Workload Identity Management in Agentic Platform

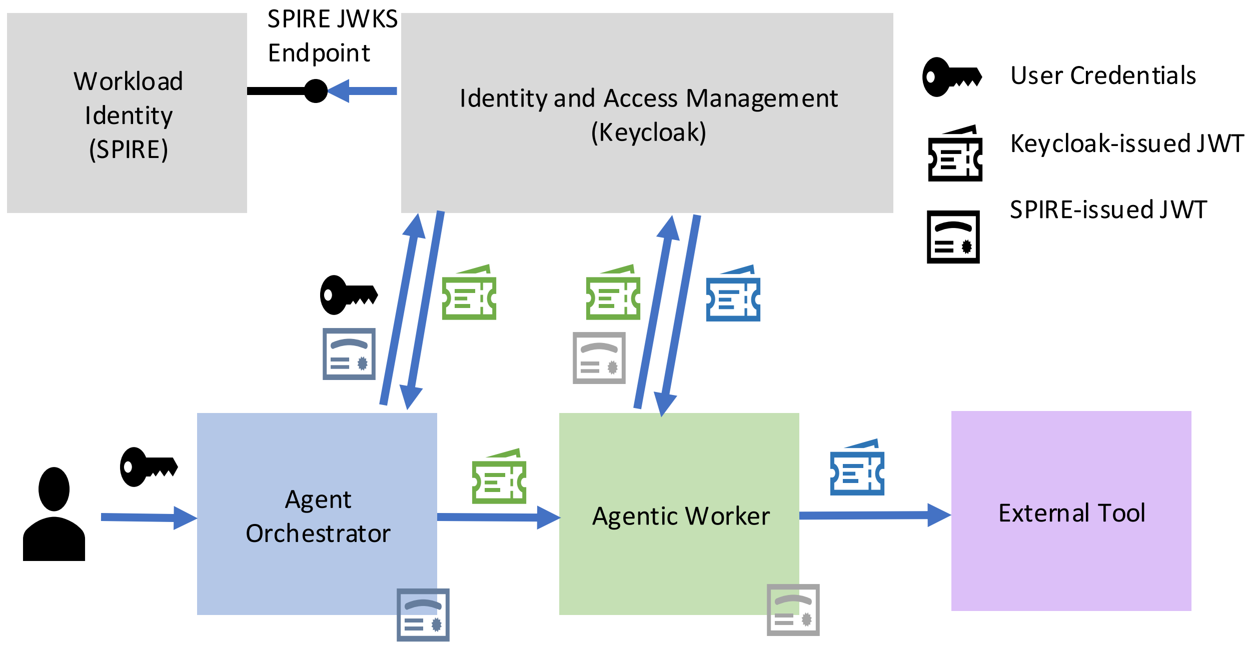
Identity and Authorization Management Summary

Challenges:

- Agents need to perform actions on behalf of users
- Static credentials (e.g., API Keys) violate zero-trust principles
- Need to give agents just the right set of permissions to perform an action

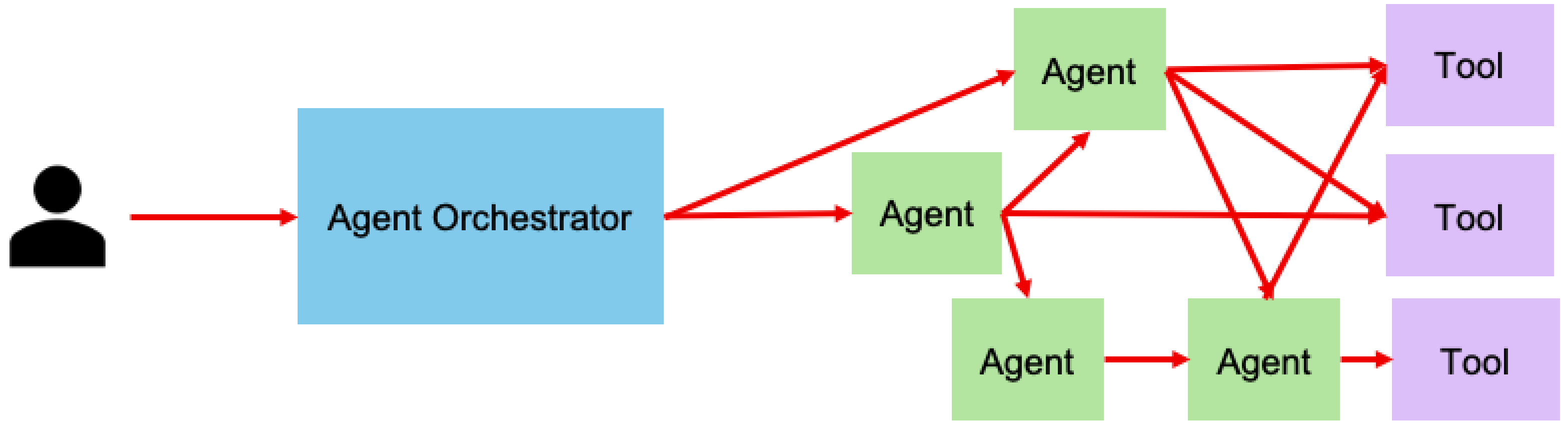
Approach:

- Leverage standardized approaches for workload identity (SPIFFE/SPIRE)
- Token Exchange: leverage identity and access management (Keycloak)

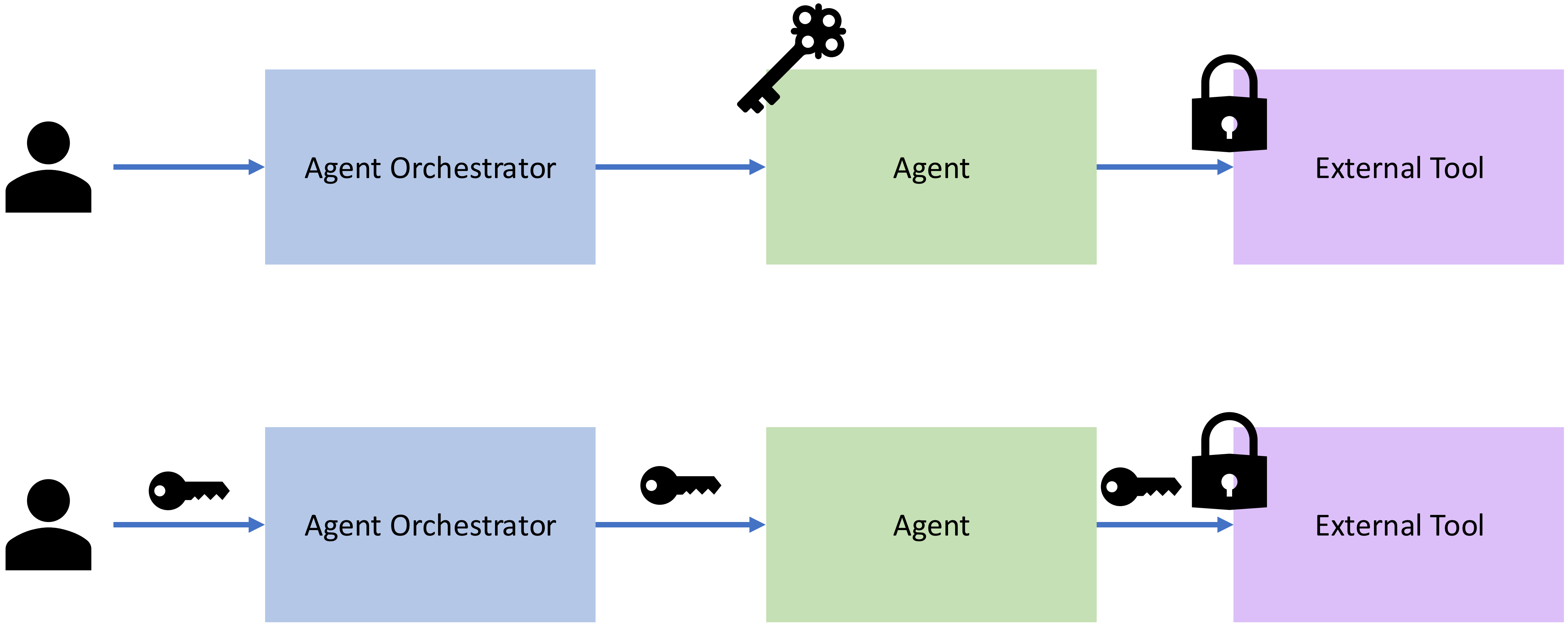


Background

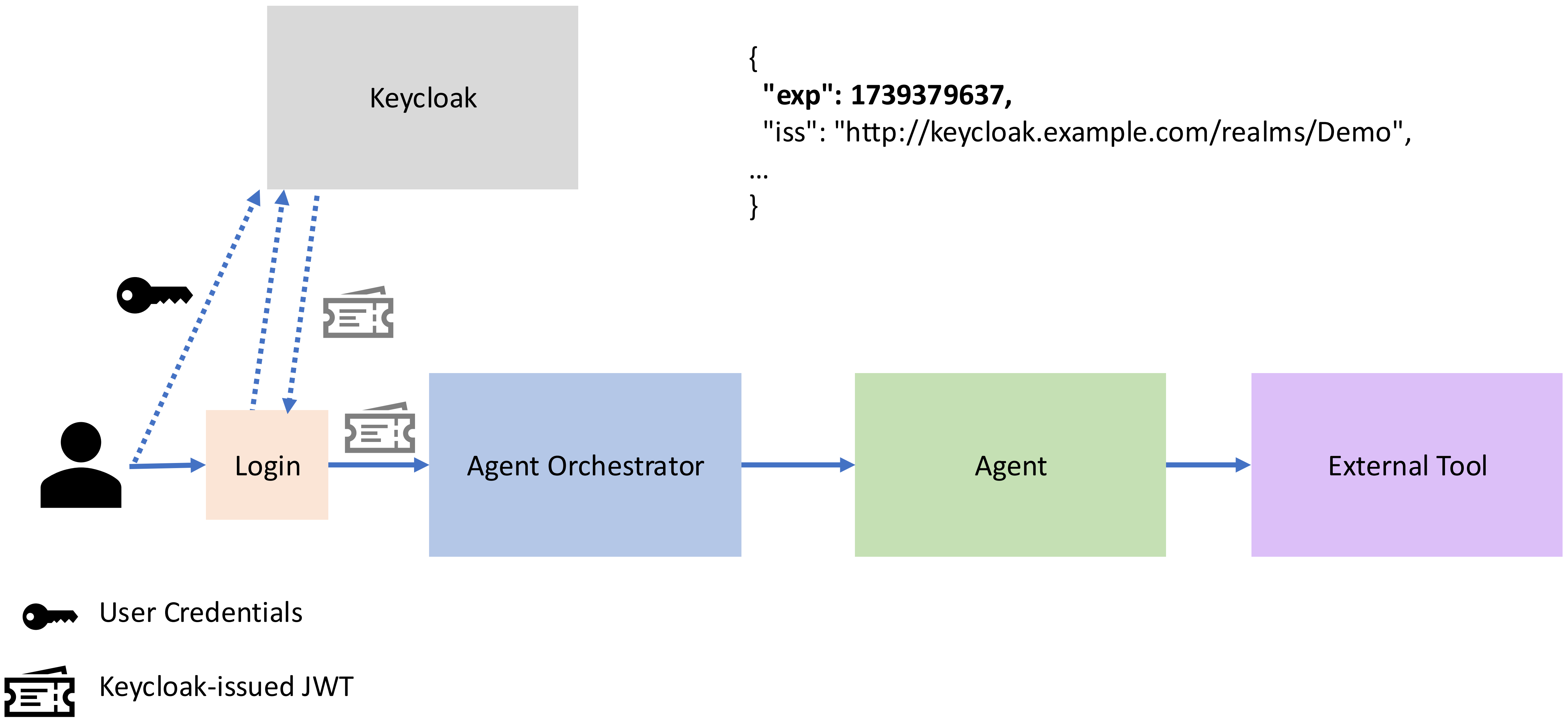
- In agentic applications, transaction flows are more **dynamic** than ever
  - Users calling agents
  - Agents calling tools on behalf of users
  - Agents calling agents



What we’re avoiding: “workloads act as users”



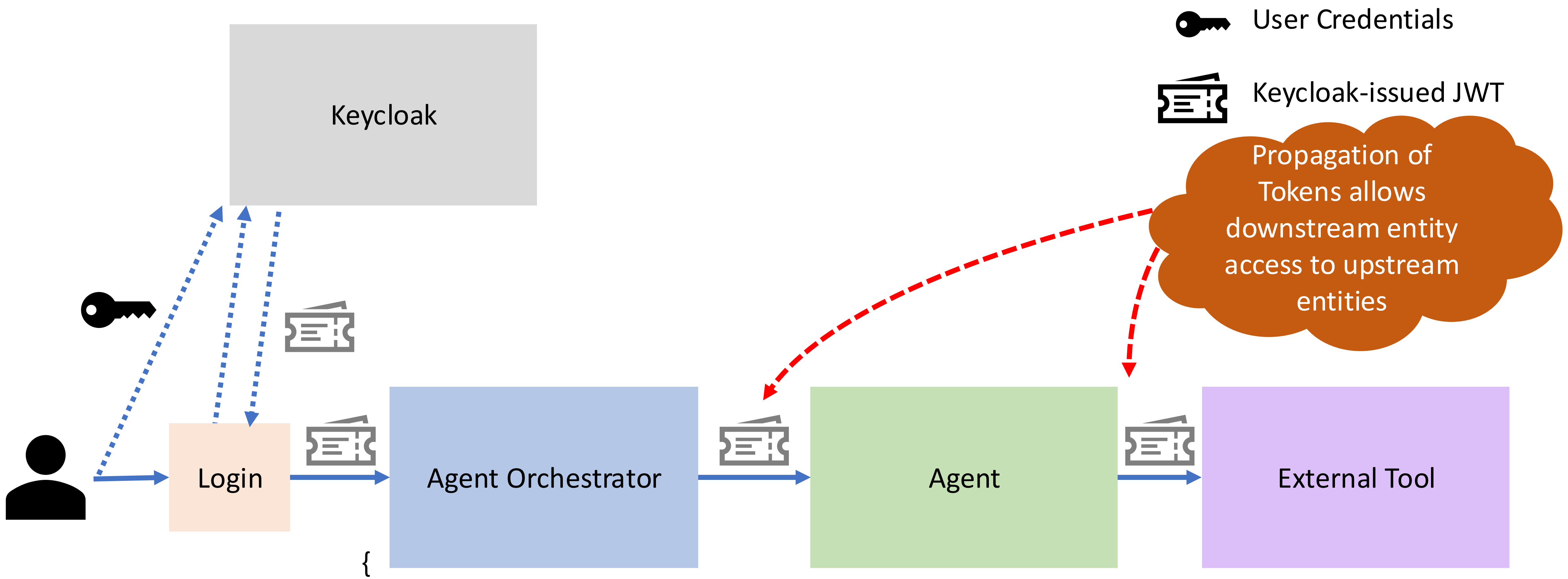
OAuth2.0 for short-lived user delegation



```
{
  "exp": 1739379637,
  "iss": "http://keycloak.example.com/realms/Demo",
…
}
```

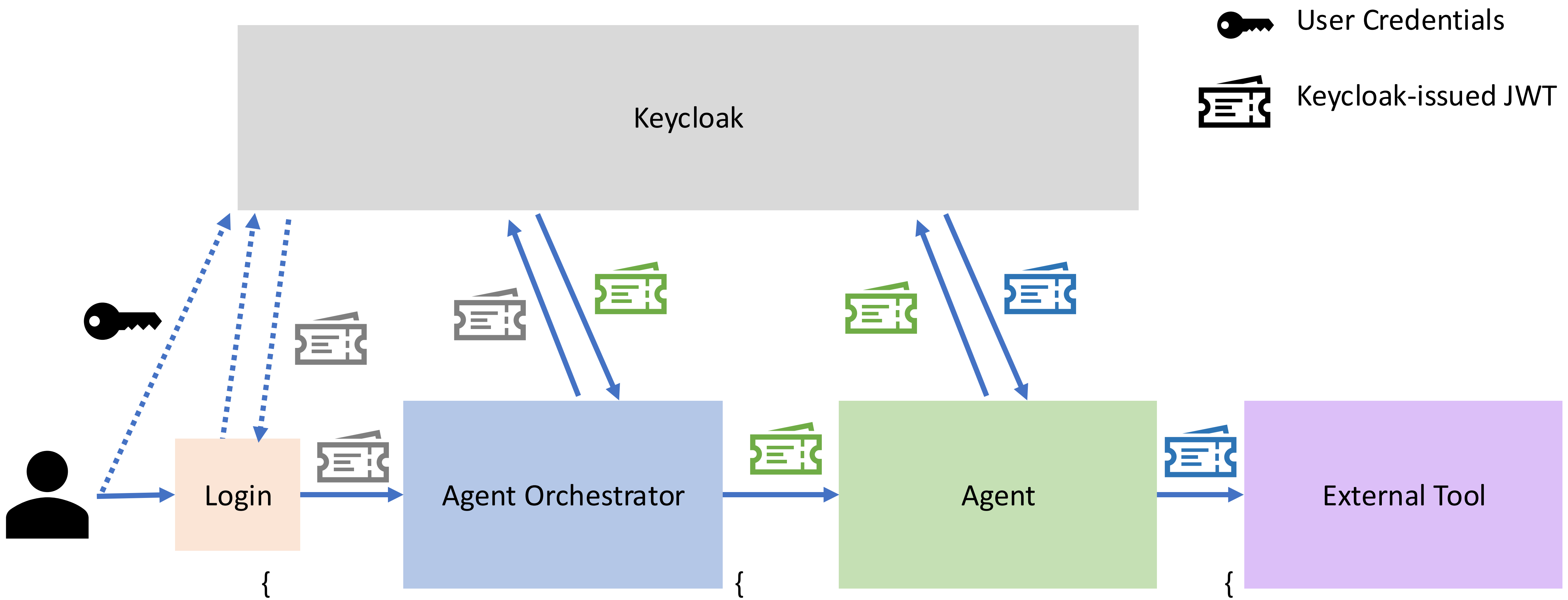
Passed access tokens should be **minimally-scoped**.

What we're avoiding: token passthrough



```
{
  "exp": 1739379637,
"aud": ["Agent Orchestrator", "Agentic Worker", "External Tool"],
"azp": ["Login"],
}
```

Token Exchange



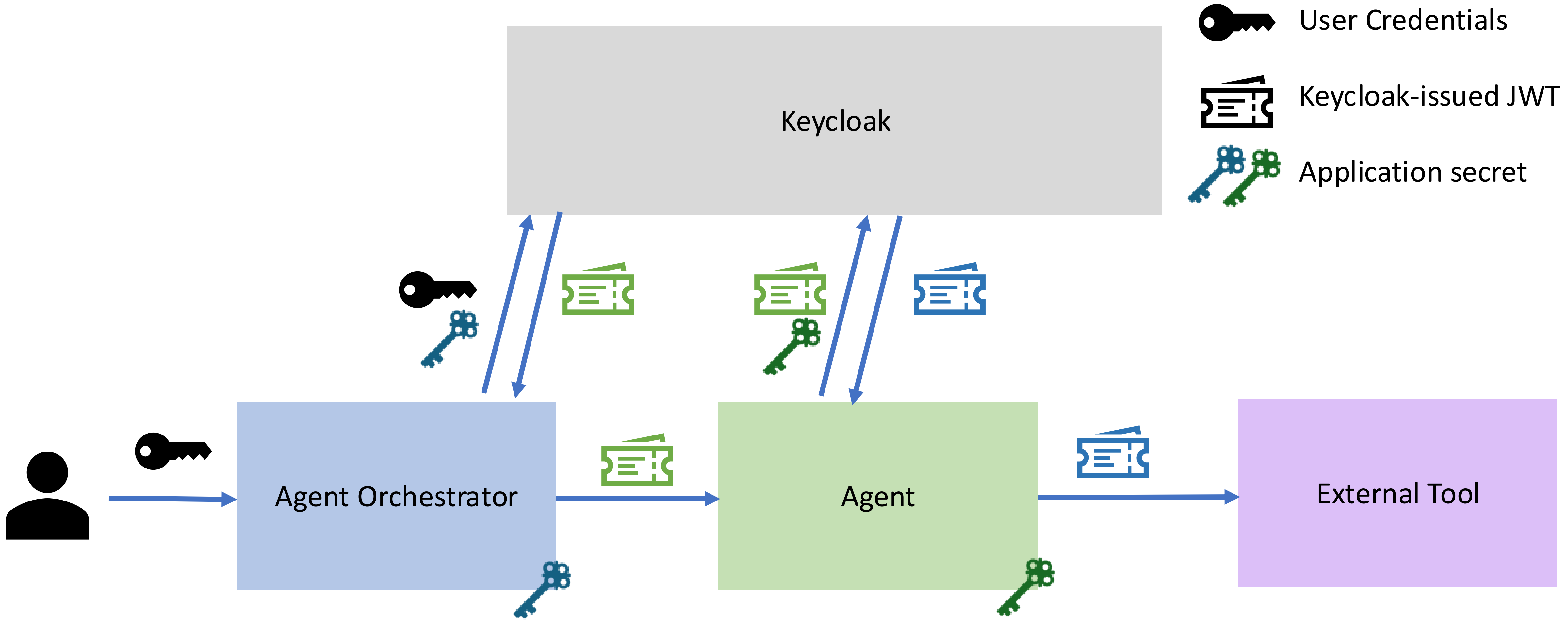
```
{
 "exp": 1739379637,
 "aud": "Agent Orchestrator",
 "azp": "Login",
}
```

```
{
 "exp": 1739379637,
 "aud": "Agentic Worker",
 "azp": "Agent Orchestrator",
}
```

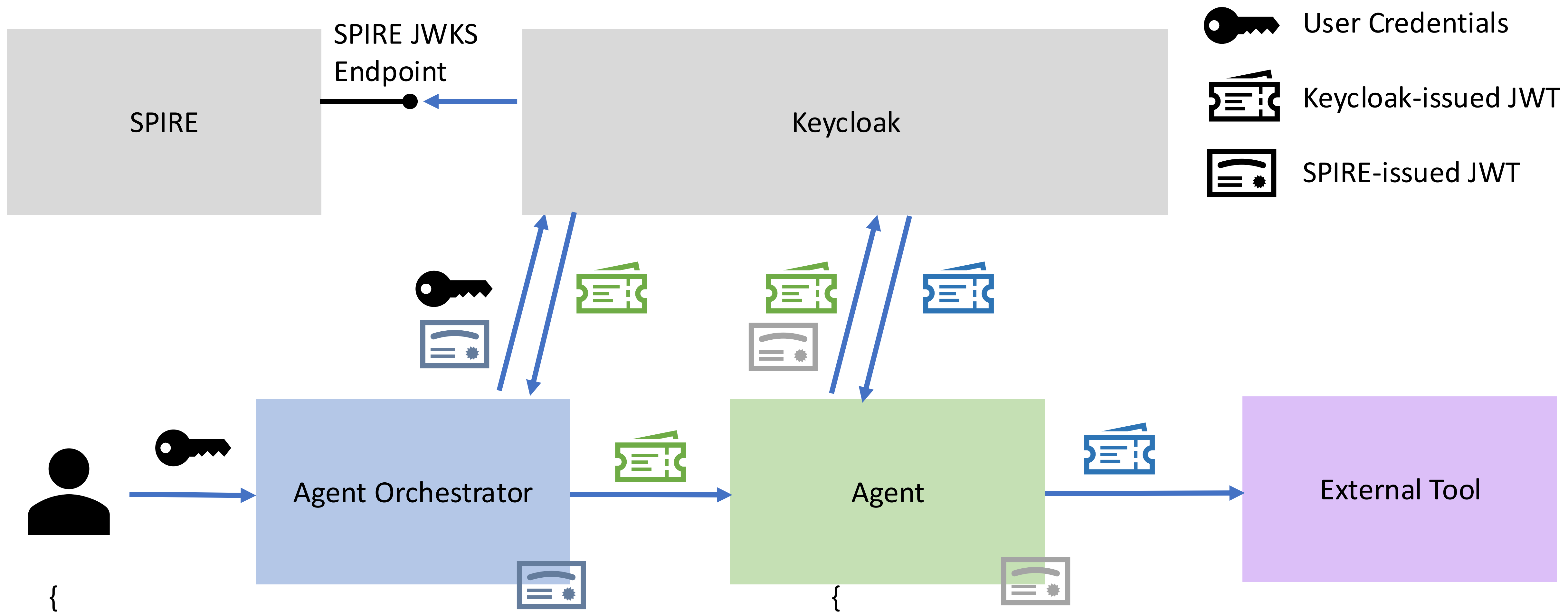
```
{
 "exp": 1739379637,
 "aud": "External Tool",
 "azp": "Agentic Worker",
}
```

Workload credentials should be **dynamic**.

What we're avoiding: static secrets



Workload Authentication with SPIRE

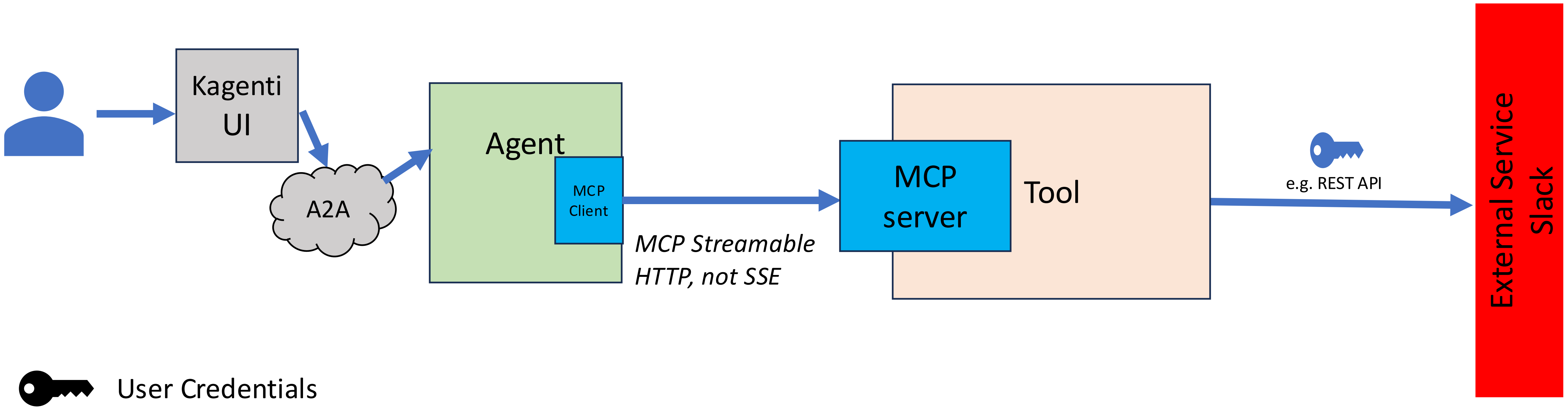


```
{
  "exp": 1739379637,
  "iss": "http://spire.example.com/oidc-discovery",
  "sub": "spiffe://example.com/agent-orchestrator",
}
```

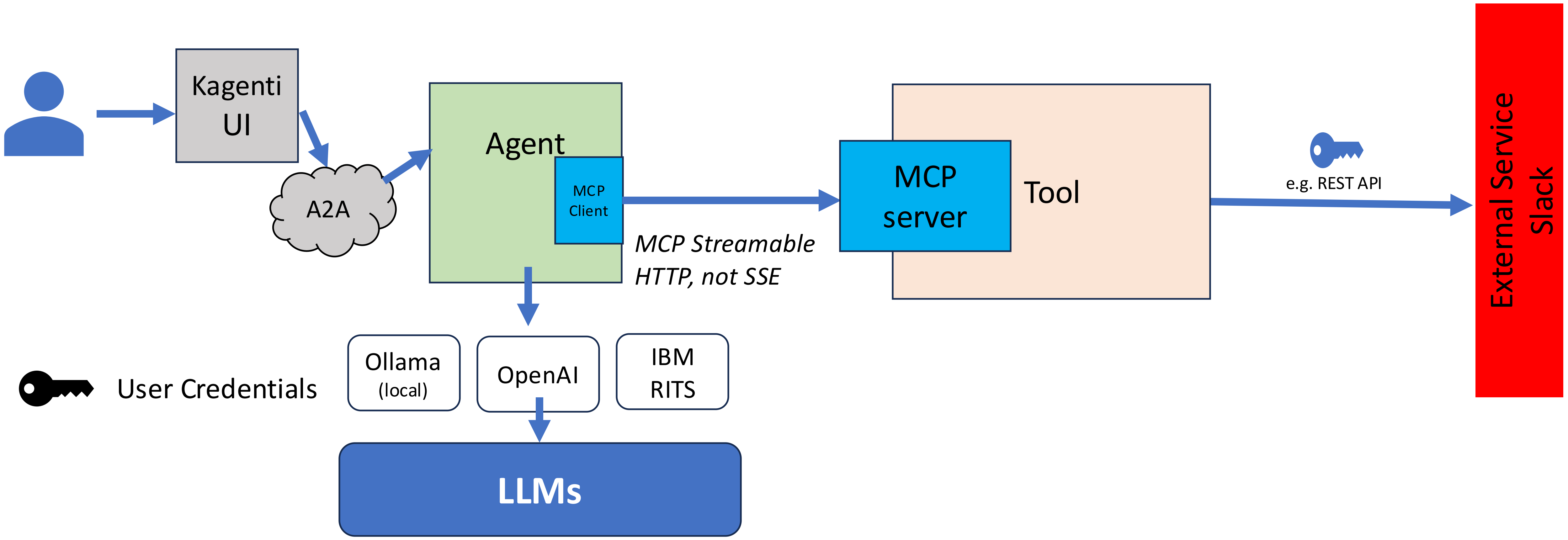
```
{
  "exp": 1739379637,
  "iss": "http://spire.example.com/oidc-discovery",
  "sub": "spiffe://example.com/agent-worker",
}
```

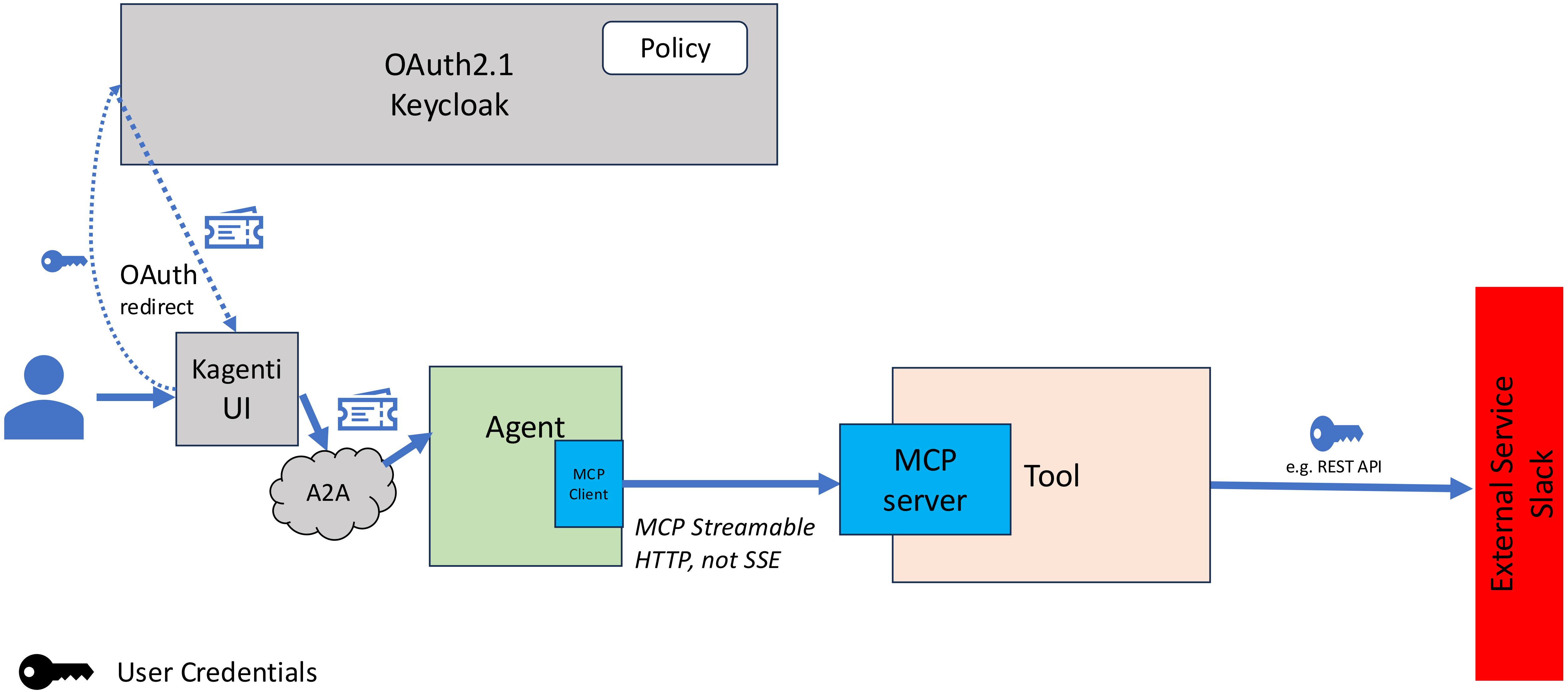
How this fits into a Kagenti platform

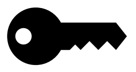
Kagenti before authn/authz



Kagenti before authn/authz

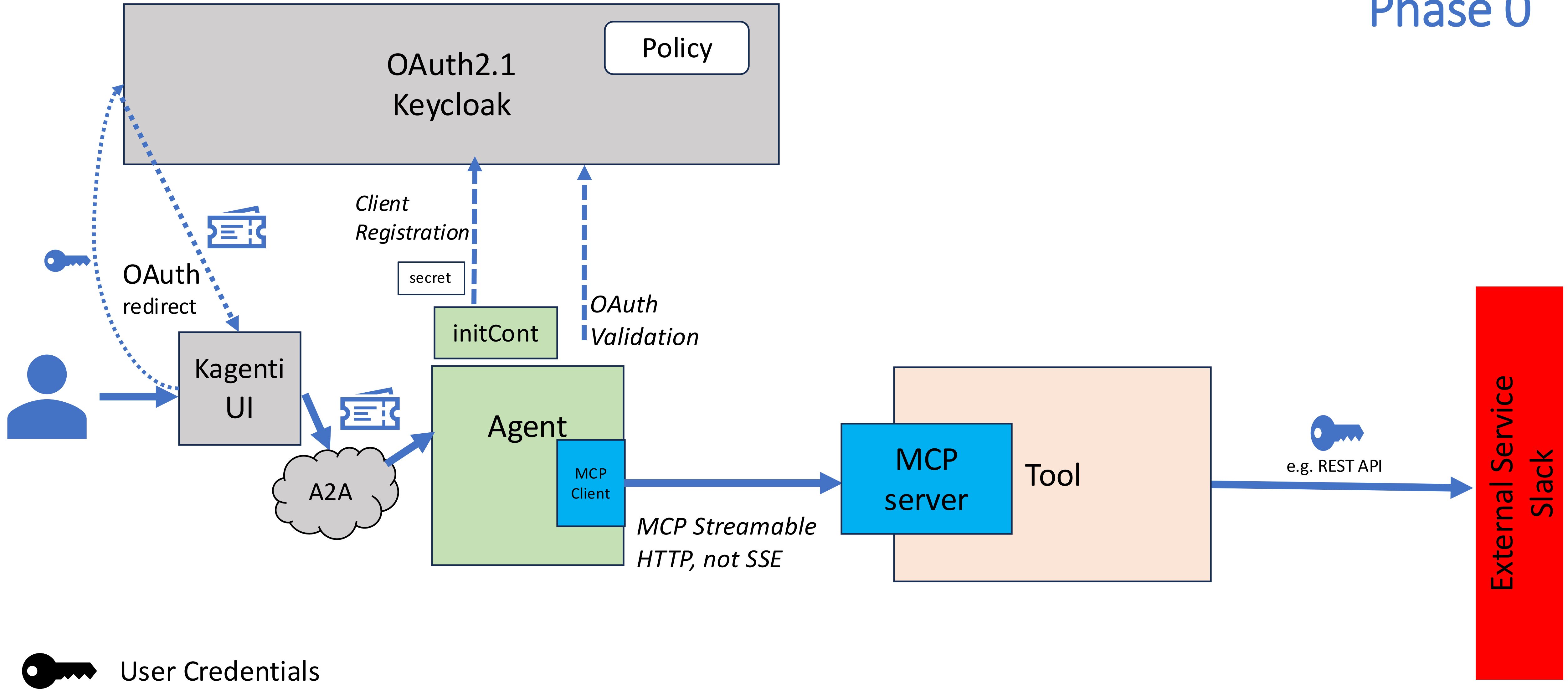




 User Credentials

Keycloak-issued JWT

Phase 0



User Credentials

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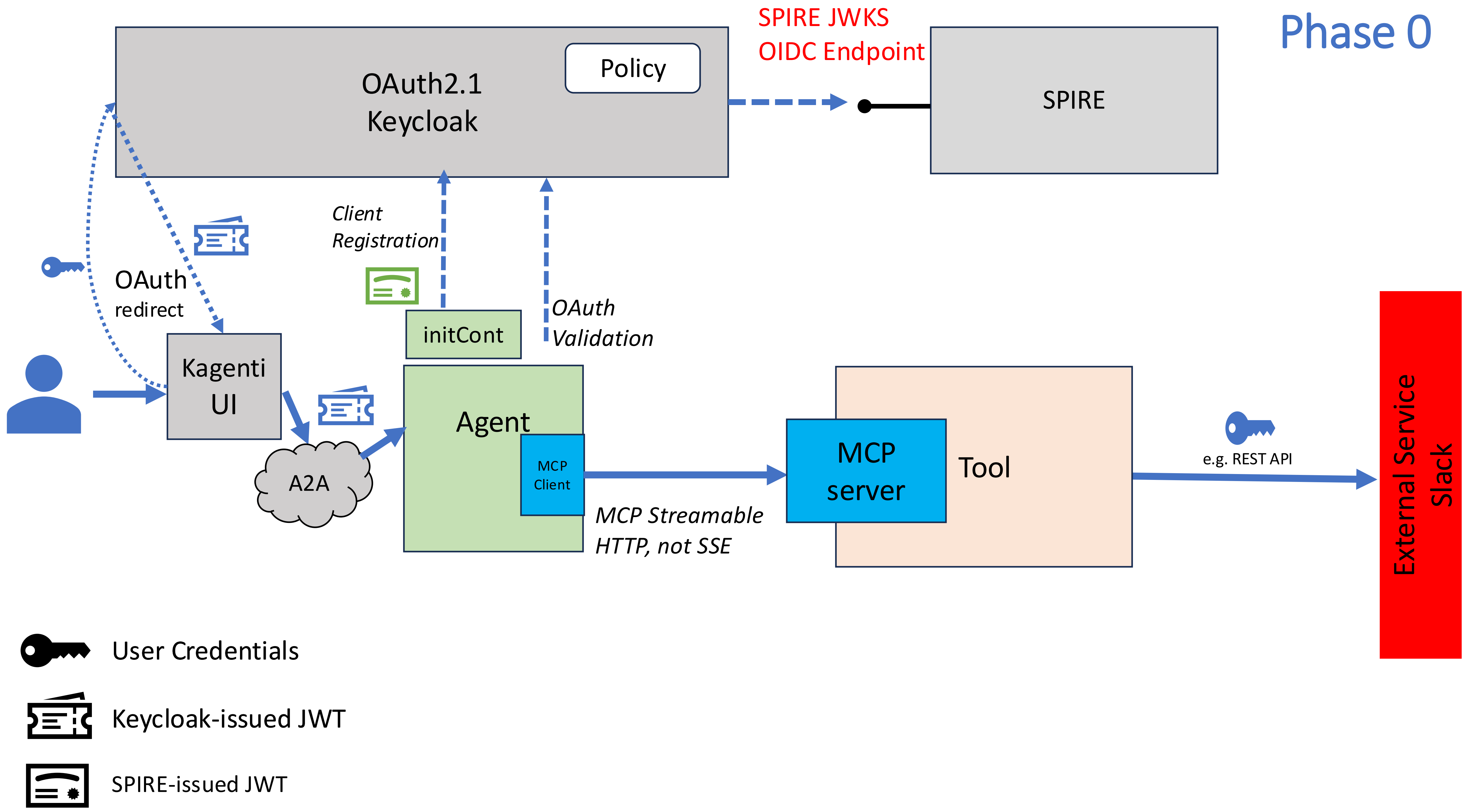
OAuth2.1
Keycloak
Policy
SPIRE JWKS
OIDC Endpoint
SPIRE
Client
Registration
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initCont
Kagenti
UI
A2A
Agent
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MCP Streamable
HTTP, not SSE
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server
Tool
e.g. REST API
External Service
Slack
User Credentials
Keycloak-issued JWT
SPIRE-issued JWT

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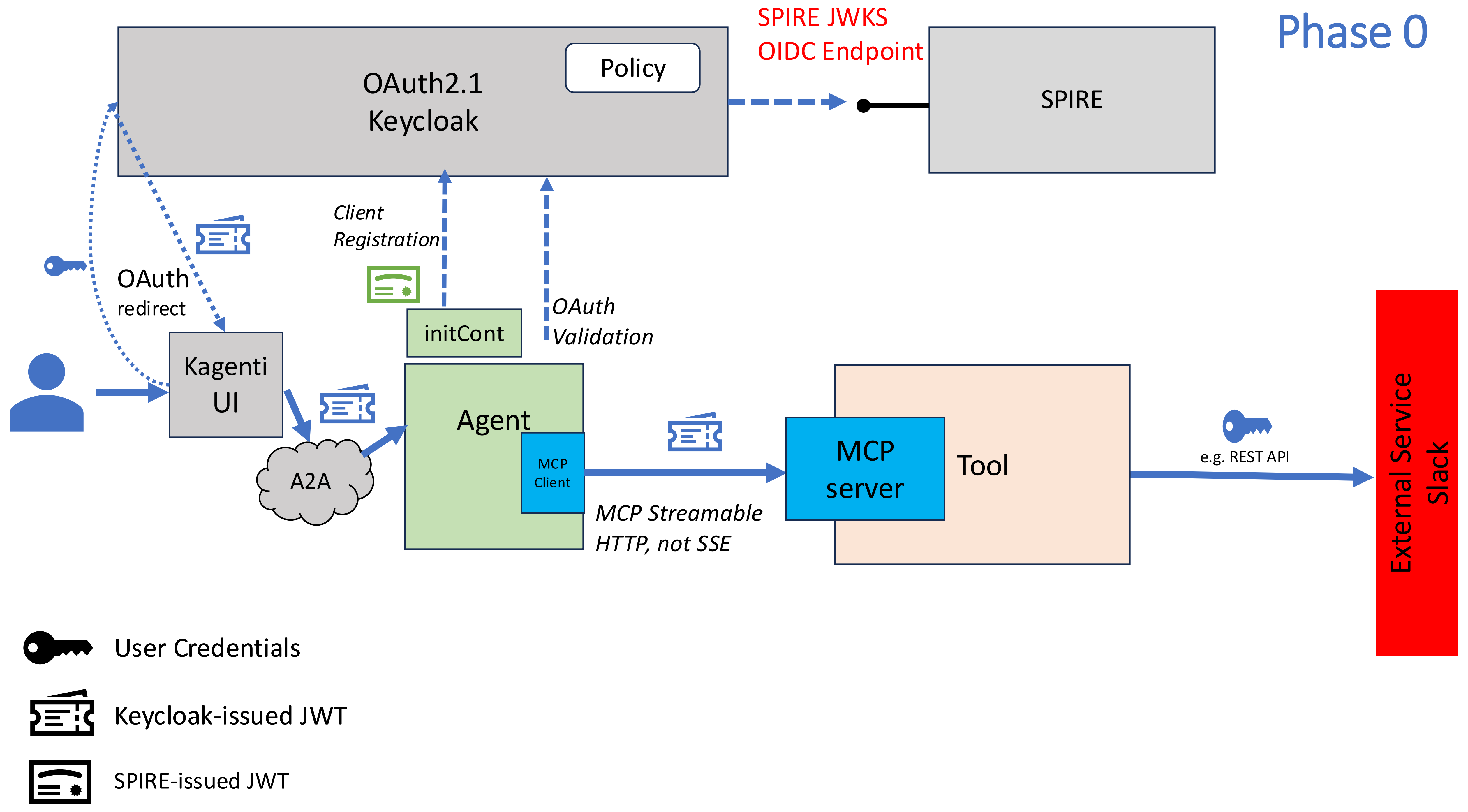
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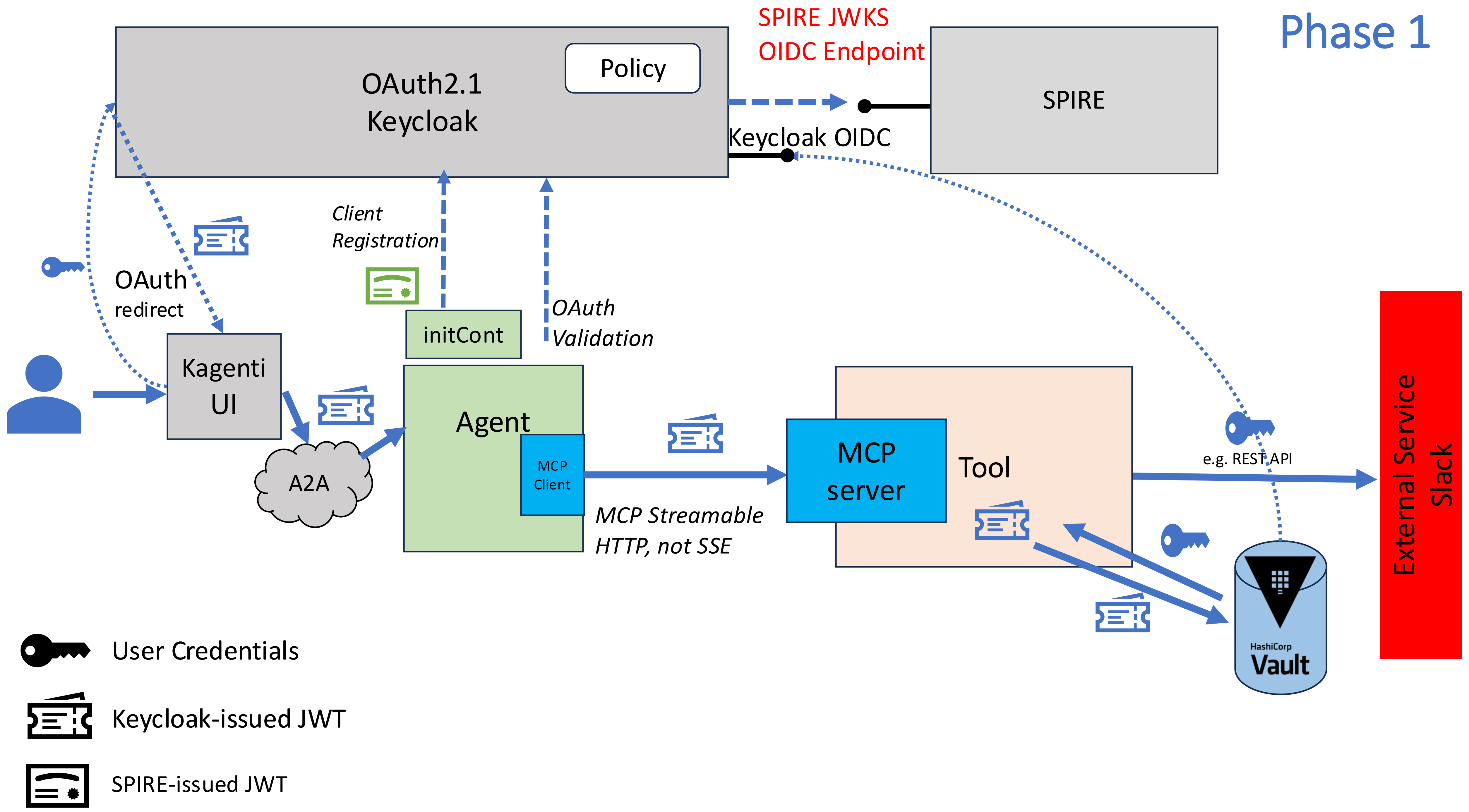

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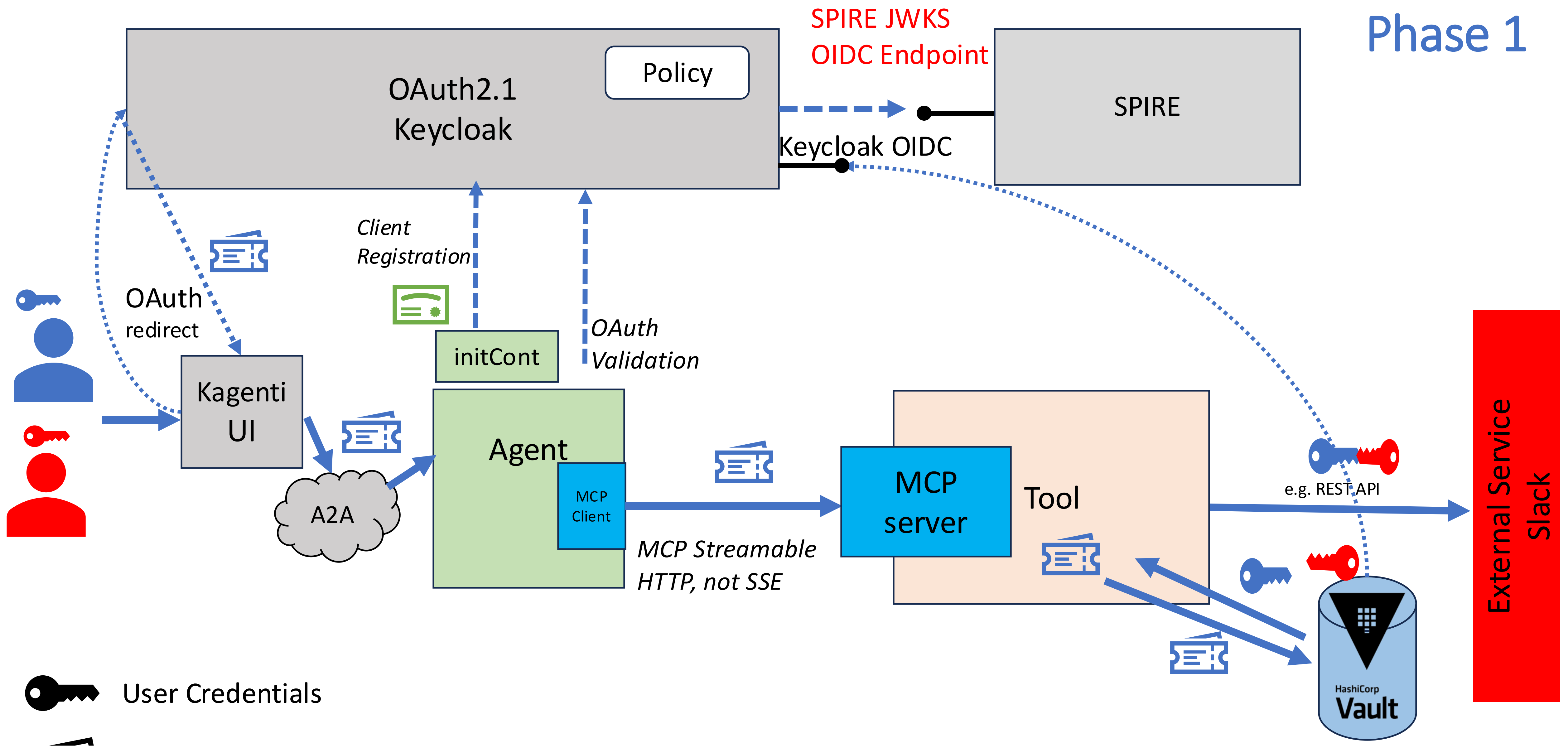

User Credentials

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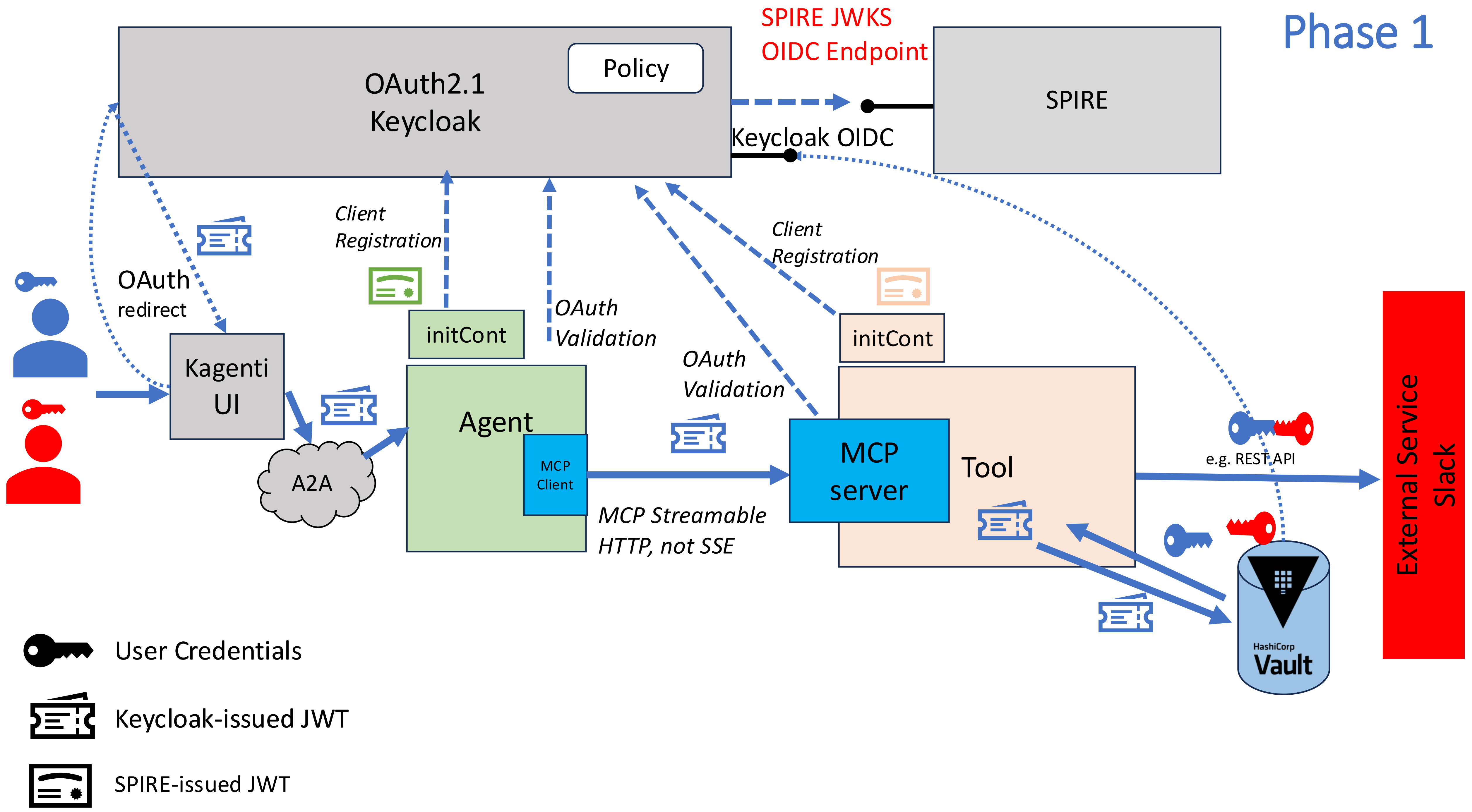
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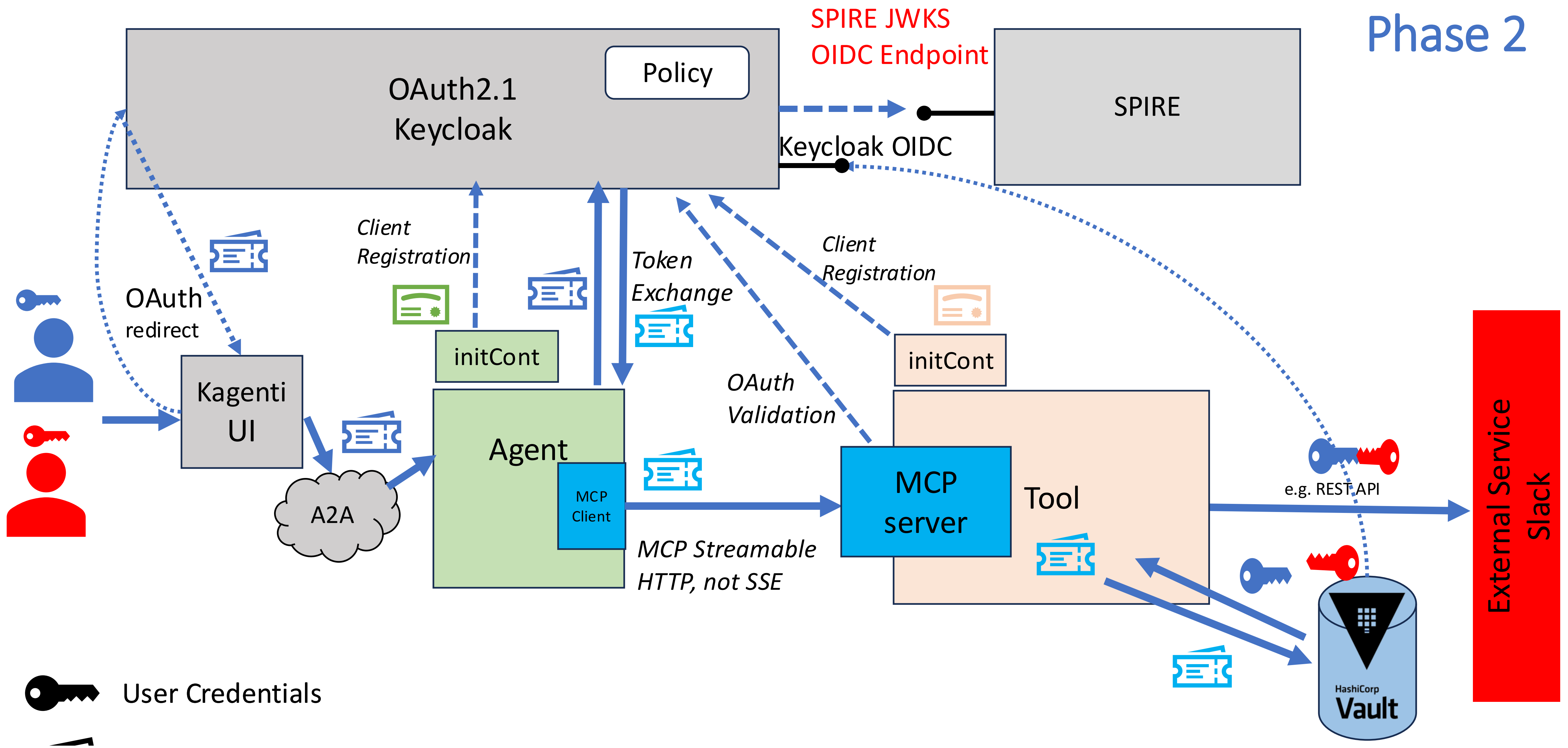
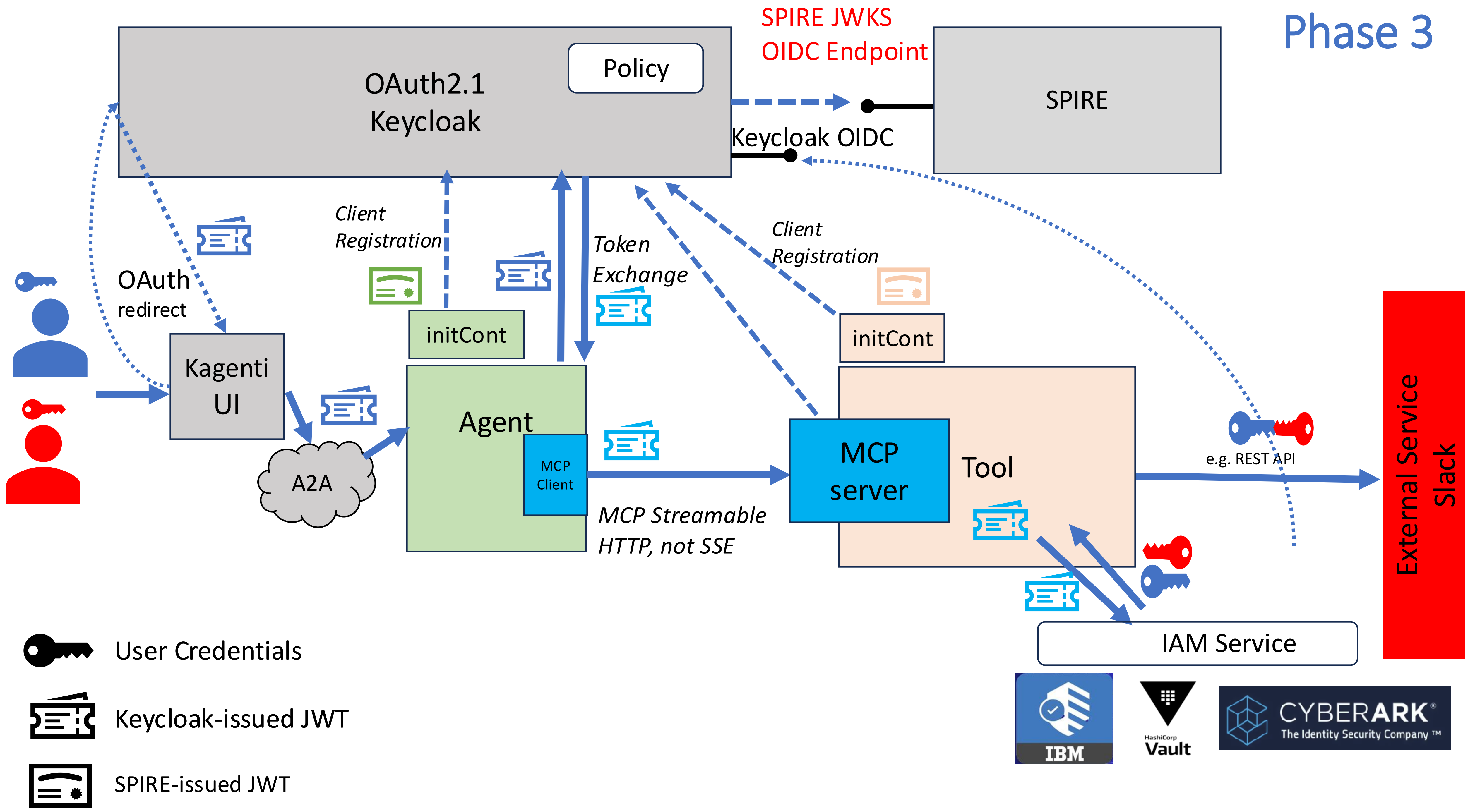


🔑 User Credentials

🎫 Keycloak-issued JWT

▭ SPIRE-issued JWT

Phase 3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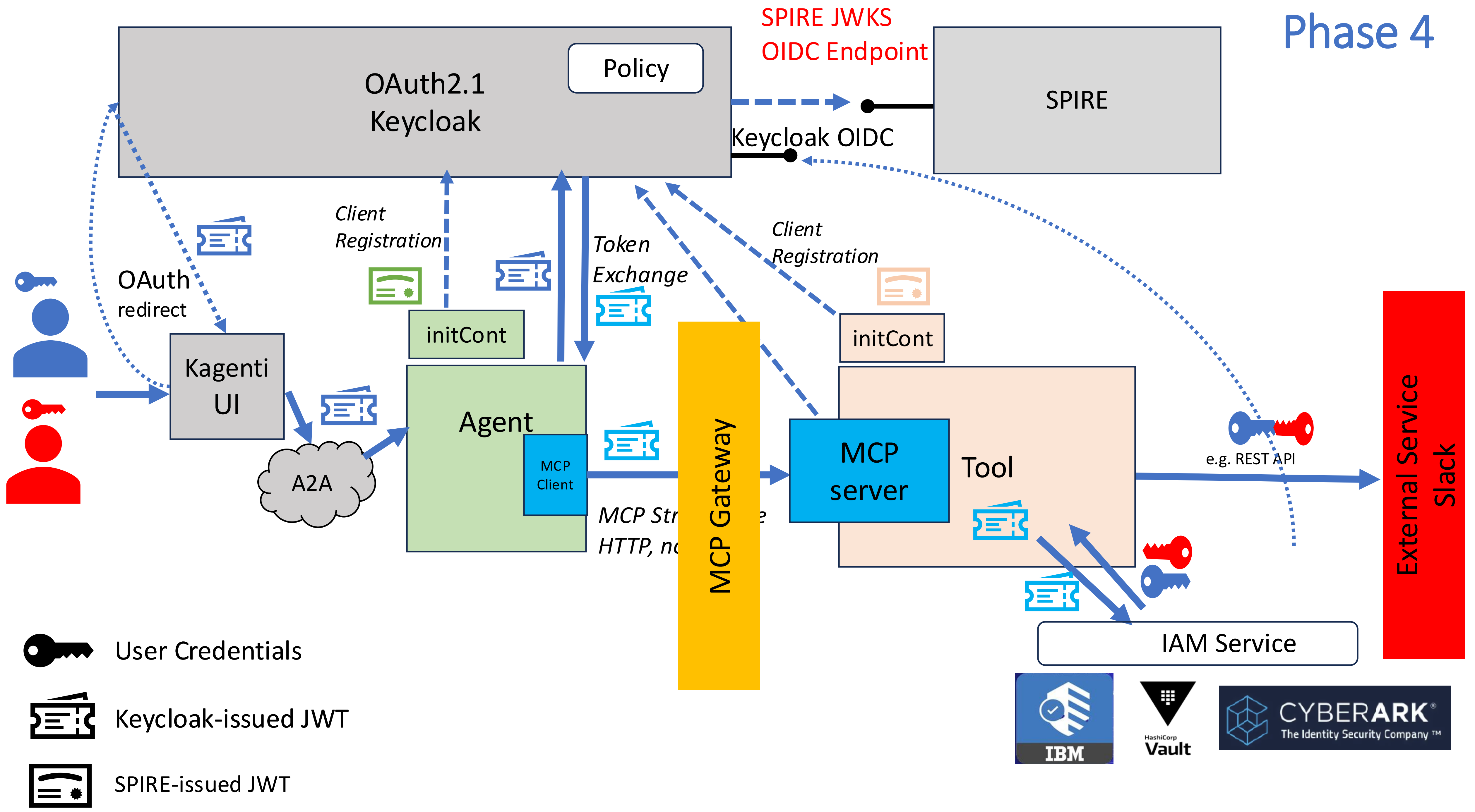
Phase 4



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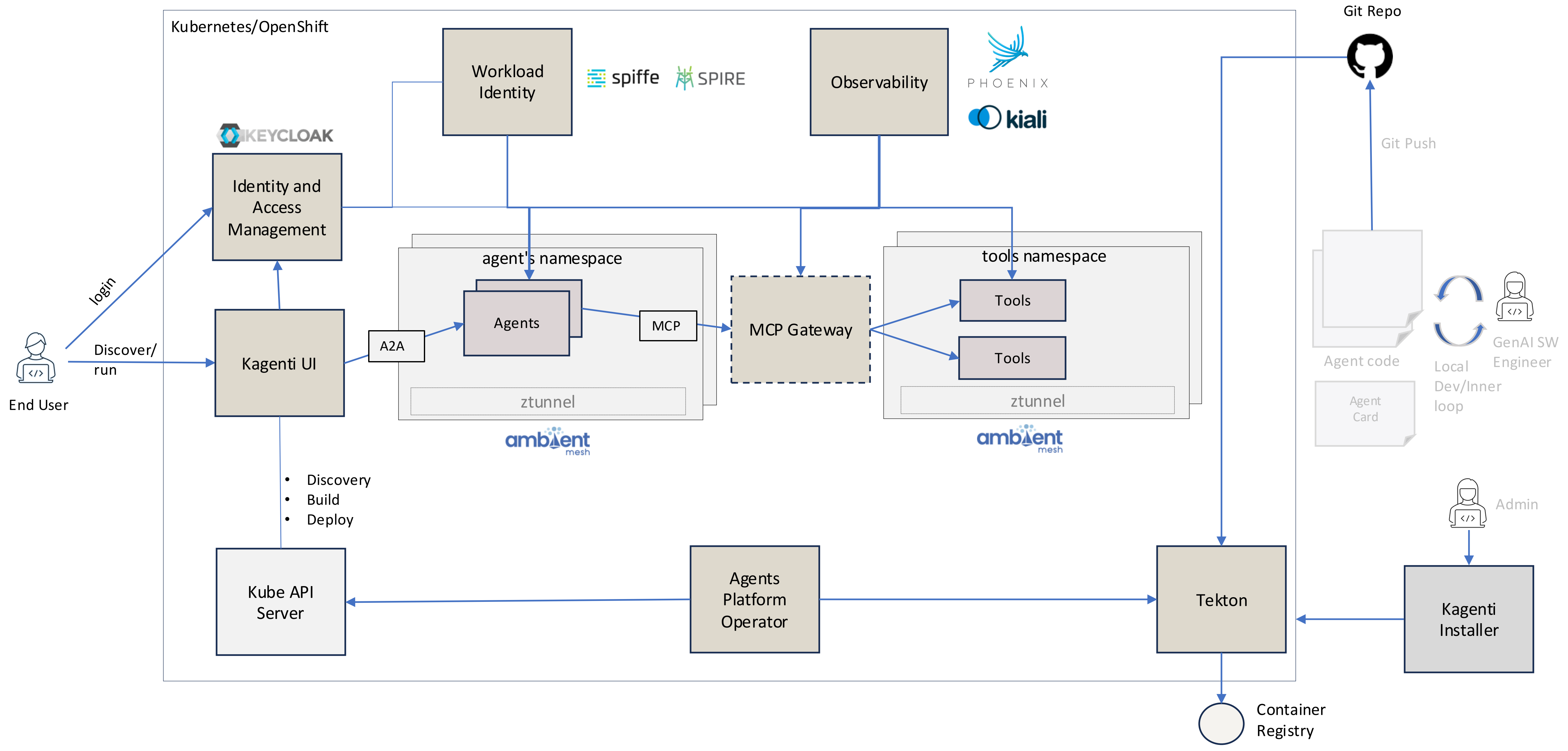
Kagenti – Putting it all together


Kubernetes/OpenShift
Workload Identity
spiffe
SPIRE
Observability
PHOENIX
kiali
KEYCLOAK
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agent's namespace
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ztunnel
ambient mesh
MCP Gateway
tools namespace
Tools
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Kagenti UI
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Build
Deploy
Kube API Server
Agents Platform Operator
Tekton
Git Repo
Git Push
Agent code
Agent Card
Local Dev/Inner loop
GenAI SW Engineer
Admin
Kagenti Installer
Container Registry