Data Center Regulations

CODES · STANDARDS · REGULATIONS · CERTIFICATIONS · DOCUMENTATION & AUDITS · INDUSTRY GUIDELINES · BEST PRACTICES

STUDY & REVIEW

01 MUST KNOW

if you remember five things, remember these

01 **Three words, three meanings: codes** are regulations enforced by governmental entities to evolve industry best practices; **standards** ensure organizations follow accepted professional practices (construction, maintenance, safety, documentation); **regulations** are government-defined practices to protect the public and enforce ethical standards. Together they are integral to a data center's operational process — non-compliance can cost millions a year and open the door to threats and risks.

02 **Full compliance, not minimum:** a high-quality data center provides a higher level of protection, mitigates risks, and ensures better uptime while abiding by the law. Design and infrastructure standards apply across all types of data centers, and **full compliance instead of minimum compliance** is what matters.

03 **Know the standards landscape: ANSI/BICSI 002-2014** covers all phases (plan, design, construct, maintain, fire, security); **ANSI/TIA 942-A 2014** is the telecommunications infrastructure standard (cabling, electrical, mechanical, architectural); **EN 50600** is the first European-wide standard (series -1 through -2-6); the **Uptime Institute Tier Standard** rates reliability — but **AWS does not use it to certify its data centers**.

04 **The data center is not the certifier:** an accredited, certified organization acts as the **mediator** between a compliance body and the data center and issues a **certificate of compliance after every compliance audit**. Code-maintenance audits are run regularly by an impartial team of **3 to 5 people who are not from the department being audited**.

05 **Guidelines vs. best practices:** Lesson 2 sorts **industry guidelines** into four focus areas — *information security, physical design and operation, audits, service management* — and **best practices** into categories such as *load, fire safety, physical structure, equipment, environment, air distribution and cooling, and sustainability*.

02 KEY TERMS

TERM	DEFINITION
Code	A regulation enforced (often by governmental entities) to evolve industry best practices
Standard	Ensures organizations adhere to accepted professional practices — construction, equipment maintenance, personnel and data safety, and documentation
Regulation	A government-defined practice to protect the public and enforce ethical standards for professionals to follow
NFPA	National Fire Protection Association — international nonprofit devoted to eliminating death, injury, and property/economic loss from fire, electrical, and related hazards
OSHA	Occupational Safety and Health Administration — sets legal requirements for a safe working environment and maintains health industry standards
EPA	Environmental Protection Agency — develops and enforces environmental regulations and governs emission standards to reduce environmental risk
ANSI/BICSI 002-2014	Standard of implementation and best practices for every phase of planning, designing, constructing, maintenance, fire protection, and security
ANSI/TIA 942-A 2014	Telecommunications infrastructure standard for data centers — cabling, electrical layout, mechanical devices and parts, and architectural system
EN 50600	First European-wide, transnational standard for the planning, construction, and operation of a data center
Uptime Institute (UI) Tier Standard	Globally recognized standard for data center reliability and performance; note that AWS does not use the UI to certify data centers

TERM	DEFINITION
SOC 2 Type II	Inspects the policies and procedures for data security, availability, integrity, privacy, and confidentiality in an organization
PCI DSS	Payment Card Industry Data Security Standard — secures credit and debit card transactions; mandatory if a card is processed by a company or vendor

03 CODES AND THE BODIES THAT ENFORCE THEM

codes range from nationwide to resident; the organization decides which apply

CODE / AGENCY	WHAT IT GOVERNS
NFPA	International nonprofit devoted to eliminating death, injury, and property/economic loss due to fire, electrical, and related hazards
ECCCNYS	Energy Conservation Construction Code of New York State — minimum standards for the design, construction, and occupancy of buildings in New York
Building energy code	Minimum energy-efficiency requirements for new and renovated buildings; **IECC** and **ANSI/ASHRAE/IES 90.1** are the model standards
OSHA	Legal requirements for a safe working environment; maintains health industry standards; provides training, outreach, and assistance
EPA	Develops and enforces environmental regulations and governs emission standards to reduce environmental risk and protect human health

04 STANDARDS AND CERTIFICATIONS AT A GLANCE

who governs what — exam gold

STANDARD / CERTIFICATION	PURPOSE
ANSI/BICSI 002-2014	Best practices across all phases — planning, design, construction, maintenance, fire protection, and security
ANSI/TIA 942-A 2014	Telecommunications infrastructure: cabling, electrical layout, mechanical parts, and architectural system
EN 50600	First European-wide standard for planning, construction, and operation (series -1 through -2-6)
UI Tier Standard	Uptime Institute reliability and performance tiers — *AWS does not use it to certify its data centers*
SSAE 18 / ISAE 3402	For service organizations — ensures a company is honest in its financial reporting
SOC 2 Type II	Inspects policies for data security, availability, integrity, privacy, and confidentiality
ISO/IEC 27001:2013	Checks an organization for vulnerabilities and risks; provides guided training for information security
PCI DSS 3.2	Secures credit/debit card data — **mandatory** if a card is processed by a company or vendor
LEED / ENERGY STAR	Eco-friendly green building certifications — *optional* for a data center to obtain

05 LESSON 2 — GUIDELINES VS. BEST PRACTICES

sort each item into the right bucket

INDUSTRY GUIDELINES — FOUR FOCUS AREAS

what the design standards address

- Information security — HIPAA, ISO/IEC 27001, PCI DSS
- Physical design and operation — ANSI/BICSI 002, ANSI/TIA 942-A, ISO 14000
- Audits — SAS 70, SSAE 18, ISAE 3402
- Service management — ISO 9000, ISO 20000-1

BEST PRACTICES — CATEGORIES

what a well-run data center optimizes

- Load — plan for initial *and* future, partial/low-load
- Fire safety and physical structure
- Equipment — group by load density and temperature
- Environment and sustainability/energy efficiency
- Air distribution and cooling

06 FROM DOCUMENTATION TO CERTIFIED COMPLIANCE

how a data center proves it meets the codes

01 Document every process (the 12-step procedure) → 02 An accredited **mediator** organization assesses the data center → 03 **Certificate of compliance** issued after the compliance audit → 04 Regular code-maintenance and OSHA safety audits confirm it holds

07 EXAM TRAPS

where the knowledge check gets you

- × "AWS certifies its data centers with the Uptime Institute Tier Standard." — **False.** The UI Tier Standard is a globally recognized reliability standard, but AWS does **not** use it to certify its data centers.
- × "The data center issues its own compliance certificate." — A data center is **not a certifying body**. An accredited organization acts as the mediator between the compliance body and the data center and issues the certificate of compliance after each audit.
- × "Codes, standards, and regulations all mean the same thing." — They differ: codes are enforced by governmental entities to evolve best practices, standards ensure accepted professional practices, and regulations are government-defined practices to protect the public.
- × "Meeting the minimum compliance level is enough." — For data center design and infrastructure standards, **full compliance instead of minimum compliance** is important.
- × "A department can audit itself." — Impartiality requires that the 3-to-5-person audit team **not** be members of the department being audited.
- × "SSAE 18 and ISAE 3402 are two different codes." — SSAE 18 is **now called ISAE 3402**; it is for service organizations and ensures honest financial reporting.
- × "Green certifications like LEED and ENERGY STAR are mandatory for a data center." — They are considered **optional** for a data center; PCI DSS, by contrast, is **mandatory** when a card is processed.
- × "Mobile phones and shipping cardboard are fine on the data center floor." — Mobile phones are a **security risk** and are not permitted in critical areas such as the data hall, and no cardboard, plastic wrap, or flammable packaging is allowed in the data hall.

08 SELF-QUIZ

answers are upside-down below

Q1 How does a code differ from a standard?

Q2 Which US agency sets legal requirements for a safe working environment and maintains health industry standards?

Q3 Which US agency develops and enforces environmental regulations and governs emission standards?

Q4 Which standard is the telecommunications infrastructure standard for data centers (cabling, electrical, mechanical, architectural)?

Q5 Which standard covers all phases of planning, designing, constructing, maintenance, fire protection, and security for data center facilities?

Q6 What is the first European-wide, transnational standard for the planning, construction, and operation of a data center?

Q7 Does AWS use the Uptime Institute Tier Standard to certify its data centers?

Q8 Which certification secures credit/debit card data and is mandatory when a company processes cards?

Q9 How many people should run a code-maintenance audit, and from where must they come?

Q10 Which information-security guideline protects individually identifiable health information?

ANSWER KEY (rotate the page)

Q1 A code is a regulation enforced by governmental entities to evolve best practices; a standard ensures organizations adhere to accepted professional practices. Q2 OSHA (Occupational Safety and Health Administration) Q3 EPA (Environmental Protection Agency) Q4 ANSI/TIA 942-A 2014 Q5 ANSI/BICSI 002-2014 Q6 EN 50600 Q7 No — AWS does not use the UI to certify its data centers Q8 PCI DSS Q9 3 to 5 people who are not members of the department being audited (to ensure impartiality) Q10 HIPAA (Health Insurance Portability and Accountability Act)