SYMBEEO

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DESIGN STUDY

Change pipeline for a bank's two EVPN data-center fabrics, every change model-checked

Complete design on current platforms

CAPABILITY	INDUSTRY	SETTING
Automation	Financial Services	Retail and commercial bank
DOCUMENT	**VERSION**	**DATE**
AUT-002	1.1	Oct 10, 2026

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Document control

Document	AUT-002	Version	1.1
Issued	Oct 10, 2026	Status	Issued by Symbeeo
Classification	Public	Supersedes	1.0, Sep 27, 2026
Capability	Automation	Industry	Financial Services
Author	Mark Winston	Role	Principal Network Architect
Credentials	CCIE, CISSP, CCSP, CCISO, CISM, Adopting Zero Trust (Forrester)		
Approval	Approved by Edwin Ozer, Founder, Oct 10, 2026. Issued by Symbeeo, Oct 10, 2026. Design study: every figure is vendor-published, a design target or a marked assumption.		
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, project's or regulator's own current page on Sep 24, 2026 · [S*] figure from the page's published summary where the page itself could not be opened · [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 head of network engineering at a bank whose two data-center fabrics are changed by hand in a weekly window, and whose regulator now asks for a documented ICT change-management process with the evidence to show it ran.

Typical buyer [A]. A retail and commercial bank with two data centers 30 km apart. Each data center runs an Arista EVPN-VXLAN leaf–spine: 4 spines and 44 leaves, 4 of them border leaves, 96 switches in total. A network team of nine makes about 60 fabric changes a month, 70 % of them VLAN, port-profile and VRF additions. Arista CloudVision already manages every switch; an ITSM tool already holds change records.

What is in. The source of truth, the fabric data model, the pipeline with its model check and virtual replica, deployment through CloudVision, drift reporting, and the audit record each change leaves behind. **What is out.** Firewalls and their policy; the WAN; the switch hardware; the application teams' own infrastructure code; the ITSM product.

Assumptions. Arista is the fabric vendor and stays so [A]. The bank's existing Git service and CI runners host the pipeline [A]. The bank is a financial entity under the EU's Digital Operational Resilience Act [A]. Both fabrics run one EOS release train [A].

Related documents, read Sep 24, 2026.

- SRA-AUT-001, Symbeeo reference architecture for infrastructure automation (the pattern this design applies)
- Arista AVD 6.x release notes — `https://avd.arista.com/devel/docs/release-notes/6.x.x.html`
- Arista AVD `cv_deploy` role, AVD 6.4 — `https://avd.arista.com/6.4/ansible_collections/arista/avd/roles/cv_deploy/index.html`
- Arista AVD latest release (GitHub) — `https://github.com/aristanetworks/avd/releases`
- Batfish releases — `https://github.com/batfish/batfish/releases`
- Batfish supported devices — `https://batfish.readthedocs.io/en/latest/supported_devices.html`
- containerlab, Arista cEOS kind — `https://containerlab.dev/manual/kinds/ceos/`
- containerlab releases — `https://github.com/srl-labs/containerlab/releases`
- NetBox releases — `https://github.com/netbox-community/netbox/releases`
- DORA, Regulation (EU) 2022/2554, Article 9 — `https://eur-lex.europa.eu/eli/reg/2022/2554/oj`

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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. AVD example for a dual data center using L3LS: two mirrored EVPN-VXLAN data centers, EVPN gateway on the DCI leaves, built on cEOS lab; CloudVision left out to keep the example simple	Arista AVD project · page updated Aug 28, 2026	R3 and §4.4: two twin fabrics from one data model, and a cEOS replica as the test bed, are the project's own published pattern	`https://avd.arista.com/6.4/ansible_collections/arista/avd/examples/dual-dc-l3ls/index.html`
Our own design, built from published documentation. `cv_deploy` role: creates, builds and submits CloudVision workspaces; creates change controls, left pending approval by default	Arista AVD project · AVD 6.4 documentation; 6.4.0 released Aug 28, 2026	R6 and R7: the executor never pushes to a switch directly; a second person approves inside CloudVision	`https://avd.arista.com/6.4/ansible_collections/arista/avd/roles/cv_deploy/index.html`
Public deployment. A UK retail bank: Arista CloudVision and AVD adopted while eight data centers are consolidated into two strategic locations; configurations under version control; infrastructure as code named as the next step	HighPoint, Arista partner, case study · April 2026, read Sep 27, 2026	R3 and §4.5: a bank running two data-center locations on the same two Arista tools this design uses. The page does not state EVPN-VXLAN or a CI/CD pipeline, so it settles the platform choice only; no figure from it enters the register	`https://www.highpoint.com/portfolio/aldermore-cloudvision-avd-driving-automation-visibility-and-a-future-ready-network/`

The AVD example talks to switches over eAPI; this design deploys through CloudVision instead, so §4.5 uses the `cv_deploy` path the same project documents [S]. R11 cites DORA Article 9(4)(e) directly.

2 · Requirements register

Table 3. Requirements register

#	Requirement	Value	Source
R1	Estate	2 data centers · 96 EOS switches · ≈ 60 changes a month	[A]
R2	Intent recorded	every switch, VRF, VLAN and port profile held in the source of truth and the AVD data model; zero unrecorded switches	[T]
R3	Configuration generation	rendered from structured data by AVD `eos_designs` then `eos_cli_config_gen`	[S] AVD 6.x

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#	Requirement	Value	Source
R4	Model check	every change set analyzed against baseline BGP, EVPN and reachability questions before deployment; any unexpected answer blocks it	[T]; [S] Batfish supports Arista
R5	Virtual replica	every new template runs on a cEOS replica first; up to 50 cEOS nodes per host from EOS 4.32.0F	[S] containerlab `arista_ceos`
R6	Deployment path	through CloudVision workspace and change control only; no direct push	[S] `cv_deploy`
R7	Separation of duties	author ≠ reviewer on the merge request; CloudVision change control approved by a third person	[T]
R8	Rollback	one fabric back to its prior configuration ≤ 15 min	[T]
R9	Drift	a difference between rendered and running configuration reported ≤ 15 min	[T]
R10	Audit retention	merge request, model-check report and change-control ID kept together 5 years	[A]
R11	Regulatory evidence	documented ICT change-management procedures and controls	[S] DORA Art. 9(4)(e)
R12	Blast radius	one fabric per change control; the second fabric follows after 24 h	[T]
R13	Lead time, standard change	≤ 2 working days from merge request to deployment	[T]

Thirteen rows; five carry a vendor or regulator figure, two are design assumptions, six are design targets.

3 · Architecture overview

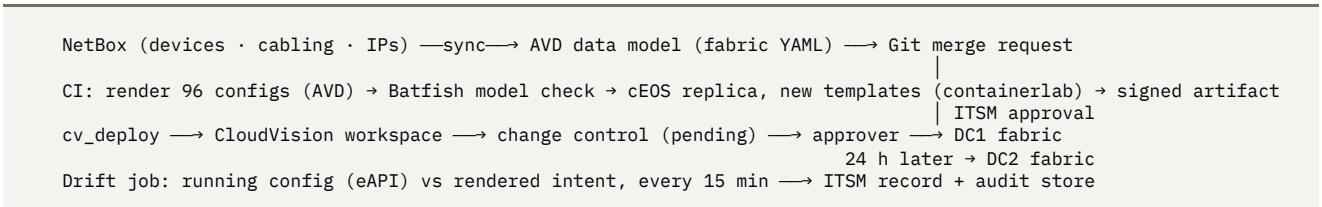


Figure 1. Fabric change pipeline

One data model renders both fabrics. The pipeline proves every change against a model of all 96 switches, and every new template against a small running replica, before CloudVision sees it, and CloudVision stays the only path to the switches, so the bank keeps the controller it already operates.

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Table 4. Architecture overview

Role	Product (exact version)	Qty	Capacity used	Why this unit
Source of truth	NetBox 4.7.1 (Sep 15, 2026) [S]	HA pair + DB replica [A]	96 switches, ≈ 5,000 interfaces [A]	open source, holds non-Arista devices later [S][A]
Fabric data model and rendering	Arista AVD 6.4.0 (Aug 28, 2026) [S]	1 collection in CI	96 configurations per run [A]	`eos_designs` and `eos_cli_config_gen` [S]
Model check	Batfish v2026.08.27 [S]	1 service	96 configurations per run [A]	Arista supported [S]
Virtual replica	containerlab v0.79.0 (Aug 21, 2026) with cEOS-lab [S]	1 host	16 of 50 nodes [S][A]	`arista_ceos` kind, gNMI, NETCONF and eAPI enabled [S]
Deployment	CloudVision via AVD `cv_deploy` [S]	existing	2 fabrics	workspaces and change controls [S]

4 · Design by subsystem

4.1 Source of truth.

NetBox holds sites, racks, switches, cabling, prefixes and VLANs; a sync job writes the AVD fabric variables from it, so no one edits the YAML by hand for a standard change [A]. Nightly, the job lists every switch CloudVision knows and raises any without a NetBox record (R2) [A]. Rejected: CloudVision as the source of truth — it records only EOS devices, and the bank's WAN routers and firewalls will follow onto the same pipeline (SRA-AUT-001 D1).

4.2 Rendering.

AVD's `eos_designs` turns the fabric model into structured configuration and `eos_cli_config_gen` turns that into EOS configuration per switch [S]. Every merge request renders all 96 configurations; the reviewer reads the rendered diff, not only the YAML [A]. Rejected: templates per switch — 96 files drift apart within a year.

4.3 Model check.

Batfish loads the 96 rendered configurations [S] and answers a fixed set of baseline questions: every BGP underlay and EVPN overlay session compatible; every server VRF reaches its anycast gateway; no border-leaf ACL line shadowed by an earlier one [A]. An answer that changes from the baseline without a matching line in the merge request fails the pipeline (R4) [A].

4.4 Virtual replica.

A containerlab topology of 16 cEOS-lab nodes — per data center 2 spines, 2 border leaves and 4 leaves — runs on one host [A], within the 50-node figure Arista's kind page gives from EOS 4.32.0F [S]. The `arista_ceos` kind starts nodes with gNMI, NETCONF and eAPI enabled [S]. A new template or a new EOS train is proved here before production (R5); AVD's own dual-DC example uses cEOS lab the same way [S]. The replica runs the production EOS train [A].

4.5 Deployment through CloudVision.

`cv_deploy` creates and submits a CloudVision workspace and creates a change control [S]; `cv_run_change_control` stays at its default of false [S], so the change control waits until a third person, named in the ITSM approval, approves it in CloudVision (R7) [A]. One fabric per change control; the second data center follows 24 hours later on the same artifact (R12) [T]. Rollback redeploys the previous signed commit's rendered configurations through the same path, one

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fabric in ≤ 15 minutes (R8) [T]. Rejected: pushing over eAPI from CI — bypasses the controller the operations team already watches.

4.6 Drift, audit and evidence.

Every 15 minutes a job reads running configuration over eAPI and compares it with the rendered intent; a difference opens an ITSM incident (R9) [A]. Each change leaves one record: merge request with author and reviewer, Batfish report, replica result, CloudVision change-control ID and approver, deployment time [A]. The record set is kept five years (R10) [A] and is what the bank shows for DORA Article 9(4)(e) [S].

5 · Failure behavior

Table 5. Failure behavior

Failure	Behavior	Source
Batfish answer changes unexpectedly	pipeline stops; nothing reaches CloudVision	[T] R4
New template fails on the cEOS replica	pipeline stops at the replica stage	[T] R5
CloudVision unreachable	workspaces cannot be created; changes queue; switches keep forwarding on their running configuration	[A]
Change control approved, fabric degrades after deploy	redeploy of the previous commit, ≤ 15 min for one fabric; second fabric untouched for 24 h	[T] R8, R12
Engineer changes a switch by hand	drift reported ≤ 15 min; intent restored or adopted through a merge request	[T] R9
Source of truth down	sync job and pipeline fail closed; no change deploys	[A]

6 · Limits

- The 60-changes-a-month and 70 % standard-change figures are assumptions; a month of ITSM records sets the real catalog.
- The model check is only as good as its baseline questions; a failure mode no question asks about passes.
- A 16-node replica proves templates and EOS behavior, not 96-switch scale or hardware forwarding.
- CloudVision change-control rollback behavior was not read from an Arista page; §4.5 rolls back by redeploying the previous commit instead.
- DORA sets the duty, not the retention period; five years is an assumption to be set by the bank's compliance function.

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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SYMBEEO

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Compared. Then Delivered.

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

AUT-002 · Version 1.1 · Oct 10, 2026