

ANSI/TIA-942

THE GLOBAL DATA CENTER STANDARD



The globally adopted ANSI/TIA-942 Telecommunications Infrastructure Standard for Data Centers specifies the minimum requirements and guidelines for the design of a data center or computer room. It is intended for use by data center designers, owners, consultants, suppliers, operators and users who need a comprehensive understanding of the data center design, including power systems, mechanical systems, architecture, security, telecommunications systems, fire protection and safety.

To keep pace with the latest technologies, market trends and the global economy, the TIA TR-42 Engineering Committee released the ANSI/TIA-942-C standard in April 2024. This updated version incorporates the previously published TIA-942-B-1 addendum that covers the specific requirements of edge data centers and recognizes the latest cabling infrastructure technologies and applications in alignment with industry best practices. It provides guidance for dealing with today's higher cabling and rack power densities associated with technologies like artificial intelligence, including thermal guidelines and a new informative annex on liquid immersion cooling. It also features a greater focus on sustainability and clarifies several requirements and the applicability of annexes for more flexible and straightforward implementation.

TIA-942 offers several advantages over other data center standards, including:

- Accredited by ANSI and maintained by industry representatives from TIA member companies with expertise across all aspects of a data center
- Publicly available and developed via consensus-based, objective and industry-driven specifications for greater transparency
- Continually and pro-actively updated to support evolving data center design principles and technologies
- Utilizes standard nomenclature applicable to any size or type of data center, from the edge to the hyperscale, as well as enterprise, telco, cloud and co-location
- Offers a more extensive scope with international specifications needed to design and build any data center

TIA-942 OVERVIEW

The TIA-942 standard covers all aspects of data center physical infrastructure, including architecture and topology, environmental design, power systems, cooling systems, telecommunications, redundancy, fire protection, safety, monitoring, and physical security. A key objective of the TIA-942 standard is to define how to build and configure a data center that meets the level of reliability and resiliency required by end users. It includes four ratings that provide an impartial way for data center owners and users to define their expectations depending on the type of applications and data stored in their specific data center.

The TIA-942 standard is also the foundation of the TIA-942 Certification Program that enables data center facilities to be independently reviewed and certified for conformity to the standard based on the four ratings for resiliency, providing greater assurance to customers and stakeholders.

TIA-942 DATA CENTER RATINGS

Rated-1: Basic Site Infrastructure

The data center has single-capacity components; a single, nonredundant distribution path for all equipment; and limited protection against physical events.

Rated-2: Redundant Component Site Infrastructure

The data center has redundant capacity components, but a nonredundant distribution path that serves the computer equipment.

Rated-3: Concurrently Maintainable Site Infrastructure

The data center has redundant capacity components and redundant distribution paths that serve the computer equipment, allowing for concurrent maintainability of any piece of equipment. It also includes improved physical security.

Rated-4: Fault Tolerant Site Infrastructure

The data center has redundant capacity components, active redundant distribution paths to serve the equipment, and protection against single failure scenarios. It also includes the highest level of security.

If you are interested in contributing to the future of data centers, please contact us at DataCenterInfo@tiaonline.org.

For more information about TIA or the TIA-942 Certification Program, visit www.tiaonline.org.

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