Vendor Support APIs and how Telstra has used them to automate zero touch workflows

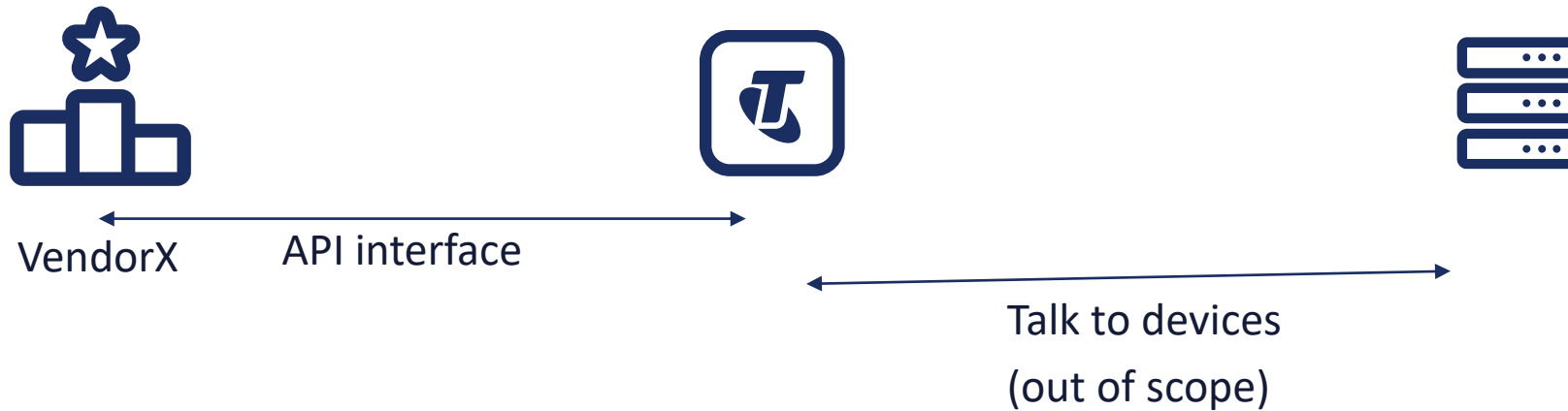Russell Langton – AusNOG 2023

Introduction

- Nearly 20 years in Telstra

- Current role is supporting technical teams and creating automation

- Part of virtual Incident Management group supporting (Domestic) GOC

    - Technical Incident Manager for past 8 years

- Active in beer4peer/slack and edgeIX/discord

- Editor at Telco.news

- First time speaker, Please be nice ☺

General

What is it?

- API communication between company and Vendor.

- Device communication not in scope

  - May be part of the solution but can be done many ways.

VendorX   ←— API interface —→   ←— Talk to devices (out of scope) —→

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General

Why Vendor APIs

- The problem;
  - Raising vendor cases is slow
  - Takes a lot of (human) operator time
    - Need to get device information
    - Need to confirm delivery address
    - Use vendor portal to raise case
    - Back and forth about troubleshooting, Site hours etc.
  - Repetitive
  - How to automatically confirm if supported?
  - Need framework for future Automation/AIOps

General

- Juniper APIs are at https://jnprprod.devportal-aw-us.webmethods.io/portal/apis
- Features;

    - ServiceAsset API – Asset information

    - ServiceCase APIs - Case Management (Create/Close/Update/QueryCase/QueryRMA)

    - ServiceContact API – Contract data

    - EOX APIs – Checking on EoL and EoS data

    - Service Quote API

General

- Dedicated non-prod environment for testing
- Policies:
    - 600 requests/hour
- Security:
    - Authentication via Oauth, ODIC or Client Certificate.
- How to sign up;
    - Onboarding requires form filled out https://onboarding-form-app.juniper.net/
    - Then manually processed

- Cisco Support APIs are at https://developer.cisco.com/docs/support-apis/#!introduction-to-cisco-support-apis/introduction-to-cisco-support-apis

- Features;

  - Automated Software Distribution – Asset information

  - Bug – Find info on bugs

  - Case APIs - Case Management (Summary/Detail, List cases)

  - EOX APIs – Checking on EoL and EoS data

  - Product information – PID and details of asset.

  - RMA – Query RMA

  - Serial number information – Find if that serial# is supported.

Note:
Create Case **not** via Support API
But uses Smart Bonding interface

- Policies:
  - 600 requests/hour
- Security:
  - Authentication via oAuth – using self-serve client key and secret.

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General

- How to sign up;
  - 1) Get Company Administrators added to Cisco Services Access Management
    - Cisco account reps need to request for Smart Net Total Care (SNTC) accounts.
    - Support accounts need to be Smart Net Total Care (SNTC)
    - https://cdceb.cloudapps.cisco.com/csam/
  - 2) Then you login and assign roles to Cisco User IDs (CCO)
    - This could be API Developer/Customer user/Customer Administrator.
  - 3) Then users with API Developer access can login to API Console portal
    - https://apiconsole.cisco.com/ and register App and Keys/Secrets

Roles in Cisco Services Access Management

Delegated Administrator (Company Administrator)	Role Administrator	API Developer
·DA for all Cisco services ·Associate users with a company (also to External users) ·Assign roles to administrators and users of Cisco services ·Nominate additional DAs ·Approve or deny user requests	·Perform Role assignment to users (also to the External users) ·Assign, approve, or reject user role requests	·Access the Support APIs through the API Console

* Sourced from Cisco User Guide

Testing in Postman

HTTP https://id.cisco.com/oauth2/default/v1/token

POST ∨	https://id.cisco.com/oauth2/default/v1/token

Params   Authorization   Headers (9)   **Body** ●   Pre-request Script   Tests   Settings

○ none   ○ form-data   ● x-www-form-urlencoded   ○ raw   ○ binary   ○ GraphQL

	Key	Value
☑	grant_type	client_credentials
☑	client_id	
☑	client_secret	
	Key	Value

Cisco will reply back with Access token…..

```
{
    "token_type": "Bearer",
    "expires_in": 3600,
    "access_token": "ausnogisawesomeaccesstokenhere",
    "scope": "customscope"
}
```

Testing in Postman

Use Access token in Authorization Field......

https://apix.cisco.com/sn2info/v2/coverage/summary/serial_numbers/{serial}

| GET ∨ | · https://apix.cisco.com/sn2info/v2/coverage/summary/serial_numbers/{serial} |

Params | Authorization ● | Headers (8) | Body | Pre-request Script | Tests | Settings

Type | Bearer Token ∨

The authorization header will be automatically generated when you send the request. Learn more about authorization ↗

ⓘ Heads up! These parameters hold sensitive data. To keep this data secure while working in a collaborative environment, we r

Token | ausnogisawesomeaccesstokenhere

Sometimes you get surprising results…

- Serial number information – query from Telstra Production EoL gear

```
"serial_numbers": [
    {
        "base_pid_list": [
            {
                "base_pid": "WS-CDC-2500W"
            }
        ],
        "contract_site_customer_name": "WALMART INC",
        "contract_site_address1": "200 HIGHWAY 74 SOUTH",
        "contract_site_city": "PEACHTREE CITY",
        "contract_site_state_province": "GA",
        "contract_site_country": "US",
        "covered_product_line_end_date": "2020-06-30",
        "id": "1",
        "is_covered": "NO",
"

    }
```

- MyF5 support platform planning to be updated with Support APIs and is a high priority for F5

- New version of BIG-IP later this year
    - uses Central Manager to easily generate a Qkview and automatically upload the Qkview to case

 - F5 always taking feedback about features our customers would like to see on MyF5.
- Upcoming features and feedback - https://my.f5.com/manage/s/article/K000092546

NOKIA

- (Nokia)

- Nokia is trialing a B2B/S2S integration where Nokia support system is integrated to customer ticketing system.

- Currently can raise Fault requests/RMA an Email interface using a template which can be automated
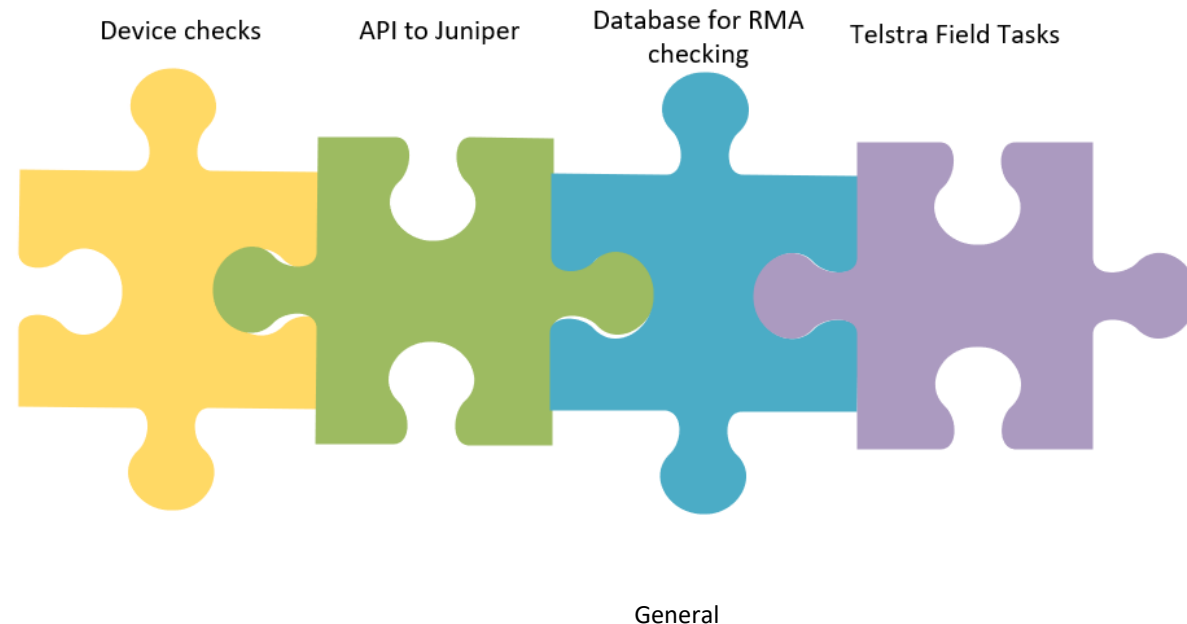
                                                                                                                                                   AusNOG 2023 - Telstra: Vendor Support APIs

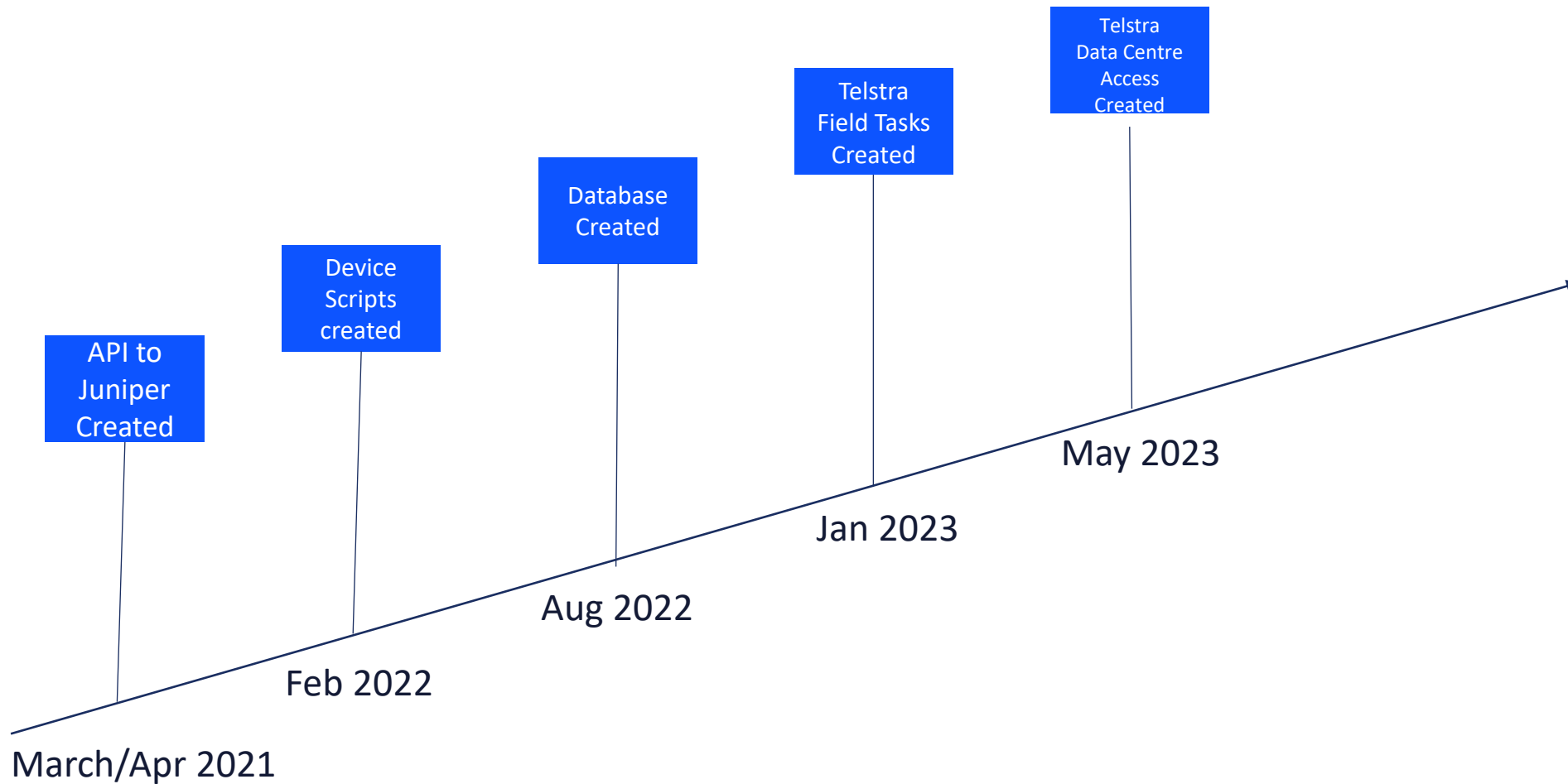General

Telstra Zero Touch Journey

Telstra Zero Touch Journey

- Telstra has many moving parts

- Focused on IP Networking in NOC

- We were given the Impossible dream of making everything Zero Touch

- Focused on FRU replacements on JuniperMX960/10K (power supplies)

    - Multi-platform – BNG/PE/Agg

    - "Juniper AutoTAC"

- Discovered none of the requirements were created

Device checks   API to Juniper   Database for RMA checking   Telstra Field Tasks

Telstra Zero Touch Journey – Progressive Evolution

API to Juniper Created

Device Scripts created

Database Created

Telstra Field Tasks Created

Telstra Data Centre Access Created

March/Apr 2021

Feb 2022

Aug 2022

Jan 2023

May 2023

General

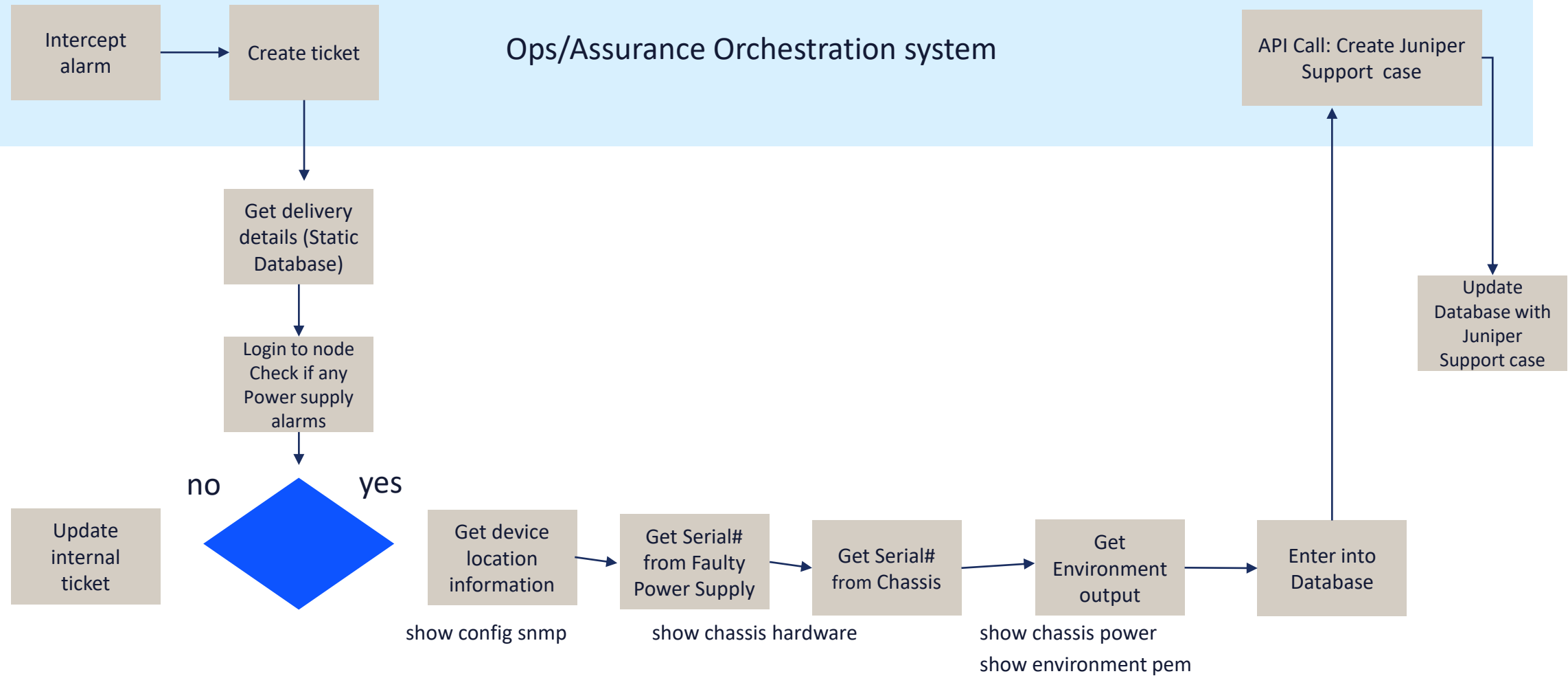# Telstra Zero Touch Journey – Current implementation

- Automate case create

  - Intercept alarm and create internal ticket

  - Trigger flow to login to find location of node and delivery details

  - Login to node and to find faulty hardware info - model numbers, serial numbers
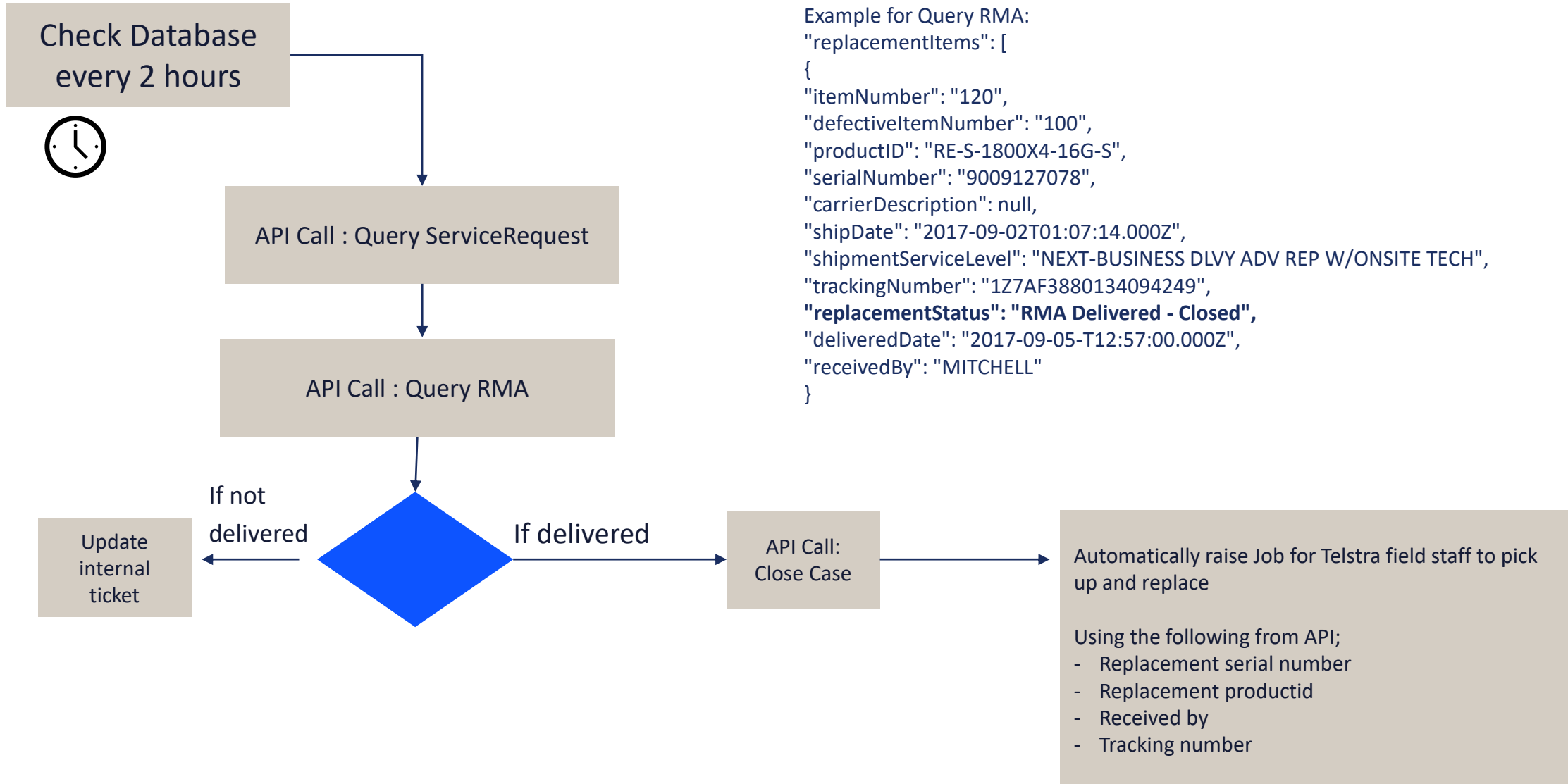
  - Create Juniper Support case via API

- Check Delivery status every 2 hours via API

  - Once delivered, Raise Field job to replace

  - Can also raise requests for Telstra Data Centres

General

Juniper AutoTAC – Part 1 – Create Case

Ops/Assurance Orchestration system

Intercept alarm → Create ticket

API Call: Create Juniper Support case

Get delivery details (Static Database)

Update Database with Juniper Support case

Login to node Check if any Power supply alarms

no — yes

Update internal ticket

Get device location information

Get Serial# from Faulty Power Supply

Get Serial# from Chassis

Get Environment output

Enter into Database

show config snmp

show chassis hardware

show chassis power
show environment pem

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General

Juniper AutoTAC – Part 2 – RMA check

Check Database every 2 hours

API Call : Query ServiceRequest

API Call : Query RMA

If not delivered

If delivered

Update internal ticket

API Call: Close Case

Automatically raise Job for Telstra field staff to pick up and replace

Using the following from API;
- Replacement serial number
- Replacement productid
- Received by
- Tracking number

Example for Query RMA:
"replacementItems": [
{
"itemNumber": "120",
"defectiveItemNumber": "100",
"productID": "RE-S-1800X4-16G-S",
"serialNumber": "9009127078",
"carrierDescription": null,
"shipDate": "2017-09-02T01:07:14.000Z",
"shipmentServiceLevel": "NEXT-BUSINESS DLVY ADV REP W/ONSITE TECH",
"trackingNumber": "1Z7AF3880134094249",
"replacementStatus": "RMA Delivered - Closed",
"deliveredDate": "2017-09-05-T12:57:00.000Z",
"receivedBy": "MITCHELL"
}

General

Juniper AutoTAC – Real life example

1) Case Creation in 50 seconds

Company*+	Telstra Operations
Customer*+	Russell Langton
Contact+	
Node Code+	Area Type

Template+	
Summary*	[VO] rdnqej820mai1321 Alarm set: F
Notes	rdnqej820mai1321 Alarm set: Pwr su

Service*+	
CI+	
Target Date	

74 entries returned - 74 entries matched

Type	Summary	Files Submit Date
General Information	CREATE_INC action performed by VO	6/1/2023 9:47:00 PM
General Information	Possible Automation target, calling JuniperAPI-Autotac script	6/1/2023 9:47:11 PM
General Information	Automation Triggered....	6/1/2023 9:47:18 PM
General Information	JTAC case raised - 2023-0601-705726	6/1/2023 9:47:53 PM
General Information	API checks show RMA not created as yet, will check again in 2hr	6/1/2023 10:00:24 PM
General Information	Case Updated - P3 - Medium - 2023-0601-705726 - - TELSTRA - SWITCHING AND MANAGEMENT - rdnqej820ma	6/1/2023 10:11:33 PM
General Information	Case Updated - P3 - Medium - 2023-0601-705726 - - TELSTRA - SWITCHING AND MANAGEMENT - rdnqej820ma	6/1/2023 10:12:31 PM
General Information	Case Updated - P3 - Medium - 2023-0601-705726 - - TELSTRA - SWITCHING AND MANAGEMENT - rdnqej820ma	6/1/2023 10:14:26 PM
General Information	API checks show RMA not created as yet, will check again in 2hr	6/2/2023 12:00:28 AM
General Information	Case Updated - P3 - Medium - 2023-0601-705726 - - TELSTRA - SWITCHING AND MANAGEMENT - rdnqej820ma	6/2/2023 1:04:30 AM
General Information	Case Updated - P3 - Medium - 2023-0601-705726 - - TELSTRA - SWITCHING AND MANAGEMENT - rdnqej820ma	6/2/2023 1:11:27 AM
General Information	RMA is R200462648, API checks show not delivered, will check again in 2hr	6/2/2023 2:00:26 AM
General Information	RMA is R200462648, API checks show not delivered, will check again in 2hr	6/2/2023 4:00:29 AM
General Information	RMA is R200462648, API checks show not delivered, will check again in 2hr	6/2/2023 6:00:27 AM

2) API Checks for RMA (RMA not created)

3) API Checks for RMA (RMA created not delivered)

Juniper AutoTAC – Real life example

4) API Checks for RMA (RMA Delivered)

5) API Call to close Juniper case

General Information	RMA is R200462648, API checks show not delivered, will check again in 2hr	6/6/2023 2:00:27 AM
General Information	Case Updated - P3 - Medium - 2023-0601-705726 - - TELSTRA - SWITCHING AND MANAGEMENT - rdnqej820ma	6/6/2023 2:21:28 AM
General Information	API reports part has been delivered	6/6/2023 4:00:23 AM
General Information	Request submitted to close Juniper case	6/6/2023 4:00:47 AM
General Information	Creating Single Field Task for replacement, BH replacement approved by TPO	6/6/2023 4:00:50 AM
General Information	CREATE_TASK action performed by VO	6/6/2023 4:00:56 AM
Interface Update	QWA Request sent to CONNECT	6/6/2023 4:00:59 AM
Interface Update	Successful Response recieved from CONNECT	6/6/2023 4:01:24 AM
General Information	Case Updated - P3 - Medium - 2023-0601-705726 - - TELSTRA - SWITCHING AND MANAGEMENT - rdnqej820ma	6/6/2023 4:01:33 AM
General Information	QM: Incident has 1 open task(s), status set to Pending - Local Site Action Required.	6/6/2023 5:11:25 AM
General Information	Case Updated - P3 - Medium - 2023-0601-705726 - - TELSTRA - SWITCHING AND MANAGEMENT - rdnqej820ma	6/6/2023 4:58:30 PM
General Information	Case Closed - P3 - Medium - 2023-0601-705726 - - TELSTRA - SWITCHING AND MANAGEMENT - rdnqej820mai	6/6/2023 5:02:29 PM
General Information	pre-checks	0 6/7/2023 12:44:22 P
General Information	Power supply successfully swapped by Dani	0 6/7/2023 1:27:14 P
General Information	part returned under Con Note 1095508147	0 6/7/2023 1:27:23 P

6) Job submitted for Telstra remote hands/tech to replace

7) Part replaced

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General

Where are we now with Juniper AutoTAC?

300+ devices enabled

Cross platform including BNG/PE/Agg/Switch

12 % of (R&S) JTAC cases raised via API

In last 12 months

Equals 43 cases

99% zero touch

Only covering power supply replacements

Next Steps

Fans, FPCs, Fabric Boards

Increase to 25% API Automated

General

Learnings and Outcomes

- Automated hardware replacements make a lot of sense for Medium/Large networks

- Single orchestration system for assurance purposes

- Start small, think big

- One vendor, One interface

- Consider vendor selection with Support APIs in RFP/tenders

MTTR

Human Touch

Next steps

- Proposal for Vendor Support APIs for Machine-To-Machine RMA Requests
    - If M2M, then don't ask for additional outputs
    - Validate the information, and raise RMA
    - Reduced human touch required from vendor.
        - Reach out to Juniper AE for Juniper Support Insights (JSI) Roadmap

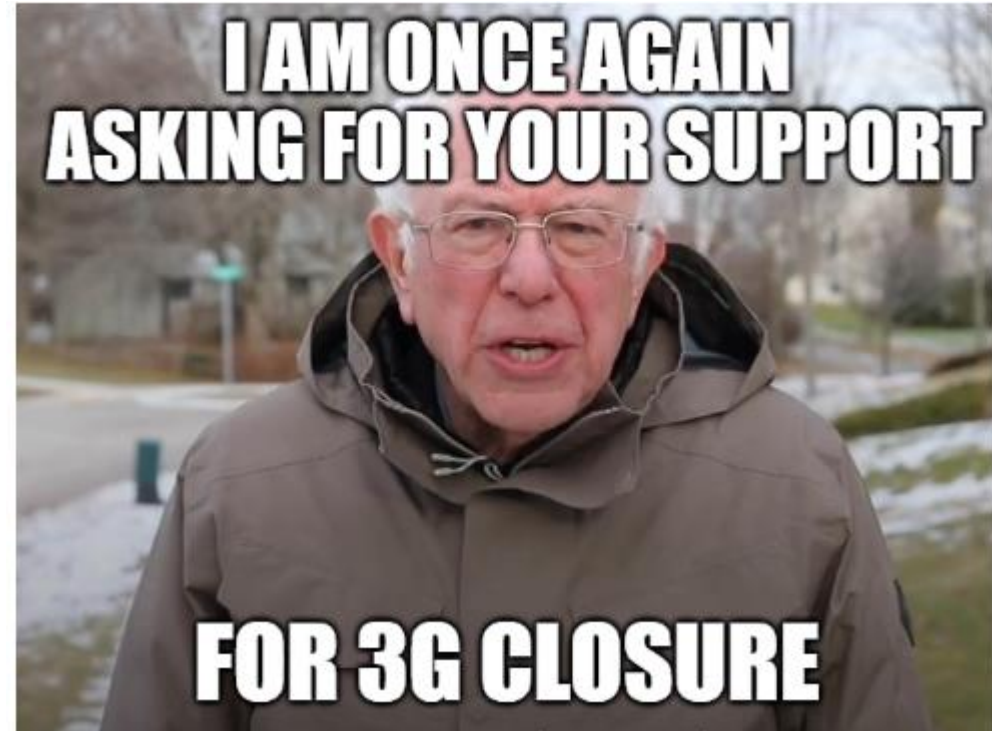- More Vendors onboarded to drive down manual touch

3G Closure reminder – Planned for June 2024

- Avoid surprises
- If you have a 3G-only device or a 4G device that doesn't support 4G VoLTE or 4G 700MHz capability, then you'll need to upgrade your device (including VoLTE emergency calling).

Could include;

- OOB/console connections
- Security systems
- M2M/Asset Tracking devices
- SCADA monitoring.
- EFTPOS terminals
- Environment monitoring.

227 working days left as of Aug 2023

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General

Thanks!
Questions?