AT&A Multivendor Discovery

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Status	DRAFT (Expect major changes. Feedback welcome).

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Introduction

This document describes making Asset Tracking and Analytics (AT&A) multivendor instead of the Cisco only product that it is today. It is a high-level document and the intention is affected teams create lower-level designs as required.

This document outlines a target (aspirational) design. This will form the basis of transition designs - incremental steps toward the final design that provide value and can be implemented within a suitable period (e.g. a SAFE program increment).

This document assumes the reader is familiar with basic network auto-discovery concepts is intended for internal use only.

Requirements

Baseline

AT&A is a service that auto-discovers network devices in client environments to:

1. Help regions and countries verify or provide the client devices provided by a client during the transition of MNS, MSEN or Uptime (day 1).
2. Correct or update the list of network devices in an existing service, such as part of a periodic audit (day 2).
3. Provide data for consulting or professional services engagements.

TODO
Describe how AT&A works today, including the Cisco PSS collector integration into CSAP.

Business

The challenges with the existing AT&A implementation include:

1. AT&A is Cisco only. Non-Cisco devices are removed before the results are available. This is a common feature request for AT&A and one of the major obstacles blocking its wider introduction.
2. Cisco has decided to reduce support for the Cisco Partner Support Service (PSS) collector. It will likely be end-of-lifed soon, meaning the central technology for the current AT&A implementation will no longer be available.
3. It can take several weeks to get a Cisco PSS license and configure the collector appliance correctly. This is the single biggest piece of transition in terms of time. Reducing this directly contributes to decreasing time to value for the client and time to revenue for Dimension Data.

The goal of this feature is to make AT&A support devices other than just Cisco. An analysis of network auto-discovery tools was completed and documented at AT&A criteria for replacing the Cisco Collector with multivendor tool, recommending NetformX. Specifically, an engine-only installation that can run in a container and is configured programmatically. The Cisco PSS collector also provided a means to send the results out of the client environment and for Dimension Data to retrieve them. Removing this creates a gap that the new design must address. Changes outside these should be minimal to reduce rework.

In general:

1. AT&A currently has no defined metrics that need to be met or exceeded. However, installation and activation cannot be longer than it is today.
2. The existing AT&A functionality requires Internet connectivity. This requirement remains unchanged.
3. If practical, the solution should enable a LAER (Land Adopt Expand Renew) capability, allowing easy up selling of a client to other Dimension Data services such as MNS or MCS through reuse of components or data.

Out of scope:

1. Analyzing the differences in data values and format provided by NetformX to those provided by the Cisco PSS collector and the impacts on reports or other uses of the data. This will need to be investigated separately. This is captured as a risk.
2. Using SitePod to host NetformX and other required products adds an additional cost to delivering AT&A. An analysis of the commercial impact of the new design is out of scope. This is captured as a risk.
3. Providing a single, authoritative, supported source of EoX (end of warranty, end of service, end of support, etc) data. CSAP stores details for five vendors including Cisco today and is used to replace the EoX data received from Cisco. The plan is for this to continue with the data received from NetformX, including for non-Cisco devices where EoX data is available.

TODO
Includes:

1. Who will operate the service? What are their expectations around transition? Operation (e.g. error handling, credential management, patching, backup/restore of NetformX configuration)? Are there any data sovereignty concerns?
2. How is product quoted (e.g. Direct) and the contract managed (e.g. SAP)? What is the flow into and out of AT&A? Should this integration be automated?

Stakeholders

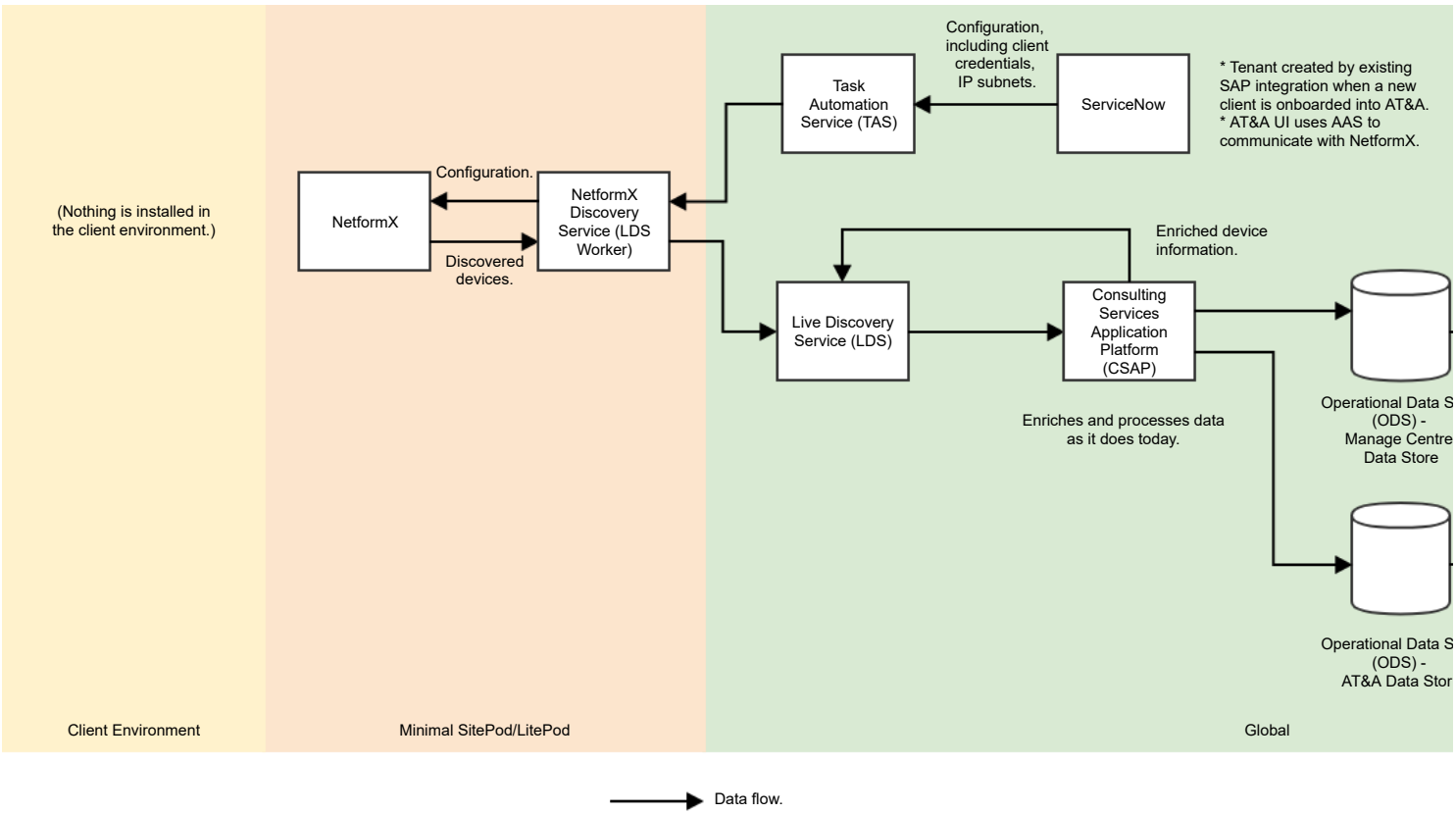
Name	Team	Architecture Role	Architecture RACI
@ Anthony Langsworth (Group)	Digital Platform Architecture (DPA)	Solution Architect	Responsible
@ Belinda Blake (Group)	Ganga Shark	Product Owner	Accountable
@ Georg Wenhold (Group)	DevStar	Product Manager	Accountable
@ Derrick Plank (Group)	Optimization Prime	SACM Owner	Accountable
@ Pieter Smit (Group)	Crazy Horse	Product Manager	Accountable
@ Marc Kelchtermans (Group)	DevStar	Software Architect	Consulted
@ Aram Mirzadeh (Group)	Group CTO Team	Subject Matter Expert (CSAP)	Consulted
@ Andre Van Schalkwyk (Group)	-	Subject Matter Expert (Networking)	Consulted
@ Koen Leurs (Group)	Crazy Horse	Subject Matter Expert (ServiceNow)	Consulted
@ Eugene Mitiachev (Group)	Sirius Analyzers (Manage Center)	Subject Matter Expert (UX)	Consulted
@ Stuart Campbell (Group)	White Rabbits	Subject Matter Expert (LDS)	Consulted
@ Maxine Purchase (Group)	Ganga Shark	Scrum Master	Informed
@ Justin Elms (Group)	DevStar	Scrum Master	Informed
@ Otto Du Plessis (Group)	?	?	?
Francois ?	?	?	?

TODO
Add GDC representative and others.

Design

Solution Concept

A target (aspirational) solution concept is given below



Key points:

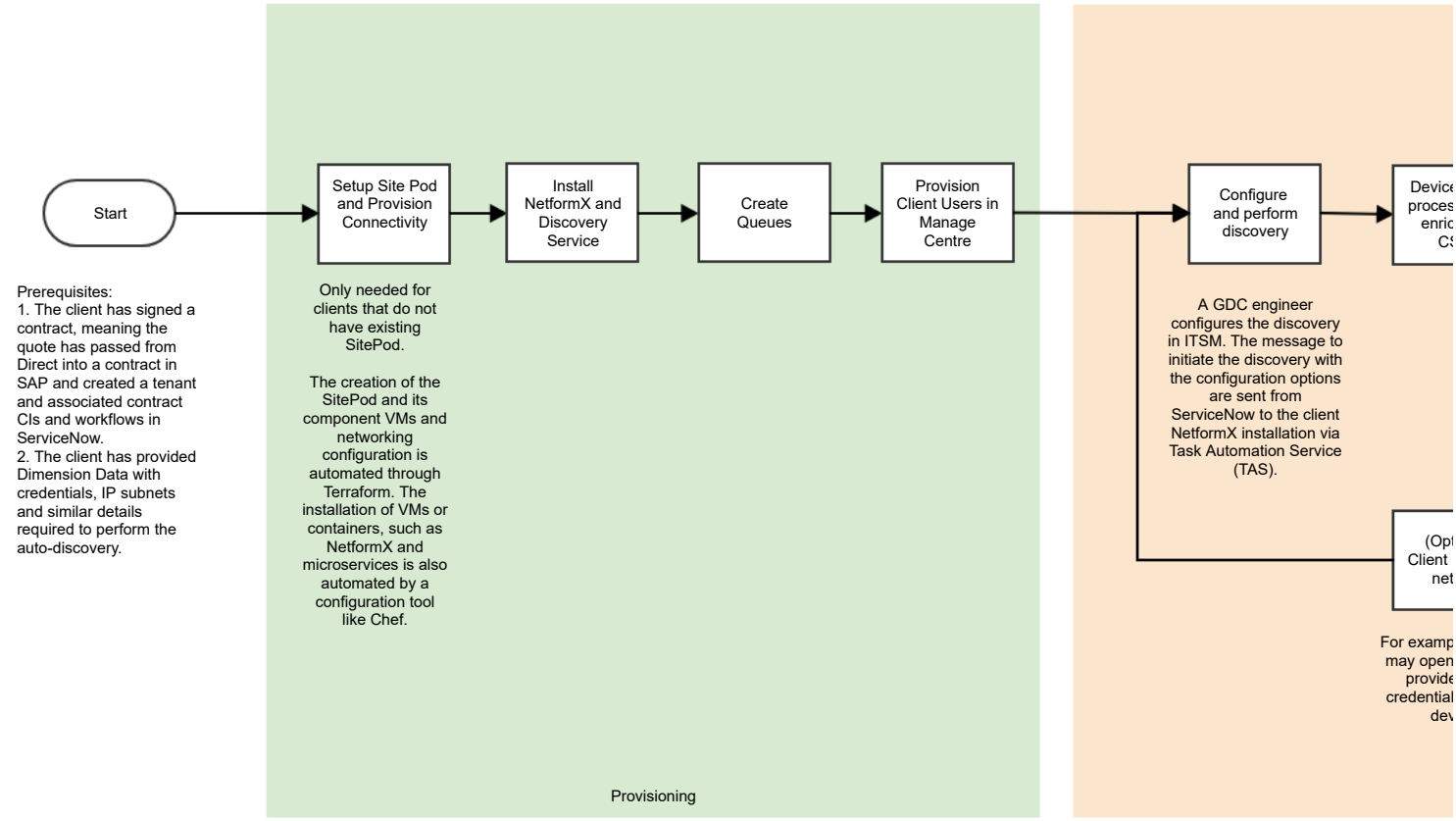
1. Nothing is installed in the client environment. This differs to the previous design where the Cisco PSS collector was installed.
2. NetformX is installed in a minimal SitePod/LitePod.
    a. The SitePod uses the existing SitePod client connectivity and connectivity into Dimension Data.
    b. Common SitePod components used for managed services, such as BeyondTrust, are not required unless they are used by another service.
3. The SitePod also contains a Live Discovery Service (LDS) worker, a new component that:
    a. Receives configuration from ServiceNow via Task Automation Service (TAS).
    b. Initiates NetformX discoveries either by configuring NetformX to discover on a schedule and/or triggering a discovery on a schedule that the LDS worker maintains.
    c. Gathers the results of the discovery and sends them to Dimension Data via the Live Discovery Service (LDS).
4. The existing UI and automations in ServiceNow are modified to use TAS to send the configuration through to the NetformX Discovery Service.
    a. The configuration includes client credentials (which need to be protected), IP subnets and other details required for NetformX.
5. LDS sends the discovered CIs to Consulting Services Application Platform (CSAP). LDS sends data to ServiceNow today but this is not required.
6. CSAP performs the enrichment and processing it does today then stores the processed data in the in the Operational Data Store (ODS).
    a. The schema in the AT&A and Manage Centre Data Stores in ODS is unchanged.
    b. The enriched device data is fed back into LDS. This means other sources consuming data from LDS, such as ServiceNow in the future, can benefit from these updates.
7. The data in ODS is used to display data in Manage Centre (unchanged) and the exception reports (unchanged).

The advantages of this design include:

1. It follows standards such as LDS, AAS and SitePod. While this adds dependencies on other teams, this has two benefits:
    a. Future integrations with other Dimension Data services is easier. For example, integrating into LDS means putting devices discovered by AT&A into ServiceNow just requires directing discovered devices into ServiceNow. Using SitePod means we reuse existing client connectivity if the client has existing Dimension Data services or transitions to new Dimension Data services in the future.
    b. Enhancements to common services benefits AT&A.
2. Assuming the data discovered by NetformX is comparable to the Cisco PSS collector, the existing CSAP, ODS and Manage Centre portions are unchanged.
3. The move from the Cisco PSS collector will likely reduce the time between a discovery being initiated and the results being available. The current AT&A implementation waits 24 hour after discovery to get the results because the processing by Cisco can take a long time. The new design will make the discovery results available as soon as they are produced by NetformX and uploaded into CSAP.

Service Lifecycle

The high level process from an operations perspective is:



The process is split into three main phases:

1. Provisioning, which includes setting up a SitePod, installing NetformX and supporting services, creating EMR queus and provisioning client users in Manage Centre.
2. Discovering client devices. This is an iterative process.
3. Deprovisioning the service once the engagement is complete. This is critical to minimize costs.

Work Packages

	Team	Description
1	DevStar	Create automated installation (e.g. container) for NetformX for SitePod. This includes automated deinstallation to remove ongoing SitePod costs and to ensure NetformX license counts are not exceeded.
2	DevStar	Create NetformX Discovery Service, including TAS and LDS support.
3	Mixology	Creation of RabbitMQ (EMR) queues for development and testing.
4	Crazy Horse	Modify existing AT&A configuration UI and automations in Manage Centre to use the Task Automation Service (TAS).
5	White Rabbits	Modify LDS to support updating ODS as well as ServiceNow.

TODO
Expand on and add remaining work packages.

Architectural Risks

The architectural risks (things that may require significant changes to the architecture) are:

	Status	Description	Mitigation(s)
1	Raised	**NetformX data differs significantly from Cisco PSS data** While NetformX works with many vendors to ensure the data it produces is consistent and aligns with vendor's naming conventions, it may differ from the format or values that the Cisco PSS collector. Existing reports or automations may assume the Cisco PSS format or values. A detailed investigation of the data used by Manage Centre and other places is out of scope of this architecture work. The impact of this is additional work may be required to normalize or translate the data from NetformX into the format previously provided and/or the reports or automations may need to be changed.	1. (Transfer) Request that NetformX update their tool to support the formats or values we require. However, this may impact other users of NetformX. 2. (Mitigate) Translate the data gathered from NetformX into the format previously supplied by Cisco PSS collector. 3. (Mitigate) Modify any reports, automations or similar things impacted by new data. However, this may cause problems if they also need to work on older, Cisco PSS collector derived data.

	Status	Description	Mitigation(s)
2	Raised	**Design is more expensive than the previous version** The commercials of the new design differs from the previous version. The new design uses SitePod for hosting and client connectivity, which adds a monthly cost to the operation of AT&A. However, NetformX is covered by existing enterprise license agreements and the Cisco PSS collector license cost is removed. While unlikely, the worst case impact of this is the new design is uneconomical to run. More likely, the engagement may be limited in time.	1. (Mitigate) Perform a cost analysis to understand the design's impacts on commercials. Make design changes if warranted.

TODO
Add risks as identified

References

1. AT&A tool investigation: AT&A criteria for replacing the Cisco Collector with multivendor tool

No labels