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DESIGN STUDY

Field workforce mobility for a water utility: 1,100 rugged tablets, two carriers in every van

Complete design on current platforms

CAPABILITY	INDUSTRY	SETTING
Mobility	Utilities	Water and wastewater utility
DOCUMENT	**VERSION**	**DATE**
MOB-006	1.1	Oct 10, 2026

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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."		

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CONVENTIONS

Source tags. [S] figure read from the vendor's own current page on Sep 24, 2026, or on Sep 27, 2026 where the text says so · [S*] figure from a page summary or trade press where the vendor's page could not be opened or was not read in full · [A] design assumption, to be confirmed by the signing engineer · [T] design target: the record's outcome figure and anything derived from it. No figure comes from any 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 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 field operations director of a water and wastewater utility whose technicians carry a laptop, a phone and a paper map, who lose the work order the moment they drive out of one carrier's coverage, and who has been told a lost tablet must not become a way into the control system.

Typical buyer [A]. A regional water and wastewater utility serving a 4,500 km² area: two treatment works, 60 pumping stations, 9,000 km of main. 1,100 field technicians and supervisors in 700 vans, on call 24×7. Work orders, GIS maps and a read-only view of pumping station status come from the office; no field device writes to SCADA.

What is in. The field tablet; the van router; carrier selection and eSIM profiles; UEM enrollment and compliance; per-app access to work-order, GIS and the read-only station view; offline behavior; the lost-tablet runbook; the depot-by-depot rollout. **What is out.** SCADA, its network and the station view's server side (SRA-SEC-001, OT scope); the work-order and GIS applications; private 5G (the service area is too large for it; SRA-MOB-001 D3 (c)); office Wi-Fi.

Assumptions. Samsung supplies the tablets and Ericsson Cradlepoint the van routers [A]. Omnissa Workspace ONE is the UEM, already chosen by the buyer's comparison [A]. Two national carriers each cover at least 90 % of the service area's roads, with different gaps [A]. The per-app access gateway of SRA-SEC-001 Model B is in service [A].

Related documents, read Sep 24, 2026.

- Samsung Galaxy Tab Active5 Pro Enterprise Edition: IP68, MIL-STD-810H, eSIM, dual GPS, two replaceable 5,050 mAh batteries, Knox Suite Enterprise Plan (undated page; read Sep 27, 2026) — https://www.samsung.com/ca/business/tablets/galaxy-tab-active/galaxy-tab-active5-pro-enterprise-edition-sm-x358uzgan45/
- Samsung Mobile Security, security updates scope — https://security.samsungmobile.com/workScope.smsb
- Ericsson Cradlepoint R980 data sheet (dated Sep 9, 2026; read Sep 27, 2026) — https://cradlepoint.ericsson.com/datasheet/r980-series-ruggedized-router/
- Ericsson Cradlepoint R980 product page: 5G and Cat 19 LTE; 2 GbE (LAN/WAN switchable); Wi-Fi dual-band, dual-concurrent, 802.11ax (Wi-Fi 6); GNSS; operating temperature −30 °C to 70 °C (undated page; read in full Sep 27, 2026) — https://cradlepoint.ericsson.com/products/endpoints/r980/
- Omnissa Docs, Samsung Knox Mobile Enrollment for Workspace ONE UEM (dated January 7, 2026; read in full Sep 27, 2026) — https://docs.omnissa.com/AWT-KNOXBULK-INTRO-VSaaS/AWT-KNOXBULK-INTRO
- SRA-MOB-001, SDD-MOB-001, STP-MOB-001 (Symbeeo), v1.0 of Sep 27, 2026

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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
A California water utility with over 100,000 connections moves its field operations and customer-service crews from paper to rugged convertibles and tablets after consumer-grade tablets failed in the field	Getac success story · February 11, 2025 · public deployment	the design's shape — a water utility putting rugged tablets, not consumer ones, in its field crews' hands — runs at a named utility; it uses another maker's devices and does not settle R2, R3 or the van router	https://www.getac.com/en/success-stories/REPLACING-WATER-COMPANYS-PAPER-BASED-SYSTEMS-WITH-RUGGED-TECHNOLOGY-TO-IMPROVE-EFFICIENCIES/
Galaxy Tab Active5 Pro announced: 10.1-inch, IP68, MIL-STD-810H, 5G (Sub6), Wi-Fi 6E, dual SIM (pSIM + eSIM), 10,100 mAh user-replaceable battery set with Dual Hot-Swap	Samsung Electronics America press release · April 14, 2025 · vendor documentation, used to build our own design	R4–R7: a rugged tablet class with hot-swap batteries and eSIM	https://news.samsung.com/us/samsung-introduces-galaxy-xcover7-pro-galaxy-tab-active5-pro-ruggedized-devices-frontline-excellence/
R980: 5G NR / Cat 19 LTE, 5G network slicing capable, eSIM carrier switching, GNSS/GPS location tracking, managed under an Ericsson NetCloud service plan	Ericsson Cradlepoint R980 data sheet · September 9, 2026 · vendor documentation, used to build our own design	R8 and §4.2: a vehicle router class that gives the van its own carrier path	https://cradlepoint.ericsson.com/datasheet/r980-series-ruggedized-router/
Samsung Knox Mobile Enrollment into Omnissa Workspace ONE UEM: devices registered with purchase and reseller details, Android Work Managed (device owner) enrollment supported	Omnissa Docs · January 7, 2026 · vendor documentation, used to build our own design	§4.3: out-of-the-box enrollment with no depot step (R9)	https://docs.omnissa.com/AWT-KNOXBULK-INTRO-VSaaS/AWT-KNOXBULK-INTRO

Every row was read on Sep 27, 2026. The R980's Wi-Fi 6, two GbE ports and −30 °C to 70 °C operating range come from Ericsson's undated R980 product page, and the Enterprise Edition's dual GPS, 5,050 mAh batteries and Knox Suite from Samsung's undated product page, both listed under Related documents.

2 · Requirements register

Table 3. Requirements register

#	Requirement	Value	Source
R1	Devices	1,100 tablets · 700 van routers; ceiling 1.2×	[A]
R2	Work order on the road	≥ 99 % of the service area's roads reach the work-order app on at least one carrier	[T]

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#	Requirement	Value	Source
R3	Offline	a technician can open, update and close an assigned work order with no signal; sync on return	[T]
R4	Tablet durability	IP68; MIL-STD-810H	[S] Tab Active5 Pro
R5	Tablet cellular	5G sub-6 with eSIM	[S] Tab Active5 Pro
R6	Tablet shift life	full 12-hour on-call shift with battery swap, no reboot	[S] two replaceable batteries, hot-swap; [T] 12 h
R7	Tablet location	dual GPS for asset location on the map	[S] "Dual GPS"
R8	Van router	second carrier path, Wi-Fi to the tablet, GNSS for the van	[S] R980
R9	Enrollment	out of the box, fully managed, no depot step	SRA-MOB-001 R10
R10	App access	per-app, per-session through the SRA-SEC-001 gateway; no device-wide VPN	SRA-MOB-001 §4.4
R11	SCADA exposure	no field device writes to SCADA; station view read-only	[A]
R12	Lost tablet	wiped and access withdrawn ≤ 15 min after report	SRA-MOB-001 R18
R13	Security-update end date	read per model before order, ≥ 5 years from ship	SRA-MOB-001 R17

Thirteen rows; five carry a vendor figure, two are design assumptions, two are design targets, and four restate an SRA-MOB-001 requirement or section for this design.

3 · Architecture overview

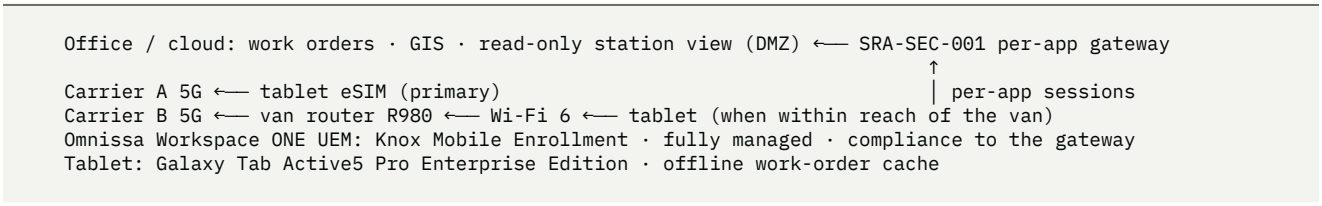


Figure 1. Field tablet connectivity and management

Two carriers, two radios, one tablet. The tablet uses its own 5G on one carrier; the van router holds the other and offers it over Wi-Fi when the technician is near the van. Neither path is a tunnel into the utility's network: each app opens its own session through the gateway, and the station view it reaches is a read-only copy in a DMZ [A].

Table 4. Architecture overview

Role	Product (exact model)	Qty	Capacity used	Why this unit
Field tablet	Samsung Galaxy Tab Active5 Pro, Enterprise Edition, 5G	1,100	one per technician [A]	IP68, MIL-STD-810H, 5G, eSIM, hot-swap batteries [S]

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Role	Product (exact model)	Qty	Capacity used	Why this unit
Van router	Ericsson Cradlepoint R980	700	one per van [A]	5G and LTE, Wi-Fi 6, GNSS, −30 °C to 70 °C [S]
UEM	Omnissa Workspace ONE UEM	1 tenant	1,100 tablets	Knox Mobile Enrollment, Android Enterprise [S]
Router management	Ericsson NetCloud	1 account	700 routers	the R980's management service [S]
Depot spares	Galaxy Tab Active5 Pro	55	5 % [A]	swap from the depot, enroll by power-on

4 · Design by subsystem

4.1 Tablet.

Galaxy Tab Active5 Pro Enterprise Edition: IP68, MIL-STD-810H, Gorilla Glass Victus+; 10.1-inch display up to 600 nits and 120 Hz; Wi-Fi 6E; 5G sub-6 including n41, n71, n77 and n78; eSIM; dual GPS [S]. Two replaceable 5,050 mAh batteries, 10,100 mAh combined, swapped without a reboot [S] — R6 is met by carrying a charged spare in the van cradle [A]. One year of Knox Suite Enterprise Plan is included [S]. Rejected: a rugged laptop per van — the technician works at the pump, not in the cab.

4.2 Van router.

Cradlepoint R980: embedded 5G and Cat 19 LTE, dual-band dual-concurrent Wi-Fi 6, GNSS, two GbE ports, −30 °C to 70 °C, network-slicing capable, eSIM [S]. Its SIM is on carrier B; the tablet's eSIM on carrier A [A]. The tablet joins the van's Wi-Fi 6 SSID (WPA3-Enterprise, device certificate) when in range and its own 5G is weak [A]. Rejected: tablets on one carrier only — fails R2 wherever that carrier has a gap.

4.3 Enrollment and compliance.

Tablets registered in Knox Mobile Enrollment by the reseller, enrolled into Workspace ONE as fully managed Android Enterprise devices at first boot [S] [A]. Compliance: OS and patch level, encryption, screen lock, no root, UEM check-in within 24 hours [A]; state passed to the SRA-SEC-001 policy engine, which withdraws app access inside R12's window (SRA-MOB-001 R13).

4.4 Apps and offline.

Work-order and GIS apps hold the technician's assigned jobs and the map tiles for their patch on the device, encrypted in the managed profile [A]. A job can be opened, updated with photos and readings, and closed with no signal; it syncs through the gateway when either carrier returns (R3) [A]. The station view is read-only and reached only through the gateway (R11).

4.5 Security-update life.

The Samsung product page read for this design does not state the Enterprise Edition's update end date [S]; the date is read per model from Samsung's security-updates scope page at order and written into the as-built (R13) [A].

4.6 Rollout by depot.

Six depots [A]. Per depot: routers fitted to vans over two weeks during service visits; tablets handed out at a shift briefing with the old laptop and phone collected the same day; paper maps withdrawn after two weeks [A]. About 14

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weeks for 700 vans [A].

5 · Failure behavior

Table 5. Failure behavior

Failure	Behavior	Source
Carrier A gap	tablet uses the van router on carrier B over Wi-Fi when in range	[A]
Both carriers gone	technician works offline; jobs sync on return	[T] R3
Van router fails	tablet stays on carrier A; van location lost until replaced	[A]
Tablet battery flat	swapped for the van's spare, no reboot	[S] hot-swap batteries
Gateway or policy engine down	per SRA-SEC-001 F2, F3; offline work continues	SRA-MOB-001 F8; [A]
Tablet lost or stolen	wiped from the UEM; gateway access withdrawn	SRA-MOB-001 F10

6 · Limits

- The 99 % road-coverage target rests on two carriers' published maps; a drive test on each depot's patch confirms it.
- R980 figures were read from Ericsson's data sheet and product page on Sep 27, 2026; the operating range is −30 °C to 70 °C, so a van cab that runs hotter needs the router mounted out of direct sun [A].
- Samsung's update commitment for the Enterprise Edition was not stated on the page read; R13 is checked per model at order.
- A successor to the Tab Active5 Pro may follow within the fleet's life [A]; Samsung's announcements are checked at order, since no successor could be confirmed from a source read on Sep 27, 2026.
- The read-only station view is a client decision under SRA-SEC-001; this design only keeps field devices from writing to SCADA.

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

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