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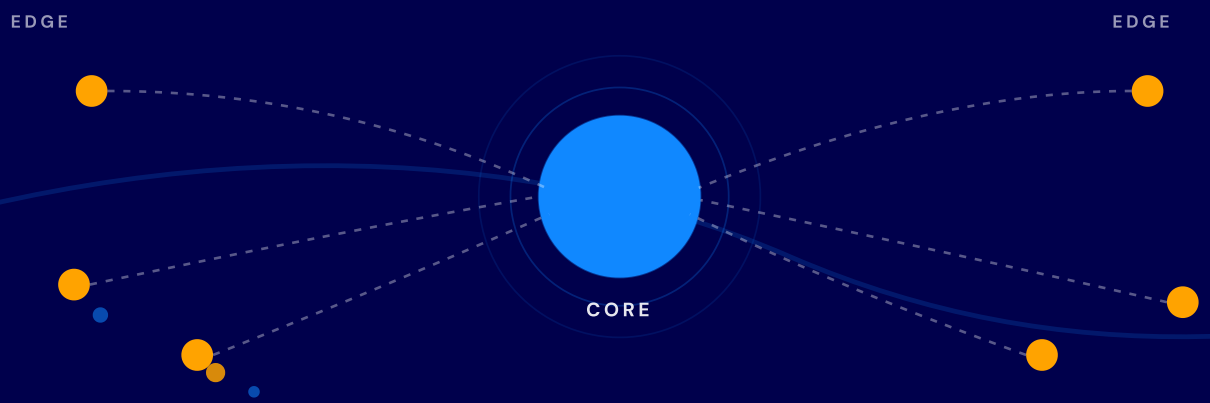
A RESILIO MOVE FASTER EBOOK

FIELD GUIDE · EDGE FILE SYNC · 2026

The Resilient Edge Data Workflow Field Guide

Designing for reliability, recovery, and scale across distributed sites.



FOR IT INFRASTRUCTURE LEADERS

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INTRODUCTION

Why edge workflows are hard to design.

Edge environments place unusual demands on data movement. Remote sites generate large volumes of data, central systems need timely visibility, and distributed endpoints depend on receiving the right files and updates to stay operational.

All of that has to work across networks that are often constrained, intermittent, or geographically dispersed.

If you're standardizing edge data workflows across a distributed organization, the design choices you lock in now will shape how much your operations team has to babysit the workflows for the next three years.

THE DESIGN QUESTION

How do you keep data moving reliably between the edge and the core without creating bottlenecks, retransmission waste, or operational drag?

Edge workflow design gets easier when you separate the movement patterns instead of treating the edge as a single workflow.

CONTINUE → The two patterns at a glance, next page.

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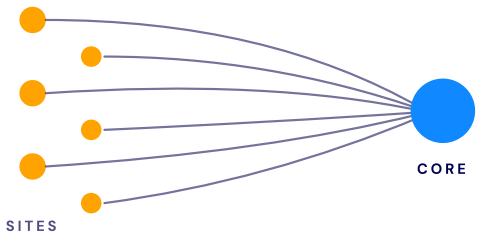
THE TWO FLOWS

Most production edge environments need both.

The design work is figuring out how each pattern should behave when bandwidth is limited, sites disconnect unexpectedly, and transfers need to recover without manual intervention.

INGEST · MANY → ONE

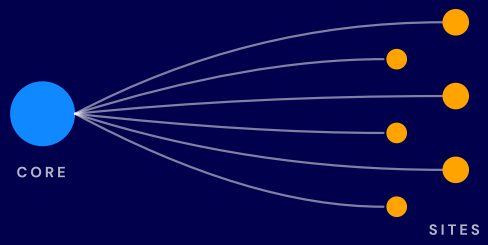


Edge ingest

Data moves from many remote sites back to a central environment.

- Telemetry, transactions, logs needed quickly in the core
- Bulk files that can wait for a better network window
- Many-to-one consolidation, resumed cleanly after disconnect

DISTRIBUTION · ONE → MANY



Edge distribution

Data, content, or updates move from a central source out to many remote sites.

- Software updates, reference files, pricing, operating content
- Non-urgent content staged over time
- One-to-many delivery, version-consistent across sites

SEVEN DESIGN STEPS

Designing edge workflows that hold up in production.

A working sequence, from priorities to instrumentation, for IT infrastructure leaders responsible for distributed organizations.

STEP

01

Set data priorities.

Without defined freshness targets and recovery windows, every transfer becomes a judgment call in production.

CATEGORIZE

- TIME-SENSITIVE INGEST
- BULK INGEST
- CRITICAL DISTRIBUTION
- BACKGROUND DISTRIBUTION

Not all data should be treated equally. A common mistake in edge data management is applying uniform transfer policies to all datasets. Instead, categorize data based on urgency and characteristics.

FOR EACH CATEGORY, DEFINE

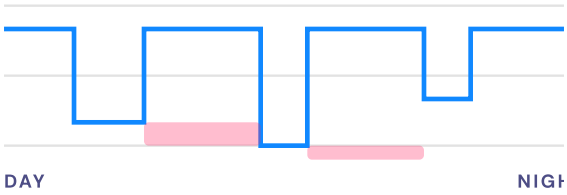
Freshness target	**Priority**
Expected transfer size	**Acceptable recovery window**

This classification ensures that bandwidth is used efficiently and critical operations are not delayed by lower-priority transfers.

STEP

02

PROFILE EACH SITE



Connectivity isn't binary. Profile the shape.

Design for the real network.

Intermittent connectivity is the baseline at the edge; the architecture has to assume it from day one.

Do not design around ideal network conditions. Design around the worst normal conditions. For each site or endpoint, answer:

- How often does it disconnect, and for how long?
- Are there predictable low-bandwidth periods during business hours?
- Are there better transfer windows overnight or off-peak?
- Does the site reconnect intermittently or in long stable sessions?

A branch office with daytime bandwidth constraints needs a different workflow than **a mobile field unit** that may go offline for hours at a time.

STEP

03

Match movement to flow.

Ingest and distribution have different scales, recovery, and consistency demands; one architecture rarely fits both.

Once you know the data classes and connectivity patterns, choose how each flow should operate.

FOR EDGE INGEST

OPTIMIZE FOR

- Predictable many-to-one consolidation
- Resume after interruption
- Minimal retransfers of unchanged data
- Low manual recovery effort as endpoint count grows

FOR EDGE DISTRIBUTION

OPTIMIZE FOR

- Reliable one-to-many delivery
- Version consistency across sites
- Minimal load on central infrastructure
- Automatic catch-up when endpoints reconnect

IN PRACTICE, THAT MEANS DECIDING

Which transfers are **event-driven** versus **scheduled**.

Whether sites **always pull from the center** or can use **peer-assisted delivery**.

Which datasets should move **immediately** versus **in batches**.

How **urgent files** are prioritized over **bulk movement**.

STEP

04

10 → 1,000

Manual intervention works at 10 sites. It breaks at 1,000.

Plan for recovery.

Manual intervention works at 10 sites and breaks at 1,000 — recovery has to be designed for the deployment you're actually planning.

Edge workflows work until the network fails halfway through a transfer. Your workflow should explicitly define what happens when:

- A site disconnects at 80% completion
- A transfer resumes after several hours offline
- The same data is generated twice
- A site misses an update window
- Some endpoints reconnect with stale files while others are current

THE SYSTEM SHOULD

- Resume partial transfers automatically
- Avoid retransmitting completed portions unnecessarily
- Verify integrity before marking a job complete
- Reconcile site state after reconnect
- Continue without manual cleanup for normal interruptions

STEP

05

Engineer for consistency.

Successful transfer means nothing if half your sites end up on the wrong version.

FOR DISTRIBUTION WORKFLOWS

DEFINE

- How updates are versioned
- What counts as "current" at each endpoint
- Whether sites must apply updates in sequence
- How partial or interrupted updates are detected
- When a site is allowed to serve or use newly received data

FOR INGEST WORKFLOWS

DEFINE

- How duplicate or unchanged data is identified
- When data is considered complete and ready for downstream processing
- What metadata is needed to track source, timestamp, and version

This is especially important in environments where the same footprint supports both ingest and distribution. **Many organizations are not just moving files to the edge or from the edge.** They are doing both simultaneously across the same remote estate.

STEP

06

Validate before you commit.

Walk a representative scenario end-to-end to expose gaps before the budget and timeline are locked.

WALK IT END-TO-END

A representative scenario, traced through the architecture, exposes more weaknesses than any review document.

The fastest way to expose architectural weaknesses is to walk through a real deployment scenario end-to-end.

THE WORKFLOW NEEDS TO

- Distribute software, patches, and applications from central IT to remote endpoints
- Move large operational files between site and core over constrained connectivity
- Operate over connections that are intermittent and frequently drop mid-transfer
- Recover automatically when an endpoint loses connectivity
- Scale to hundreds of sites without scaling the IT team in proportion

A REAL EXAMPLE → Synergy Marine, p. 13

STEP

07

Instrument for leadership.

Completion rate, recovery time, and version lag are the metrics that prove the system works at scale.

Do not stop at architecture diagrams. Define how you will measure whether the workflow is healthy.

COMPLETION RATE

% / site

By site, not aggregated.

RECOVERY TIME

avg.

After reconnect.

RETRANSFERRED BYTES

GB

Wasted bandwidth.

BACKLOG AGE

hrs

Ingest queue.

VERSION LAG

sites

Across endpoints.

CENTRAL LOAD

peak

During 1→many.

MANUAL INTERVENTIONS

count

Per period.

WHY MEASURE

Without these, weaknesses surface only after sites drift, queues build up, or central systems become a bottleneck.

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FIELD DEPLOYMENT · SYNERGY MARINE GROUP

How Synergy Marine Group Navigated Global File Transfers With Confidence. 700 vessels. 14 countries.

> *The redesign had to assume the network rather than work around it.*

Distributing vessel software, patches, and business-critical applications from shore to ships at sea — over satellite connectivity that's intermittent, bandwidth-constrained, and frequently drops mid-transfer.

BEFORE · THE ORIGINAL DESIGN

It didn't validate at scale.

- Satellite transfers **failed at 60–70 MB**
- IT resorted to **hand-carrying USB sticks** with 2–3 GB of updates onto ships
- With 10 people working full-time, the deployment ceiling was **1 vessel per day** across a 700-vessel fleet
- The math didn't close. The design couldn't keep the fleet up to date at the pace the business required

THE MATH

1

vessel per day — across a 700-vessel fleet.

Ceiling with 10 people working full-time on rollouts.

FAILURE THRESHOLD

60–70 MB

Satellite drops above this size.

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AFTER · RESILIO ACTIVE EVERYWHERE

Fleet-wide deployments in two to three days — over the same satellite links.

AFTER VALIDATING RESILIO, SYNERGY NOW

- Pushes installations and patches via remote scripting that runs **in parallel across vessels**
- Resumes interrupted transfers **automatically from the point of failure**
- Uses **delta-only transfers**, so unchanged files don't retransmit
- Manages deployments centrally with **API-based logging** for compliance
- Completes fleet-wide application deployments in **2–3 days** — work that previously took a year

32+ TB OF DATA MOVED

2,000+ DEPLOYMENTS COMPLETED

700 VESSELS IN THE FLEET

3 yrs IN PRODUCTION

> Now that we have Resilio, our lives are simpler, and our work is easier. We don't have to worry about whether data gets to the ships, it just does.

Ilaiyakumar M
Head of Cloud & IT Infrastructure, Synergy Marine Group

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A PRACTICAL EVALUATION CHECKLIST

Pressure-test the design before rollout.

Seven questions to walk through with your architects, your operations lead, and your network team. If any answer is "no" or "we'll figure it out later," the design isn't ready.

- [ ] Can the workflow **resume automatically** after expected outages?
- [ ] Can it move **urgent data** without starving bulk movement?
- [ ] Can it **avoid retransferring** unchanged data?
- [ ] Can it support both **many-to-one ingest** and **one-to-many distribution**?
- [ ] Can it keep **site versions consistent** after reconnect?
- [ ] Can it scale operationally **without per-site babysitting**?
- [ ] Can it integrate across the **operating systems, storage environments, and endpoint types** already in use?

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WHAT A GOOD EDGE WORKFLOW DESIGN LOOKS LIKE

Predictable behavior under bad network conditions.

A strong edge design **consolidates data from distributed locations** without creating ingest bottlenecks. It **distributes files and updates** without turning the core into a choke point.

It resumes cleanly after interruptions. It keeps sites consistent. And it does all of that without forcing operators to perform constant retries, restarts, and reconciliations.

- Consolidates from distributed locations without bottlenecks
- Distributes without choking the core
- Resumes cleanly after interruptions
- Keeps sites consistent across reconnects
- Operates without constant retries or reconciliations

The hardest part of edge data architecture isn't the design; it's ensuring the design holds up across hundreds or thousands of sites without your team constantly running interference.

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MOVE FASTER AT THE EDGE

Built for edge operations that don't need babysitting.

Resilio Active Everywhere moves data reliably between distributed sites and central systems under intermittent connectivity, recovers cleanly without manual intervention, and keeps endpoints consistent at scale.

The outcome is what edge operations should look like: data that moves at the speed the business needs, without the operational drag that turns architectures into babysitting projects.

SCHEDULE A WORKING SESSION

See how IT leaders are running edge workflows across distributed estates with Resilio.

SCHEDULE A DEMO →

RELIABLE

Moves data between distributed sites and central systems under intermittent connectivity.

RESILIENT

Recovers cleanly without manual intervention or operator cleanup.

CONSISTENT

Keeps endpoints consistent at scale, without per-site babysitting.

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FREQUENTLY ASKED QUESTIONS

For the conversation after the read.

01

What is an edge data workflow?

An edge data workflow is the process for moving data between remote sites and central systems that remains reliable even when connectivity is limited or intermittent. In most environments, that includes both **ingest workflows**, where data moves from the edge back to the core, and **distribution workflows**, where files, updates, or content move from the core out to remote sites.

02

Why are edge workflows harder to design than traditional data movement?

Edge environments usually involve constrained bandwidth, frequent disconnections, geographically dispersed sites, and large numbers of endpoints. A workflow that works well in a stable data center often breaks down when transfers are interrupted, links are slow, or sites reconnect at unpredictable times.

03

What is the difference between edge ingest and edge distribution?

Edge ingest is a **many-to-one** process that consolidates data from remote sites into a central environment. Edge distribution is a **one-to-many** movement, where updates, files, or content are delivered from a central source to many remote endpoints. Most real-world edge environments need both, and each requires different workflow behavior.

04

How should teams prioritize data in an edge workflow?

Start by classifying data based on urgency, size, and recovery expectations. Time-sensitive telemetry or transactions may need immediate movement, while large bulk datasets can wait for better network windows. Prioritization helps ensure critical data moves first without lower-priority transfers consuming limited bandwidth.

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ABOUT RESILIO

High-performance data, everywhere.

The Resilio Active Everywhere Platform delivers active, current, and accessible file-based data everywhere. The Resilio platform is designed for mission-critical applications in the most demanding IT environments globally.

From maritime fleets to media production, architectural firms, and global retail estates — IT infrastructure leaders run Resilio when the data has to move, the network can't be trusted, and the operations team can't grow with the footprint.

LEARN MORE

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