SYMBEEO

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SOLUTION DESIGN DOCUMENT

Automation platform design for a typical buyer, applying SRA-AUT-001

Design document (HLD + LLD)

CAPABILITY	DOCUMENT	VERSION	DATE
Automation	SDD-AUT-001	1.3	Nov 4, 2026

WRITTEN BY

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What this document is. The reference architecture says what a good automation platform looks like. This document is that platform applied to one client, with components, names, repository layout, change classes and a cut-over plan, in the shape integrators hand over: a technical design document (versions, purpose, approach, solution overview, requirements) with low-level design content (prerequisites, detailed design, asset and version verification). The client here is the typical buyer from SRA-AUT-001 §1 [A]; every value marked [A] is replaced by the real client's during the design workshop. Where a row names a product, it is an option from SRA-AUT-001 §5 used as the placeholder [A]; the comparison may replace any row without changing the design. 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.

Document control

Document	SDD-AUT-001	Version	1.3
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Sign-off	"The customer's named representative signs this document before build; the practice lead signs it after."		

Contents

1 · Introduction 3
2 · Prerequisites (all must be true before build) 4
3 · Solution overview 4
4 · Logical design 5
5 · Platform design 6
6 · Platform services 6
7 · Migration and cut-over 6
8 · Roles and deliverables 7
9 · Security, lifecycle and handover 7

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Table 1. Revision history

Date	Version	Change
Sep 27, 2026	1.0	First issue.
Oct 7, 2026	1.1	Reissued with the practice set; no change.
Oct 10, 2026	1.2	Approval line now reads: approved by the Founder, issued by Symbeeo. Mark Winston remains the author.
Nov 4, 2026	1.3	Wording correction: how the comparison is described.

1 · Introduction

1.1 Purpose.

Technical design of the automation platform for the client's network, security and cloud-network estate, on the architecture of SRA-AUT-001. After review, the client's representatives sign this document and work continues to build.

1.2 Project overview and goals.

Move from hand-typed changes to rendered, reviewed, tested and reversible changes. Goals: one source of truth for every managed device; every change through a merge request and a model check; rollback within 15 minutes; drift reported within 15 minutes; a first catalog of event-driven runbooks; AI assistance that reads but never writes on its own.

1.3 Approach and phases.

Phase 1 platform build and source-of-truth import (read-only; the network is not touched). Phase 2 drift reporting and telemetry. Phase 3 first automated change class (interface descriptions, VLANs) at one branch. Phase 4 all standard changes estate-wide, site by site. Phase 5 event-driven runbooks and the AI assistant. Phase 6 handover and as-built.

1.4 Change control and reporting.

- **Design changes.** Once this document is signed, any change to it — scope, component, quantity, phase or date — is a **written change order** stating what changes, why, and its cost and schedule effect. Both parties sign it before the change is built. Nothing is built from a verbal request.
- **Operational changes.** The platform itself is changed through its own pipeline once Phase 1 ends; until then, through tickets in the client's change system citing this document's section and, where it alters the design, the change-order number.
- **Weekly status report.** Every week from signature to acceptance: % complete per deliverable (§8), slippage against the signed plan in days with its cause, change orders open and signed.
- **Escalation.** Contacts on both sides, by role, in §8.

1.5 Intended audience.

Client infrastructure, security and change-management teams; Symbeeo build engineers.

1.6 Related documents.

SRA-AUT-001 · STP-AUT-001 · SRA-NET-001 and SDD-NET-001 (the estate being automated) · sources listed in SRA-AUT-001 §9.

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2 · Prerequisites (all must be true before build)

Table 2. Prerequisites (all must be true before build)

#	Prerequisite	Owner	Status
P1	Inventory export of every managed device (name, model, serial, OS, management IP)	client	open
P2	Management network and OOB reachable from the platform hosts (SRA-NET-001 §4.6)	client	open
P3	Service accounts on every device, scoped to the automation role, issued via the secrets broker	both	open
P4	Model-driven interface (NETCONF or gNMI) enabled and reachable on each capable device; list of CLI-only devices agreed	both	open
P5	ITSM integration: API account, standard-change catalog owner named	client	open
P6	Identity provider for single sign-on and group-based roles	client	open
P7	Platform software baseline agreed (§5.4)	both	open
P8	Virtual-lab images licensed for every device OS in the estate	Symbeeo	open

3 · Solution overview

3.1 Architecture.

As SRA-AUT-001 §3: source of truth, Git and pipeline, change gate, executor, telemetry and event loop, read-only AI assistant.

3.2 Components and inventory [A].

Table 3. Components and inventory [A]

Component	Role	Placeholder option (SRA-AUT-001 §4–§5)	Instances	Naming
Source of truth	inventory, IPAM, intent data	NetBox 4.7	2 + DB replica	aut-sot-01/02
Git and CI	repository, pipeline runners	client's existing Git service	3 runners	aut-ci-01…03
Validation	network model	Batfish	1	aut-val-01
Virtual lab	topology replicas	containerlab	1 host	aut-lab-01
Executor	config push, playbooks	ansible-core 2.21 or AAP 2.7	3	aut-exe-01…03
Rules engine	event rules to runbooks (R9)	Event-Driven Ansible, with ansible-core 2.21 or AAP 2.7	2	aut-eda-01/02
IaC	cloud network	OpenTofu 1.12	runs in CI	—
Event bus	event transport	Apache Kafka 4.x	3 brokers	aut-bus-01…03
Collectors	gNMI, YANG-Push, syslog, OTLP	open-source gNMI collector	2	aut-col-01/02

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Component	Role	Placeholder option (SRA-AUT-001 §4–§5)	Instances	Naming
Metrics	time series, drift reports	Prometheus 3.x	2	aut-met-01/02
Secrets	per-job credentials	client's secrets broker	3	aut-sec-01…03
Audit	append-only log	client's log platform	—	—
AI connector	read-only tool set	MCP server, read scopes only	1	aut-ai-01

3.3 Locations.

Primary at DC-A, standby executor, rules-engine, collector and metrics nodes at DC-B; virtual lab at DC-A only.

4 · Logical design

4.1 Repository layout.

One repository per domain: `net-intent` (templates and data overrides), `net-runbooks` (rulebooks and playbooks), `cloud-iac` (modules and stacks). Protected `main` branch; merge requires one reviewer who is not the author and a green pipeline (R3).

4.2 Source-of-truth data model.

Sites, racks, devices, interfaces, cables, prefixes, VLANs, circuits and config contexts per site and role. Custom field `automation_mode` with values `model-driven`, `cli`, `excluded` per device [A].

4.3 Pipeline stages.

Table 4. Pipeline stages

Stage	Check	Fails the change when
1 Lint	syntax, style, secrets scan	any error or secret found
2 Render	full configuration for every affected device	render error
3 Model check	reachability, ACL, routing, BGP sessions against baseline questions	any baseline answer changes unexpectedly (R4)
4 Virtual lab	new template or runbook on a replica	lab test fails (R15)
5 Provenance	signed artifact with build record	signature missing (R14)
6 Gate	ITSM change state	not approved, unless standard change (R10)

4.4 Change classes [A].

Table 5. Change classes [A]

Class	Examples	Approval	Window
Standard	interface description, access VLAN, NTP/syslog targets	pre-approved catalog entry	any time
Normal	routing policy, ACL, new site	named approver in ITSM	agreed window

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Class	Examples	Approval	Window
Emergency	incident fix	on-call manager; recorded within 24 h	immediate

4.5 First event-rule catalog [A].

Interface flapping above 5 transitions in 10 min: shut and open incident. BGP session down on a WAN edge: collect diagnostics, open incident. Drift on a standard-change field: restore intended value. Certificate within 30 days of expiry: open change. Circuit breaker: 3 runs per target per hour (SRA-AUT-001 §4.7).

4.6 AI assistant scope.

Read tools only: source-of-truth queries, telemetry queries, model questions, job history. Proposed writes become merge requests assigned to a named reviewer (R11). Every assistant call is logged like any other actor (R13).

5 · Platform design

5.1 Hosting.

Virtual machines on the client's platform at DC-A and DC-B, or a Kubernetes cluster where one exists [A]. **5.2 Network placement.** All components on SDD-NET-001's management VLAN 10; device access only from executor and collector addresses; no inbound path from user networks. **5.3 Sizing [A].** Executors 8 vCPU / 32 GB each; source of truth 8 vCPU / 32 GB; rules engine 4 vCPU / 16 GB each; collectors 8 vCPU / 16 GB; metrics 8 vCPU / 64 GB, 2 TB; lab host 64 cores / 512 GB. **5.4 Software baseline [A].** Current supported release of each component on the day of staging, recorded at first build with checksums; ansible-core on a release inside its maintenance window (2.21 maintained to November 2027) [S].

6 · Platform services

6.1 Identity.

Single sign-on with group roles: viewer, author, reviewer, approver, operator. **6.2 Secrets.** Per-job credentials from the broker, expiring at job end (R12); break-glass credentials sealed, held by the client. **6.3 Time.** Same NTP sources as SDD-NET-001 §6.2. **6.4 Logging.** Every job, rulebook action and assistant call to the append-only store (R13). **6.5 Backup.** Source-of-truth database nightly, restore tested quarterly; Git mirrored to DC-B.

7 · Migration and cut-over

Table 6. Migration and cut-over

Step	Action	Rollback
1	Build platform; import inventory; discovery reconciles to zero unknown devices (STP-AUT-001 T1)	none needed — network untouched
2	Render intended configuration for all devices; report drift only	none needed
3	Resolve drift: adopt running value into intent or schedule a change	revert the data commit
4	First standard change class at branch 1 through the full pipeline	stored rollback, ≤ 15 min

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Step	Action	Rollback
5	Standard changes estate-wide, one site per week	per-site: return site to manual
6	Enable event rules in notify-only mode for two weeks, then act mode	switch rule to notify-only
7	Enable AI assistant read tools	disable connector
8	As-built, acceptance (STP-AUT-001 §4)	—

8 · Roles and deliverables

Table 7. Roles and deliverables

Role	Symbeeo	Client
Design authority	practice lead (signs)	infrastructure manager (signs)
Build	build engineers	change approver, catalog owner
Acceptance	test lead	named acceptor

Escalation contacts [A]. Names are written in at signature; roles are fixed here.

Table 8. Roles and deliverables

Level	When	Symbeeo	Client
1	day-to-day issue, a test case blocked	build lead	change approver
2	slippage over 5 business days [A], a change order disputed	practice lead	infrastructure manager
3	unresolved at level 2 after 5 business days [A], a security incident (§9)	the Founder	the client's sponsoring executive

Deliverables. This document · weekly status reports (§1.4) · signed change orders · STP-AUT-001 with results · the handover pack (§9.5).

9 · Security, lifecycle and handover

9.1 Security incidents.

A security incident affecting the client's data or systems — on the platform, in the pipeline, or in any credential the platform holds — is reported to the client's level-2 escalation contact (§8) **within 24 hours of discovery**, with what is known, what is contained and the next report time.

9.2 Media sanitization.

Any storage medium that has held client data and leaves the client's control — a failed disk from the lab host or executors, a Symbeeo staging host after T2–T8, a returned appliance — is sanitized to **NIST SP 800-88 Rev. 2** (Guidelines for Media Sanitization, final September 2025, superseding Rev. 1) [S], technique per IEEE 2883 [S*], with **a certificate per device**: serial, medium type, method, date, operator and verification result [A]; or the media stay with the client under a non-return service. Media holding PHI or other regulated personal data are never taken back unsanitized.

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9.3 Lifecycle on the quote.

No hardware or software subscription is quoted past its vendor's end-of-sale date. Every quoted item shows its **end-of-sale date and end-of-support date** in the vendor's own terms — for example Cisco's End of Sale date and Last Date of Support [S] — and open-source components show their project's maintenance end (ansible-core 2.21: November 2027 [S], §5.4). An item with no published end-of-support date is marked so on the quote.

9.4 Vendor support by severity.

Every quote states, for each vendor support contract, the response time for severity 1, 2, 3 and 4 as the vendor's contract defines them. Values come from the vendor's quote at bid time; none is assumed here.

9.5 Handover pack.

At the end of Phase 6: as-built drawings (components, locations, network placement); configurations and versions with checksums; repository and pipeline definitions; the event-rule catalog; credentials transferred to the client and Symbeeo's revoked; licenses; support contracts with their severity terms; the break-glass runbook; the signed STP-AUT-001; the acceptance certificate; open items with owner and date.

Sources for §9, read Sep 24, 2026. NIST SP 800-88 Rev. 2 `https://csrc.nist.gov/pubs/sp/800/88/r2/final` · IEEE 2883 as the technique reference, from secondary summaries [S*] `https://www.bitraser.com/blog/nist-800-88-rev-2-vs-rev-1/` · Cisco end-of-life milestones `https://www.cisco.com/c/en/us/products/eos-eol-policy.html` · ansible-core maintenance, SRA-AUT-001 §9.

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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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