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REFERENCE ARCHITECTURE

Enterprise mobility on 2026 platforms: Wi-Fi 7 and private 5G access, managed zero-trust endpoints, rugged devices

CAPABILITY	DOCUMENT	VERSION	DATE
Mobility	SRA-MOB-001	1.1	Oct 10, 2026

WRITTEN BY

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Sign-off	"The practice lead signs this document before any build proceeds under it."		

Contents

1 · Scope 3
2 · Requirements register 3
3 · Architecture overview 5
4 · Component design 5
5 · Options and platform choices 6
6 · Failure conditions 7
7 · Validation 8
8 · Operations and lessons learned 8
9 · Appendix 8

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CONVENTIONS

Source tags. [S] read from the standards body's, regulator's or maker's own current page on Sep 24, 2026, or on Sep 27, 2026 where the text says so · [S*] read from trade press or a page summary where the primary page could not be opened or was not read in full · [A] design assumption for a typical buyer, to be confirmed by the signing engineer. No figure comes from any prior engagement, file or asset. Products are named as options (§5), never as the choice; the buyer's comparison makes the choice. 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 27, 2026	1.0	First issue.
Oct 10, 2026	1.1	Approval line now reads: approved by the Founder, issued by Symbeeo. Mark Winston remains the author.

1 · Scope

Who it is for. The head of infrastructure who must put phones, rugged handhelds, vehicle tablets and cellular sensors on one managed, zero-trust footing — offices, a high-bay warehouse, an outdoor yard — and show an auditor how a lost device is cut off.

Typical buyer [A]. The SRA-NET-001 client (1,500 users at HQ, 3 branches, 2 data centers). Branch 3 is a distribution center: 20,000 m² indoor with 12 m racking, 40,000 m² yard. Endpoints: 1,200 corporate smartphones, 600 BYOD phones, 300 rugged handhelds, 60 vehicle-mounted tablets, 150 cellular IoT sensors; 120 field technicians work off-site daily.

What is in. Wi-Fi 7 at the distribution center; the mobile SSID and security profile for every site; private 5G in the yard; unified endpoint management (UEM); the device signals that feed zero-trust decisions; rugged device criteria. **What is out.** The campus AP estate and controllers at HQ and branches 1–2 (SRA-NET-001 R6–R8); the policy engine, NGFW and cloud security edge (SRA-SEC-001); laptops (SRA-SEC-001, managed device class R4).

Assumptions. The jurisdiction authorizes indoor 6 GHz Wi-Fi and local 5G spectrum [A]; the SRA-SEC-001 policy engine is in service before mobile enforcement begins.

Related documents, read Sep 24, 2026. IEEE 802.11be-2024 · Wi-Fi CERTIFIED 7 · 3GPP Release 19 · NIST SP 800-124r2, SP 800-63-4, SP 1800-35 · Apple Platform Deployment (WWDC26) · Android Enterprise Recommended · RFC 9765 · Regulation (EU) 2023/1670. URLs in §9.

2 · Requirements register

Each row is written to the ISO/IEC/IEEE 29148 characteristics: necessary, unambiguous, verifiable, naming no product. R2, R3, R4, R6, R11, R16, R17 and R18 carry more than one measurable clause, and STP-MOB-001 checks each clause. R1 is an input and R15 an operations measure (§8); neither is tested at acceptance.

Table 2. Requirements register

#	Requirement	Value	Source
R1	Endpoints served	2,310 at issue; design ceiling 1.5×	[A]

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#	Requirement	Value	Source
R2	Indoor Wi-Fi coverage, distribution center	≥ −67 dBm, SNR ≥ 25 dB, 5 and 6 GHz, 1.5 m height, 95 % of aisles and docks	[A]
R3	Wi-Fi generation of every new AP	IEEE 802.11be-2024, Wi-Fi CERTIFIED 7, concurrent 2.4/5/6 GHz	[S] IEEE; Wi-Fi Alliance
R4	Link protection on every enterprise SSID except the R5 transition SSID	WPA3-Enterprise, management-frame protection required, beacon protection on	[S] Wi-Fi 7 security rules
R5	WPA2 transition SSID	none in service 90 days after cut-over	[A]
R6	Outdoor cellular coverage, yard	RSRP ≥ −100 dBm, SINR ≥ 10 dB, 95 % of area	[A]
R7	Yard service with site WAN down	local device-to-application traffic continues ≥ 4 h	[A]
R8	Spectrum authorization	on file for every transmitter before first emission	[S] FCC AFC, CBRS; [A] jurisdiction
R9	Voice interruption per AP handover	≤ 50 ms	[A]
R10	Corporate-device enrollment	100 % at first boot, no manual console step	[S] Apple, Android zero-touch
R11	Device credential	per-device certificate, key hardware-bound and attested; no shared key	[S] Apple MDA; Android key attestation
R12	Interactive sign-in from mobile endpoints	100 % at AAL2 or higher, phishing-resistant	[S] NIST SP 800-63-4
R13	Access withdrawn from a non-compliant device	≤ 15 min after state change	[A]; [S] SP 800-124r2
R14	BYOD separation	enterprise data erasable without reading personal data	[S] work profile; User Enrollment
R15	Patch compliance	95 % of devices on latest patch within 14 days of release	[A]
R16	Rugged durability	≥ IP65; repeated 1.8 m drops to concrete (MIL-STD-810H or IEC 60068-2-31)	[A] above [S] AER floor IP54
R17	Rugged security-update life	≥ 5 years from ship, ≤ 90-day cadence, end date published	[S] AER
R18	Lost device	data erased and certificate revoked ≤ 15 min after report	[A]; SRA-SEC-001 R11
R19	RADIUS, access network to policy engine	RADIUS over TLS, or Message-Authenticator on every packet (CVE-2024-3596)	[S] CERT; RFC 9765

Nineteen rows; eleven cite a standard, regulator or maker's program (three beside a typical-buyer value), eight are typical-buyer assumptions.

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3 · Architecture overview

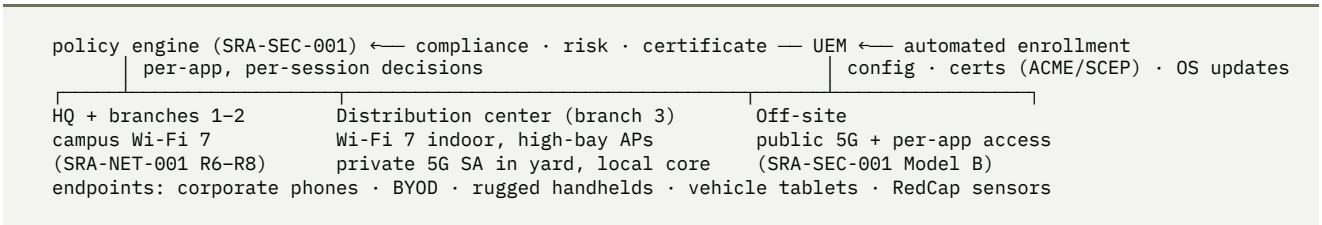


Figure 1. Enterprise mobility architecture overview

Wi-Fi indoors, private 5G where Wi-Fi cannot follow a moving vehicle, public 5G off-site; one UEM and one policy engine decide access identically on every path.

4 · Component design

4.1 Wi-Fi 7, distribution center.

IEEE 802.11be approved Sep 26, 2024, published Jul 22, 2025 [S]; Wi-Fi CERTIFIED 7 certifies 320 MHz channels, multi-link operation (MLO), 4K-QAM [S]. The 2026 enterprise AP class: three 4×4 radios, dual 10GbE, 802.3bt Class 6 power [S*]. Directional variants at racking ends [A]. 6 GHz indoor low-power everywhere; standard power only under an AFC system (US: U-NII-5, U-NII-7) [S]. EU license-exempt 6 GHz stops at 6425 MHz; the November 2025 RSPG opinion keeps the upper band from Wi-Fi [S*]. APs join SRA-NET-001's management domain [A]. Rejected: Wi-Fi 6E (arriving rugged devices are Wi-Fi 7); Wi-Fi 8 — certification targeted January 2028 [S*].

4.2 Mobile SSID profile, all sites.

Wi-Fi 7 admits an MLO client only under WPA3 or Enhanced Open with protected management frames and beacon protection [S]. corp: WPA3-Enterprise, EAP-TLS on the device certificate (R11), fast transition, MLO on 5 + 6 GHz. legacy: WPA2-only scanners, 5 GHz, no MLO, closed at R5. guest: Enhanced Open.

4.3 Private 5G, yard.

Standalone; control and user plane on site for R7 [A]. 3GPP froze Release 19 in December 2025; Release 20 protocol freeze is targeted for March 2027 [S*]. Sensors on RedCap (Release 17) or eRedCap (Release 18, 10 Mbps peak) [S]. eSIM profiles through the UEM [A]. US spectrum: CBRS, Part 96, GAA plus PAL where held [S]; elsewhere the national local license [A]. Apple documents 5G network-slicing support [S]; Android AMAPI adds slicing controls [S*]. Rejected: private LTE and non-standalone 5G for a new build.

4.4 Path selection.

Rugged devices carry Wi-Fi 7 and 5G: Wi-Fi indoors, private 5G in the yard, public 5G off-site. Per-app sessions reconnect through the SRA-SEC-001 gateway, not a device-wide VPN.

4.5 UEM.

One console for iOS/iPadOS and Android Enterprise. Apple: automated enrollment and declarative management. Apple announced the removal in 2025 and states that in all 27.0 operating systems legacy software update management no longer functions: software-update commands, software-update queries, recommended cadence settings and software-update restrictions such as deferrals and Background Security Improvements; updates are set through declarative software update management only [S] (Apple Platform Deployment, WWDC26 device

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management updates, published June 8, 2026, read Sep 27, 2026). The Intune view of the same change: Microsoft documents its MDM-based Apple update policies for iOS 10.3 – iOS 18 (supervised) and says Intune "will soon end support" for them [S] (Microsoft Learn, updated Jun 22, 2026, read Sep 27, 2026). URLs in §9. Android: fully managed (corporate), work profile (BYOD, R14), dedicated device (shared rugged), zero-touch (R10); device admin deprecated [S]. Maker settings through OEMConfig [A].

4.6 Zero-trust signals.

The policy engine is SRA-SEC-001's; this document supplies its inputs. Device: certificate over ACME with Apple Managed Device Attestation, or Android key attestation [S]. Compliance and mobile-threat risk from the UEM, per SP 800-124r2 [S]. User: passkeys — SP 800-63-4 (final July 2025) accepts syncable authenticators at AAL2 [S]. Transport: RFC 9765 RADIUS/1.1 over TLS removes MD5 [S].

4.7 Rugged devices.

Selected against R16–R17 and R3's generation. Devices sold in the EU: Regulation (EU) 2023/1670 since June 20, 2025 [S]; RED cybersecurity (EN 18031) since August 1, 2025 [S*].

4.8 Monitoring and lifecycle.

Wi-Fi and cellular KPIs to the client's NMS; weekly UEM compliance report; each model's security-update end date in the as-built.

5 · Options and platform choices

One row per decision; every option weighed is listed under its decision. [CMP] = decided by the buyer's comparison, not by this document.

Table 3. Options and platform choices

ID	Decision	Requirement	Alternatives considered	Decision taken	Rationale
D1	Wi-Fi generation, distribution center	R2, R3, R4	(a) Wi-Fi 7 tri-band AP class — meets §2; (b) Wi-Fi 6E — fails R3; (c) Wi-Fi 8 — certification targeted January 2028 [S*]	(a)	Arriving rugged devices are Wi-Fi 7 (§4.1); (c) is not certifiable in the build window. Cost band: (a) high per AP · (b) lower
D2	Wi-Fi 7 AP model	R2, R3	Cisco CW9178I [S]; HPE Aruba Networking 750 Series, Juniper AP47 (sold by HPE), Arista C-460, Extreme AP5020 [S*]	[CMP]	All in the D1 (a) class; the comparison scores coverage in racking, power draw against 802.3bt Class 6 [S*] and vendor continuity (below). Cost band high per AP
D3	Yard coverage technology	R6, R7	(a) private 5G SA, on-site core — meets §2; (b) private 5G, off-site core — fails R7 (WAN dependency); (c) public 5G only — fails R7, kept for off-site; (d) Wi-Fi across the yard — fails R6 at vehicle speed [A], an option for yards < 10,000 m² [A]; (e) private LTE or non-standalone 5G — rejected for a new build (§4.3)	(a)	Only (a) keeps yard traffic local with the WAN down (R7) at vehicle speed (R6). Cost band: (a) mid–high · (b) mid · (c) opex · (d) low

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ID	Decision	Requirement	Alternatives considered	Decision taken	Rationale
D4	Private 5G vendor	R6, R7, R8	Ericsson Private 5G; HPE Aruba Networking Private 5G; Nokia Digital Automation Cloud (DAC) on Nokia MX Industrial Edge [S]; Celona (AerFlex: control in Celona's cloud, data breaks out on site [S])	[CMP]	Ericsson, HPE and Nokia list an on-site core [S]; Celona states WAN-loss behavior in writing before it is scored against R7 [A]; continuity scored as below. Cost band mid–high
D5	UEM platform	R10, R11, R13, R14, R15	Microsoft Intune, Omnissa Workspace ONE UEM, Jamf Pro, SOTI MobiControl, Ivanti [A] — none yet tested against §2; Jamf Pro manages Apple devices only [S]	[CMP]	Criteria: declarative management, AMAPI, zero-touch, OEMConfig, policy-engine feed; Jamf Pro alone does not give §4.5's one console for iOS/iPadOS and Android. Cost band per device
D6	Rugged device class	R3, R16, R17	(a) rugged handheld, Wi-Fi 7 + 5G + CBRS — meets §2: Zebra TC501/TC701 [S]; Honeywell CT70 (IP68/IP65, 1.8 m per MIL-STD-810H) [S]; (b) rugged phone, Wi-Fi 6E + 5G: Samsung Galaxy XCover7 Pro — IP68, MIL-STD-810H, drops onto steel from 1.5 m, security updates until May 31, 2032 [S] — fails R16's 1.8 m and has no MLO	(a) as the class; model [CMP]; (b) not selected: fails R16 as published	(a) carries every access path of §4.4; (b) is drop-tested to 1.5 m, below R16, and loses MLO on corp. Cost band: (a) high · (b) mid

Vendor continuity is scored, not assumed. HPE closed its Juniper acquisition on July 2, 2025 [S]. HPE still sells HPE Aruba Networking Private 5G (product page read Sep 27, 2026); its private 5G end-of-sale notice of June 30, 2026 is a release rollover — P5G Core 1.25.1 license, end of sale October 31, 2026, replaced by P5G Core 1.26.1 — not a withdrawal [S]. Nokia moved private wireless into non-core "Portfolio Businesses" in November 2025 [S*]; RCR Wireless reported on September 14, 2026 the sale of Nokia's Enterprise Campus Edge unit, which carries DAC and MX Industrial Edge, expected to close by the end of 2026 [S*]. Each bidder commits in writing to support across R17's horizon.

6 · Failure conditions

Table 4. Failure conditions

#	Condition	What the user sees	Recovers by itself	Needs a hand	Time
F1	One AP down	clients roam	neighbor APs	replace	seconds
F2	Wi-Fi management plane unreachable	none	APs keep forwarding	restore	0 [A]
F3	One 5G radio unit down	devices reselect	neighbor cell	replace	seconds
F4	Private 5G core node down	none	redundant pair [A]	replace	seconds
F5	Site WAN down	cloud apps lost; yard apps continue	local core (R7)	carrier	≥ 4 h local
F6	SAS or AFC unreachable	5G or 6 GHz standard power stops at grant lapse	no	restore; Wi-Fi / low power carries	per rule

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#	Condition	What the user sees	Recovers by itself	Needs a hand	Time
F7	UEM unreachable	none; last policy holds	no	vendor	no new enrollments
F8	Policy engine or identity down	per SRA-SEC-001 F2, F3	—	—	—
F9	Certificate authority down	new enrollments fail; issued certificates valid	no	restore	hours
F10	Device lost or stolen	—	—	wipe and revoke (R18)	≤ 15 min

7 · Validation

None yet. At first build: walk surveys (R2, R6), roam timing (R9), WAN-down yard test (R7), revocation timing (R13, R18), recorded here from STP-MOB-001 — which makes this a validated architecture.

8 · Operations and lessons learned

Day 2: monthly patch report measuring R15; each major OS release piloted on 5 % of each model for 30 days [A]; spectrum grants and AFC registration checked monthly; certificates renewed 30 days before expiry. Lessons: to be written by the signing engineer after the first build.

9 · Appendix

Bill of materials by class [A]: 70 × Wi-Fi 7 AP (24 directional) · 2 × 48-port 10G Class 6 access switch · 6 × outdoor 5G radio · 1 × on-site 5G core pair · 300 rugged handhelds · 60 vehicle tablets · 150 RedCap sensors · 2,160 UEM licenses (the 150 RedCap sensors are managed in the 5G core, SDD-MOB-001 §4.2). Models come from the comparison.

References, read Sep 24, 2026. https://standards.ieee.org/ieee/802.11be/7516/ · https://www.wi-fi.org/news-events/newsroom/wi-fi-alliance-introduces-wi-fi-certified-7 · https://www.cisco.com/c/en/us/support/docs/wireless/catalyst-9800-series-wireless-controllers/223061-migrate-to-wi-fi-7-and-6ghz.html (Wi-Fi 7 security) · https://docs.fcc.gov/public/attachments/DA-24-166A1.pdf (AFC) · https://www.wi-fi.org/news-events/newsroom/wi-fi-alliance-strongly-disagrees-rspg-recommendation-blocking-wi-fi-access · https://wifinowglobal.com/news-blog/wi-fi-8-standard-on-track-for-completion-in-1h2028-with-certification-scheduled-for-january-2028/ · https://firstnet.gov/newsroom/blog/3gpp-completes-release-19-while-progress-begins-6g-work · https://www.3gpp.org/news-events/partner-news/redcap-gsa-article01 · https://www.ecfr.gov/current/title-47/chapter-I/subchapter-D/part-96 · https://csrc.nist.gov/pubs/sp/800/124/r2/final · https://pages.nist.gov/800-63-4/sp800-63b.html · https://www.nccoe.nist.gov/projects/implementing-zero-trust-architecture · https://developers.google.com/android/work/device-admin-deprecation · https://www.android.com/enterprise/recommended/requirements/ · https://www.rfc-editor.org/info/rfc9765/ · https://kb.cert.org/vuls/id/456537 · https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32023R1670 · https://www.cencenelec.eu/news-events/news/2025/newsletter/ots-59-cybersecurity-standards/ · https://www.zebra.com/us/en/products/mobile-computers/handheld/tc7x-series/tc701.html · https://automation.honeywell.com/us/en/products/productivity-solutions/mobile-computers/handheld-computers/ct70-mobile-computer · https://www.hpe.com/us/en/newsroom/press-release/2025/07/hewlett-packard-enterprise-closes-acquisition-of-juniper-networks-to-offer-industry-leading-comprehensive-

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Read Sep 27, 2026. Apple Platform Deployment, WWDC26 device management updates (published June 8, 2026; §4.5), https://support.apple.com/en-gb/guide/deployment/depd638aa061/web · Microsoft Learn, Use Microsoft Intune to manage software updates for supervised iOS/iPadOS devices (updated Jun 22, 2026; §4.5), https://learn.microsoft.com/en-us/intune/device-updates/apple/deprecated-mdm-policies-ios · HPE Aruba Networking P5G Core 1.25.1 License End of Sale Announcement (June 30, 2026; §5), https://networkingsupport.hpe.com/notification/product-eol/Tm90aWZpY2F0aW9uOjE4MjM5OA%3D%3D · Ericsson Private 5G product pages (D4), https://www.ericsson.com/en/private-networks/ericsson-private-5g · https://cradlepoint.ericsson.com/products/ericsson-private-5g/ · Nokia Digital Automation Cloud private wireless (D4), https://www.dac.nokia.com/portfolio/nokia-digital-automation-cloud-private-wireless/ · RCR Wireless, Nokia campus strategy – from private 5G to private AI? (September 14, 2026; §5), https://rcrwireless.com/20260914/network-infrastructure/nokia-campus-strategy-from-private-5g-to-private-ai-telco-diary · Celona AerFlex (D4), https://celona.io/aerflex · Jamf Pro (D5), https://www.jamf.com/products/jamf-pro/ · Omnissa Workspace ONE UEM (D5), https://www.omnissa.com/products/workspace-one-unified-endpoint-management/

9.1 · Industry rules this architecture helps a buyer meet.

No industry rule in Symbeeo's industry research of September 2026 is linked to this document's requirements, so none is named here.

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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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