, Focus is on Preventing Attacks Leading To Breaches In A Variety Of Ways



Concern	Security Requirement	Technology
Device Identification	The IoT device can be uniquely identified logically and physically.	Secure Attestation
Device Configuration	The IoT device's software and firmware configuration can be changed, and such changes can only be performed by authorized entities.	Secure Upgrade
Software and Firmware Update	The IoT device's software and firmware can be updated by authorized entities using only a secure and configurable mechanism.	Secure Upgrade
Data Protection	The IoT device can protect the data it stores and transmits from unauthorized access and modification.	Secure Key Management
Logical Access to Interfaces	The IoT device can limit logical access to its local and network interfaces to authorized entities only.	Secure Debug
Software and Firmware Update	The IoT device's software and firmware can be updated by authorized entities using only a secure and configurable mechanism.	Secure Upgrade
Cybersecurity Event Logging	The IoT device can log cybersecurity events and make the logs accessible to authorized entities only.	Anti-Tamper
Software Integrity	Attempts to breach security are logged and developers may select appropriate system counter-measures technologies to protect security.	Secure Boot



EU Announces First Cybersecurity For IoT Legislation (Jan2023)... Similarly in the US, 2020



EU announces first ever move to legislate cybersecurity for IoT

Posted by IoT.Business.News | Date: October 10, 2022 | In: IoT Insights



By Mike Nelson, VP of IoT Security at DigiCert.

What the EU Cyber Resilience Act means for IoT security

The EU Cyber Resilience Act is the first EU-wide legislation to impose cybersecurity rules on manufacturers. It will cover both hardware and software and applies to both manufacturers and developers, making them responsible for the security of connected devices. The European Commission states that the regulation will tackle two issues: *“the low level of cybersecurity of many of these products and more importantly the fact that many manufacturers do not provide updates to address vulnerabilities.”*

GlobalSign Blog
The Cybersecurity Improvement Act 2020 & NIST Cybersecurity For IoT

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Please check here to opt in to emails about GlobalSign products. You can always update your communication preferences in our Preference Center.

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Legislation Citation

Examples: hrs, sres, "health care" MORE OPTIONS

Home > Legislation > 116th Congress > H.R. 1668

H.R.1668 - IoT Cybersecurity Improvement Act of 2020

116th Congress (2019-2020)

LAW Hide Overview X

Sponsor: [Rep. Kelly, Robin L. \(R-IL-2\)](#) (Introduced 03/11/2019)

Committees: House - Oversight and Reform; Science, Space, and Technology

Committee Meetings: [09/12/19 10:00AM](#)

Committee Reports: [H. Rept. 116-501](#)

Latest Action: 12/04/2020 Became [Public Law No. 116-207](#) ([All Actions](#))

Tracker: Introduced Passed House Passed Senate To President Became Law



Digi ConnectCore Security Service

Service Offering

- Vulnerability analysis for customers pre- and post-launch of their products
- Identify security issues in ConnectCore / DEY based customer products
- Support SBOM management requirements for medical devices
- Binary image scans for additional vulnerability insights
- Monitor & maintain security through the entire product lifecycle
- Engineering services / consulting to help fixing security issues
- Service based on collection of commercial & open-source security tools
- Yearly subscriptions with different levels (Basic, Premium, Enterprise)
- Demand will be driven by upcoming EU & US compliancy rules




Summary

- Don't Let Material Supply Restrictions (e.g. Semiconductor Allocation) Threaten Your Ability to Create Sales Revenue
 - Mitigate Some Of That Risk With Software / Cloud Base Annual Recurring Revenue (ARR) Which Is Infinitely More Resilient To Supply Chain Issues
 - Handled Correctly, The Initial Upfront Cost Of Adopting The Tools For ARR Can Easily Pay For Itself From Your Perspective, Your Customer's Perspective, and Potential Their Customers' Too!
- Ensure That You Are Fully Up-to-date With Global / Regional Legislation – Potential Market Driven (e.g. Medical) Which Could Impede Your Ability To Bring You Products To Market
 - Have A Security Endurance Strategy To Ensure The Security Of Your Product Over The Entirety Of It's Life-Cycle
 - A Breach In The Integrity Of The IoT Security Of Your Product Has Repercussions Beyond Reputation & Liability... It Can Literally Erode The Value of Your Company

The logo for DIGI, consisting of the word "DIGI" in a bold, black, sans-serif font, followed by a green square icon with a white diagonal line.

Ron Singh – Digi International

<https://www.linkedin.com/in/ronald-ron-singh-a1230a/>

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