

# National Computer Emergency Response Team

**Current Status & Future Roadmap** 

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Certified Ethical Hacker, ACM Distinguished Speaker (USA)

Fellow of the IET (UK), Fellow of The British Computer Society (UK)

-Director General, National Cyber Emergency Response Team
Government of Pakistan

## Global Cybersecurity Index 2024 by The ITU

## Tier performance: Global

## Tier 1 - Role-modelling (score of 95-100)

Australia Ghana Morocco Singapore Bahrain Netherlands (Kingdom Slovenia Greece

Banglades

Belgium Brazil

This is an acknowledgment of Pakistan's efforts and a step in the right direction on a long and unending journey

United Kingdom

Viet Nam

Cyprus

Denmark Egypt

Estonia

Finland

Jordan

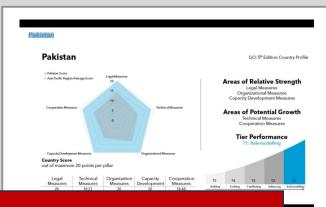
Qatar United Arab Emirates

Kenya Korea (Republic of)

> Rwanda United States

Luxembourg Saudi Arabia France Malaysia

Germany Mauritius Serbia



#### Tier Performance: Asia and the Pacific

T5	<b>T4</b>	T3	T2	T1
Building	Evolving	Establishing	Advancing	Role-modelling
Afghanistan Dem. People's Rep. of Korea Maldives Marshall Islands Micronesia Solomon Islands Timor-Leste	Cambodia Fiji Lao P.D.R. Nauru Samoa Tonga Tuvalu	Bhutan Brunei Darussalam Iran (Islamic Republic of) Kiribati Mongolia Myanmar Nepal (Republic of) New Zealand Papua New Guinea Vanuatu	China Philippines Sri Lanka	Australia Bangladesh India Indonesia Japan Malaysia Bakistan Republic of Korea Singapore Thailand Viet Nam

# **National Cyber Security Policy 2021**

## Course of action outlined in the National Cybersecurity Policy

The National Cybersecurity Policy aims to establish a holistic digital ecosystem, enhance local IT industry capabilities, and promote online businesses. It focuses on strengthening national Cyber Security capabilities through governance frameworks, security standards, and regulatory mechanisms. Cyber threats have reached unprecedented levels, affecting individuals, businesses, and nations globally. The interconnected nature of our digital world exposes us to various forms of cyber attacks.



#### Vision

The vision is for Pakistan to have a secure, robust, and continually improving nationwide digital ecosystem ensuring confidentiality, integrity, and availability of digital assets, leading to socio-economic development and national security.

### Scope



The policy aims to secure the entire cyberspace of Pakistan, including all digital assets, data, and information systems used by citizens, in both public and private sectors.



## **Objectives**

- Establish governance and institutional framework for a secure cyber ecosystem.
- Enhance the security of national information systems and infrastructure.
- Create protection and information-sharing mechanisms against threats.
- Protect National Critical Information Infrastructure by mandating security standards.
- Develop an information assurance framework and ensure the integrity of ICT products and services.
- Protect the online privacy of citizens and promote Cyber Security awareness.
- Train skilled cybersecurity professionals and encourage the indigenization of solutions.
- Foster public-private partnerships and global cooperation on Cyber Security.
- Manage risks related to cybersecurity continuously through a riskbased approach.

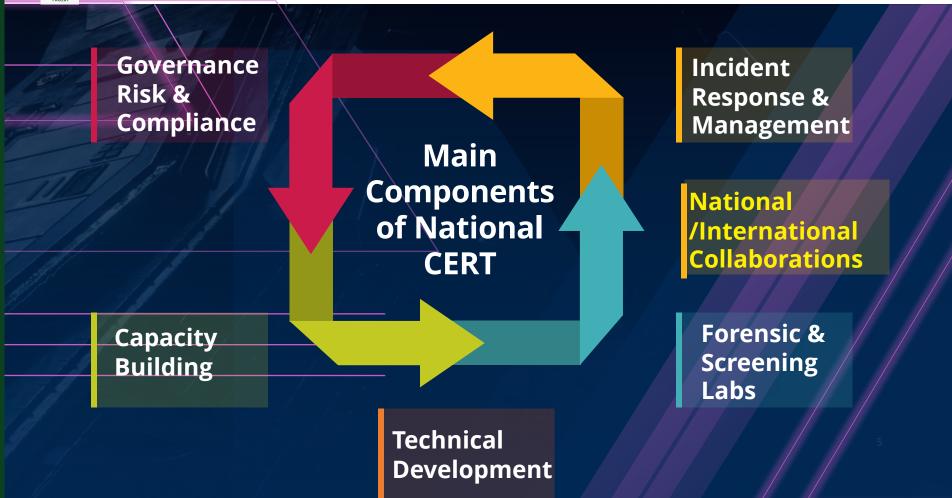
Cyber Security Policy to a Coordinated Strategy

Define Strategic
Objectives
Break down policy
goals into specific,
actionable
objectives for each
sector.





## **National Cyber Emergency Response Team of Pakistan (PKCERT)**



## **Central Coordination**







Academia NUST /Air Uni / LUMS etc



# **Coordination Through National CERT**



FIA NRC3/Cyber crimes



State Bank
Cybersecurity Initiatives



- SPD - Private Sector PISA / SECP etc



**Army Cyber Command** 

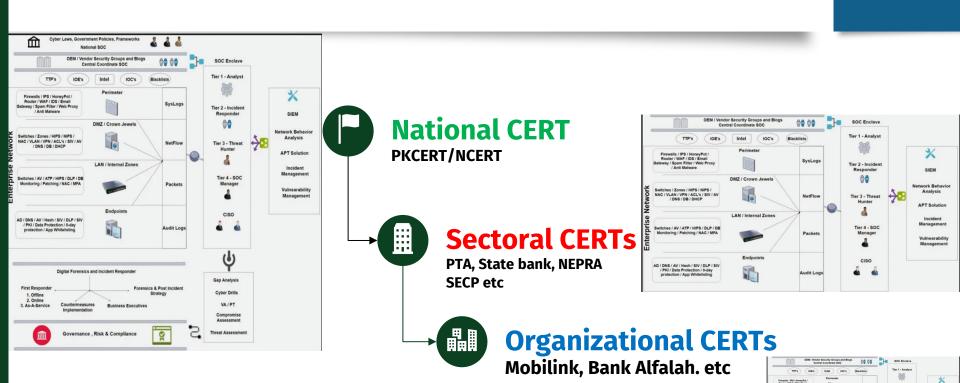


Pakistan Airforce NASTP/ Cybercommand/Academy



Cyber laws / Regulations PECA /

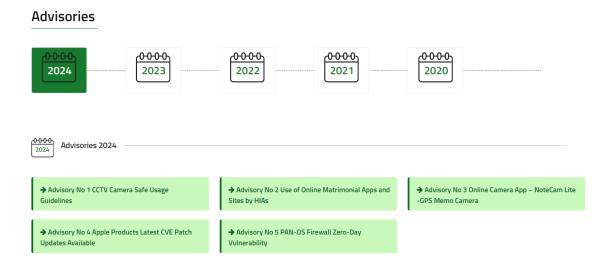
## **3 Tier CERT Structure**

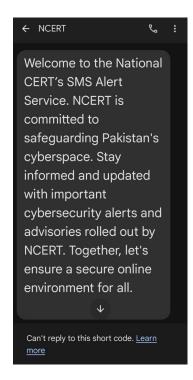


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# Advisory Services (Web & SMS Alert Service)

NCERT has initiated a proactive approach to disseminate advisories and alerts via its web platform and SMS Alert Service, enhancing accessibility and outreach to stakeholders. This strategic move ensures timely communication of crucial information, fostering a more informed and prepared educational community.





#### PKCERT

Sved Imran Hai...

Sved Imran Hai.

# CyberWatch – Webinar Series

Webinar 1: From Bruteforce to Biometrics: Evolution of Password Attacks and Defenses Dr. Asad Raza, New Jersey Institute of Technology, USA

Webinar 2: Behavior Analytics and Insider Threat Dr. Fatima Hussain, Principal SaaS Security Architect, Royal Bank of Canada

Webinar 3: Global CERT/CSIRT Collaborations Mr. Adli Bin Abd Wahid, Senior Internet Security Specialist, APNIC, Australia

Webinar 4:Resilient Phishing Tactics of Adversary Groups and Defensive Strategies Mr. Nadeem Ashraf, Group Director of MSSP Operations at (PTCL) Webinar repository maintained on the National CERT YouTube channel

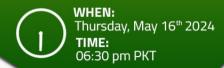
The videos of the webinars are uploaded on <u>National CERT's YouTube Channel</u>.

## CyberWatch - Webinar Series

Topic:

Behaviour Analytics and Insider Threat





## er: Dr. Fatima Hussain



# National CERT CyberPatriot Program

A Website Bug





An Application Bug

A Zero Dav











A Zero Day

Any Other Aspect of Digital Security

An Application

A Website Bug Any Other Aspect of Digital Security

**National CERT** is the platform to disseminate this information to the relevant stakeholders.

We will validate the assertion and then convey it to the appropriate audience, along with an acknowledgment/appreciation certificate to recognize your contributions

Report this to us via email cyberpatriot@pkcert.gov.pk

# National-CERT Internship Program



## **Industry Driven Problems**

- Real-World Case Studies: Partner with cybersecurity firms to provide real-world problems for interns to solve.
- **Problem-Specific Teams:** Create multi-disciplinary teams to address a specific industry problem, allowing cross-functional learning.
- Collaborative Projects: Collaborate with cybersecurity startups to create projects focused on niche areas like IoT security, AI security, etc.
- **Problem Briefing Sessions:** Weekly sessions where industry experts explain ongoing security challenges and the approaches taken to solve them.
- **Industry Mentorship**: Assign each intern a mentor from a relevant industry organization to guide them throughout their project.
- **Virtual Labs & Challenges:** Setting up virtual labs where students can work on penetration testing, malware analysis, and other security tasks.
- Hands-on Experience with Industry Tools: Ensure regular internships focus
  on giving interns access to industry tools such as SIEM systems, IDS/IPS tools,
  etc.
- Remote Internship Opportunities: Given the global nature of cybersecurity, provide remote internships, allowing students to work remotely.
- Real-Time Threat Monitoring: Allow interns to be part of the Security Operations Center (SOC) to monitor and analyze real-time cyber threats.
- **Involvement in Incident Response:** Interns can be involved in real-world incident response exercises or simulations with industry partners.

Join us in the battle against cyber threats! Make a difference, enhance your skills, and build a rewarding career in cybersecurity with the National Cyber Emergency Response Team Internship Program.



#### Eligibility

We welcome applications from students and recent graduates with a possion for cybersecurity, strong analytical skills, and a witnerwest to keep.



#### Internship Focus Areas

• Incident Response • Threat Intelligence • Security Operations



hy Choose the NCERT

Naturadana Oppostupitla

Connect with a diverse community of professionals, establish meaningful relationships, and expand your network within the authorises unity industry.



National CERT Internship Program



Innovento and Cape

Collaborate with professionals and fellow interns to brainstorm and implement incovaries solutions to emerging cyber threats. Your fresh ideas could shape the Lature of expenses units.

## **How to Apply?**

Email your resume at pkcert@cabinet.gov.pk.with subject line"NCERT INTERNSHIP PROGRAM" to submit your application.

Application Deadline: 1st Oct 2023

Apply today and become part of the frontline defense team that keeps our digital world secure





## STREAMLINED AUDIT **PROCESS**







## Cybersecurity Program Establishment

Strategies, Procedures, Audit Criteria, Guidelines

# **National CERT's Initiatives**

## **Awareness Programs**



**National Cyber Emergency Response Team ABC (Awareness Brings Change) Program** 

#### **Introducing National CERT's ABC (Awareness Brings Change) Program**



The National Cyber Emergency Response Team of Pakistan (PKCERT), proudly launches the ABC Program -Awareness Brings Change, In our dynamic digital landscape, cybersecurity is not just a necessity; it's a collective responsibility. The National CERT's ABC Program is a transformative initiative designed to enlighten, engage, and safeguard all individuals navigating the realms of technology and digital devices.

Join Hands with National CERT to build a Safe and Secure Cyber Ecosystem!

#### Objectives of the National CERT's ABC Program



Raise Cybersecurity Awareness:

Equip individuals of all ages - from children exploring the digital world to professionals and elderly citizens embracing technology.

Provide comprehensive guidance on cybersecurity best practices. Ensuring individuals, young professionals, startups, and enterprises can fortify their digital defenses.



#### **Encourage Proactive Cyber Hygiene:**

Foster a culture of proactive cybersecurity measures, empowering everyone to play a role in mitigating cyber threats.



Bridge the gap between diverse sectors by encouraging collaboration and information sharing, building a resilient digital ecosystem.



#### Empower Digital Literacy:

Enhance digital literacy skills to enable individuals and businesses to navigate the online world with confidence.

#### Beneficiaries

The National CERT's ABC Program caters to a diverse audience, including:



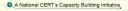
www.pkcert.gov.pk







Enterprises & Startups







**National Cyber Emergency Response Team ABC (Awareness Brings Change) Program** 

#### Guidelines and Best Practices on Smart Phones & App Security

In the dynamic realm of technology, where smart phones, gadgets, and apps weave seamlessly into our daily lives, safeguarding these digital companions becomes pivotal. As a cornerstone initiative of the National CERT's ABC (Awareness Brings Change) Program, we unveil indispensable guidelines and best practices to fortify your digital defense against the unseen threats that lurk in the interconnected landscape of smart devices.

#### Smart Phones & App Security: Nurturing a Resilient Digital Ecosystem



#### Vigilant Selection and App Installation

Choose apps only from reputable app stores, and be wary of third-party sources. > Prioritize apps with positive reviews, high ratings, and a transparent privacy policy. > Review and uninstall apps that are no longer in use or deemed unnecessary.

#### Regular Updates and Patching

- > Enable automatic updates for your device's operating system and apps to ensure the latest security patches.
- > Be proactive in updating your apps, as developers often release security enhancements along with new features.
- > Conduct periodic security scans from mobile security apps to identify and rectify vulnerabilities on your device.



#### **Privacy and Permissions Management**

- > Scrutinize app permissions before installation; grant only those necessary for the app's functionality.
- Keep on reviewing and adjusting app permissions in your device settings.
- > Be cautious of apps seeking excessive access to personal information, and report suspicious activity promptly.

#### Secure Connectivity Practices

- > Use secure Wi-Fi networks, and avoid connecting to public networks without proper
- Employ VPNs when accessing sensitive information to encrypt your data.
- Turn off unnecessary connectivity features when not in use to minimize potential vulnerabilities.

#### **Device Encryption and Biometric Security**

- > Activate device encryption to protect your data in case of loss or theft.
- > Utilize strong, unique passcodes and biometric authentication features for added
- > Keep reviewing and updating your authentication methods to stay ahead of evolving threats.

#### Utilize Mobile Device Management (MDM) and Mobile Application Management (MAM)

- Implement MDM solutions for centralized control over device security settings.
- Use MAM to manage and secure mobile applications, ensuring only authorized apps are used.
- > Audit and update MDM/MAM configurations to adapt to changing security landscapes.

By integrating these Smart Phones, Gadgets & Apps Security Practices into your digital lifestyle, you actively contribute to a resilient and secure digital future. Remember, awareness brings change, and together, we shape a path towards a safer and more connected tomorrow.

A National CERT's Capacity Building Initiative





#### National Cyber Emergency Response Team

COMING SOON -Cyber Security

----- Webinar Series ----

Get ready for CyberWatch, an upcoming Webinar Series as part of the National CERT's ABC (Awareness Brings Change) Program. This transformative initiative aims to offer a platform for education, enlightenment and interaction with top Cyber Security Experts. The Webinars will cover a spectrum of topics, spanning from fundamental awareness to advanced areas in the constantly evolving field of Cyber Security.







A National CERT's Capacity Building Initiative

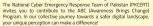


#### **National Cyber Emergency Response Team ABC (Awareness Brings Change) Program**

Join the Cybersecurity Discourse!

#### Share Your Inshights With Us

Contribute to the Cybersecurity Knowledge Base The National Cyber Emergency Response Team of Pakistan (PKCERT) invites you to contribute to the ABC (Awareness Brings Change)





? Why Contribute?

Make an Impact: Your insights matter! Contribute through blogs and content related to cybersecurity, and play a crucial role in enhancing our national cybersecurity awareness.

Community-Driven Approach: Join us in fostering a community-driven approach to cybersecurity. Together, we can strengthen our defenses and safeguard the integrity of our digital infrastructure. Your Voice Matters: We will disseminate your valuable contributions through our social media platforms and website, acknowledging and appreciating your commitment to securing our National Digital frontiers.

(i) How to Contribute?

Submit your contributions to us at info@pkcert.gov.pk and be a part of the movement towards a safer digital future for our nation.

A National CERT's Capacity Building Initiative

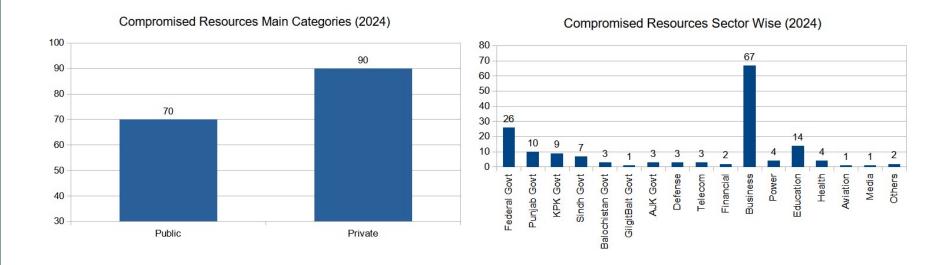




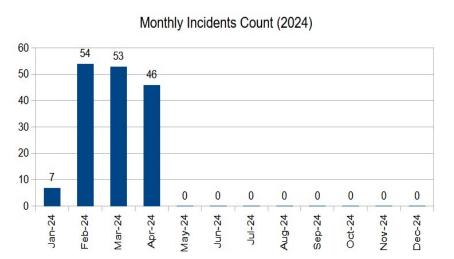
## **Incident Management**

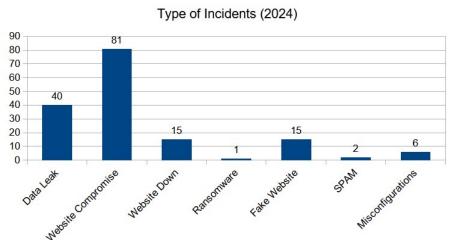
## Cyber Incidents being monitored and managed since Jan. 2024

- 29/80 incidents affected public sector assets
- 51/80 incidents affected private sector assets
- Notable assets include various Govt. and private organizations in Islamabad, Punjab, Sindh and Baluchistan



## **Incident Management**





## **Training Delivered by National CERT**

- 1. Five Day Technical Training of ISMS ISO 27001-Lead Auditor for Government and strategic organizations (*June 2024*)
- International Diplomatic Capacity Building training on New & Emerging Threats, Cyber Tools of Terrorism, Dark Web, and Transnational Crime delivered to a group of 27 United Nations (UN) New York based foreign diplomats of Small Island Developing States (SIDs) and Least Developed Countries (LDCs) at Foreign Service Academy, Ministry of Foreign Affairs (May 2024)
- 3. 3-day Cyber Security Compliance and Auditing training for Government Sector held at Military College of Signals (May-June 2024)
- 4. Cyber Security Capacity Building training for all Ministries, Divisions and attached departments conducted in collaboration with NCCS (May 2024)
- 5. Training session for the Intelligence Bureau Officers on National Cyber Security Policy and Cyber Crime laws at the National IB Academy (February 2024)
- 6. Specialized Training session at National IT Board on enhancing Cyber Security Preparedness with over 100 participants from NITB and various Ministries (*January* 2024)
- 7. Cyber Security training on Cybersecurity Awareness Identifying and Mitigating Human Based Threats conducted at National Intelligence Bureau Academy (*January 2024*)
- 8. Technical session on Supply Chain Cyber Security Landscape under the Digital Pakistan Cyber Security Hackathon training program for Government Officials (December 2023)
- 9. Training session on Collaboration Efforts on Cybersecurity with Foreign Diplomats from Brotherly Countries involving foreign diplomats from over 12 friendly countries at Foreign Services Academy (*December 2023*)
- Training for Ministry of Foreign Affairs officials and 40 Pakistan Embassies on Safe and Secure Use of Technology – Cyber Security Threat Landscape at Ministry of Foreign Affairs (August 2023)







# Keynote Addresses/ Talks and Panel Discussions (Seminars and Conferences)

- 1. Keynote Address at the PAF Air War College Institute on Next Generation Warfare (October 2024).
- 2. Participation in a high-level roundtable discussion hosted by the Centre for Aerospace & Security Studies (CASS), Islamabad. The event, titled "Lebanon Explosions: Weaponizing Consumer Technologies". (October, 2024)
- 3. Lecture on National Cybersecurity Threats and Countermeasures for Pakistan Administrative Service (PAS) officers from federal and provincial governments at the National Institute of Management (NIM), Lahore. (Sep. 2024)
- 4. Participation and Keynote Address for delineating comprehensive vision for the online protection of children in the four-day Child Online Protection (COP) training organized by UNICEF Pakistan. (Sep, 2024)
- 5. Participation in Expert Panel Discussuin on AI, Cybersecurity and the Future of Work at FC College, Lahore. (Aug, 2024)
- 6. Technical Talk at The Challenges and Opportunities of Artificial Intelligence (AI) & Cybersecurity in Pakistan Seminar organized by Sustainable Development Policy Institute (*March 2024*)
- 7. Keynote at EDI Policy Dialogue held at National School of Public Policy on Digital Ethics and Cybersecurity (March 2024)
- Keynote at Fortinet Cyber Security Day at Karachi (*March 2024*)
  Roundtable discussion in NDU over Cyber Security in Pakistan: Challenges and Opportunities (*Feb*
- Roundtable discussion in NDU over Cyber Security in Pakistan: Challenges and Opportunities (Fell 2024)
- 10. Keynote Address at the Beijing Cybersecurity Conference (June 2024)
- 11. Keynote addresses at ReCypher International Cyber Security Conference (IBA Karachi) (Jan 2024)12. Keynote at International Conference on Open-Source Systems and Technology (UET, Lahore) (Dec
- 2023)
   Technical Talk at Al for sustainable Future: Its role in Ethical Policies and Climate Resilience conference, jointly organized by Institute of Regional Studies (IRS) and the Centre of Pakistan and International Relations (COPAIR) (Dec 2023)
- Keynote address at Al-Driven hackathon and International Colloquium on Al-based interdisciplinary research (Aug 2023)









# **National CERT's Initiatives**

**National Competitions / Hackathons / Skill Development** 

























# **National CERT's Initiatives**

## **Sectoral-Stakeholder Engagement**

Stakeholder engagements for current state assessment and Capacity Development needs under the National CERT's Guidelines













# National CERT's Collaborations

## **Government & Private Organizations**

- MoU with the Center of Pakistan and International Relations (COPAIR).
- MoU with SNSKIES.
- MoU with NADRA and NTL.
- (MoU) with the Institute of Business Administration's Center for Information and Communication Technology (IBA - CICT). This collaboration aims to enhance research and development, promote cybersecurity awareness programs, and provide customized cybersecurity training for industry professionals.
- Initial collaborative meetings held with Asia Pacific Network Information Center for joint capacity building program to be launched in collaboration with APNIC
- İnceptive meetings with NRD CS Lithuania, for collective capacity development collaborations and interaction with peer CERTs from Baltic states
- Initial Collaboration meetings with CISCO and SANS for capacity development programs and collective initiatives
   Collaboration with NCCS for joint Cyber Security Activities
- Collaboration with NCCS for joint Cyber Security Activities and Events including Trainings, Awareness sessions, Hackathons and Conference/Seminars







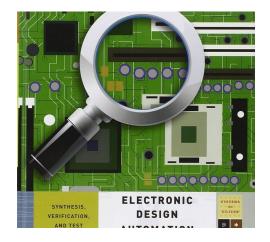


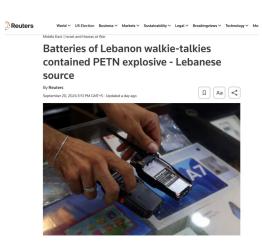
# NCERT Cyber Campus

Impactful Research Efforts











# Hardware & Software Sceerning

# **Consolidated Future Roadmap**

### At Government Level



National Cybersecurity Gap Analysis



Establishment National Vulnerability Assessment Centre



Conducting independent audits of Government agencies



Supporting research, indigenous product development and cyber awareness centers



Collaborate with the private sector and international cybersecurity research organizations



Ensure capacity building of LEAs to combat cybercrimes

## **At Organizational Level**



Help to Evaluate the cyber health of the organizations



Help to build a system for Incident Response, Regular Audits & Risk Mgmt



Regular Security Updates, Backups



Supporting to Focus on indigenous development



Hunting/discouraging pirated software



Employees Training on cyber attack prevention



MDM and Security Culture

## **At Individual Level**



Advisory about the latest cybersecurity threats and best practices



Awareness about pirated softwares



Provision of Basic Protection: Firewalls and Anti-Virus



Strengthen First line of Defense



Anti Phishing: Responding to unknown requests/emails



Safe Ecommerce Usage/Use multifactor authentication



Secure Social Media Usage



Cybersecurity for Children Awareness Programs

# **THANK YOU**

## Happy to take your suggestions /feedback

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https://www.facebook.com/profile.php?id=100095346962455

https://twitter.com/PKCERT\_official