SNIA NSF | NETWORKING STORAGE

Storage Life on the Edge: Security Challenges

Live Webcast

April 27, 2022

10:00 am PT / 1:00 pm ET

Today's Presenters

David McIntyre
Director, Product Planning
Samsung

Thomas Rivera
CISSP, CIPP/US, CDPSE
Strategic Success Manager at
VMware Carbon Black

Eric Hibbard
CISSP-ISSAP, ISSMP, ISSEP, CIPP/US, CIPT, CISA, CDPSE, CCSK
Director, Product Planning – Storage Networking & Security, Samsung Semiconductor.

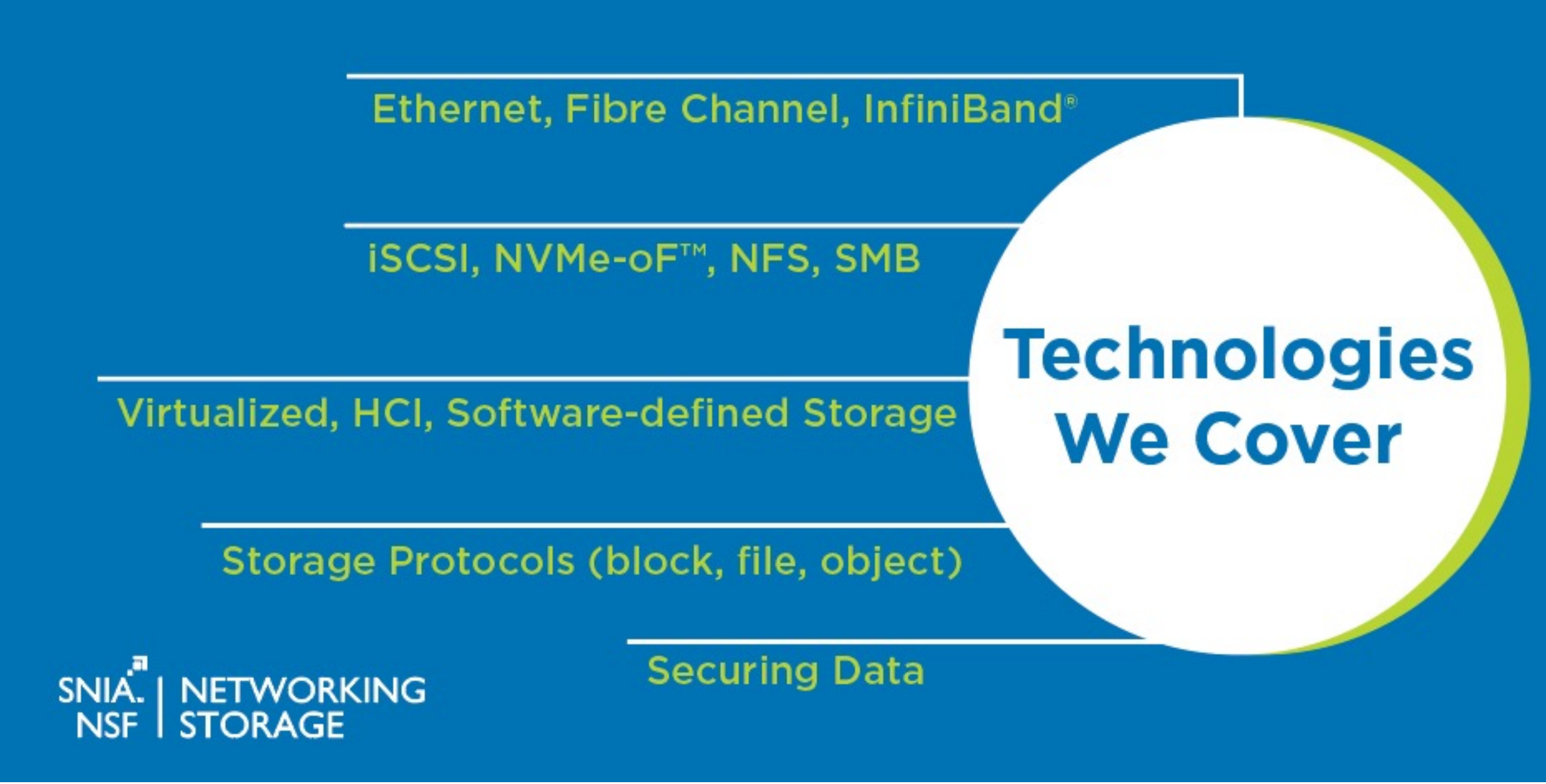
SNIA-at-a-Glance

180
industry leading organizations

2,500
active contributing members

50,000
IT end users & storage pros worldwide

Learn more: **snia.org/technical** **@SNIA**



SNIA Legal Notice

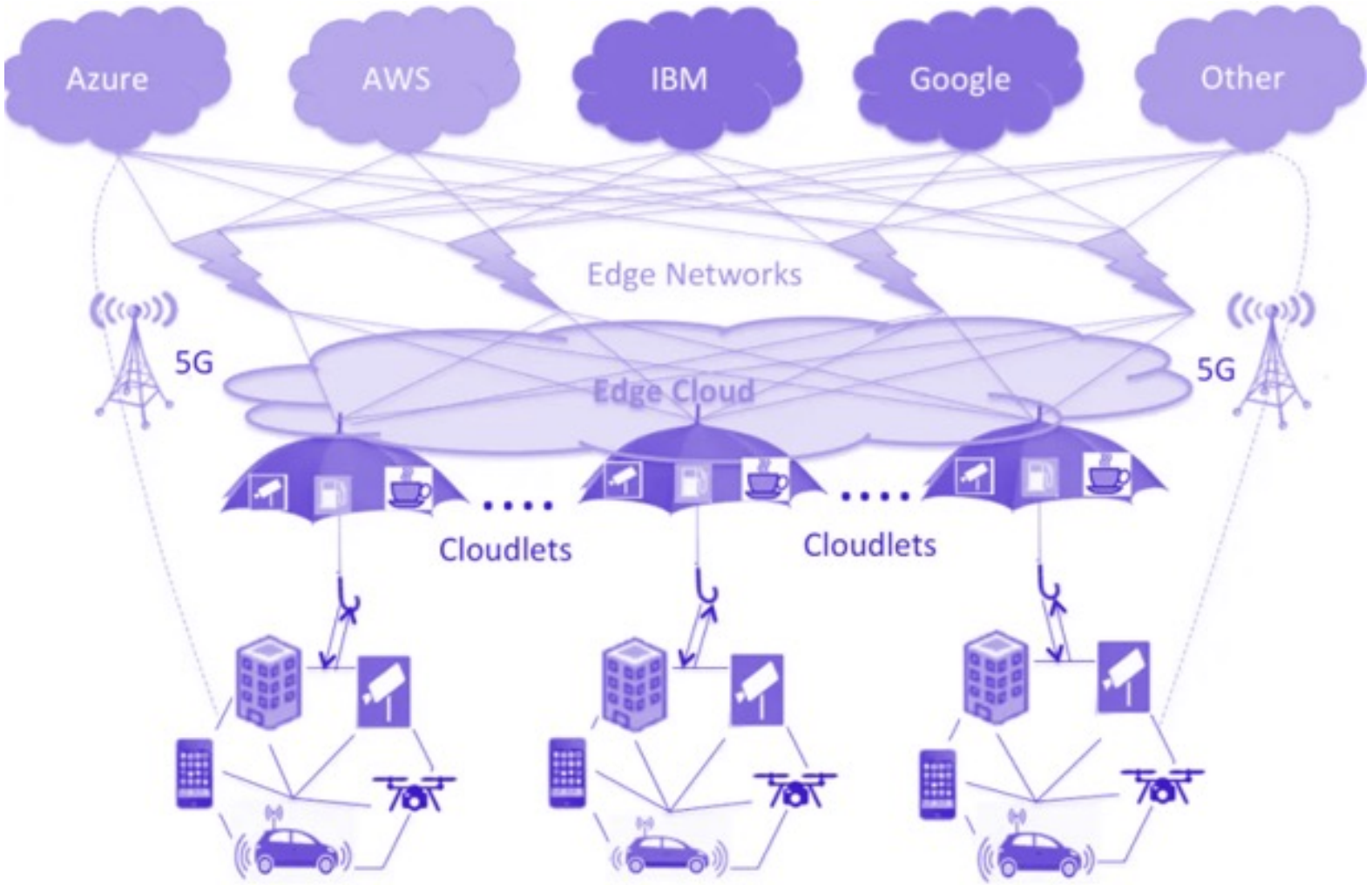
- The material contained in this presentation is copyrighted by the SNIA unless otherwise noted.
- Member companies and individual members may use this material in presentations and literature under the following conditions:
  - Any slide or slides used must be reproduced in their entirety without modification
  - The SNIA must be acknowledged as the source of any material used in the body of any document containing material from these presentations.
- This presentation is a project of the SNIA.
- Neither the author nor the presenter is an attorney and nothing in this presentation is intended to be, or should be construed as legal advice or an opinion of counsel. If you need legal advice or a legal opinion please contact your attorney.
- The information presented herein represents the author's personal opinion and current understanding of the relevant issues involved. The author, the presenter, and the SNIA do not assume any responsibility or liability for damages arising out of any reliance on or use of this information.

  NO WARRANTIES, EXPRESS OR IMPLIED. USE AT YOUR OWN RISK.

Agenda

- Chaos at the Edge
- ISO Perspective on Edge Computing
- Security on the Edge
- Panel Discussion

Chaos at the Edge



Storage Life on the Edge is a Series!

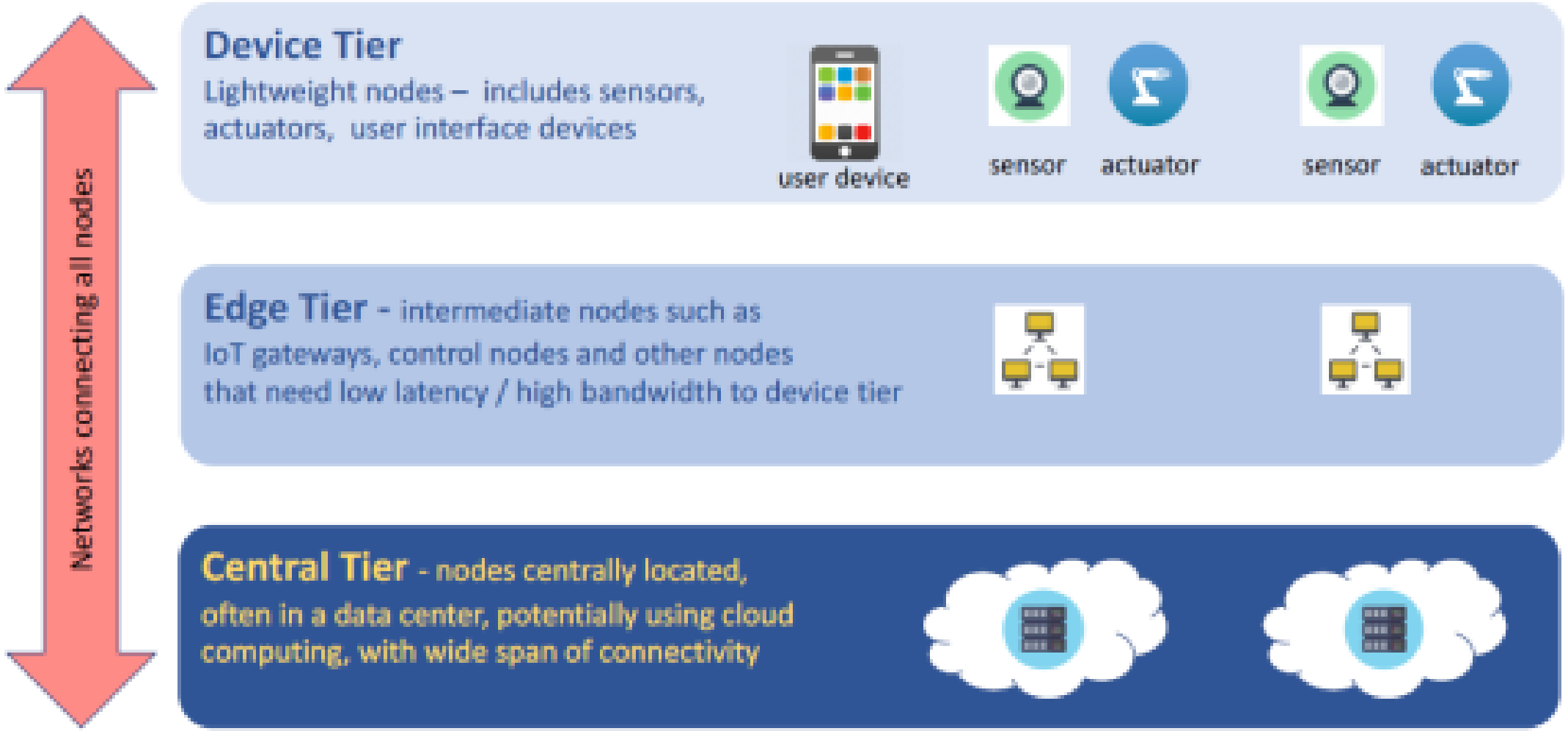
- Watch previous presentations at the SNIA Educational Library
  - Storage Life on the Edge: Managing Data from the Edge to the Cloud and Back
  - Storage Life on the Edge: Edge Use Cases

ISO Perspective on Edge

ISO TR 23188:2019 Perspective on Edge Computing

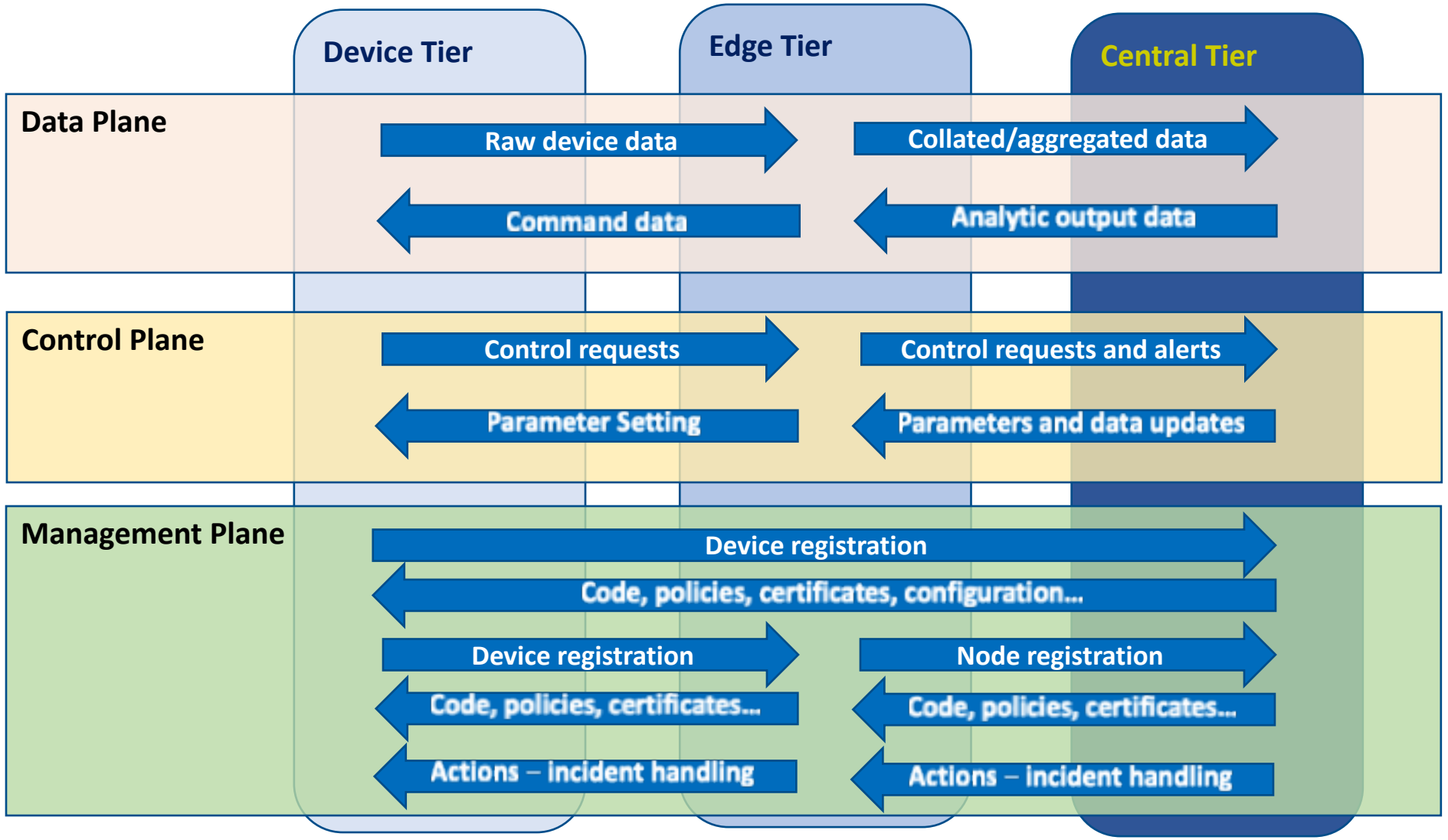
- Edge computing is distributed computing [networked systems] in which data processing and storage takes place on nodes which are near to the edge
- The edge is marked by the boundary between pertinent digital and physical entities, i.e., between the digital system and the physical world, delineated by networked sensors and actuators
- Pertinent digital entities means that the digital entities which need to be considered can vary depending on the system under consideration and the context in which those entities are used

Conceptual Model (containing physical elements)



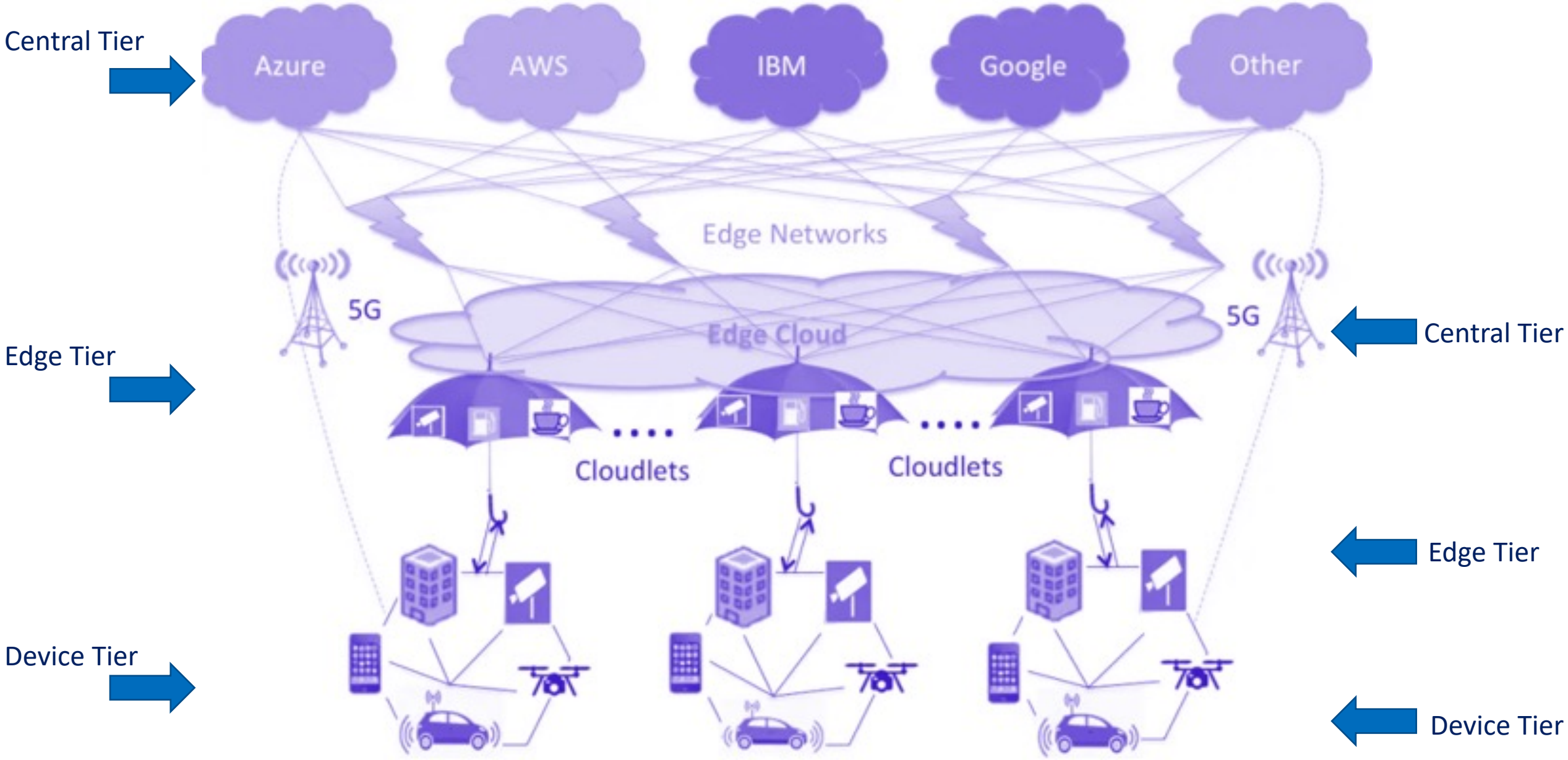
Source: ISO TR 23188:2019

Relationship of Capability Planes to Edge Computing Tiers



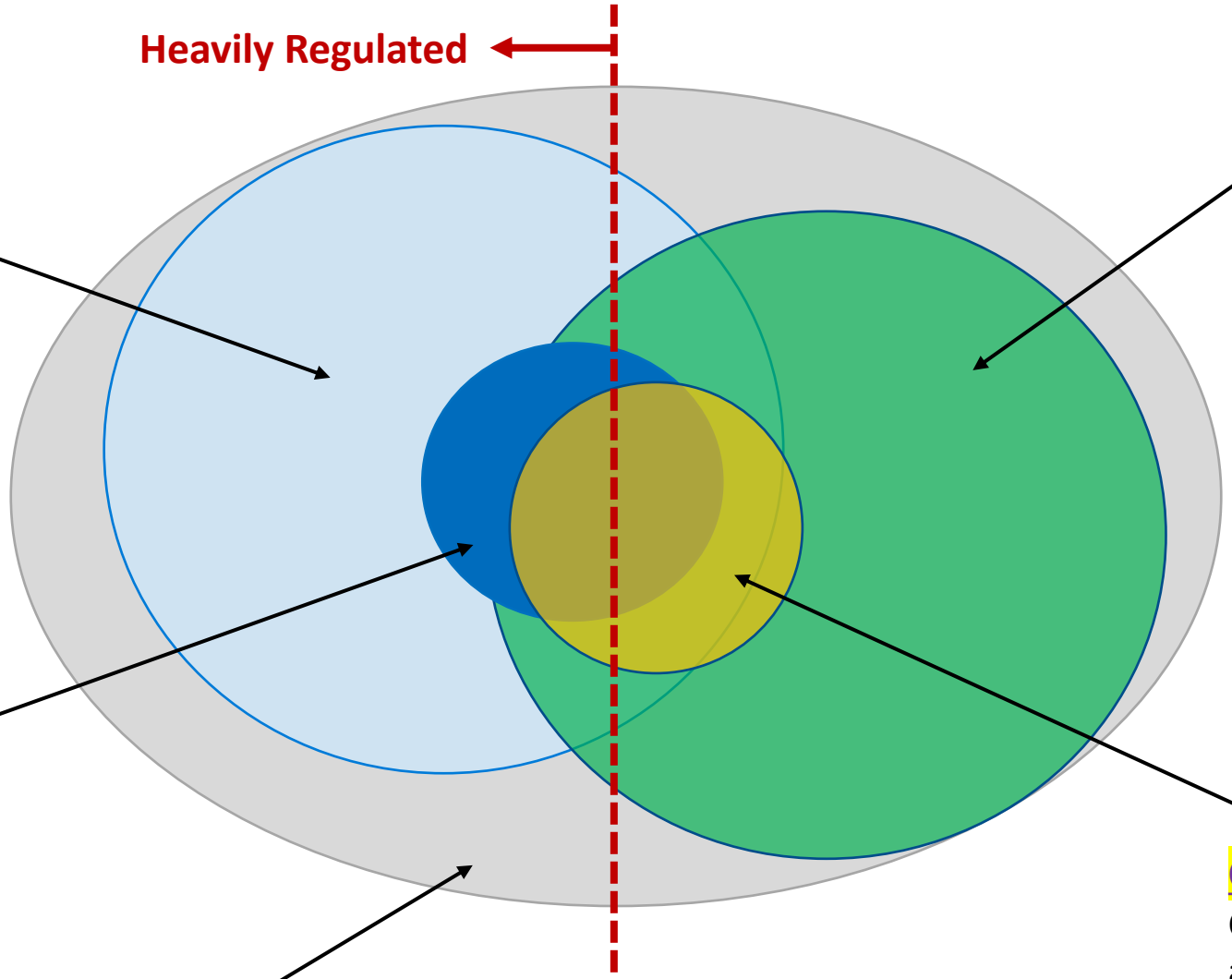
- The arrows within the planes represent possible abstract information flows within the distributed computing system
- The data, control and management planes need to be isolated from each other, in networking terms

Source: ISO TR 23188:2019



Security on the Edge

Privacy: Collection Limitations, Data Quality, Purpose Specification, Use Limitation, Security Safeguards, Openness, Individual Participation, Accountability



Information Security: Ensures Confidentiality, Integrity, and Availability (CIA) of information

Personal Data Protection: Safeguards applying under various laws and regulations to personal data (PII, PHI, etc.) about individuals that organizations collect, store, use and disclose

Ethics: Moral principles that govern a person's behavior or the conducting of an activity

Cybersecurity: Ensures Confidentiality, Integrity, and Availability of data; Identify, Protect, Detect, Respond, Recover

Many Challenges From Its Characteristics

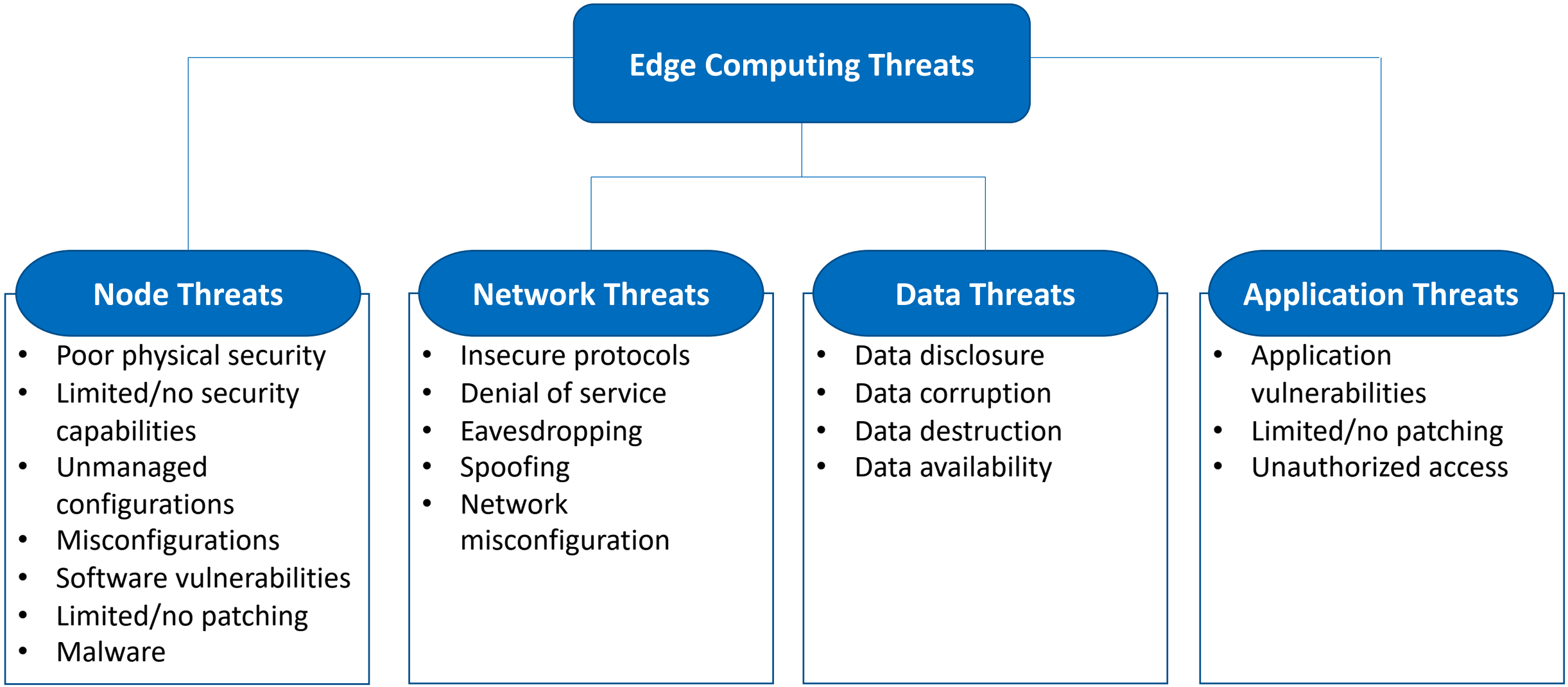
Characteristics

- Massive number of nodes
- Proximity networks often use specialized protocols to interconnect nodes
- First entrance of data; large amounts of real-time and unfiltered data
- Harsh environments
- Hardware and software constraints
- High latencies and low reliabilities
- Localized compute, storage, and management
- Heterogenous and diverse features sets

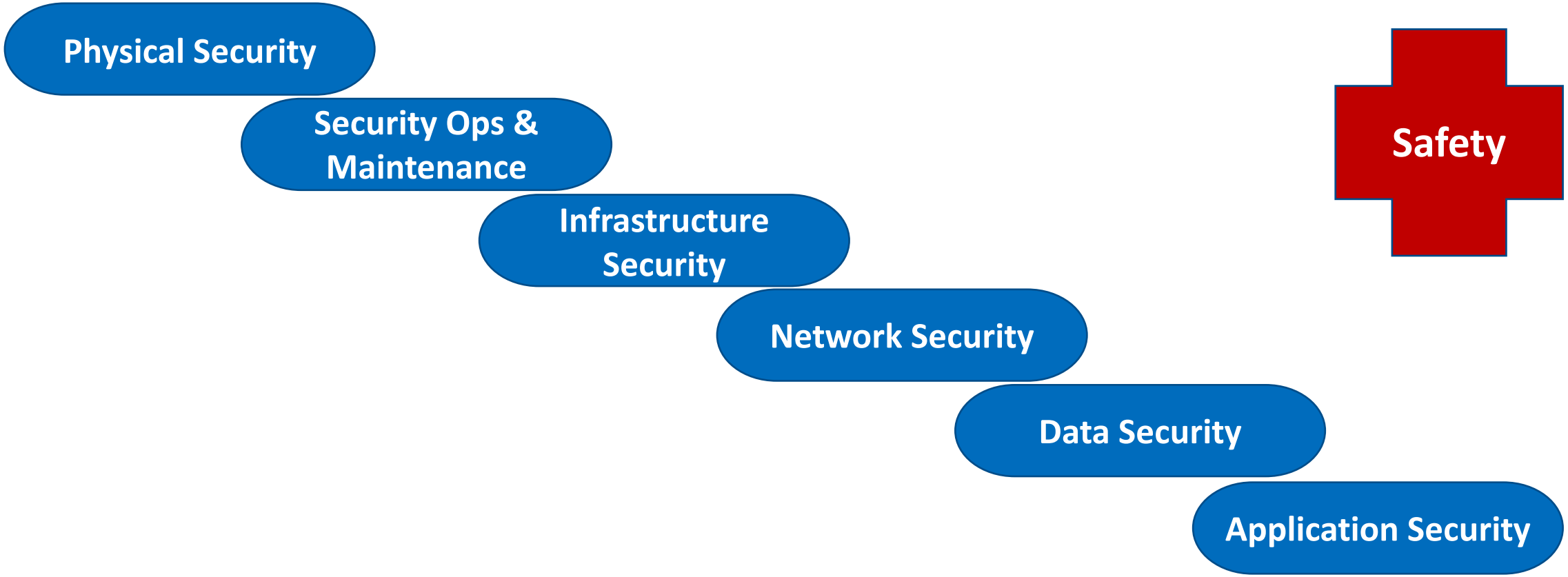
Challenges

- Non-traditional cloud interactions
- Traditional firewalls and IDS/IPS do not apply
- Different kinds of nodes diminish automation options
- Insufficient access control policy and enforcement
- Insecure interfaces and protocols
- DDoS susceptibility
- Expanded attack surface due to vulnerabilities

Rudimentary Risk Analysis



Example Edge Computing Security Framework



Panel Discussion

Summary and Q&A

- Security issues permeate edge ecosystems
- Heterogeneity complicates security
- There is no once-size-fits-all, so security needs to reflect the risks, organizational risk tolerance, value of assets, etc.
- Privacy implications need to be addressed
- In some scenarios, safety can dominate the security priorities

Storage Life on the Edge is a Series!

- Watch previous presentations at the SNIA Educational Library
  - Storage Life on the Edge: Managing Data from the Edge to the Cloud and Back
  - Storage Life on the Edge: Edge Use Cases

Learn More on May 11, 2022

https://www.snia.org/storage-security-summit

After this Webcast

- Please rate this webcast and provide us with your feedback
- This webcast and a copy of the slides will be available at the SNIA Educational Library https://www.snia.org/educational-library
- A Q&A from this webcast, including answers to questions we couldn't get to today, will be posted on our blog at https://sniansfblog.org/
- Follow us on Twitter @SNIANSF

Thank You!

