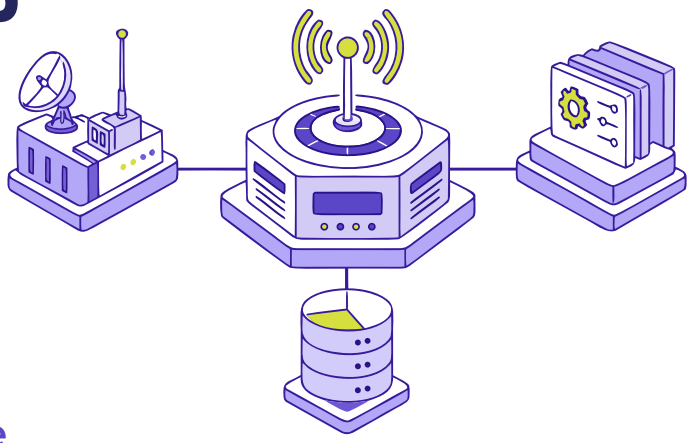
ARCHITECTURE OVERVIEW

HOW WANAWARE BUILDS NETWORK TRUTH ACROSS THE CARRIER STACK



The technical architecture behind a live, continuously reconciled model of every connected asset, service path, and commercial record, so planning, service delivery, the NOC, and billing all act on the network as it actually is today

A carrier's footprint spans physical infrastructure, logical configuration, virtualized and software-defined resources, and customer services, each changing on its own schedule, while the OSS, BSS, and vendor management systems that describe it each update at a different time. WanAware closes that gap with a live model that reads the network as it runs and continuously reconciles it against the records carriers already maintain. This overview describes the architecture behind that model: how WanAware ingests every **connected asset** without agents or scanners, how the Relationship Graph turns multi-vendor data into one current picture, and how the Knowledge Discovery Engine and Integrated Service Catalog put that picture to work before a technician is dispatched or an invoice is sent.

01. WHAT WANAWARE INGESTS ACROSS THE CARRIER STACK

Network truth requires a model that reads every layer that changes, and every system that claims to describe it, rather than treating any one of them as the whole picture. WanAware continuously pulls from each layer and each system below and resolves all of it into the same current record.

Source	What it contributes	Discovery method
Physical infrastructure	Fiber, microwave, cell sites, cabinets, and ports, the layer that changes slowest but underlies every service riding on it.	Agentless, read-only integration with management interfaces
Logical configuration	Interfaces, VLANs, LAGs, and routes, which change with every provisioning order, reroute, or repair.	Agentless, read-only integration and protocol telemetry
Services and software-defined relationships	Virtualized functions, service paths, and cloud and edge resources that change on demand, often through automation.	Continuous telemetry from control planes and orchestration systems
OSS	Port and path assignments as provisioned, the record service delivery and planning act on today.	Read-only API integration
BSS	Orders, circuit IDs, and billing, the commercial record of what was sold.	Read-only API integration
Vendor management systems	Each vendor's own view of its equipment, in its own format and vocabulary.	Read-only API integration, normalized to one shared vocabulary

02. DISCOVERY: AGENTLESS, NO SCANNERS, AND SCHEMALESS BY DESIGN

Much of a carrier network runs on equipment that cannot host added software: generators, HVAC units, and battery monitors at unstaffed tower sites, and customer-premises ONTs the carrier does not own. Cloud-native network functions pose the opposite problem, spinning up and down faster than an agent could ever be deployed to them. WanAware is built around both realities at once.

- **No agents, no scanner appliances.** WanAware reads from the control planes, management interfaces, network protocols, and carrier systems that already provision and manage the network. **No new credentials are introduced** at unstaffed sites, and every connected asset is observed without a site visit or a scanning footprint to deploy and maintain.

- **Schemaless Asset Modeling.** A 5G network slice, a new ONT model, or a MEC node does not wait for a data-modeling project. WanAware discovers each asset's attributes automatically, and a new asset type can be defined in minutes, with **no schema migration** or custom code before equipment already carrying traffic appears in the inventory.

- **Continuous, not scheduled.** Discovery runs constantly rather than on a scan cadence, so the model reflects today's state, not the state as of the last cleanup or audit.

03. THE RELATIONSHIP DISCOVERY ENGINE: ONE SHARED VOCABULARY, EVERY VENDOR

A single service often runs through equipment from several vendors, each describing that equipment in its own terms, while its fiber, VLAN, and routing records sit in different systems still. **WanAware's Relationship Discovery Engine (RDE)** translates each vendor's data into one shared vocabulary and correlates the Layer 1, Layer 2, and Layer 3 records for each service, so a path that would otherwise exist as five disconnected views becomes one.

Where a service appears	What that view shows	What the RDE does with it
BSS	Commercial identity and order context: the circuit or service ID.	Links the commercial record to the live asset it describes.
OSS	Provisioning intent and assigned capacity: the port or path assignment.	Checks the assignment against what the network actually shows.
Layer 1	Physical continuity: fiber path, port, patch-panel cross-connect.	Confirms the physical path matches the logical one above it.
Layer 2 / Layer 3	Switching, segmentation, and routing: VLANs, LAGs, interfaces, adjacencies.	Correlates configuration changes the moment they occur, not at the next scheduled review.

Because the RDE keeps running rather than executing once, a repair that moves a circuit to a new port, or a software change that shifts a VLAN, is picked up the moment it happens, not at the next periodic cleanup.

04. THE RELATIONSHIP GRAPH: THE LIVE MODEL ITSELF

Every asset, every service path, and every dependency the RDE resolves lands in the same live, queryable Relationship Graph, the model carriers mean when they ask for a single pane of glass that shows the path from customer to core.

- **Every service's end-to-end path, in one place.** A planner or engineer can trace a circuit from its fiber pair through its VLAN and route to its circuit ID without rebuilding the path by hand from five separate systems.
- **Dependencies, not just inventory.** A port that looks idle may still carry a service, and one device may sit in the path of several. The graph records what depends on what, so a team can see every service relying on a resource before reclaiming it.
- **Blast radius, mapped automatically.** When a device fails, the graph shows **everything the failure affects**, the cell sites, circuits, and customers in its path, and everything that is unaffected, rather than requiring engineers to trace it from memory.
- **Current by construction.** Because the RDE updates the graph continuously, the model a planner, engineer, or billing analyst queries today reflects today's network, not the day of the last cleanup.

05. THE KNOWLEDGE DISCOVERY ENGINE: ONE INCIDENT, NOT A FLOOD OF ALARMS

A single equipment failure can set off alarms from every element in its path, leaving the NOC to work out which one points to the actual cause. **WanAware's Knowledge Discovery Engine (KDE)** reads the **Relationship Graph** to do that reasoning automatically.



STEP 1

Correlate

Alarms from every element in a failed device's path are combined into one incident instead of many.



STEP 2

Reason

The KDE reads the Relationship Graph to determine the likely root cause.



STEP 3

Scope

Every affected service, cell site, and customer in the blast radius is listed, alongside what is unaffected.



STEP 4

Resolve

The on-call engineer starts from a scoped incident instead of tracing dependencies from memory and separate dashboards.

99.9% ROOT-CAUSE ACCURACY

Incidents point to the right cause, not a list of possibilities.

UP TO 90% FASTER MTTR

Less time spent scoping an incident before repair can begin.

UP TO 99% LESS ALERT NOISE

One incident per failure, not one alarm per affected element.

06. THE INTEGRATED SERVICE CATALOG: RECONCILING THE NETWORK WITH WHAT WAS SOLD

What is deployed and what has been sold, provisioned, licensed, or billed typically sit in separate OSS, BSS, and procurement systems. WanAware's **Integrated Service Catalog** stores each entry in the Relationship Graph alongside the assets that deliver it, so the live assets behind a service and its commercial details sit in one object, while the BSS still keeps the commercial record itself.

What the network shows	What carrier records show	What the carrier can check
A service is active	The BSS has a sold service	Does the live service match what was sold?
A circuit is deployed	The OSS has a provisioning assignment	Does the deployed path match the assignment?
A virtualized network function is running	A license entitlement exists	Does deployed use stay within the entitlement?
Traffic is flowing	The billing record is missing or incomplete	Is a live service going unbilled?

The OSS and BSS remain the systems of record. WanAware checks them against what the network is actually doing and shows the teams that own those records any mismatch it finds, rather than replacing the systems those teams already rely on.

07. NETWORK TRUTH IN ACTION: THE PRE-FLIGHT CHECK BEFORE DISPATCH

A single order shows where this architecture fits into a carrier's existing workflow. The BSS and OSS handle a new order as they do today; WanAware adds one step before a technician is booked.

STEP 01

Order captured
The BSS records the service, the customer, and the contract terms.

STEP 02

Capacity assigned
The OSS selects a port, line card, and fiber pair from its provisioning records.

STEP 03

Pre-flight check
WanAware compares the assignment against current network data: is the port free, does the path match, does another service depend on it?

STEP 04

Dispatch or hold
A matching assignment proceeds to dispatch. A mismatch is held and corrected before a technician is ever sent.

When the assignment matches at booking, the installation is far more likely to finish on the first visit, and the carrier learns about any mismatch while the order is still in the OSS, before a truck roll, not after one.

A live, continuously reconciled model turns planning, service delivery, the NOC, and billing into teams that check the same current view of the network before they act, rather than teams that find out after the fact that their records were already out of date. WanAware builds that model from the systems a carrier already runs, agentlessly, continuously, and without a schema-remodeling project every time the network changes shape.

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