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DESIGN STUDY

Arena network refresh in the off-season: 36 switches and 520 Wi-Fi 7 access points planned to cut over in 12 weeks to a fixed first-event date

Complete design on current platforms

CAPABILITY	INDUSTRY	SETTING
Implementation Services	Sports & Entertainment	17,000-seat arena
DOCUMENT	**VERSION**	**DATE**
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Document control

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Sign-off	"An engagement under this design is signed by the practice lead before any build proceeds."		

Contents

1 · Scope 3
1c · Public implementations this design follows 4
2 · Requirements register 4
3 · Architecture overview 5
4 · Design by subsystem 6
5 · Failure behavior 7
6 · Limits 8
7 · Lessons learned 8
8 · The author 8

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CONVENTIONS

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Table 1. Revision history

Date	Version	Change
Sep 27, 2026	1.0	First issue.
Oct 10, 2026	1.1	Approval line now reads: approved by the Founder, issued by Symbeeo. Steve Phillips remains the author.

1 · Scope

Who it is for. The vice president of technology at an arena whose network has been chosen and bought, and who now has one close season to install it: the day after the last event the building is a construction site, and on the first event of the new season 17,000 people, 300 tills and a television truck expect it to work. There is no second date.

Typical buyer [A]. A 17,000-seat arena, home to one resident team, with concerts through the summer tail of the season. 18 IDFs and one MDF. The close window runs 84 days from the day after the last event to the first event of the new season. The existing Wi-Fi 5 network, access switches and core are replaced; horizontal copper and the IDF-to-MDF fiber are retained. The arena's own IT team is six people, who also run the ice plant's and the scoreboard's network needs [A].

What is in. Survey; staging and burn-in at an integrator area during the season before the window; configuration from one source of truth; the core, IDF and access point installs; per-system acceptance; a load-test event; rollback; the go/no-go gates that protect the first-event date; the store of record and handover. **What is out.** The Wi-Fi design and RF plan (issued before this engagement); the choice of vendor; cabling beyond patch fields; the payment, ticketing and IPTV applications themselves; the neutral-host cellular system.

Assumptions. Arista is the chosen vendor: 720XP access switches, 7050X4 core, C-460D and C-430 access points, managed from CloudVision [A]. Every IDF has two free rack positions, dual power circuits and fiber that tests clean on the sample [A]. The arena's lift and rigging schedule gives the access point crews the bowl for weeks 4–8 of the window [A]. Two lift crews and two IDF crews [A].

Related documents, read Sep 25, 2026.

- SRA-IMP-001, SDD-IMP-001, STP-IMP-001 — this capability's reference architecture, design and test plan
- Arista 720XP Series Campus PoE Switches data sheet (dated Aug 07, 2026) — https://www.arista.com/assets/data/pdf/Datasheets/CCS-720XP-Datasheet.pdf
- Arista C-460D Wi-Fi 7 access point data sheet (dated September 2, 2026) — https://www.arista.com/assets/data/pdf/Datasheets/Arista-C-460D-Datasheet.pdf
- Arista C-430 Wi-Fi 7 access point data sheet (dated August 27, 2026) — https://www.arista.com/assets/data/pdf/Datasheets/Arista-C-430-Datasheet.pdf
- Arista 7050X4 Series data sheet — https://www.arista.com/assets/data/pdf/Datasheets/7050X4-Datasheet.pdf

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- Arista Validated Designs 6.4, Campus Fabric example — https://avd.arista.com/6.4/ansible_collections/arista/avd/examples/campus-fabric/index.html
- pyavd 6.4.0 release (Aug 28, 2026) — https://pypi.org/project/pyavd/
- NetBox v4.6 release notes — https://netboxlabs.com/docs/netbox/release-notes/version-4.6

1c · Public implementations this design follows

Table 2. Public implementations this design follows

Implementation	Who published it · date	What it settles for this design	URL
Campus Fabric example: two spines as the MDF routing the SVIs; L2 leaf switches in the IDFs with 802.1X network access control on port ranges; configuration generated, validated and documented from one data model	Arista Networks, Arista Validated Designs 6.4 (pyavd 6.4.0 released Aug 28, 2026) · vendor documentation, used to build our own design	§3 and §4.2: the arena is built as that example, so the configuration is generated, not typed (R8)	https://avd.arista.com/6.4/ansible_collections/arista/avd/examples/campus-fabric/index.html

The row is vendor documentation, not a deployment; its release date was confirmed on PyPI on Sep 27, 2026 (https://pypi.org/project/pyavd/). No named arena deployment is cited.

2 · Requirements register

Table 3. Requirements register

#	Requirement	Value	Source
R1	Window	84 days, day after the last event to the first event	[A]
R2	First-event date	fixed; the network is ready or the fallback in §4.7 carries the event	[T]
R3	Access switch	720XP-48TXH-2C-S: 48 × 100M–10G RJ45 at 90 W 802.3bt, 4 × 25G SFP, 2 × 100G QSFP, 780 Gbps (1,560 Gbps FDX); 1,775 W typical / 1,744 W minimum PoE with the default 2 × 1,050 W supplies	[S] 720XP data sheet
R4	Bowl access point	C-460D: Wi-Fi 7, three 4x4 access radios (6, 5, 2.4 GHz) plus a 2x2 tri-band multi-function radio; directional antennas switchable 80° and 50°; 2 × 10 GbE PoE++; 44.4 W maximum	[S] C-460D data sheet
R5	Concourse and suite access point	C-430: Wi-Fi 7, 9.3 Gbps aggregate, omnidirectional, 2 × 5 GbE 802.3at PoE+; 24 W maximum	[S] C-430 data sheet
R6	Core	2 × 7050X4-48Y-4DF: 48 × 25G SFP, 4 × 400G QSFP-DD, up to 2.8 Tbps; MLAG	[S] 7050X4 data sheet

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#	Requirement	Value	Source
R7	Quantities	300 C-460D, 220 C-430, 36 access switches (2 per IDF), 2 core switches	[A]
R8	Configuration	every device from one AVD data model through CloudVision; zero manual deltas at handover	[T]; SRA-IMP-001 R8
R9	Burn-in	72 h sustained load at the integrator area before dispatch, completed in season before the window opens	[T]; SRA-IMP-001 R5
R10	Fiber	every connector inspected and every IDF-to-MDF link tested for loss, length and polarity before first use	[S] SRA-IMP-001 R10, R11
R11	Gates	G1 core in service end of week 2 · IDF work weeks 3–7, four a week and the last two in week 7, none before G1 except by the §4.7 fallback · G2 all IDFs end of week 7 · G3 all access points end of week 8 · G4 load-test event week 10 · freeze from week 11	[T]
R12	Rollback per IDF	old switches left racked and powered until G4; re-patch in ≤ 2 h	[A]
R13	Per-system acceptance	point of sale, ticket scanning, IPTV, building management, broadcast hand-off: each owner signs	[T]
R14	PoE budget	22.4 kW demand against 62.8 kW available at minimum, 36 %; per switch on the default supplies at most 20 C-460D, 888 W of 1,744 W	[S] 1,744 W × 36, 44.4 W per C-460D; [A] demand, 12 bowl IDFs; [T] 20 per switch
R15	Handover pack	≤ 10 working days after the first event	[A] SRA-IMP-001 R16

Fifteen rows; five carry a vendor or reference-document figure, one a derived vendor figure, four are design assumptions, five are design targets.

3 · Architecture overview

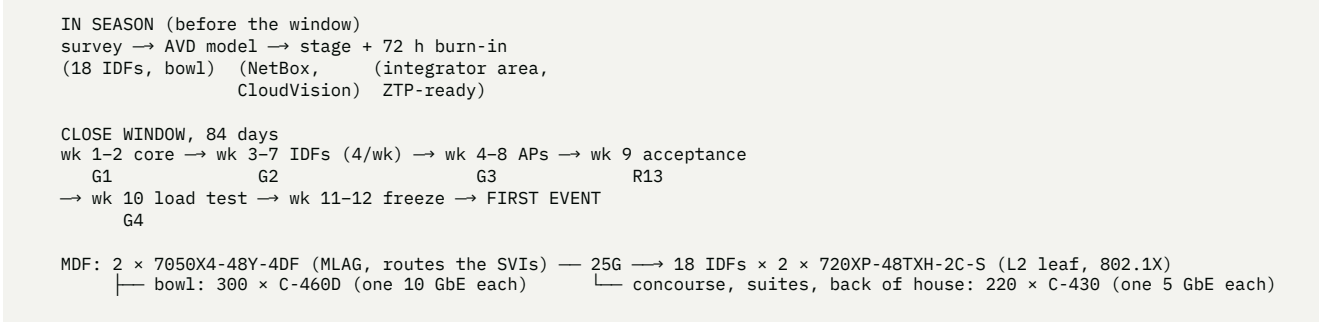


Figure 1. Close-window schedule and network layout

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The work that can be done while the arena is still trading — survey, configuration, staging, burn-in — is done in season, so the 84 days are spent only on what needs the building empty. The core goes in first so every IDF cuts over onto a finished core.

Table 4. Architecture overview

Role	Product (exact model)	Qty	Capacity used	Why this unit
Core (MDF)	Arista 7050X4-48Y-4DF	2	36 of 48 × 25G ports each, 75 % [A]/[S]	One 25G uplink from every access switch to each core; 400G ports for the peer link and the firewall hand-off [S]
Access (IDF)	Arista 720XP-48TXH-2C-S	36	1,400 of 1,728 ports, 81 %; 36 % of minimum PoE [A]/[S]	90 W and up to 10G on every port [S]; one model in every IDF
Bowl access point	Arista C-460D	300	1 per 57 seats [A]	Directional, switchable beam; 4x4 on all three bands [S]
Concourse and suite access point	Arista C-430	220	1 per 80–100 m² and one per two suites [A]	Omnidirectional; draws 24 W on PoE+ [S]
Management	Arista CloudVision (CV-CUE for Wi-Fi)	1 tenant	all 558 devices [A]	Access points activate and configure from the cloud in under two minutes [S]
Source of truth	NetBox 4.6	1	558 devices by serial [A]	SRA-IMP-001 D2

4 · Design by subsystem

4.1 Survey, in season.

Every IDF surveyed on a non-event day: rack space, both power circuits, fiber endface inspection and a loss test on a one-in-four sample of IDF-to-MDF links [A]; any failure widens the test to every link in that riser (R10) [T]. Bowl access point positions walked with the RF plan and the rigging contractor, since the bowl positions decide the lift schedule [A].

4.2 One data model.

The arena is built as the AVD Campus Fabric example: two spines as the MDF routing the SVIs, L2 leaves in the IDFs with 802.1X on port ranges [S]. Port profiles for access point, point of sale, camera, IPTV, building management and broadcast [A]. AVD generates, validates and documents the configuration from the model [S]; CloudVision pushes it; NetBox holds the serials, racks and cable IDs (R8) [A]. A change after handover is a change to the model, never to a switch.

4.3 Staging and burn-in, in season.

Switches staged at an integrator area (SRA-IMP-001 D1) [A]: power-on, 72 h of PoE and traffic load (R9), EOS image at the release CloudVision recommends on the staging day, serial recorded, onboarding to CloudVision confirmed [A]. Unlike IMP-003, which records a 4 h waiver of SRA-IMP-001 R5 for store switches, the season gives the time and the full 72 h is kept [T]. Access points are not staged; they activate from the cloud when first powered [S]. Kit is boxed per IDF with its port map [A].

4.4 Core, weeks 1–2.

The core pair is racked beside the old core, patched to the firewall and to the retained IDF fiber, and brought up with the new VLAN and SVI plan [A]. At G1 the SVIs move from the old core to the new in one overnight window, with the old core

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left powered as the rollback [A]. From G1 the old IDF switches are reached through the new core, so IDFs can move one at a time.

4.5 IDFs, weeks 3–7, and access points, weeks 4–8.

IDF work starts in week 3, after G1, so every IDF cuts over onto a core already in service. Four IDFs a week in weeks 3–6 and the last two in week 7 cover all 18 by G2, two per IDF crew a week, the 12 bowl IDFs first (weeks 3–5) so each bowl section's IDF is done before its lift arrives (R11) [T]. Per IDF: rack the pair beside the old switches, move patches by the port map, power on; the switches reach CloudVision and take their configuration [A]. The old switches stay racked and powered until G4 (R12). Access points follow the IDFs: each is swapped on its existing cable, bowl sections from lifts, concourse from ladders; 520 in five weeks is about 104 a week [A]. PoE: 300 × 44.4 W plus 220 × 24 W plus 3.8 kW of cameras, phones and screens is 22.4 kW [S]/[A], against 36 × 1,744 W = 62.8 kW at minimum (R14), so the default supplies suffice in total [S]. The budget is per switch, so the bowl is checked per IDF: the 300 C-460D home on the 12 IDFs that ring the bowl [A], 25 per IDF, 13 and 12 across the pair. 13 × 44.4 W = 577 W leaves 1,167 W of the switch's 1,744 W for its other 35 ports, 33 W each, above the C-430's 24 W [S]. One switch runs out at 39 C-460D (1,744 ÷ 44.4) [S], so the design rule is at most 20 C-460D per switch on the default supplies (888 W) [T]; a bowl IDF whose RF plan needs more than 40 takes the 720XP's dual 2,000 W supplies on both switches, 3,601 W of PoE each at minimum [S] (720XP data sheet, read Sep 27, 2026), rather than a third switch, and the switch count stays 36 [A]. Rejected: the 720XP-48ZC2 — cheaper, but only 8 of its ports run above 2.5G and only at 60 W [S], and the C-460D uplink is 10 GbE [S].

4.6 Acceptance and the load test, weeks 9–10.

Each system owner runs their own test on the new network and signs (R13): every till and handheld transacts once, every gate scanner validates a ticket, every IPTV screen shows the house channel, building management polls every controller, the broadcast hand-off passes the rights holder's check [A]. G4 is a load-test event — a staff and season-ticket open practice with the bowl partly occupied [A] — the only test that puts real devices on the bowl Wi-Fi before the first event. After G4 the old switches come out and the freeze starts.

4.7 Gates and the fallback.

The first-event date does not move (R2), so the plan answers "what if a gate is missed" before it starts [T]. G1 missed by more than 3 days: IDF work proceeds on the old core, rerouted later [A]. G2 missed: the unfinished IDFs stay on the old switches for the first event and move in the first road trip [A]. G3 missed: sections without new access points keep their old ones, which are left hanging until their replacement is in and tested [A]. G4 failed: the event runs on whichever parts passed; every system has a named fallback on the event sheet [A]. Rejected: removing the old network at the start of the window — faster, but it leaves no fallback for a date that cannot move.

4.8 Handover.

NetBox, the AVD model at its final commit, the CloudVision configuration record, acceptance sheets per system and the load-test report, delivered within 10 working days of the first event (R15), per SRA-IMP-001 R16 [A].

5 · Failure behavior

Table 5. Failure behavior

Failure	Behavior	Source
Switch fails burn-in	replaced from staging stock; IDF kit ships complete	[A]
IDF fiber fails the loss test	link cleaned, re-terminated and retested; IDF held until it passes	[S] SRA-IMP-001 F4

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Failure	Behavior	Source
Switch does not reach CloudVision on the night	management path checked; IDF re-patched to the old switches inside 2 h	[A] R12
One core switch fails after G1	MLAG peer carries every IDF on its second uplink	[S] MLAG; [A]
Access point does not activate	power class and VLAN checked; spare hung; section on neighbors meanwhile	[A]

6 · Limits

- 84 days assumes the lift schedule and a vendor delivery before the window; a late delivery moves staging into the window and the 72 h burn-in becomes a waiver.
- The load test is one event with a partial bowl; the first sold-out night is still the first real test of the bowl Wi-Fi.
- Rollback for access points is by leaving old ones in place, not by reinstalling them.
- The RF design is taken as given; if the load test shows a coverage gap, the fix is after the first event.

7 · Lessons learned

None yet — this is a design study; populated after the first build against it.

8 · The author

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SYMBEEO

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Figures are as published by their sources on the dates given in this document; figures marked [A] are assumptions.

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