yubico

PARTNER WITH YUBICO TO CULTIVATE PHISHING-RESISTANT USERS

Modernizing authentication across global critical infrastructure

Around the world, critical infrastructure organizations are deploying modern authentication with hardware-backed passkeys

Cyberattacks target critical infrastructure necessitating stronger protections

Globally there is an increasing number of malicious actors trying to cause mass disruption to public life and safety by targeting critical infrastructure and disrupting supply chains with cyberattacks. Although definitions of critical infrastructure can vary across countries and regions, the sectors listed are all considered vital to the continuity of society, even if they are not specifically called out by local law or regulation. Critical infrastructure organizations face mounting pressure to reduce risk and to adopt a Zero Trust strategy that sets identity as the new perimeter in order to combat the cascading and devastating impact that attacks can have on vital business operations

Not all MFA is created equal

Multi-factor authentication (MFA) should be a first-line defense of any cybersecurity strategy to protect data, information technology (IT), and operational technology (OT) environments. And while any MFA is better than passwords, not all forms of MFA offer the same level of security or frictionless user experience.

Usernames and passwords are easily hacked. Legacy mobile-based authentication OTP codes, and push notifications are highly susceptible to phishing attacks, malware, SIM swaps, and attacker-in-the-middle attacks. Mobile-based MFA can also be costly as organizations may be liable for mobile-related service costs. MFA investments must provide critical infrastrcure organizations with protection that evolves alongside risk and compliance requirements. To be future-proofed, the MFA investment should reflect the growing regulatory requirement for phishing-resistant MFA, the need to implement Zero Trust, and modern login flows such as passwordless.

40%

of targeted attacks are towards critical infrastructure[1]

150%

global increase in attacks impacting operational technologies (OT)[2]

84%

of known critical infrastructure cyber incidents, the initial access vector could have been mitigated[3]

56%

of organizations believe that GenAI will provide an overall advantage to attackers within the next two years[4]

According to the National Institute of Standards and Technology (NIST) Special Publication (SP) 800-63-B4, only two forms of authentication currently meet the mark for phishing-resistant MFA: Smart Card/PIV and the modern FIDO2/ WebAuthn authentication standard.

[1] Microsoft, Microsoft Digital Defense Report 2022, (Nov 2, 2022)

[2] Waterfall, 2023 Threat report - OT Cyberattacks with Physical Consequences, (May 4, 2023)

[3] IBM, X-Force Threat Intelligence Index 2024, February 2024

[4] Accenture, Prioritizing Security for Success: Analyzing Organizational Security Structures 2024

Protecting all users in the enterprise

The YubiKey is uniquely designed to support all use cases in critical infrastructure, including:

- **Priviliged access**
- **Mobile restricted**
- **Shared workstation**
- **Remote workforce**
- **Office workers**
- **3rd party access**
- **End customers**

Safeguard your IT and OT ecosystem with Yubico

Yubico solutions meet you where you are on your cybersecurity journey, while paving the way to a modern authentication infrastructure, and jumpstarting your plans to implement a Zero Trust framework. With Yubico solutions, you can be confident that your data and intellectual property are secured, and product integrity is always ensured.

The YubiKey

A pioneer in modern, hardware-based authentication and Yubico's flagship product, the YubiKey is designed to meet you where you are on your authentication journey by supporting a broad range of authentication protocols, including FIDO U2F, WebAuthn/FIDO2 (passkeys), OTP/TOTP, OpenPGP and Smart Card/PIV.

yubi.co/key

Yubico Hardware Security Module (HSM)

The world's smallest HSM, YubiHSM 2, packs a lot of power, and offers game changing cryptographic protection for servers, applications and computing devices. Secure your public key infrastructure (PKI) environments, encrypt your files and databases and securely sign code or any digital artifact to raise the bar for security for your OT and IT systems.

yubi.co/hsm

YubiKeys as a Service

Get peace of mind in an uncertain world with a YubiKey subscription service that makes supporting new hires, tackling employee turnover and securing remote/hybrid workers fast, flexible and future-proofed—all with a lower cost to entry.

This service provides priority customer support, ease of form factor selection, backup key discounts, and replacement stock benefits.

yubi.co/YKSvc

YubiEnterprise Delivery

Accelerate your journey to phishing-resistant MFA with an end-to-end domestic and international YubiKey delivery service. Let Yubico and our global partners worry about the logistics so you can focus on bigger business issues.

yubi.co/delivery

These are real stories of global critical infrastructure organizations changed the game for modern enterprise security with the help of Yubico solutions.

> “Proactively securing our global supply chain was an important step as properly tested and approved products are counted on by our customers who buy and deploy them.
>
> As part of our IEC SL2 certification, we included MFA in our power operation system, well positioning us to meet SL3 requirements in the future. This is a point of differentiation for Schneider Electric.”

Chad Lloyd |
Director of Cybersecurity Architecture for Energy Management |
Schneider Electric

Schneider Electric enhances global supply chain security

As leaders in the digital transformation of energy management and the manufacturing of electric products, Schneider Electric worked closely with Yubico to deploy phishing-resistant YubiKeys to increase security with MFA in its power operation Supervisory Control and Data Acquisition (SCADA) system, a system common in manufacturing.

Lloyd was tasked with a challenge to integrate multi-factor authentication (MFA) on an isolated system—without the use of the Internet or traditional methods such as SMS. With the YubiKey, Schneider Electric is able to meet its requirement for MFA and to ensure only authenticated users can gain access to operate the SCADA system. Further, the YubiKey has helped reduce system interruptions during shift changes or when step-up authentication is needed for certain operations.

After positive results from the initial deployment of YubiKeys, Schneider Electric then expanded to solve additional use cases in managing its supply chain. Schneider Electric deployed the YubiHSM 2 with third-party vendors to proactively increase security within their supply chain. Creating a dual encryption process allows both the vendor and Schneider Electric to have confidence that products with the Schneider Electric brand are indeed authentic based on encrypted keys that are embedded by both companies during manufacturing.

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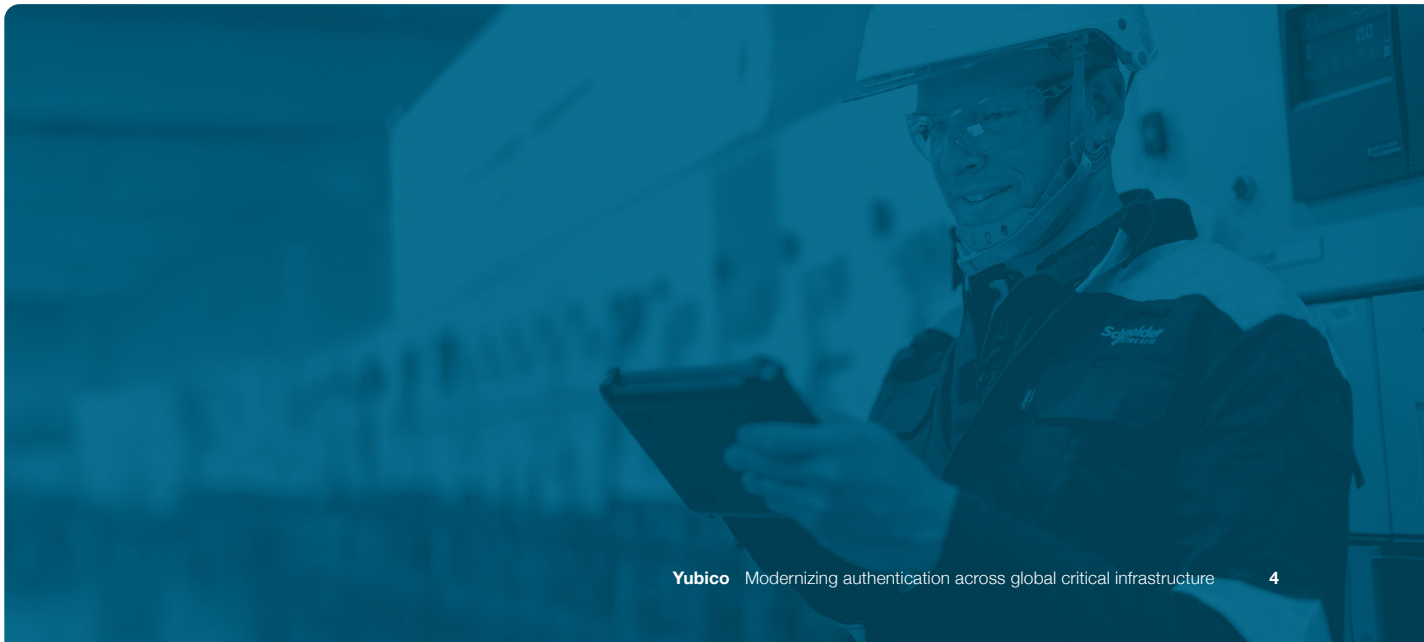
yubi.co/SchneiderElectric



Protecting critical infrastructure in Ukraine

The Russian invasion of Ukraine is a battle in both the physical and the digital world. On both sides, cyberwarfare plays a more critical role than in any other war in human history, with the biggest attack vector and threat being weak login credentials.

In March 2022, Yubico received a request from authentication partner Hideez to help to protect critical infrastructure in Ukraine. When the war started, much of the Hideez team decided to stay in Ukraine to lend their expertise, products and services to the most targeted Ukraine entities and IT systems. With a donation of 20,000 YubiKeys, a dozen government agencies and critical infrastructure providers were able to quickly secure themselves against rising rates of attacks.

“Since the war began, we have experienced a massive increase in phishing attacks,” explains a cybersecurity executive at a Ukrainian energy plant. “To mitigate this risk, our organization required us to change passwords every day, which did not provide sufficient security and was time consuming as well as an added stress to employees working in a war zone. We needed something that was not only more secure, but that also worked seamlessly across a range of systems and devices. We also needed a tool that worked from locations where internet and cell phone connectivity are not stable. Additionally, because of the advanced types of phishing, and man-in-the-middle attacks, we simply could not rely on legacy or mobile-based authentication.”

One of the critical infrastructure organizations who benefited from the deployment was Naftogaz, a government-owned group of oil and gas companies. Naftogaz-Bezreka, the security group responsible for securing Naftogaz, was already keen to deploy the YubiKey, but it was not until the invasion and Yubico’s donation that the deployment could be accelerated. The keys are used to secure authentication for logging into Windows, workstations and other applications like Microsoft Office 365. The YubiKeys offer enhanced protection for users who require privileged access, as well as enabling safe login for remote workplaces.

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yubi.co/Naftogaz

> “The YubiKeys significantly increased the security and also made access across many IT systems faster and easier, which has been a tremendous relief to our employees. We believe YubiKeys are as important for our cyber defense as the bullet proof vests that are protecting the soldiers and others that are on the front lines of the ground war.”
>
> **Anonymous** |
> Ukraine energy plant

> “One of the greatest cybersecurity threats is the human factor, through phishing attacks when cybercriminals obtain passwords or credentials.”

Oleksandr Tarasov |
Head of Security Controls |
Security Operation Center,
Naftogaz-Bezreka

> My personal opinion is that they're more convenient to use than a token off your phone, especially when your YubiKey is next to you. I don't like having to grab my phone and look for an app to get a token out of it or unlock it to approve a request. It's a lot quicker to just hit a button on the USB stick."

OT Security Specialist |
Anonymous State-Owned Energy Company

> In our world, critical infrastructure is a high priority target for many nation states, so there will always be malicious actors looking to get in. In a worst case scenario, there could be a catastrophic failure of the primary plant. Some of those things can take years to replace."

OT Security Specialist |
Anonymous State-Owned Energy Company

Securing critical infrastructure at an Asia-Pacific energy company

For this leader in electricity distribution in Asia-Pacific, serving millions of customers, much of the responsibility for protecting operations from cyberattacks falls to the OT Security Specialist, a job which sits at the border between IT and OT.

During the procurement process of an authentication solution, the energy company had to balance multiple requirements. It was important that the product would also integrate easily with existing infrastructure, without requiring additional software. This ruled out one possible solution—Smart Cards—which require specific drivers and Smart Card readers to function. The OT Security Specialist was also keen to find a solution that was user-friendly.

The OT Security Specialist was most attracted by how YubiKeys balanced security and usability: "if you've got to physically touch the button, you know a user is physically there using it. We could set up one YubiKey as MFA for all a user's accounts, so they don't need six different TOTPs." To protect the hardware and live equipment upon which distribution relies, the organization chose the YubiKey to secure all users who access the operational environment—offering a balance of security. Further, the flexibility of YubiKey as a Service helps guarantee the highest level of protection into the future.

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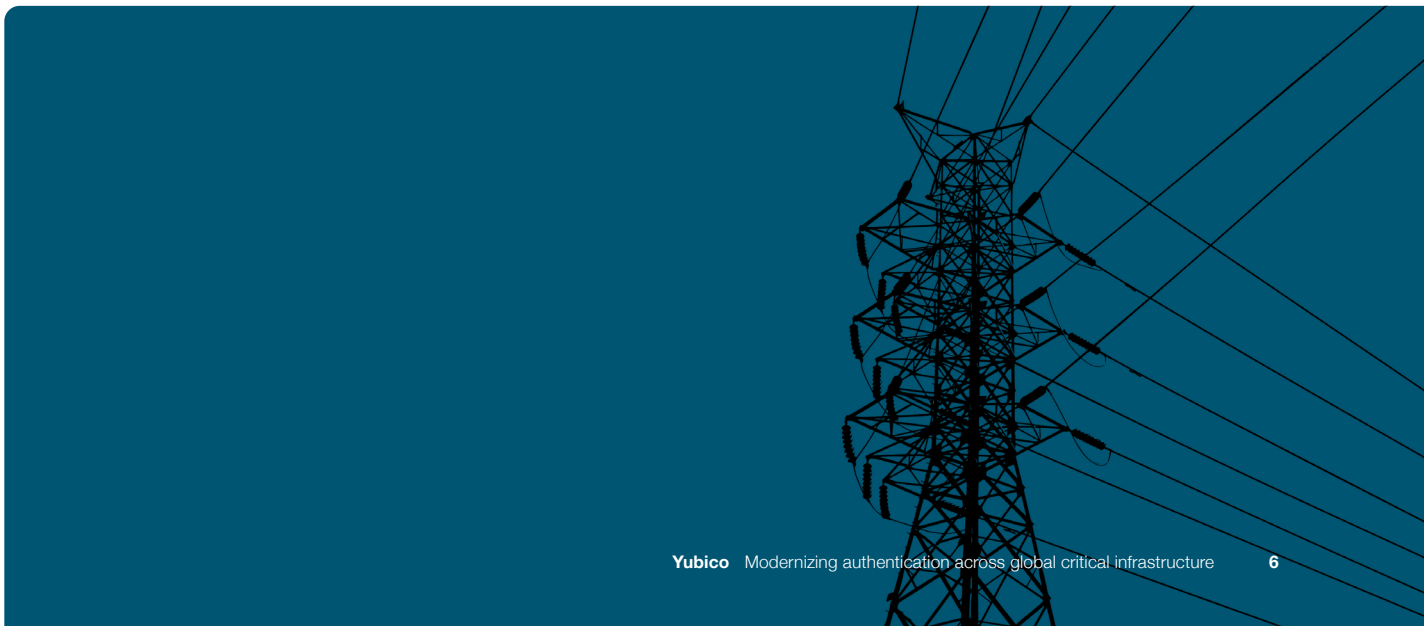
yubi.co/EnergyCo



> YubiKeys are a big enabler for digitization. They protect the identity of the end user and make their life easier. If a company moves towards digitization, you have to do it securely. It was different 15 years ago, but since more and more tools and functions are cloud based, it's essential to protect identities."

Mathias Ignberg | Service Manager: Identity & Access Management and Cloud

Boliden advances its reputation for innovation with YubiKeys

Boliden is one of Europe's leading metal mining companies. Based in Sweden, with presence around the Nordic region and beyond, Boliden produces a vast array of the metals required for modern life: zinc, copper, lead, nickel, gold, palladium, platinum and silver. Known for their commitment to sustainability, with a vision to be the most climate friendly metal provider in the world, Boliden operates at the forefront of innovation, utilizing cutting-edge technology to optimize and improve their operations.

Mathias Ignberg shared that the two big drivers are a Zero Trust philosophy and being on the journey to passwordless login. Since people are roaming around more and using more cloud services, it makes the protection of identities more important. From a security standpoint, passwords by their nature are bad. Going passwordless is a win-win.

They use the YubiKeys for FIDO2 authentication to Azure, Microsoft Office 365 and AWS, but also as Smart Cards, using certificates, to protect privileged accounts and server access on-prem. The same YubiKey can be used for everything. While the initial deployment was relatively small, Boliden plans to roll out FIDO2 authentication across the entire organization in phases. First, they want to roll out to all IT employees company wide and then offer YubiKeys to end users more widely. It all depends on the use case. They see big potential for using YubiKeys in our open-pit mines, where a big chunk of the workforce only has a mobile device.

Ignberg is delighted with the results so far and has advice for anyone else considering starting on a similar journey. "Start! Just start," says Ignberg. "Start small, with your most important admin accounts. It's better to start even if you don't have the full picture or know exactly how you're going to do it. It's better to protect a few users rather than none. The more accounts and identities you protect, the better."

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yubi.co/Boliden

Freedom of the Press Foundation protects press freedom with the YubiKey

The Freedom of the Press Foundation (FPF) is a 501(c)(3) non-profit organization founded in 2012 to fund and support free speech and freedom of the press. The organization's main objective is to protect and defend adversarial journalism in the 21st century. FPF uses crowdfunding, digital security, and internet advocacy to support journalists and whistleblowers worldwide.

Due to the high profile nature of their work, journalists are a target for attacks that threaten their personal safety, the safety of their sources and which undermine the freedom and integrity of the press. Spyware, surveillance, malware, and phishing attacks may compromise systems, reveal sensitive data, or reveal personal information about journalists in order to discredit, harass or intimidate them from covering stories (doxing).

FPF was also an early adopter and strong advocate for multi-factor authentication (MFA) and the YubiKey. The YubiKey supports phishing-resistant MFA and passwordless authentication, offering the highest level protection for a journalist's identity, accounts and devices. Without having physical access to the security key, a bad actor isn't able to access an account. "Helping journalists adopt the most secure form of authentication available is important in supporting our goal," shares Huerta. "Our ultimate goal is a free press that acts within the autonomy it gets when it doesn't have to fear repercussions."

It is one thing to recommend the YubiKey to journalists, it is quite another to be able to put a YubiKey directly in their hands. With the help of Yubico's Secure it Forward program, FPF can now freely distribute YubiKeys to the journalists they work with.

Looking to the future, for FPF and the press, Holmes knows that cybersecurity is always changing, such as the use of artificial intelligence to boost the effectiveness of social engineering campaigns. The YubiKey doesn't just stop run-of-the-mill phishing attacks, but also these emerging and threatening social engineering attacks.

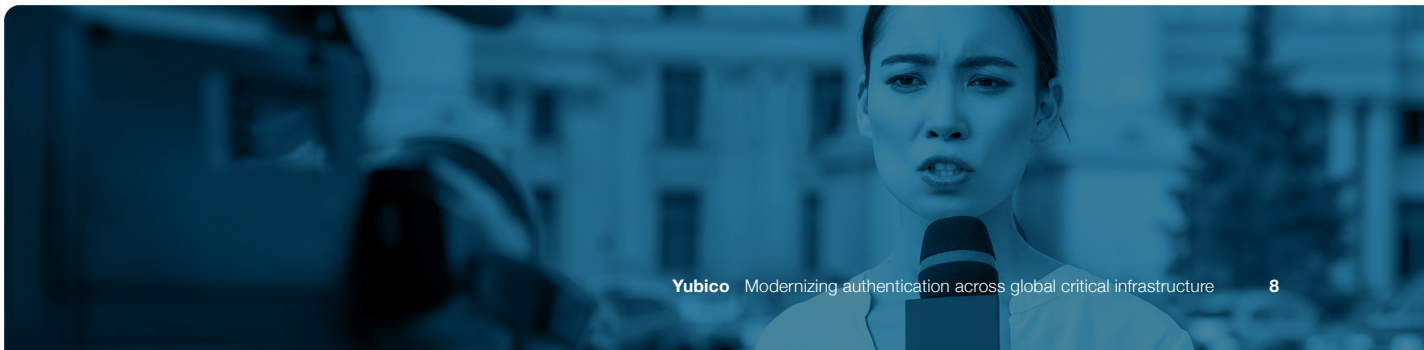
READ THE CASE STUDY
yubi.co/FPF

> "I'm always thinking about what comes next, what is going to be the future of cybersecurity and how those things may impact the press' ability to do the work they do. The YubiKey puts us ahead of the curve."

Harlo Holmes |
Chief Information Security Officer and Director of Digital Security, Freedom of the Press Foundation

> "Many journalists don't even use an office anymore, which changes the attack surface significantly,"

David Huerta |
Senior Digital Security Trainer



> With YubiKeys we have been able to speed up the login process from over 40 seconds down to less than 10 seconds, which means that healthcare personnel have more time to care for their clients."

Matthias van Alphen |
CEO & Founder, Adapta

Adapta secures healthcare worker access to Google Cloud with YubiKeys

Adapta is an IT services and development company based in the Netherlands, specializing in the implementation and maintenance of enterprise architectures for healthcare institutions, with a particular focus on care for the elderly and those with disabilities. Their mission is to make the working lives of healthcare professionals easier and more enjoyable. Matthias van Alphen is the founder and CEO of Adapta, and is committed to offering innovative solutions for clients.

In healthcare, where the security of patient data is critical, any digital transformation must be secure by design. When Adapta began looking for multi-factor authentication (MFA) solutions to introduce to healthcare settings, popular legacy MFA solutions did not prove suitable. The most common method organizations choose," says van Alphen, "is an authenticator app. However, in nursing homes staff need something like a laptop or tablet, not a cellphone. If you have to log in with a code from an app or by clicking a prompt, then you need two devices before you even start."

Adapta have recently introduced YubiKeys to two care organizations in the Netherlands, Zorgcentra De Betuwe and BrabantZorg.Adapta chose the Security Key NFC by Yubico, which supports the FIDO U2F and FIDO2/passkey protocols, making it a perfect complement to newly-implemented Google Cloud architectures. The results of the implementation are clear: happier employees. The future is going to be 'passwordless' and with FIDO2 we will be able to offer a password-free workplace. From the perspective of caregivers or nurses, the powerful combination of Google and the YubiKey can be summarized in a single word: speed!"

The partnership between Adapta and Yubico is also about values, according to van Alphen. "Our mission is to make the working lives of healthcare professionals more enjoyable, easier and generally better," he says. "Yubico's mission is to make the internet more secure and user-friendly for everyone. That's why we fit so well together."

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yubi.co/Adapta

> It was important for us to design our ICT systems to be both secure and easy to use. The YubiKey has made the login process for our staff much simpler, allowing them to continue to focus on providing quality care."

Thomas Pike |
ICT Innovation Lead,
Carers ACT

Carers ACT delivers quality carer interactions thanks to passwordless logins with the YubiKey

Operating from four locations across Canberra and Illawarra, Carers ACT has 65 full-time employees, with additional support workers in short term respite facilities and a disability services program. Providing safe and effective respite and services for family and friend carers requires timely access to sensitive health information about the individuals being cared for, including care plans, health conditions and consents.

"Account compromise is something which is hugely worrying for us," says Pike. "We hold some of the most sensitive personal information you can and we take our responsibility in holding that information very seriously." In the past several years, Pike has noticed increasingly sophisticated cyber threats, including spear phishing campaigns that target employees with malicious emails that appear to come from the CEO of Carers ACT. Threats also come from potentially insecure devices used by clients and other guests accessing guest WiFi systems while in their facilities. Pike decided to replace cumbersome passwords and complex two-factor and legacy multi-factor authentication (MFA), such as SMS codes, with a FIDO security key to enable a secure, user-friendly passwordless experience for its support workers.

Having used and worked with YubiKeys at a previous organization, choosing the YubiKey for Carers ACT was an "easy choice to make." The YubiKey is a hardware security key that delivers phishing-resistant MFA and passwordless authentication, complying with Essential Eight Maturity Levels 2 & 3. Carers ACT began by rolling out the Security Key C NFC by Yubico which supports FIDO2/WebAuthn (device-bound passkeys) to all support staff to address cyber threats and enable a seamless and user-friendly login to shared devices. As an established Microsoft environment, Pike was able to take advantage of out-of-the-box support for the YubiKey to streamline implementation.

After first-hand experience with the drawbacks associated with passwords and legacy MFA, the YubiKey provides Carers ACT with a high-assurance and user-friendly passwordless experience for its support workers. Looking to the future, Carers ACT plans to extend the YubiKey deployment across other parts of the organization.

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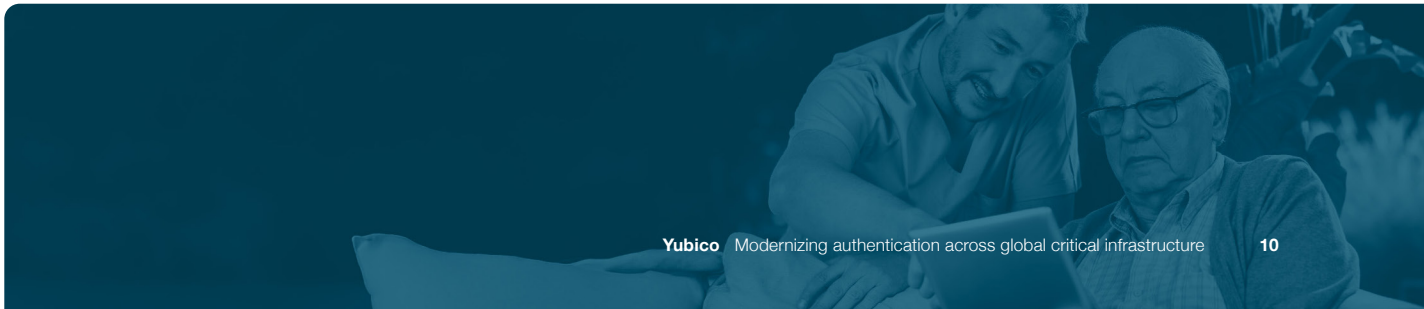
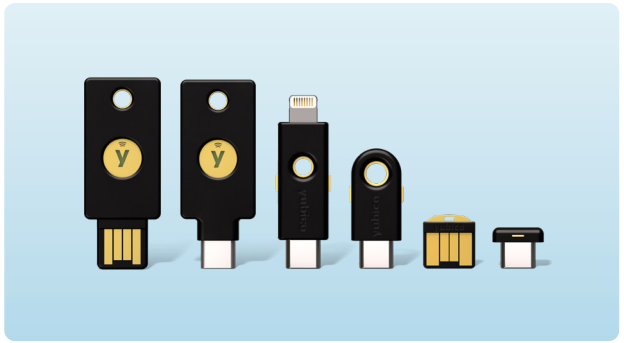
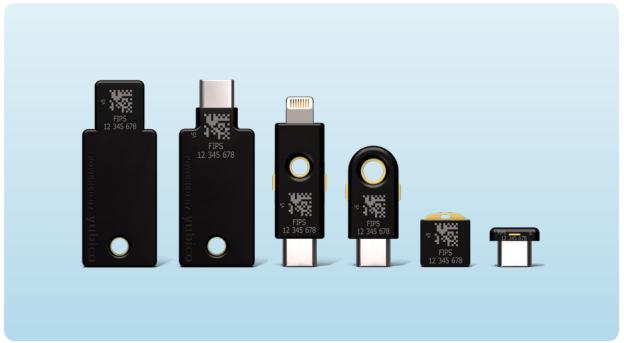


Cultivate phishing-resistant users with the YubiKey



The YubiKey 5 Series–from left to right: YubiKey 5 NFC, YubiKey 5C NFC, YubiKey 5Ci, YubiKey 5C, YubiKey 5 Nano and YubiKey 5C Nano



The YubiKey FIPS series—from left to right: YubiKey 5 NFC FIPS, YubiKey 5C NFC FIPS, YubiKey 5Ci FIPS, YubiKey 5C FIPS, YubiKey 5 Nano FIPS and YubiKey 5C Nano FIPS

The YubiKey is the most secure and user-friendly option for protecting all users across business units; providing authentication that moves with users no matter how they work across devices, platforms and systems. Also stay ahead of evolving cyber threats and regulatory requirements (PCI DSS v4.0.1, PSD2, NIS2 and more).

YubiKeys work with leading IDPs, IAM, and PAM solutions and secure user access across 1,000+ of applications and services. Some partners we collaborate with as part of our Works with YubiKey (WWYK) catalog:

Microsoft
Dropbox
Proton
aws
Google
1Password
PingIdentity
DUO
CLOUDFLARE
CYBERARK
okta

Learn more at yubi.co/WWYK

The path forward to cultivate phishing-resistant users

No matter where you are on your MFA journey, we'll meet you there. You can accelerate your zero trust approach and gain a bridge to a passwordless future. With a tried and true process that many critical infrastructure organizations have followed already—and with a 'YubiKey as a Service' model—it's not a matter of if you'll be successful but when you'll be successful in raising your bar for security with modern, hardware-backed passkeys such as the YubiKey.

Plan

Ensure readiness by clarifying use cases and user populations

Validate

Confirm the process with a small group of users before broader rollout

Integrate

Ensure key apps and services are YubiKey-ready

Launch

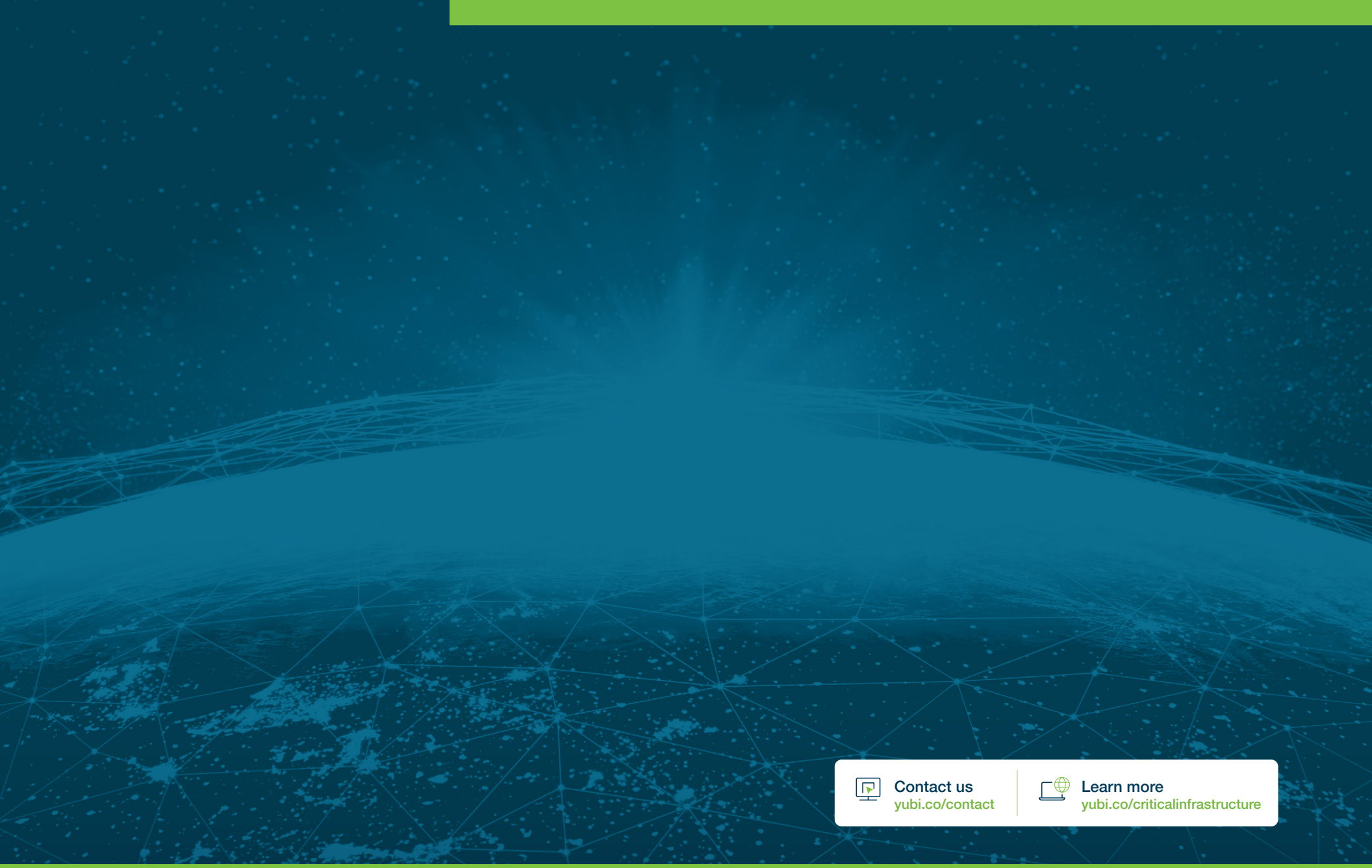
Distribute keys to users with turnkey delivery services or channel partners

Adopt

Drive adoption with best practice training and support

Measure

Report on security and business value impact



Contact us
yubi.co/contact

Learn more
yubi.co/criticalinfrastructure

yubico
The key to trust

Yubico (Nasdaq Stockholm: YUBICO) is the inventor of the YubiKey, a hardware security key that is the gold standard in phishing-resistant multi-factor authentication (MFA). Yubico's solutions offer organizations and users deployment expertise and operational flexibility as YubiKeys work across hundreds of consumer and enterprise applications and services.

Yubico is a creator and core contributor to the FIDO2/passkey, WebAuthn, and FIDO Universal 2nd Factor (U2F) open authentication standards, and is a pioneer in delivering hardware-based passwordless authentication using the highest assurance passkeys to customers in 160+ countries. For more information, please visit: **www.yubico.com.**