CDCE Audio-Friendly Reviewer

Version 2 • rewritten for smoother text-to-speech and easier listening

How to use this reviewer

This version is written to sound more natural when read aloud by AI voice tools. Instead of heavy numbering, each section explains the idea in plain language. Read it slowly, or listen in short batches.

Audio cue: Pause briefly after each section title so the listener can reset before the next concept.

1. Raised floor requirements

For raised floor requirements, remember the usual dimensions. The raised floor height is commonly around four hundred to six hundred millimeters. The distance from the raised floor up to the lowest beam is around two point six meters. The suspended ceiling clearance from the ceiling slab is usually about one point five to two times the raised floor height. The slab-to-slab minimum height is typically around three point six to four point four meters.

2. UPS classes under IEC 62040-3

There are three UPS classes to remember. VFI means voltage and frequency independent. VI means voltage independent. VFD means voltage and frequency dependent.

3. Battery types

Common battery types include wet or flooded cell batteries, sealed lead acid or valve regulated lead acid batteries, nickel cadmium batteries, and lithium-ion batteries.

4. Electromagnetic field types and safety margin

Two field types are commonly mentioned. The first is the electric field, or E field. The second is the magnetic field, also called B field or H field. For reference, the magnetic field limit noted here is thirty-seven point five milligauss for ICT equipment and ten milligauss for humans.

5. Selection criteria for CRAC or HVAC

When selecting a CRAC or HVAC unit, consider cooling capacity in kilowatts, air volume capacity in CFM or CMH, humidification and dehumidification capability, airflow direction, efficiency, system interfacing such as SNMP, water leak detection, EPO contact, and physical parameters.

6. Structured cabling length

For structured cabling, remember the common length split. Solid cable is ninety meters, and flexible cable or patch cord is ten meters. Together, they make up the standard one hundred meter channel.

7. FM-200 calculation factors

Key FM-200 calculation factors include the weight of the halocarbon agent, the data center room size or volume, the volume of halocarbon in cubic meters per kilogram, the temperature, and the design concentration.

8. Uptime Institute and TIA-942

Uptime Institute is a commercial organization, while ANSI and TIA represent a standards organization. Uptime guidance is known more for high-level papers and tier topology ideas, especially in power and cooling. TIA-942 is a formal downloadable standard that covers power, cooling, architectural requirements, telecommunications, fire suppression, safety, and security. TIA is updated at regular intervals, while Uptime material is published as needed.

9. UPS battery sizing inputs

To calculate UPS battery requirements, remember these technical inputs: UPS output power in kilowatts, inverter efficiency, DC bus floating voltage, and minimum discharge voltage on the DC bus.

10. Overcurrent protection devices

Examples of overcurrent protection devices include the miniature circuit breaker, the molded case circuit breaker, the vacuum circuit breaker, and the air circuit breaker.

11. Airflow calculation for a server

To calculate CFM or airflow for a server, start with the cooling capacity in watts or kilowatts, then use the delta T or temperature difference.

12. Where to place the CRAC unit

The CRAC unit is commonly placed perpendicular to the hot aisle. This helps return hot air faster and supports more uniform air distribution.

Audio cue: Take a short pause before continuing to the next group of ideas.

13. Halocarbon versus inert gas suppression

Halocarbon systems mainly suppress fire through heat removal. They usually need a smaller footprint, but refill cost is higher, and the cylinders should be within or near the hazard area. Inert gas systems work mainly by reducing oxygen. They need a larger footprint, refill cost is lower, and there is less restriction on distance from the hazard area.

14. Contamination categories

The contamination categories listed here are gas, solid, and liquid.

15. Common testing and commissioning mistakes

Three common testing and commissioning mistakes are these: the commissioning agent is appointed too late, the budget is unrealistic or allocated too late and becomes subject to cutbacks, and not enough time is allocated for a complete IET and IPVT scope.

16. Major areas of design review

The four major areas of design review are architecture, telecommunications, mechanical or cooling, and power.

17. Critical elements of equipment selection

Important equipment selection elements include capacity, functionality, redundancy, reliability, physical properties, interfacing, installation requirements, and life cycle considerations.

18. Criteria for selecting data center vendors or resellers

When selecting vendors or resellers, consider company stability and performance, technical and service capability, pricing, legal factors, and subjective criteria.

19. Data center lifecycle

The lifecycle stages listed here are prepare, plan, design development, acquire, construct, fit-out, test and commissioning, hand-over, operate, maintain, monitor and report, optimize, plan again, decommission, and terminate.

20. Events that trigger a snag or punch list

Two major activities can trigger a snag or punch list. The first is building construction. The second is testing and commissioning.

21. When long lead time items are purchased

Long lead time items are commonly purchased after design freeze and after conceptual design decisions are clear.

22. Responsibility for safety management

The role identified here as responsible for safety management is the health and safety manager.

23. Items normally found in the statement of need

The statement of need usually includes an executive summary, an introduction or statement of purpose, the scope of the statement of need, the definition of the business need, options available to fulfill the need, and the financials.

24. Business impact and feasibility study considerations

A business impact and feasibility study asks how the need can best be fulfilled, what benefits are expected, what capital investment is required, what funding options are available, what risks exist, what alternatives are possible, and what happens if the project does not proceed. It can also include scope of investigation, requirements and risk studies, public consultation, geotechnical study, environmental impact assessment, health and safety study, legal and planning requirements, capital and operating cost estimates, funding assessment, and potential site assessments.

Audio cue: Take a short pause before continuing to the next group of ideas.

25. Data center areas considered in design

Typical design areas include the holding area, staging area, computer room, UPS room, services corridor, battery room, security room, and network operations center.

26. Lifecycle phases and the importance of design

The broader lifecycle can be summarized as prepare, plan, design development, implement, operate, and retire. Among these, the design stage is highlighted as the most important because it sets the project direction and avoids costly mistakes later.

27. Sequence of the statement of need and principle approval

In principle, the process starts when senior management acknowledges that a project is needed. Business requirements analysis should involve the relevant stakeholder groups, and the scope of the statement of need should be clearly defined.

28. Technology review before conceptual sizing

New technology should be considered based on business requirements and location. It is reviewed before conceptual sizing because technology choices affect location needs, building type, and the rest of the facility requirement.

29. Compartmentalization and rated level

Compartmentalization is preferred for ANSI TIA-942 Rated 3 and required for Rated 4. Each distribution path for power and telecommunications must be physically separated, with no sharing of PDU, fire suppression, or cooling.

30. Maintenance frequency in TIA-942

The note in this reviewer says maintenance frequency is irrelevant in that specific question context.

31. Facility space to computer room ratio

For rated level space ratios, Rated 1 is about one point two times the computer room. Rated 2 is about one point four times the computer room. Rated 3 is about two times the computer room. Rated 4 is also about two times the computer room.

32. Most accurate method to determine power requirement

In a mixed ICT environment, the most accurate method mentioned for determining power requirement is ELU, or equipment location unit.

33. What limits maximum operational load

Maximum operational load in worst mode condition can be limited by architecture, mechanical or cooling systems, power systems, and network considerations.

34. Maximum cooling capacity context

The maximum cooling capacity is associated here with the sensible capacity of the CRAC or HVAC under both standard operations and worst-case conditions.

35. Alternatives to building your own data center

Alternatives include outsourcing through managed hosting facilities, colocation services, and wholesale data center facilities.

36. Ownership type

Two ownership types are listed: freehold and leasehold.

37. Telecom line distance for TIA-942 Rated 3 and Rated 4

The reviewer notes that a distance greater than twenty meters is required.

38. Site selection hazards and considerations

During site selection, consider the cost of real estate, architectural concerns, cost and availability of power, water and connectivity, climate, environmental conditions, natural hazards, man-made hazards, transportation, workforce, government and political stability, geotechnical factors, site permitting, layout options, and security.

Audio cue: Take a short pause before continuing to the next group of ideas.

39. EMS or BMS in conceptual design

EMS or BMS is not necessarily compulsory during conceptual design. It may be designed later.

40. Feasibility study versus business case

A feasibility study checks technical feasibility, financial feasibility, and operational viability. A business case looks more directly at the financial value of the new venture and whether it is worth pursuing.

41. Project delivery structures

DBB means design bid build. DB means design build.

42. Closed tender versus open tender

A closed tender involves prior qualification and usually has a shorter processing time because there are fewer checks and less paperwork. An open tender uses open competitive bid selection.

43. Key objectives of a project manager

A project manager provides a single point of management accountability for project outcomes. The role normally covers project planning, implementation team setup, budget development, and schedule management.

44. Capacity and capability

In this reviewer, capacity and capability are framed as the limitation of the facility.

45. Authority of the safety manager

The safety manager has the authority to shut down part or all of the work if health or safety risks are detected.

46. OSRA and TFRA

OSRA means operational systems requirement analysis. It provides a structured way to gather, analyze, and interpret critical inputs for ICT strategy development. TFRA means technical facilities requirement analysis. It fine-tunes the conceptual sizing completed during the prepare phase.

47. Factory witness testing

Factory witness testing helps confirm that equipment is acceptable before it reaches the site. In this reviewer, the answer is yes.

48. Liquidated damages

A penalty of one percent up to a maximum of ten percent is identified here as liquidated damages.

49. PDR versus FDV

PDR means preliminary design review and is linked to specification validation. FDV means final design validation and is linked to implementation validation.

50. End of life

EOL stands for end of life.

51. Delivery logistics standard

The delivery logistics standard listed here is Incoterms 2010.

52. Purpose of a full IPVT

The purpose of a full integrated performance verification test is to carry out detailed functional testing on all integrated systems, verify integrated functional performance, and validate that the data center capacity and redundancy meet the design intent.

Audio cue: Take a short pause before continuing to the next group of ideas.

53. Responsibility for testing and commissioning parties

The reviewer identifies senior management as responsible for the testing and commissioning parties.

54. IET and IPVT applicability

IET and IPVT apply to all sizes of data center.

55. Design intent considerations

To determine design intent, consider capacity, functionality, required redundancy and measures taken, maintainability, and efficiency.

56. Calibration of testing meters

Calibration should have been performed no more than twelve months before the planned tests.

57. Common T and C budget issue

A common testing and commissioning budget issue is that the budget is unrealistic or allocated too late, which leads to cutbacks.

58. Common UPS testing tools

Typical UPS testing tools include a power quality analyzer, phase rotation tester, current clamps, and a thermographic scanner.

59. Why maintain a detailed defect log during DLP

A detailed log should be kept to record any additional defects that surface during the defects liability period. This supports negotiation for an extended DLP when needed.

60. Testing and commissioning report note

The reviewer indicates that the testing and commissioning report includes a management summary.

61. What happens after IET

After IET, the next step is to define and execute IPVT in order to verify how the integrated systems perform together and to confirm the full design intent.

62. Warranty versus defects liability period

The defects liability period provides a contractual and procedural way to repair or correct data center issues without immediately going into dispute resolution. It also acts as a form of warranty for facilities, MEP, and ICT equipment. The source note treats warranty as essentially similar in this context.

63. When to turn on permanent essential services

Once the building has been erected and the basic service entries are installed, a request for turn-on can be submitted. This often involves the authority having jurisdiction, which inspects the service entries and related documents such as old diagrams or single line diagrams. Once approved, the building is connected to its permanent services and billing begins.

Listening tips

For better retention, listen to this reviewer in blocks of ten to fifteen sections, then stop and repeat the parts that are formula-based, standards-based, or comparison-based. Topics such as Uptime versus TIA-942, halocarbon versus inert gas, feasibility study versus business case, and PDR versus FDV are especially useful for repetition.

Reminder

This version keeps the meaning of the original reviewer while smoothing the phrasing for audio. A few source entries were brief or slightly incomplete, so they were preserved carefully instead of being over-expanded.