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DESIGN STUDY

Spares and RMA hub for a 3,000-device network estate across two countries

Complete design on current platforms

CAPABILITY	INDUSTRY	SETTING
Supply Chain & Integration	Public Sector	Public education network
DOCUMENT	**VERSION**	**DATE**
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Document control

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> CONVENTIONS
>
> **Source tags.** [S] figure read from the vendor's own current page on Sep 18, 2026 · [S*] figure from the vendor's page summary where the page itself could not be opened · [A] design assumption · [T] design target (the record's outcome figure and anything derived from it). Every figure carries one tag. No figure comes from any prior engagement, file or asset. A row with more than one tag is counted once: as a published figure if any tag is [S] or [S*], otherwise as an assumption if any tag is [A], otherwise as a design target.

Table 1. Revision history

Date	Version	Change
Sep 18, 2026	1.0	First issue.
Sep 20, 2026	1.1	Public implementations added; figures reconciled with published sources.
Sep 27, 2026	1.2	Figures and platform details rechecked against published sources.
Oct 10, 2026	1.3	Approval line now reads: approved by the Founder, issued by Symbeeo. Avinash Dhinakaran remains the author.

1 · Scope

Who it is for. The network operations manager of a public education network with 400 sites who has three vendors, three support portals and no single answer to "is this device on contract, where is its spare, and when does the replacement arrive."

Typical buyer [A]. A public education network with 400 sites across two countries. 3,000 devices: 2,000 Cisco Catalyst 9300 family access switches, 600 Juniper EX4400 switches, 400 Fortinet FortiGate firewalls, one per site [A]. Site classes: 300 small (1–5 devices), 80 medium (6–15), 20 large (16 or more) [A].

What is in. One contract register for all 3,000 devices; spares held per site class at two hubs, one per country; the RMA process per vendor; advance replacement within the next business day; RMA turnaround tracked per vendor. **What is out.** The network design; the monitoring that detects a failure (the hub receives a ticket); disposal of returned units after the vendor accepts them.

Assumptions. One hub per country, each within next-business-day courier reach of every site in that country [A]. Field engineers are the client's own staff; the hub ships, the engineer swaps [A]. Every device is on a vendor contract that includes advance replacement [A], at the levels in R6–R8.

Related documents, read Sep 18, 2026. Cisco Smart Net Total Care service description (https://www.cisco.com/c/dam/en_us/about/doing_business/legal/service_descriptions/docs/cisco-smart-net-total-care.pdf) · Cisco Support service description, Ver 2.1, read Sep 27, 2026 (https://www.cisco.com/c/dam/en_us/about/doing_business/legal/service_descriptions/docs/Cisco-Support.pdf) · Cisco Catalyst 9300 Series data sheet (https://www.cisco.com/c/en/us/products/collateral/switches/catalyst-9300-series-switches/nb-06-cat9300-ser-data-sheet-cte-en.html) · Juniper Care service description document (https://support.juniper.net/support/pdf/guidelines/juniper-care-service-description-document.pdf) · Juniper EX4400 models and specifications (https://www.juniper.net/documentation/us/en/hardware/ex4400/topics/concept/ex4400-models.html) · FortiCare Technical Support and RMA Services solution brief (https://www.fortinet.com/content/dam/fortinet/assets/solution-guides/sb-forticare-technical-support-and-rma-services.pdf), Feb 25, 2024 · Cisco service description version 17.0, Nov 10, 2025 · Juniper Care service description 017-EN, November 2025 · FortiCare Priority RMA and Secure RMA Services brief, May 16, 2024 (https://www.fortinet.com/content/dam/fortinet/assets/solution-guides/sb-forticare-priority-rma.pdf).

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1c · Public implementations this design follows

Each row is labeled. **Public deployment**: a named operator's real deployment, published and dated by the operator, its vendor or a partner, used where one exists. **Our own design**: the dated vendor or standards documentation this design was built from, where no public deployment of the design exists. Labels and dates checked Sep 27, 2026.

Table 2. Public implementations this design follows

Implementation	Who published it · date	What it settles for this design	URL
Our own design, built from published documentation. Cisco Support service description, Ver 2.1 (Smart Net Total Care renamed Cisco Support from Jun 15, 2025)	Cisco · Jul 24, 2026, for orders from Apr 24, 2026	R6 as published: 24x7x2 and 24x7x4 delivered; 8x7xNCD and 8x5xNBD delivered, RMA by 3:00 PM local depot time (6:00 PM Eastern Time for the United States and Canada); 8x5xShip NBD; 8x5x4 is no longer offered on new orders; TAC 24 × 7	https://www.cisco.com/c/dam/en_us/about/doing_business/legal/service_descriptions/docs/Cisco-Support.pdf · https://www.cisco.com/c/dam/en_us/about/doing_business/legal/service_descriptions/docs/cisco-smart-net-total-care.pdf
Our own design, built from published documentation. Juniper Care service description	Juniper Networks · 017-EN, November 2025	R7 as published: Next-Day Ship and Next-Day Delivery cutoff 3 p.m. local time at the ship-to address on a business day, otherwise the second business day; Same-Day 4 h and 2 h, 24 × 7; Core return-to-factory within 10 business days of Juniper's receipt; JTAC 24/7/365	https://support.juniper.net/support/pdf/guidelines/juniper-care-service-description-document.pdf
Our own design, built from published documentation. FortiCare Priority RMA and Secure RMA Services	Fortinet · May 16, 2024, 2544918-B-0-EN	R8 as published: next-calendar-day delivery 7 days a week with a 3 PM local depot cutoff; four-hour on-site delivery, with or without an engineer; Secure RMA as a 1-, 3- or 5-year add-on to any support package	https://www.fortinet.com/content/dam/fortinet/assets/solution-guides/sb-forticare-priority-rma.pdf

R6, §4.1 and §4.2 use Cisco Support, the current name, and its service levels for new orders (8x5x4 is no longer offered on them); the FortiGate hub stock in §4.3 is computed from R12. R6 and R8 carry the published cutoff times the hub must meet, and §6 records that no vendor publishes a defective-return window in days.

No public, dated record of a two-country, multi-vendor spares and RMA hub was found on Sep 27, 2026; every row is documentation used to build our own design.

2 · Requirements register

Table 3. Requirements register

#	Requirement	Value	Source
R1	Devices under one register	3,000	[T]
R2	Sites and countries	400 sites, 2 countries; 300 small, 80 medium, 20 large	[T] sites; [A] classes

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#	Requirement	Value	Source
R3	Replacement to site	advance replacement on site within the next business day	[T]
R4	RMA turnaround	tracked per vendor: ticket open to replacement received, and defective returned to vendor credit	[T]
R5	Spares per site class	small: hub stock; medium: 1 access switch model on site; large: 1 of each model on site	[A]
R6	Cisco contract level	Cisco Support (formerly Smart Net Total Care) with advance replacement; on orders from Apr 24, 2026: 8x5xNBD and 8x7xNCD (RMA by 3:00 PM local depot time), 24x7x4 and 24x7x2, 8x5xShip NBD; 8x5x4 (RMA by 1:00 PM) only on contracts under the earlier descriptions; TAC 24 × 7; no advance replacement without an RMA service level	[S] Cisco
R7	Juniper contract level	Juniper Care Next-Day Ship or Next-Day Delivery (RMA by 3 p.m. local time, subject to availability); Same-Day 4 h and 2 h available; Core is return-to-factory in 10 business days; JTAC 24/7/365	[S] Juniper
R8	Fortinet contract level	FortiCare Premium: 1 h critical response, advanced replacement next business day; Elite: 15 min critical; Priority RMA add-on next calendar day 7 days a week (RMA by 3 PM local depot time) or 4 h on-site courier; Secure RMA for non-return, 1, 3 or 5 years	[S] Fortinet (`https://www.fortinet.com/content/dam/fortinet/assets/solution-guides/sb-forticare-priority-rma.pdf`)
R9	Cisco access model	Catalyst 9300 family: C9300-48P (48 × 1G PoE+, StackWise-480), C9300X-48HX (48 × 10G mGig, 90 W UPOE+, StackWise-1T), C9300L-48P-4X (48 × 1G PoE+, 4 × 10G fixed uplinks)	[S] Cisco
R10	Juniper access model	EX4400 line: EX4400-48P (48 × 1G, up to 90 W per port), EX4400-48MP (48 × multigigabit, up to 90 W per port), EX4400-24T; 2 × QSFP28 100G uplinks via module	[S] Juniper
R11	Fortinet model	FortiGate family per site class; model per class fixed in the register	[A]
R12	Hub stock	per country: 2 % of each model's installed count, minimum 2	[A]
R13	Ticket to dispatch	RMA raised with the vendor and hub spare dispatched within 4 business hours of the ticket	[A]

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#	Requirement	Value	Source
R14	Register fields	serial, model, site, site class, vendor contract ID, service level, contract end, spare location	[A]

Fourteen rows; five carry a vendor figure, six are design assumptions, three are design targets.

3 · Architecture overview

```
intake ──→ configuration ──→ burn-in ──→ QA gates ──→ labeling ──→ dispatch
(failure    (register lookup:  (hub spare    (G1 contract  (spare tagged   (courier to
 ticket,     serial, contract,  powered,      G2 config     with site,      site NBD;
 serial)     level, spare)      baseline      G3 return)    ticket, RMA)    defective
                                config loaded)                             back to vendor)
```

Figure 1. Spares and RMA flow

One flow for every vendor: the register decides which vendor process runs, the hub ships from its own stock so the site does not wait for the vendor's unit, and the vendor's advance replacement refills the hub. The parts table is the QA checklist.

Table 4. Architecture overview

Gate	Check performed	Record produced
Intake	ticket carries serial and site; serial found in register; contract active; service level read	RMA case opened with the vendor; case ID in register
Configuration	spare of the same model available at the hub or on site (R5); if on site, engineer swaps first	spare allocation record
Burn-in	hub spare powered on, firmware set to the site's baseline, site configuration loaded, ports checked	pre-dispatch test record
QA gate G1 contract	vendor RMA accepted; replacement ship date captured; if refused, reason logged and escalated	vendor RMA record
QA gate G2 configuration	configuration on the spare matches the site's last backup; management reachable in the hub	G2 checklist
QA gate G3 return	defective unit received back at hub from site, boxed, vendor return label applied, shipped within the vendor's return window	return record with tracking
Labeling	spare tagged with site, ticket, vendor case; defective tagged with the same	labels on both units
Dispatch	courier booked for next-business-day arrival (R3); engineer notified; tracking captured	dispatch record

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4 · Design by subsystem

4.1 Contract register.

One record per serial with the fields in R14 [A]. Cisco coverage from Cisco IQ, successor to CX Cloud, which replaced the Smart Net Total Care portal on Nov 27, 2025 [S] (https://www.cisco.com/c/dam/en/us/support/docs/services/sntc/migration/sntc-to-cx-cloud-migration-guide.pdf · https://www.cisco.com/c/dam/en/us/support/docs/cx/cx-cloud/CX-Cloud-End-of-Availability-Announcement.pdf); Juniper and Fortinet contract IDs entered at purchase [A]. The register is the same one INT-005 describes, scoped to network devices [A].

4.2 Vendor RMA paths.

Cisco: RMA under Cisco Support (formerly Smart Net Total Care); the design places every site on 8x5xNBD as the floor and large sites on 24x7x4 [A], with the RMA raised before 3:00 PM local depot time to hold the NBD date [S]. Juniper: Juniper Care Next-Day Delivery as the floor, with the 3 p.m. local cutoff [S]; Same-Day 4 h for large sites [A]. Fortinet: FortiCare Premium as the floor, advanced replacement next business day [S]; Elite plus Priority RMA 4 h courier for large sites [A]. Rejected: Cisco Core-only or Juniper Core — return-to-factory at 10 business days [S] fails R3.

4.3 Hub stock.

Two hubs, one per country [A]. Stock at 2 % of installed count per model, minimum 2 (R12): for 2,000 Cisco access switches across three models, about 40 units; for 600 Juniper across the three EX4400 models of R10, 12; for 400 FortiGate across three site-class models, 14 at an even split between the countries (small model 3 + 3, medium 2 + 2, large 2 + 2), the minimum of 2 setting the medium and large figures [A]. The vendor's advance replacement refills the hub, not the site, so the site always gets a unit already loaded with its configuration [A].

4.4 Site spares.

Medium sites hold one access switch of their dominant model; large sites hold one of each model on site [A]; the hub replenishes after use through the same flow.

4.5 Pre-dispatch burn-in.

Every hub spare is powered on, set to the site's firmware baseline and loaded with the site's last configuration backup before it ships [A]. Catalyst 9300 stacks: the spare joins the stack on site and inherits the stack configuration [S] StackWise; EX4400 similarly through its uplink module and Virtual Chassis where used [A].

4.6 Turnaround tracking.

Per vendor and per service level: ticket open to RMA accepted; RMA accepted to replacement received at hub; defective shipped to vendor credit or closure [T]. Reported monthly; a vendor missing its own stated level is an exception raised on the contract review [A].

4.7 Timeline per failure.

Ticket at hour 0; RMA raised and hub spare dispatched by hour 4 (R13); spare on site next business day (R3); vendor replacement to hub per service level (R6– R8); defective returned within the vendor's window (G3).

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5 · Failure behavior

Table 5. Failure behavior

Failure	Behavior	Source
Serial not in register	ticket held; device treated as uncovered; procurement asked for the contract; hub spare still shipped if stock allows	[A]
Vendor refuses the RMA	reason logged; escalated on the contract; hub spare already on site covers the service	[A]
Hub stock for a model exhausted	nearest compatible model shipped as a loan; vendor advance replacement goes direct to site; stock level raised for that model	[A]
Courier misses next business day	logged against the courier; engineer told; site runs on the on-site spare where one exists	[A]
Defective unit not returned in the vendor's window	the vendor's non-return terms apply; the register flags the site; return chased	[A]
Both hubs' stock of one model drawn in the same week	reorder from vendor; the 2 % level is reviewed for that model	[A]

6 · Limits

- Next-business-day to site depends on courier reach from one hub per country; sites beyond it need a third hub or on-site spares in every class.
- Vendor replacement times in R6–R8 are the vendors' stated levels, subject to availability in the vendors' own words; the hub stock is what makes R3 independent of them.
- None of the three service descriptions publishes a defective-return window in days; the window in gate G3 and in §5 is the one on each RMA notice, read per case.
- The 2 % stock rule is an assumption to be replaced by measured failure rates after the first year.
- FortiGate models per site class are not named; the family is carried and the model fixed at design freeze against the current data sheet.
- No figure here has been measured.

7 · Lessons learned

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

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8 · The author

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Signed off by Edwin Ozer, Founder.

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