

Integration Gap Register

AI Operations Center — What's Live, What's Stubbed, What It Takes

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Audience: CIO, Enterprise Architect, Integration Team

Executive Summary

The AI Operations Center connects to **6 enterprise systems** via a unified MCP (Model Context Protocol) gateway. The gateway's infrastructure — circuit breakers, rate limiting, audit logging, idempotency keys — is **production-ready**. The individual tool adapters currently return deterministic canned responses and must be replaced with real ERP connectors before go-live.

This register maps every integration point, its current status, the effort to go live, and what the client's team needs to provide.

System-by-System Register

1. MCP-S4 — SAP S/4HANA

Attribute	Detail
Purpose	Financial system of record. Master data reads (customers, vendors, GL), document reads (invoices, debit memos), BAPI writes (post credit memos, create debit notes).
Current Status	🟡 Stub — Returns canned financial documents and master data.
Production Connector	SAP OData V4 via Communication Arrangement, or RFC/BAPI via SAP Cloud Connector.
API Type	OData V4 (read), BAPI/RFC (write), CDS Analytical (reporting)
Latency Budget	Master-data read <300ms, Document read <500ms, CDS analytical <1.5s, BAPI write <1.5s
Auth Required	OAuth 2.0 client credentials (SAP BTP) or X.509 certificate (on-prem)
Effort Estimate	🟡 Large (6-8 weeks) — Requires Communication Arrangement setup, field mapping for 12+ BAPIs, error handling for SAP lock objects, idempotency for write operations.
Client Must Provide	SAP system landscape diagram, Communication Arrangement credentials, custom field catalog, transport request access for ABAP artifacts if needed.
Tools to Replace	<code>getDebitMemo</code> , <code>postCreditMemo</code> , <code>getCustomerMaster</code> , <code>getVendorMaster</code> , <code>getGLBalance</code>

2. MCP-AR-Cloud — Accounts Receivable Platform

Attribute	Detail
Purpose	Collections management. Customer payment behavior, dunning history, promise-to-pay tracking, collection strategy execution.
Current Status	🟡 Stub — Returns deterministic collection account data from local database.
Production Connector	HighRadius REST API, or Billtrust/Esker equivalent.
API Type	REST JSON
Latency Budget	Read <300ms, Write <1.5s
Auth Required	API key + OAuth 2.0
Effort Estimate	🟡 Medium (3-4 weeks) — Straightforward REST integration. Main complexity is mapping dunning workflow states and handling batch collection run triggers.
Client Must Provide	AR platform API credentials, webhook endpoint for payment notifications, field mapping for collection strategies.
Tools to Replace	<code>getCollectionAccount</code> , <code>getDunningHistory</code> , <code>recordPromiseToPay</code> , <code>triggerCollectionRun</code>

3. MCP-Source-to-Pay — Procurement Platform

Attribute	Detail
Purpose	Source-to-pay workflow. Supplier master, contract lookup, PR/PO creation, approval routing, ASL validation, spend analytics.
Current Status	🟡 Stub — Returns canned supplier and contract data. PR creation writes to local PurchaseRequisition table (functional).
Production Connector	Coupa REST API, SAP Ariba, or Jaggaer.
API Type	REST JSON (Coupa), cXML (Ariba)
Latency Budget	Read <300ms, PR/PO write <1.5s
Auth Required	OAuth 2.0 (Coupa), certificate-based (Ariba)
Effort Estimate	🟡 Medium (4-5 weeks) — PR/PO creation is already modeled in the local database. Integration requires mapping to Coupa/Ariba object model, handling approval chain callbacks, and ASL synchronization.
Client Must Provide	Procurement platform API credentials, approval matrix configuration, contract template IDs, cost center / GL account mapping.
Tools to Replace	<code>getSupplierMaster</code> , <code>lookupContract</code> , <code>createPR</code> , <code>getPOStatus</code> , <code>validateASL</code>

4. MCP-DPP — Demand Planning Platform

Attribute	Detail
Purpose	Demand forecast reads, actuals ingestion, bias detection, override staging, inventory projection.
Current Status	● Stub — Returns deterministic forecast data generated from SKU master and hash functions.
Production Connector	SAP IBP OData, o9 Solutions REST API, or Blue Yonder API.
API Type	OData V2/V4 (IBP), REST JSON (o9/BY)
Latency Budget	Forecast read <500ms, Override write <1.5s, Batch <3.0s
Auth Required	OAuth 2.0 or SAML assertion
Effort Estimate	● Large (5-7 weeks) — Forecast granularity mapping (SKU × DC × week vs. day), consensus forecast vs. statistical forecast disambiguation, override workflow integration with planner approval chains.
Client Must Provide	DPP API credentials, forecast hierarchy definition, planning area configuration, override approval workflow spec.
Tools to Replace	<code>getForecast</code> , <code>getActuals</code> , <code>stageOverride</code> , <code>getInventoryPosition</code> , <code>runWhatIf</code>

5. MCP-TradePromo — Trade Promotion Management

Attribute	Detail
Purpose	Trade deal lookup, fund balance queries, accrual validation, deal-to-deduction matching, post-event analysis.
Current Status	🟡 Stub — Returns canned trade deal data. Deal validation logic in <code>trade-deal-validator.ts</code> is production-ready but runs against local TradeDeal table.
Production Connector	Vistex REST API, SAP TPM, or Blacksmith Applications.
API Type	REST JSON
Latency Budget	Deal lookup <300ms, Fund query <500ms
Auth Required	API key or OAuth 2.0
Effort Estimate	🟡 Medium (3-4 weeks) — The validation engine is already built. Integration requires mapping deal structures and fund balance queries to the TPM platform's object model.
Client Must Provide	TPM platform API credentials, deal type taxonomy, fund hierarchy structure, accrual frequency configuration.
Tools to Replace	<code>getDeal</code> , <code>getFundBalance</code> , <code>matchDeduction-ToDeal</code> , <code>getAccruals</code>

6. MCP-Analytics — Analytics & ML Platform

Attribute	Detail
Purpose	Uplift scoring, MAPE computation, attribution analysis, cluster analysis, anomaly detection.
Current Status	🟡 Stub — Returns deterministic analytics results. Some real computation exists (agreement rate, drift detection).
Production Connector	Snowflake SQL (analytics warehouse), Databricks ML serving, or internal ML endpoints.
API Type	SQL (Snowflake), REST (ML serving)
Latency Budget	Feature read <500ms, Model inference <1.5s
Auth Required	Key-pair (Snowflake), OAuth 2.0 (Databricks)
Effort Estimate	🟢 Small-Medium (2-3 weeks) — Most analytics logic already exists in the application. Integration primarily involves pointing feature queries at the analytics warehouse and deploying ML models to a serving endpoint.
Client Must Provide	Analytics warehouse credentials, feature store schema, ML model registry access, data freshness SLAs.
Tools to Replace	<code>computeUplift</code> , <code>getMAPE</code> , <code>runAttribution</code> , <code>detectAnomaly</code>

Infrastructure Status (Production-Ready)

The following MCP Gateway infrastructure components are **fully implemented** and do not require integration work:

Component	Status	Description
Circuit Breaker	✓ Live	Per-system failure tracking, auto-open after threshold, exponential backoff recovery
Rate Limiter	✓ Live	Per-system request throttling (configurable per tool)
Audit Logging	✓ Live	Every tool call persisted to MCPToolCall table with request/response/latency
Idempotency	✓ Live	Write operations use idempotency keys to prevent duplicate mutations
Correlation IDs	✓ Live	End-to-end request tracing from agent run → tool call → response
Timeout Management	✓ Live	Per-tool configurable timeouts with graceful degradation

Effort Summary

System	Effort	Weeks	Dependencies
MCP-S4 (SAP)	● Large	6-8	SAP BTP access, Communication Arrangements
MCP-AR-Cloud	● Medium	3-4	AR platform API access
MCP-Source-to-Pay	● Medium	4-5	Procurement platform API access
MCP-DPP	● Large	5-7	DPP API access, hierarchy config
MCP-TradePromo	● Medium	3-4	TPM API access
MCP-Analytics	● Small-Med	2-3	Warehouse credentials
Total		23-31 weeks	Parallelizable to ~10 weeks with 3 integration streams

Integration Approach Recommendation

Phase 1 (Weeks 1-4): Foundation

1. Stand up adapter framework with real authentication
2. Connect MCP-Analytics (lowest risk, highest immediate value)
3. Connect MCP-TradePromo (unlocks MVP1 end-to-end)

Phase 2 (Weeks 3-7): Core ERP

1. Connect MCP-S4 — Start with read-only (master data, documents)
2. Connect MCP-AR-Cloud (unlocks MVP2 end-to-end)

Phase 3 (Weeks 5-10): Full Platform

1. MCP-S4 write operations (credit memos, debit notes)
2. Connect MCP-Source-to-Pay (unlocks MVP4)
3. Connect MCP-DPP (unlocks MVP5)

Parallel: Testing & Validation

- Shadow mode: Run real adapters alongside stubs, compare results
- Golden case regression: Validate 200+ labeled cases still pass
- Performance: Verify latency budgets with real systems