Infrastructure Foundations Platform – Target State

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Key stakeholders (Exec / GM)	• **Executive Sponsor**: Paul Norman CIO • Primary Platform Stakeholder: GM Approver Nic Olivier, GM Core **Other Stakeholders:** • Elisa Hall (Head of Technology for the impacted domain/s) • Shirley McIntyre (GM, Architecture & Technology Strategy)

Platform scope and context

Platform Scope and Context -

Aligning to the BNZ Platform of Platforms model, this target state pack will provide scope and context for the Infrastructure Foundations – which describes our core hosting platforms, compute, mainframe, storage and data centres/cloud and the associated capabilities to provide strong foundations to the banks engineering, data and application hosting platforms.

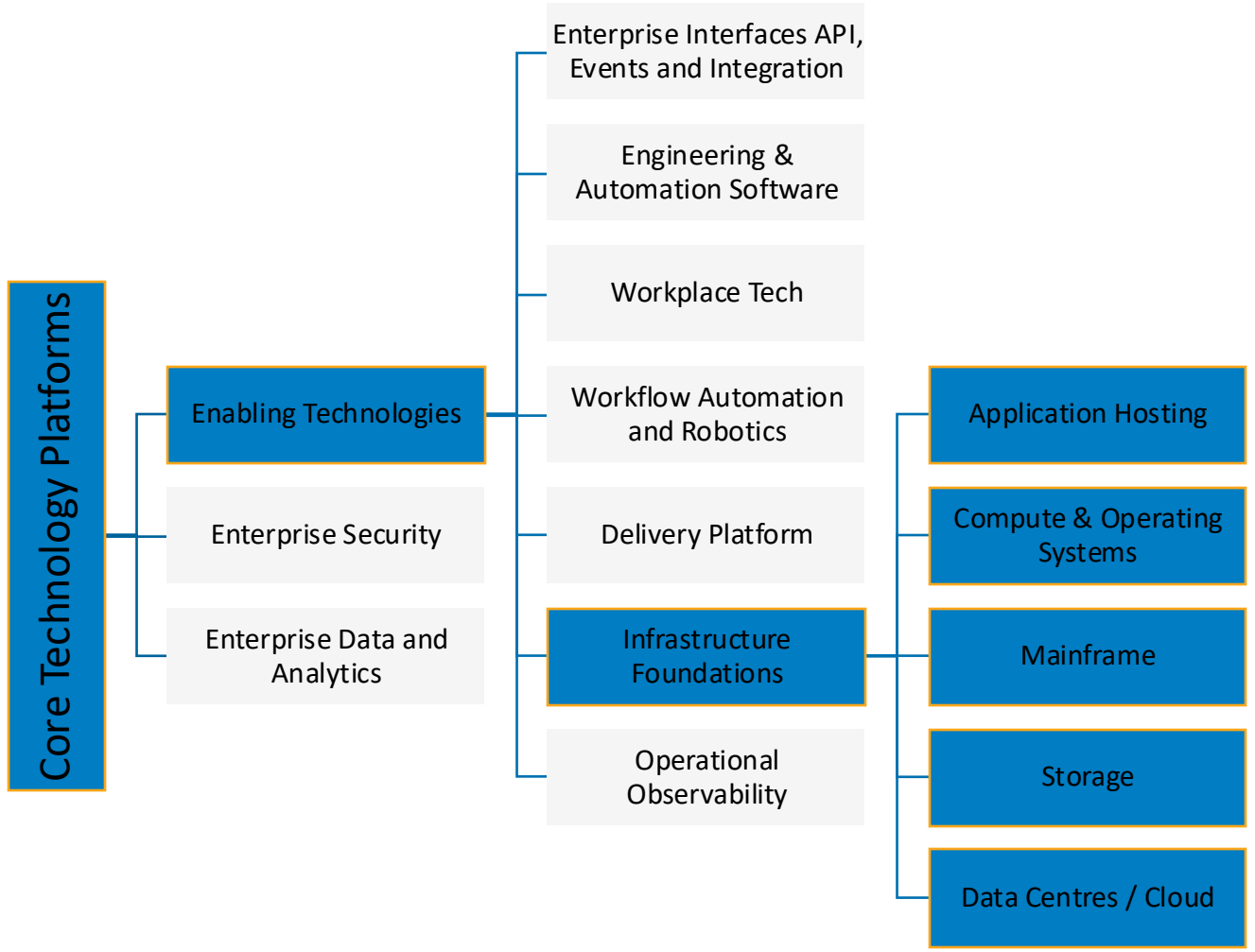
It includes our main hosting providers / locations:

- **Amazon AWS**
- **Microsoft Azure**
- **BNZ Managed On Premises Infra (NZ and AU)**

The current agreed overall approach is to incrementally build strong foundations in AWS (finish one cloud well), followed by Azure – providing end-to-end capabilities, such as

Infrastructure Foundations

- **Hosting Platforms**
    - **Application Hosting (Containers, IaaS, PaaS)**
    - **Compute & Operating Systems**
    - **Mainframe**
    - **Storage**



Infrastructure Foundations Platform – Strategic Intent

Perfect the basics

- Well Architected - Secure, Reliable, Performant, Optimised, Sustainable platform services, Operations.

  Ref:
  Amazon Well-Architected,
  Azure Well-Architected

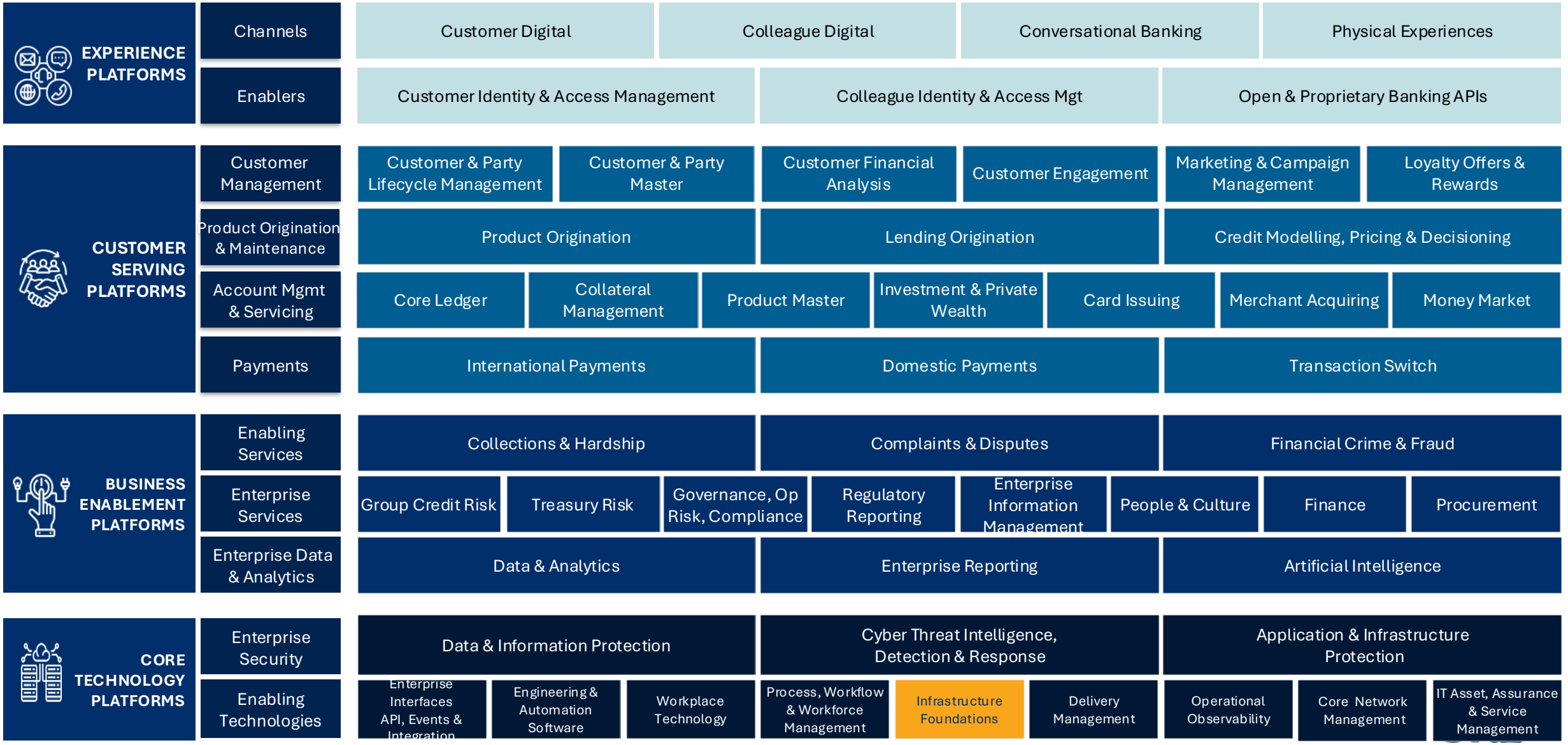
Build Strong Foundations

- Provide robust foundation capability across both cloud providers and on premises.
- Out of the box Discovery, Compliance, Security & Monitoring. (CAST, G2G, CHF, BCP).

Deliver Market Leading Experiences (capabilities)

- Enable Market leading platform capabilities for the business to leverage.
- Simple, Repeatable, and Complete (Ready and Compliant) patterns and building blocks aka Recipes.

Platforms @ BNZ



Infrastructure Foundations Platform

The target state for Infrastructure Foundations platform looks to give our colleagues the simplest, most cost effective, and most efficient way of using the bank's underlying world class technology platforms.

Modernise and simplify
Platforms domain is key to produce the building blocks and capabilities that will accelerate modernisation and simplification.

Agile and adaptable
Investing in Technology Foundations platforms will help meet the current and future needs of our organisation.

Platform mindset
Technology foundation platforms capabilities to help with enabling platform of platforms strategy.

Resilient, secure, safe
Follow the mantra of Secure by Default to reduce the risk and make it easier to build applications.

Deeply digital
Automation capabilities to support agility, industrialisation and other initiatives from Engineering and other domains.

Perfect the Basics

- Well Architected - Secure, Reliable, Performant, Optimised, Sustainable platform services, Operations.

Build Strong Foundations

- Provide robust foundation capability across both cloud providers and on premises.
- Out of the box Discovery, Compliance, Security & Monitoring. (CAST, G2G, CHF, BCP).

Deliver Market Leading Experiences (capabilities)

- Enable Market leading platform capabilities for the business to leverage.
- Simple, Repeatable, and Complete (Ready and Compliant) patterns and building blocks aka Recipes.

Scope & Context

Infrastructure Foundations describes our core hosting platforms, servers, storage, networking* and the associated capabilities to provide strong foundations to the banks engineering, data and application hosting platforms.

It includes our main hosting providers / locations:

- **Amazon AWS**
- **Microsoft Azure**
- **BNZ Managed On Premises DCs (NZ and AU)**

NAB Alignment

- Shared Strategy to be Cloud First and enable strong foundations to support the organisations technology foundation requirements.
- Consistency of providers, AWS and Azure.
- Shared Security Assessment and Guard Rails and Service Adoption Techniques.
- Shared Governance standards.
- Some Supplier differences, but leveraging consistency and scale of both organisations.

Transformation Approach

Continue to build, mature and enable Well Architected, Robust, Compliant and Reusable Infrastructure Foundations, to enable the bank to deliver on and experiment with simple, repeatable, compliant and cost effective Infrastructure and Cloud Services.

Work closely with Engineering and Security to reduce the burden on our business and developer community, **by taking on the complexity to offer a simpler user experience.**

Current State BMI View

- High BMI assets reflected in legacy foundation infrastructure components, which are being modernised.
- Low BMI new assets that have transitioned towards target state.
- Foundation Platforms links to a lot of BMI outside of platforms, enabling modernisation by providing modern platforms / support to migrate.

Roadmap

1

Perfect the Basics
- Backup Coverage of Cloud (GIRP)
- CMDB Discovery of Cloud**
- Extend Observability across hosting platforms - End to End / User Experience Monitoring – App and Infra (+Dynatrace for Cloud & MF)**
- Logging Ownership and Maturity
- FinOps

2

Build Strong Foundations
- Container Platform PCI DSS Attestation
- Proxy Egress available directly from cloud. **

3

Market Leading Experiences
- Strong Foundations enable faster path to enabling capability e.g. AI.
- Recipes / deployment patterns mature to embed resilience, security, monitoring, compliance, currency.**

4

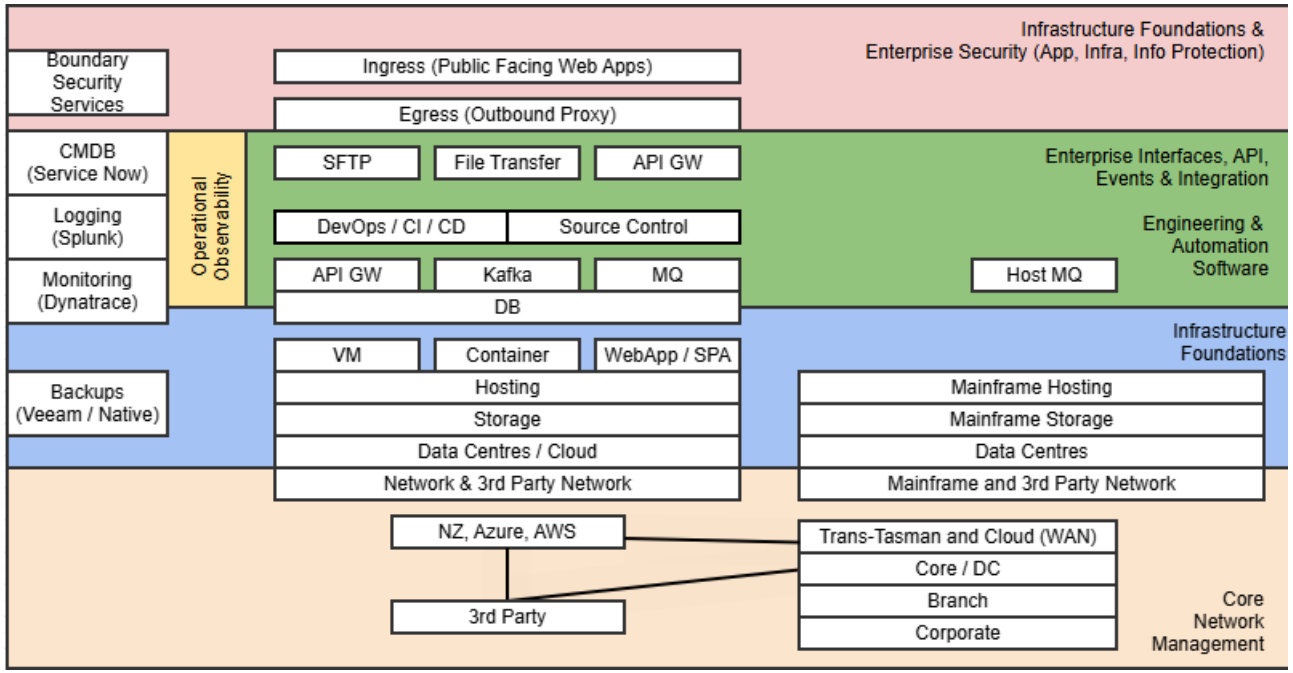
Well Architected, Evergreen and Compliant Cloud platform's (based on recipes) provide the predominant hosting environment.

* This is a draft view of a proposed transition roadmap, considering in flight work. Further refinement is required to understand prioritisation and resourcing for delivery, based on the agreed funding envelope.
** Cross over with other Roadmaps.

Technology Foundation Platform

The target state for Technology Foundation platform looks to enable a **resilient, flexible architecture** that will allow BNZ to continue to provide the **best customer experience** and allow for **feature growth** in the future.

Target State Overview



Key Points

- Prioritise AWS as our primary cloud.
  - Eventual foundation capabilities across both clouds.
  - Provider independence in the event of a provider failure.
- High capacity interconnected networks, burst bandwidth, any site to any site.
- Monitoring, logging and CMDB completeness and consistency.
- Modern, evergreen managed services provide the majority of hosting platforms, removing the burden of continuous currency and migration requirements.

Challenges and Issues

Compliance - We are asking to much of (most) teams to build, understand and maintain their applications and cloud.

Skillsets - asking to much of (some) teams to have the skills to manage things like databases, infrastructure code and currency. Determine balance between full stack teams and those who don't have the full stack skills and need support.

Capability Maturity / Hygiene - good at building things, rarely focus on getting the complete value out of the products we own. Perfect the basics, critical hygiene – map and grow our existing capabilities.

People / RACI - Ownership and clear RACI is holding us back e.g. **CRIBL** (balance of logging v's security) , **ZSCALER ZPA / ZIA** (balance experience, network policy and security). **Mult-Cloud and CAST** lacks clear ownership.

People / Process - Currency - Maintaining standard platforms, **ownership of recipes and patterns**, to ensure capability, currency, security and compliance is maintained. Always another upgrade or migration -> move to more evergreen managed patterns & platforms.

FinOps – Provide skill set which understands and can effect cloud cost management.

Commercial / Parent Pivot – Changing priorities have influenced our ability to finish one cloud well. Requires focus and

Technical Focus Areas

Cross Domain Focus Areas

- **Compliant and Mature** Components, Managed Recipes and Patterns – Full Stack! (Time to Hello World / Simplification).
- **Focused Cloud Enablement** – strong collaboration on build and priorities. (Get the Basics Right)
- **Pragmatic Priorities, Services & Realistic** Service Placement – Opinionated Cloud

Industrialisation – Recipe Adoption

- Consistency of Tooling and Onboarding
- Platform Capabilities are designed for Multi-Tenant / reuse.
- Next / Experimentation
  - Default configurations
    - Security, compliance, power, backup, log retention.
  - Tag Enforcement – refer Cloud Tagging Standard (Roll into Compliance Reporting)

Industry Leading Kubernetes

- Cross Cloud K8s capability, prioritise cloud adoption.
- Ingress and PCI DSS Ready Clusters

Next / Experimentation

- Prioritise Cloud hosting
- Extend Dynatrace
- OpenShift on Bare Metal
- Caching / persistence.
- AKS in Azure 2.0
- Centralised Network Object

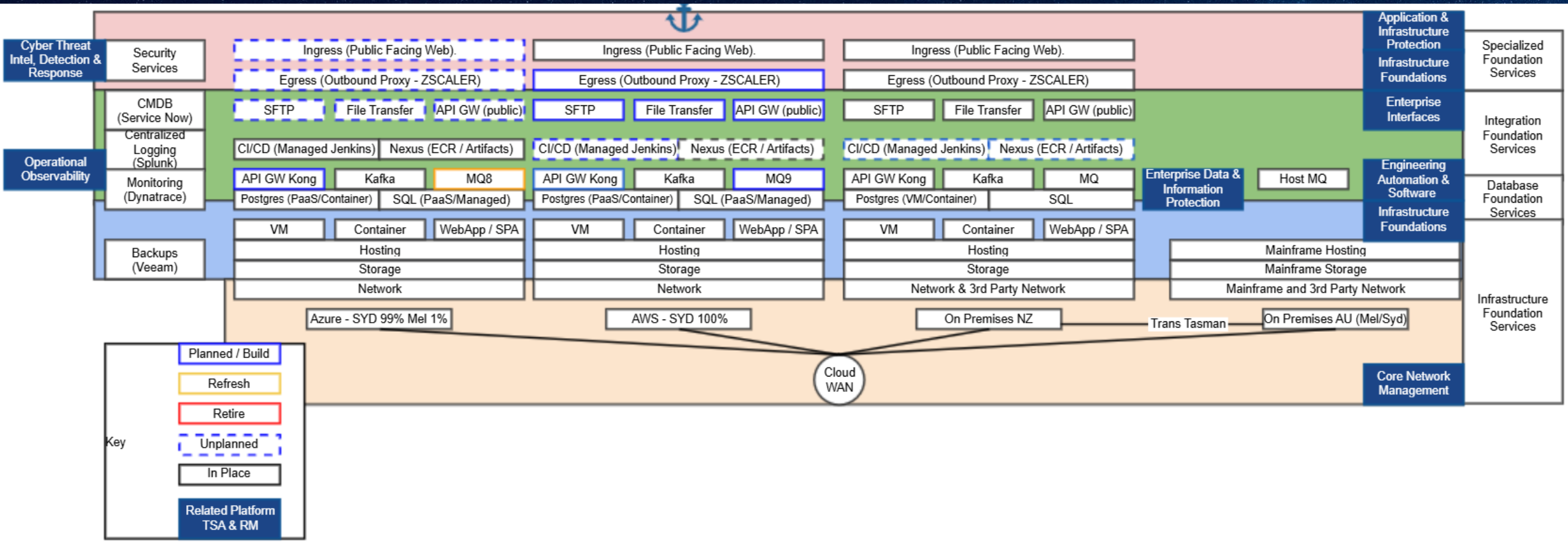
Compliance Reporting and Operational Excellence

- Build in compliance into design and delivery.
- GIRP / Compliance / CHF.
- **Next / Experimentation**
  - Cloud into Flexera + SNOW
  - Operational Monitoring Standards, embedded in deployments.
  - Services RACI (e.g. CRIBL)

Deepen Cloud Adoption

- Leverage our Strong Foundations to enable key e.g. Cloud AI and Data Capabilities.
- Finish one Cloud well - complete AWS Platform Offerings.
- Next / Experimentation
  - Backup Adoption in Cloud
  - HSM for Payments
  - Education / Guild / Perfect the basics.

Target State Overview – Across Providers



Platform Context and Scope

Stakeholders

Decision Makers		**Contributors / Interested / Impacted Parties**	
Business Stakeholders GM Impacted Business Areas	Nic Olivier	Engineering Managers / Engineering Leads	- Martin Nakshbandi - Oliver Jennings - Clare Warne
GM Architecture and Technology Strategy	Shirley McIntyre	Enterprise Architects that own platforms that are either up-stream or down-stream dependencies.	- Glenn Bellam - Francis Kaitano

GM of Technology for impacted domain/s.	->	Platform Managers / Product Owners for the impacted domain/s & Principal Engineers.	- Deepak Bhushan
			- Hayden Smith
			- Stef Edwards
			- Networks
			  - Elisa Hall
			  - Brent Johnston
			- Azure
			  - Tim Black
			  - Gaurav Ghai
			- Containers
			  - Bianca Coller
			  - Francois Herbert
			- Storage / On Premises
			  - Kevin Reynolds
			  - Pascal De Reuck
			- AWS
			  - Duncan Gilmore
			  - Todd Roseweir

Head of Technology for the impacted domain/s	Elisa Hall (acting)	Heads of Impacted Business Areas	
Head of Architecture for the platform	Tanya Boelema		

Focus Areas

Technical Focus Areas

To support the move towards the proposed target state, the following focus areas have been identified as relevant, either as foundational enabling aspects or unknown areas that would require further refinement.

Cross Domain Focus Areas

- **Compliant and Mature Components, Managed Recipes and Patterns** – Full Stack! (Time to Hello World / Simplification).
- **Focused Cloud Enablement** – strong collaboration on build and priorities. (Get the Basics Right)
- **Pragmatic Priorities, Services & Realistic Service Placement** – Opinionated Cloud.

Focus Horizons – Easier Industrialisation (Recipe Adoption)

- **Consistency of Tooling and Onboarding**
- **Platform Capabilities are designed for Multi-Tenant / reuse.**
- **Next / Experimentation**
  - Default configurations
    - Security, compliance, power, backup, log retention.
  - Tag Enforcement – refer Cloud Tagging Standard (Roll into Compliance Reporting)

Industry leading Kubernetes

- **Cross Cloud K8s capability, prioritise cloud adoption.**
- **Ingress and PCI DSS Ready Clusters**

Next / Experimentation
- Prioritise Cloud hosting
- Extend Dynatrace
- OpenShift on Bare Metal
- Caching / persistence.
- AKS in Azure 2.0
- Centralised Network Object Definitions across platforms.

Compliance, Reporting / Operational Excellence

- **Build in compliance into design and delivery.**
- **GIRP / Compliance / Critical Hygiene Framework.**
- **Next / Experimentation**
  - Cloud into Flexera + SNOW
  - Operational Monitoring Standards, embedded in deployments.
  - Services RACI (e.g. CRIBL)

Deepen Cloud Adoption

- **Leverage our Strong Foundations to enable key Cloud AI and Data Capabilities.**
- **Finish one Cloud well - complete AWS Platform Offerings.**

Next / Experimentation
- HSM in support of Payments Gateway
- Compliance of Backups and Recovery (Veeam enablement across AWS and Azure)
- Education, Guild, Perfect the Basics (Well Architected, Cost Optimisation etc.)

Technical Focus Areas

To support the move towards the proposed target state, the following focus areas have been identified as relevant, either as foundational enabling aspects or unknown areas that would require further refinement.

Focus Horizons – Mainframe Services

- **Improving the customer experience by reducing outages**
- **Improving the underlying Security, Visibility, Resilience and Currency of the mainframe environments.**

Next/experimentation

- Optimisation of the mainframe environments and integrations with other environments to ensure a cost effective and efficient approach to running mainframes.

Focus Horizons – Flexible and Scalable Networks

- **Robust high capacity - flexible Cloud WAN** (capacity for burst usage).
- **Network coverage -** connected cloud and data centre locations (NZ/AU).
- **Maturing DDOS** – Products and Skillsets - Arbor, Akamai.
- **Maturing Network Policy / Zero Trust** capability – ZSCALER and Cisco ISE.

Next / Experimentation

- Strategy Refresh
- NGINX replace F5 Load Balancer & WAF
- Operating Model (Workplace/Platforms)

On Premises / Data Centre Rationalisation

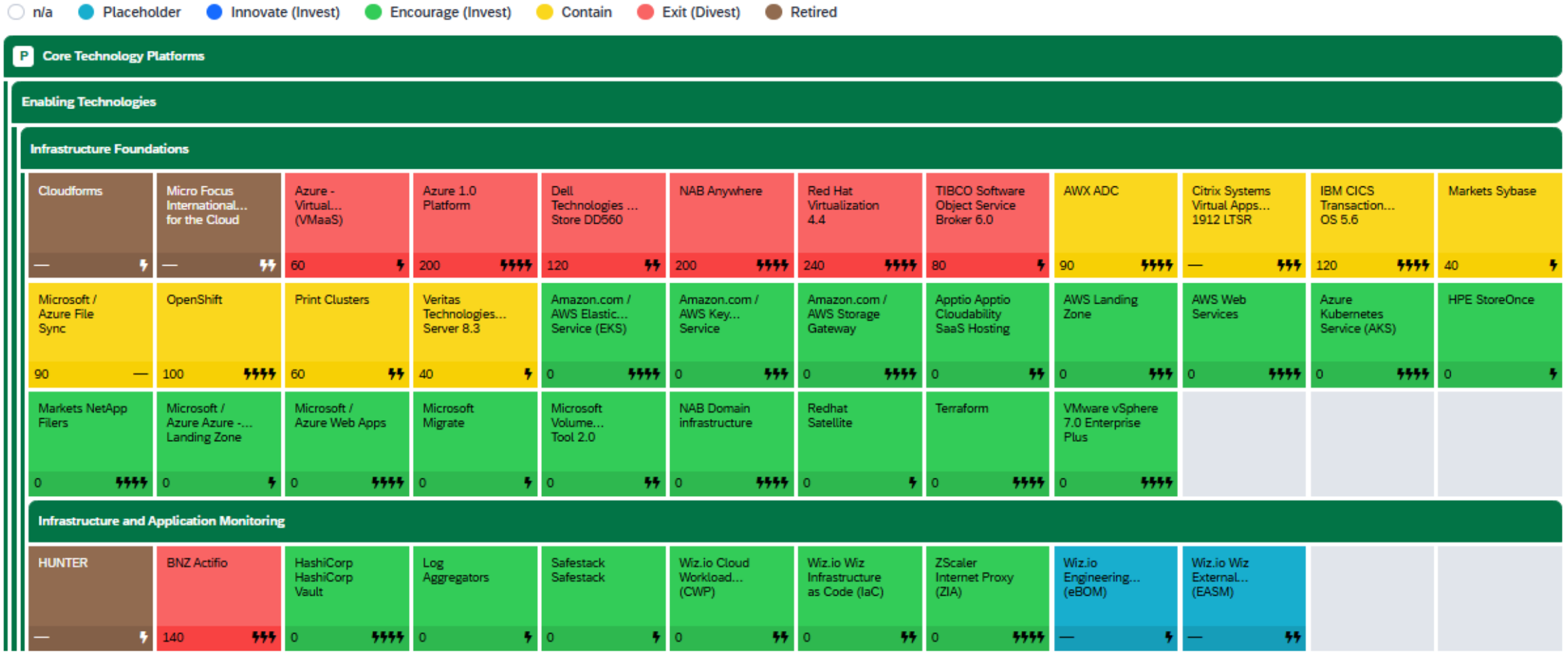
- **Reduce on premises infrastructure** – Cloud First Strategy for new and refreshed workloads.

Next / Experimentation

- Hypervisor Replacement
  - VMware, AWS Outpost.
- HPE Storage Managed Services replace Data Domain and Windows Storage.
- Auckland Data Centre DR Testing / Shutdown
- Consider Auckland Region for Mainframe Services.
- Consider Auckland Region for Cloud Services.

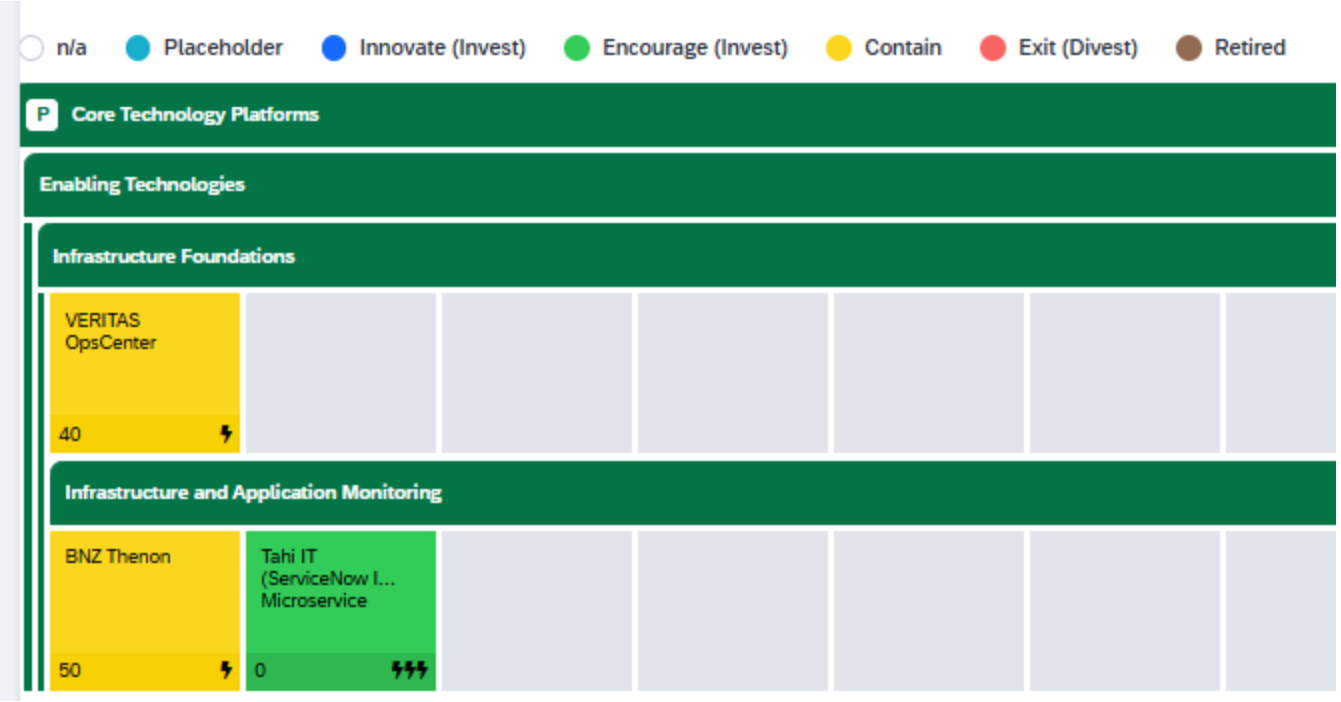
Current State Landscape

Current State Landscape - IT Components



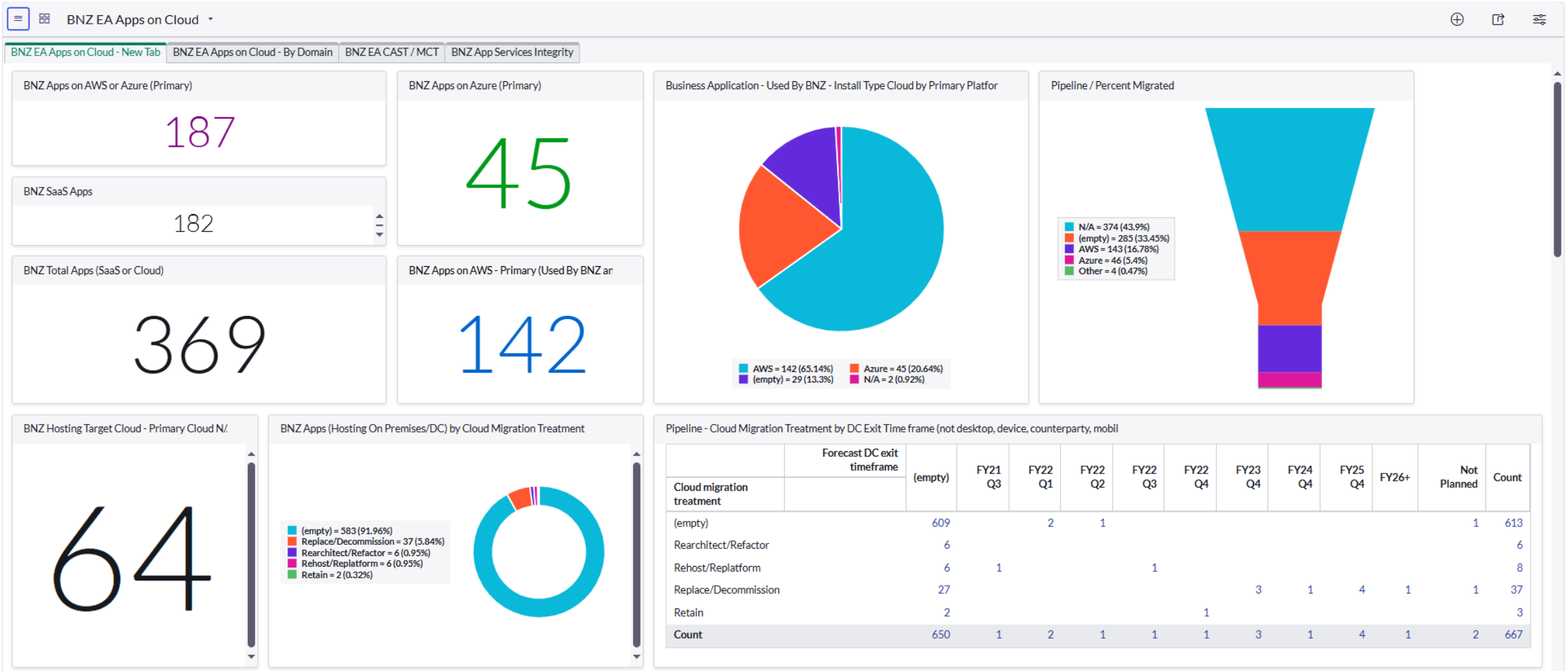
14 * The colours represent the lifecycle state of each of the application / component. The numbers in the left side bottom corner represent the BMI of the asset.

Current State Landscape - Applications



15 * The colours represent the lifecycle state of each of the application / component. The numbers in the left side bottom corner represent the BMI of the asset.

Current Cloud Placement



Cloud migration treatment	Forecast DC exit timeframe	(empty)	FY21 Q3	FY22 Q1	FY22 Q2	FY22 Q3	FY22 Q4	FY23 Q4	FY24 Q4	FY25 Q4	FY26+	Not Planned	Count
(empty)		609		2	1							1	613
Rearchitect/Refactor		6											6
Rehost/Replatform		6	1			1							8
Replace/Decommission		27						3	1	4	1	1	37
Retain		2					1						3
Count		650	1	2	1	1	1	3	1	4	1	2	667

[BNZ EA Apps on Cloud]

Challenges and Issues

Compliance - We are asking to much of (most) teams to build, understand and maintain their applications and cloud. We need to consolidate tools and produce more recipes covering the basics, to provide market leading developer experiences.

Skillsets - We are asking to much of (some) teams to have the skills to manage things like databases, infrastructure code and currency. Determine balance between full stack teams and those who don't have the full stack skills and need support. Currency and resilience / availability may suffer. Is the DevOps model working (across the wide organisation)?

Capability Maturity / Hygiene - We are good at building things, but rarely focus on getting the complete value out of the products we own. Perfect the basics, critical hygiene - grow our existing capabilities. Primary outcomes and secondary outcomes more clearly defined at opportunity canvas / design phases and funded to completion.

RACI - Ownership and clear RACI is holding us back from keeping the bank safe and fully leveraging the tech in our portfolio e.g. **CRIBL** (standards and balance of logging v's security) , **ZSCALER ZPA / ZIA** (balance of experience v's security).

Currency - Maintaining standard platforms, ownership of recipes and patterns, to ensure capability, currency, security and compliance is maintained. Always another upgrade or migration -> move to more evergreen managed patterns & platforms.

FinOps – Provide skill set which understands and can affect cloud cost management.

Too many tools – Inconsistency of Infrastructure as code / automation tooling..

Strong Positives

Embedded Security Consultants – Enables fast, informed and agile decision making within the context of the flow of the team.

Strong Foundations – Good foundation, clear ownership and roadmaps within and across platforms. Containers, Azure, AWS, On Premises, Networks.

Structure and Skills – Experienced cloud and platform teams, providing good focus and maturity to their platforms.

Collaboration across Platform, Engineering and Security – Aiming for market leading experiences for our developers, removing the toil.
e.g. Containers SpringBoot,

FinOps – Emersion of a dedicated team to ensure optimised cloud deployments and financial operations.

Current State – Business Risk

The following GRACE risks relate to the Technology platforms:

Risk Summary	TSA Impact Description	TSA Impact to Risk profile
RSK-171 Cyber Compromise Risk There is a risk that information systems containing customer, employee or business data lose their confidentiality, integrity, or availability	• System Component Inventory – enabling discovery of all resources across Foundation platforms. • Continuity and DR – Leveraging cloud resources and backup and recovery to enable effective BCP. • System Monitoring – ensuring monitoring of all resources across Foundation platforms.	Improves risk profile
RSK-166 Data Loss This risk focuses on unauthorised access to BNZ data in electronic or physical format (Customer, employee and any intellectual property) resulting in loss or disclosure of BNZ confidential information.	• System Monitoring – ensuring monitoring of all resources across Foundation platforms. • Continuity and DR – Leveraging cloud resources and backup and recovery to enable effective BCP.	Improves risk profile
RSK-158 IT System Failure The risk focuses on the failure to properly manage BNZ Information Technology (IT) assets (infrastructure, applications, systems) and effectively respond to IT incidents resulting in service outages and disruptions.	• System Component Inventory – enabling discovery of all resources across Foundation platforms. • Continuity and DR – Leveraging cloud resources and backup and recovery to enable effective BCP. • System Monitoring – ensuring monitoring of all resources across Foundation platforms.	Improves risk profile

Division : Technology Risks

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Target State Architecture

Enabling Technologies – Infrastructure Foundations – Target State Summary

The target state for Infrastructure Foundations platform looks to enable a **resilient, reusable, flexible architecture** that will allow BNZ to continue to provide the **best customer experience** and allow for **feature growth** in the future.

Strong Foundations

Build strong foundations

- Provide robust and consistent foundation capabilities across On Premises and Clouds
- Datacentre capabilities and management to support the business
- Excellence in Cloud Platforms, capability, ownership and support
- Strong Foundations enable fast adoption and experimentation (foundation stacks, network capacity, ingress, AI)

Perfect the basics

Perfect the basics.

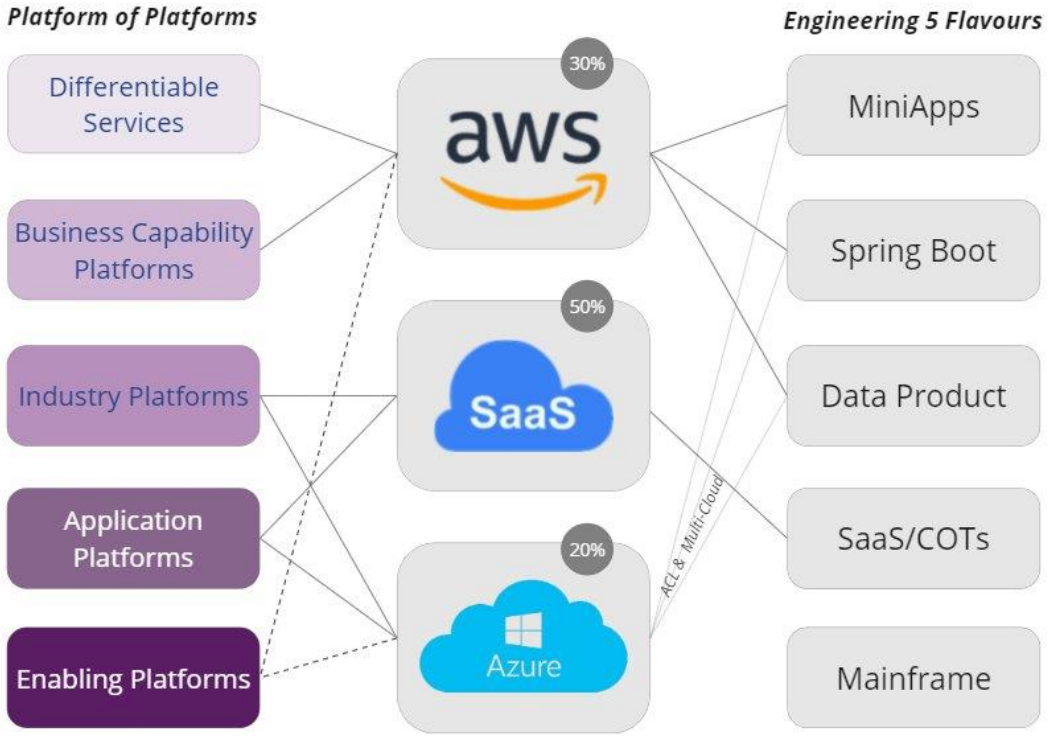
- Codified recipes form the majority of deployed patterns, enabling consistency and reuse of stack, governance and security.
- Secure by default infrastructure / platforms components
- Plug and play ready to consume monitoring and observability
- Networks and access that enables BNZ ambitions while keeping the bank secure from cyber attacks
- Storage and compute platforms that make AI adoption easier
- OOTB compliance, monitoring and reporting, reduce the compliance and skill burden.

Market Leading Experiences

Deliver Market Leading Experiences

- BNZ Cloud Platforms are as easy to engage with as the vanilla BYO cloud, however we bake in all of the requirements of a bank to provide a ready and leading experience.
- Multi-Cloud Containerization platforms
- Recipes which enable developers to develop, not concern themselves with platforms, security, and compliance.
- Golden consistent secure images R-next available asap.
- Backup and Recovery as a Service (BRaaS)
- Champion 6 pillars of Well Architected Framework
- Foundations enable fast adoption and experimentation (AI/other)

Focus Area – Cloud Adoption



This diagram indicates our architectural preference for where platforms layers and engineering recipes will be implemented.

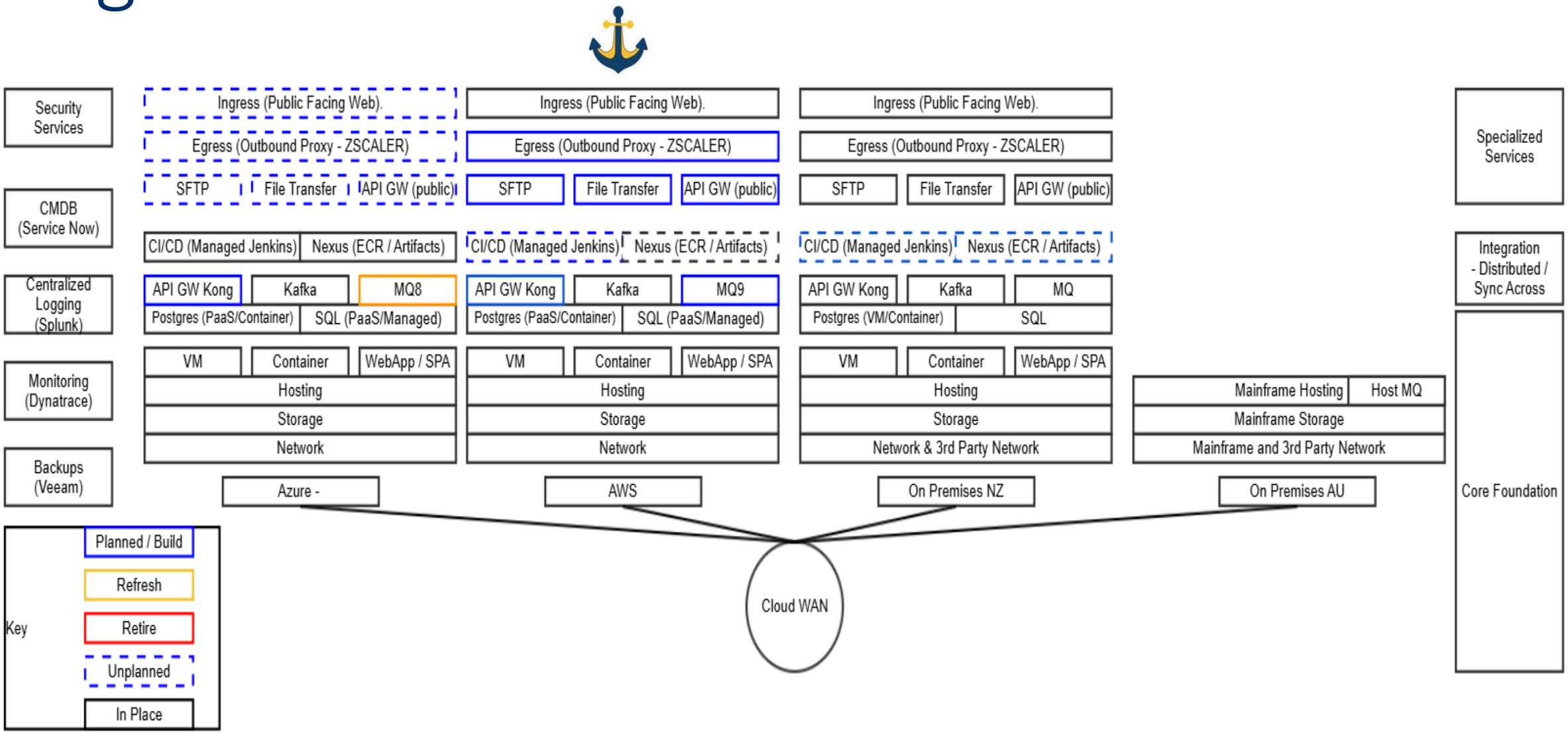
As a general rule of thumb ***AWS*** is used for the things we build ourselves (which are typically the things that differentiate us as bank), whereas ***Azure*** will be used for its productivity capability and for non-differentiating workloads.

Our cloud maturity is developing, and our practices around cloud have improved across delivery domains and platform engineering. Customer Digital platform cloud footprint is currently sitting at **MCT-2**, with the primary cloud being AWS. Due to lack of maturity and not having a full set range of capabilities in Azure, we are unable at this stage to move beyond MCT-2. Digital Channels target is **MCT-4** as per below:

- primary cloud deployment
- secondary cloud design ready
- secondary cloud deployment tested in non-prod.

We are committed to Multi-Cloud, but the focus in to first industrialise on **MCT-2** across our estate to improve our cloud platform capability, reduce our excessive risk profile around IT Asset Currency focusing on automation first of upgrades, evergreen platforms, observability and resilience. Once the maturity increases in all the mentioned areas, we will be able to achieve effortless multi-cloud support.

Target State Architecture



[Primary Cloud FAQ / Key Guidance - John Marshall - BNZ Confluence]

Technology Strategy Alignment

Modernise and Simplify

Platforms domain is key to produce the building blocks that will accelerate modernisation and simplification.

- Provide strong foundation platform and skill sets to enable the orgnisation.
- Provide evergreen managed platforms.
- Reduce the burden of developers, by providing more of the full stack via Recipes.

Agile and Adaptable

Strong Foundation (platform and skills) enables us to enable new capabilities with speed.

Investing in Technology Foundations platforms that will help meet the current and future needs of our organisation.

We want to facilitate and support the maturation use of standard recipes and patters available across the enterprise.

Recipes:

- Miniapps
- SpringBoot API (Layered)
- VM Standardisation

Platform Mindset

Technology foundation as an enabling platform - provides strong foundations, enables secure, compliant, resilient, performant and high capacity hosting capabilities.

Enables the bank to experiment with new capabilities.

Resilient, Secure and Safe

Follow the mantra of Secure by Default to reduce the risk and make it easier to build applications

We will have security and resilience practices deeply embedded into how we design and deliver capabilities through automation and reuse of patterns.

Deeply Digital

Automation capabilities to support agility, industrialisation and other initiatives from Engineering and other domains

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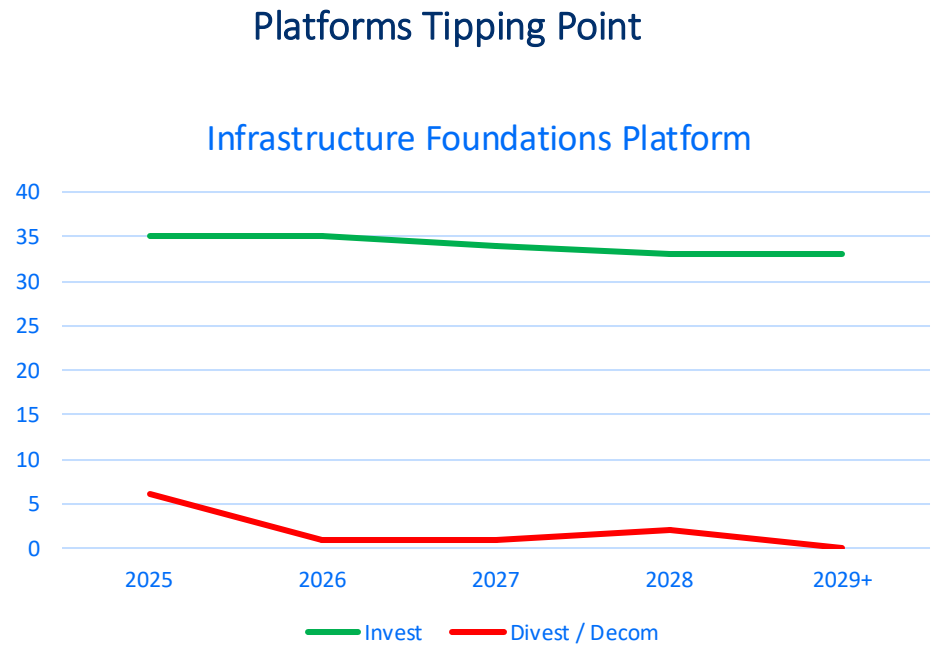
Tipping Point – Technology Foundation Platforms

The tipping point is where the rate of platform renewal outpaces the rate of legacy asset decay, based upon current initiative plans and a continued investment in Simplification. Many of BNZ's current investments are multi-year journeys toward modernisation - there is risk that major investments slip, which will mean a movement in the tipping point date. While we will continue to have modernisation investments beyond FY28, focus will shift from legacy to contemporary systems



If the roadmap is invested and prioritised as indicated in the roadmap, the tipping point for platforms will remain positive.

Platforms currency and maturing existing capabilities stays a focus, over capability replacements.

** Tipping point calculated on lifecycle status and roadmap estimates*

NAB Alignment

In general, BNZ and NAB align on platforms strategy with combined governance, security and architecture development / consulting.

NAB	BNZ	
Deliver strong cloud technology foundations based on **AWS & Azure** whilst maintaining currency on premises.	Deliver strong cloud technology foundations based on **AWS & Azure** whilst maintaining currency on premises.	Aligned on Cloud First Strategy.
Maintaining a balance of Cloud Platforms **AWS & Azure**	Maintaining a balance of Cloud Platforms **AWS & Azure**	Both NAB and BNZ are investing in AWS and Azure, with both cloud platforms being seen as important to the banks offerings. BNZ and NAB collaborate on cloud architecture, security, design and some module and solution development.
Shared Security Guard rails for Cloud Resources with Cloud Service Adoption Methodology **(CSAM)**	Shared Security Guard rails for Cloud Resources with Cloud Service Adoption Methodology **(CSAM)**	CSAM enables a standard Security Guidance and Guardrails for Cloud Resources. Enabling the development and deployment of such resources to be secure.
Governing Cloud Adoption using Cloud Adoption Standards and Techniques **(CAST)**	BNZ are reviewing CAST and the overlaps with existing governance within BNZ to ensure limited overlaps/duplication of compliance e.g. TAF, Good2Go, CHF.	BNZ originally adopted NAB's Materiality Framework and CAST to essentially provide governance and guardrails to enable us to onboard to cloud without consulting the regulator.
Component / Supplier Level		At a component / supplier level there are some differences. 2.10 Logical Architecture | Platform Architecture documentation 2.20 Suppliers | Platform Architecture documentation 2.55 Security | Platform Architecture documentation

Modernisation Horizons - Progress and Target

Foundation Phase	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2030
Cloud Foundation (Platform Team/Foundation)		Azure AWS				*				
Cloud Foundation 1a - VM & Internal App Hosting										
Cloud Foundation 1b - Web App Hosting		***	***	***						
Cloud Foundation 1c - VM Migration Tooling								?	?	?
Cloud Foundation 2 - Single Page Applications										
Cloud Foundation 3 - Containers				** **	** **					
Cloud Foundation 4a - Integration - Kafka										
Cloud Foundation 4b - Integration API GW - Kong										
Cloud Foundation 5 - Ingress Web	***	***	***	***	***					
Cloud Foundation 6 - Ingress API GW					**	**				
Cloud Foundation 7 - Egress (Proxy Egress to ZSCALER)										
Cloud Foundation x - Serverless							**			
Cloud Foundation x - SFTP GW, File GW.								**		

* will need to transition away from AD FS as that is retired.

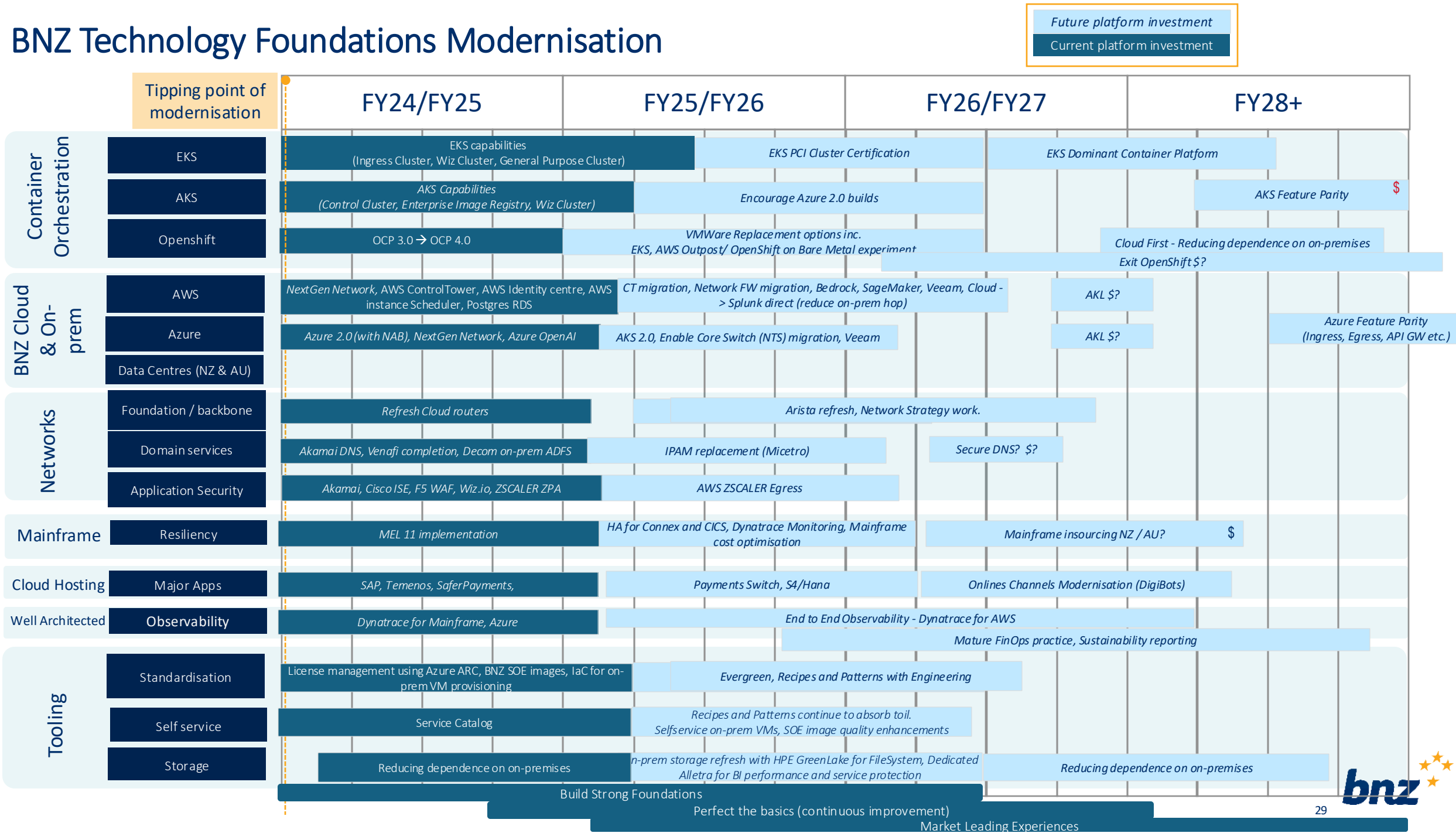
** not fully industrialized.

[Ref: Cloud Big Rocks]

Roadmap

- High Level **Technology Foundations Modernisation**
- Compute and Hardware

BNZ Technology Foundations Modernisation



Detailed Current State / Intent / Roadmaps

- Data Centres
- Cloud Services
- Hosting Platforms
- Storage
- Archive
- Compute

Current State / Intent

Data Centres

BNZ Host services out of (7)

- Wellington
- Auckland ADC 1 – Orbit Drive
- Auckland ADC 2 – East Tamaki
- Spark Wellington
- Sydney (Mainframe)
- Melbourne * 2 – Mainframe.

Strategic Intent / Considerations

- Optimise Services (FinOps)
- Consolidate to Cloud
- Take ownership of the Mainframe
- Consolidate Services to fewer DCs.
- Co-locate on managed data centre hosting with cloud providers.

Key Input / Decision Points

- Mainframe Location

Cloud Providers / Services

BNZ Host services out of (2*)

- AWS Sydney
- Azure Sydney & Melbourne
- Google Cloud* - (Managed Services – not run by BNZ)
- SaaS (largely Sydney based).

Strategic Intent / Considerations

- Buy before build, SaaS grows.
- Prioritise AWS to enable full stack offerings and cloud first strategy.
- Azure remains secondary cloud key for Multi Cloud and niche services.
- Establish Auckland presence.

Key Input / Decision Points

- Mainframe Location
    - Auckland Primary?

Hosting Platforms

BNZ Host services on

- Container Platforms (OpenShift, EKS, AKS)
- Hypervisors - VMware, RHEV
- Hardware - HPE, Dell.

Strategic Intent / Considerations

- Consolidate to Cloud - largely ‘Refactor’ as apps are refreshed ~10% of Apps per year.
- Cloud like on premises infrastructure to reduce service types / skill burden.
- Some services inefficient fit for on cloud until refactored (SharePoint, BI).
- VMware cost increases.

Key Input / Decision Points

- VMware re-bundle higher cost.

Current State / Intent

Storage

BNZ file and server storage*

HPE Alletra General

- Hypervisor (VMs), File Servers, SharePoint, BI, etc.

HPE Alletra (BI) – BI

HPE Greenlake for Files

- Performance Files

Strategic Intent

- Consolidate workloads to Cloud
- File Servers -> AWS Storage GW/HPE Greenlake for Files.
- Azure Local moves storage to server based.

Key Input / Decision Points

- Hypervisor.
- Storage (investment / capacity locked in for 2 years?).
- *Later slide shows Usage / Target.

Archive

BNZ Archive Platforms

- AWS Storage Gateway - Cloud Backed tiered and lifecycle managed storage.
- Exit – Centera and Data Domain

Strategic Intent

- Backups retain only operational recovery <90 days.
- Archive to cloud backed, tiered and life cycle managed storage.
- Simplification programme enabling content archive, to retire legacy application data (without the need for the application to interface).

Key Input / Decision Points

- Fully Retire Centera and Data Domain

Compute

BNZ Host services on

- Hardware - HPE, Dell
- Hardware EOL

Strategic Intent

- Consolidate to Cloud - largely ‘Refactor’ as apps are refreshed ~10% of Apps per year.
- Cloud like on premises infrastructure to reduce service types. E.g. Azure Local.
- Some services inefficient fit for on cloud until refactored (SharePoint, BI).

Key Input / Decision Points

- VMware Replacement / Hypervisor Hyperconverged Hardware requirements.

App Landscape

BNZ EA Apps on Cloud

BNZ EA Apps on Cloud - New Tab | BNZ EA Apps on Cloud - By Domain | BNZ EA CAST / MCT | BNZ App Services Integ

BNZ Apps on AWS or Azure (Primary)

193

BNZ Apps on Azure (Primary)

50

BNZ SaaS Apps

186

BNZ Total Apps (SaaS or Cloud)

379

BNZ Apps on AWS - Primary (Used By BN

143

BNZ EA Apps on Cloud - New Tab | BNZ EA Apps on Cloud - By Domain | BNZ EA CAST / MCT | BNZ App Services Integrity | Integrity / Essential Services | Service Locations

	Hosted SaaS	Hybrid Cloud	Managed DC	On Premise (BNZ)	On Premise (Legacy)	On Premise (MF)	Public Cloud	SaaS	Vendor DC
Assisted Channels							1		
Banker Experience & Platforms		9		142			71	45	
BNZ		2		2			2		
Cards & Payments Platforms		2		86		37	5	12	
Cloud Platforms		7		51			31	11	
Corporate Services	2	1		5	11		29	56	
Critical and Complex Platforms						1			
Customer, Onboarding & Identity				92			32	5	1
Digital Channels		2		66		1	31	13	
Engineering		17	1	152		1	17	3	
Enterprise Data		4		19		1	15	10	
Enterprise Security	1	3		10			5	22	
Enterprise Services				1			1	2	
Enterprise Services				11	1		6	7	
Finance								1	
Financial Crime	1	2		16	2	1	21	6	
Frontline Experience		1		12			9	11	1
Insurances					4		1	7	
Markets		2		25	1		1	8	
Transaction and Investments				38		34	13	5	2
Workplace	3	2		15			6	50	

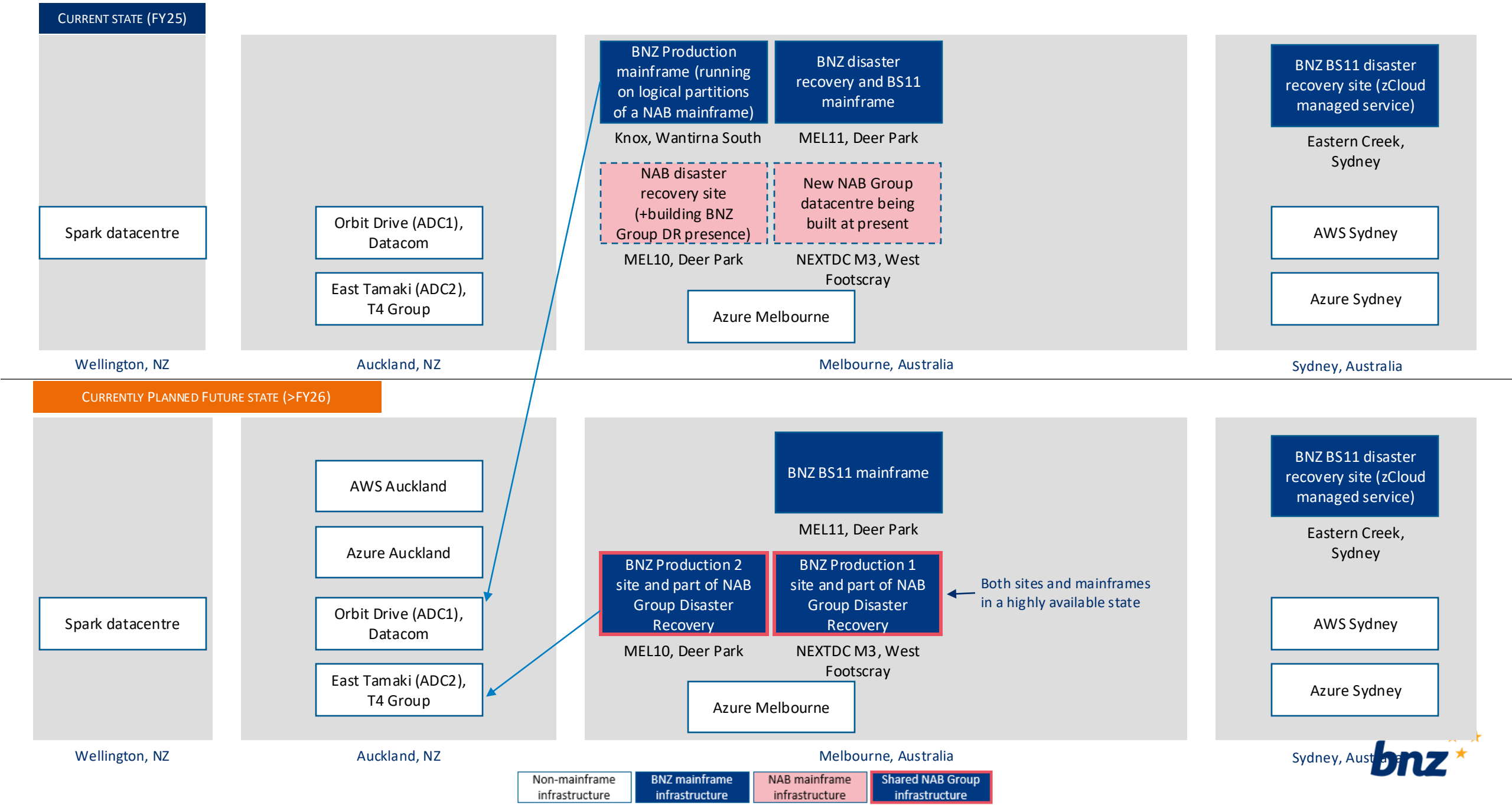
20 30 40 50 60 70 80 90 100 110 120 130 140

Google Cloud Services is used for BNZ ATM managed service and Experience Analytics.

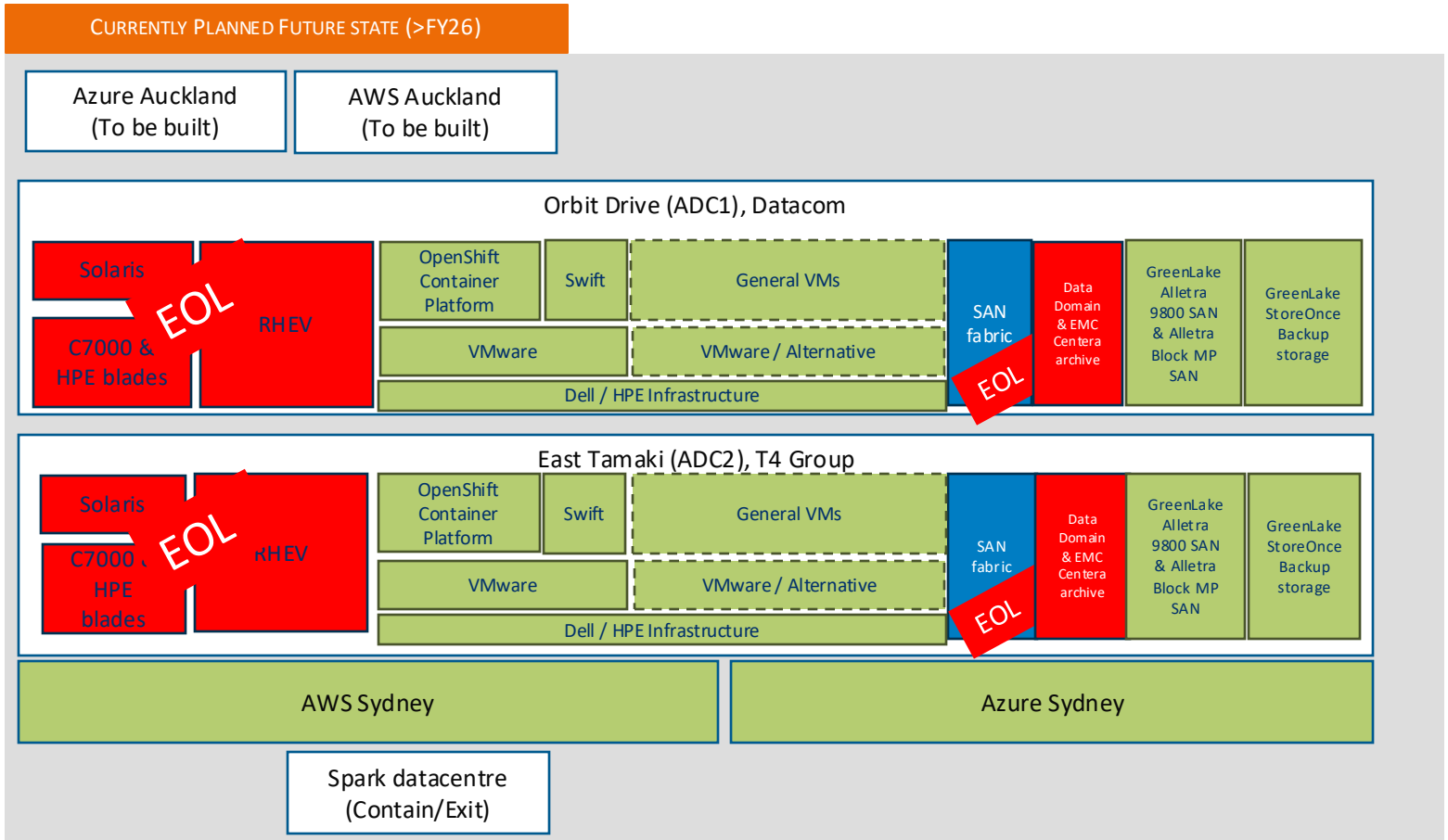
[Dashboard Reference BNZ EA Apps on Cloud]

Data Centres
Cloud Services
and Hosting Platforms

BNZ Data Centres



Non – Mainframe Context - On Premises Platforms



Key Input / Decision Points

- On Premises Hypervisor
  - Replace VMware (where we can) due to 30%+ cost uplift. Experimentation underway.
  - Potential ESU Savings with Azure Local / Hyper-V (tba if this counts).
- Hardware Refresh (Investment)
  - X Servers EOL, Investment needed to replace. Depends on Hypervisor Decision (different server types).
- Archive (Prioritisation)
  - Investment / Prioritisation to exit
    - Data Domain
      - .
      - .
    - Centera (App Teams to move data)
      - Replacement for Cua (Centra Universal Appliance) and Centera

Carbon and Environmental

Auckland

Orbit drive:
In 2022, Datacom selected Mercury to provide its New Zealand datacentre facilities with 100% certified renewable energy at a fixed price to give customers cost certainty until 2032. Datacom is targeting carbon net zero by 2030.

East Tamaki:
The facility prioritises energy efficiency, green technologies, scalability, and advanced power and cooling solutions, ensuring minimal environmental impact

Melbourne

MEL11, Digital Realty:
This site has a NABERS energy rating of 3.5 stars, with only 19% of its energy coming from renewable energy sources.

Site #2 TBC, but if using NEXTDC M3:
This datacentre leverages renewable energy sources such as solar, wind, or hydropower to counter carbon emissions. The exact percentage of renewable vs. non-renewable energy sources used is unknown, although there are options to offset carbon emissions in this datacentre.

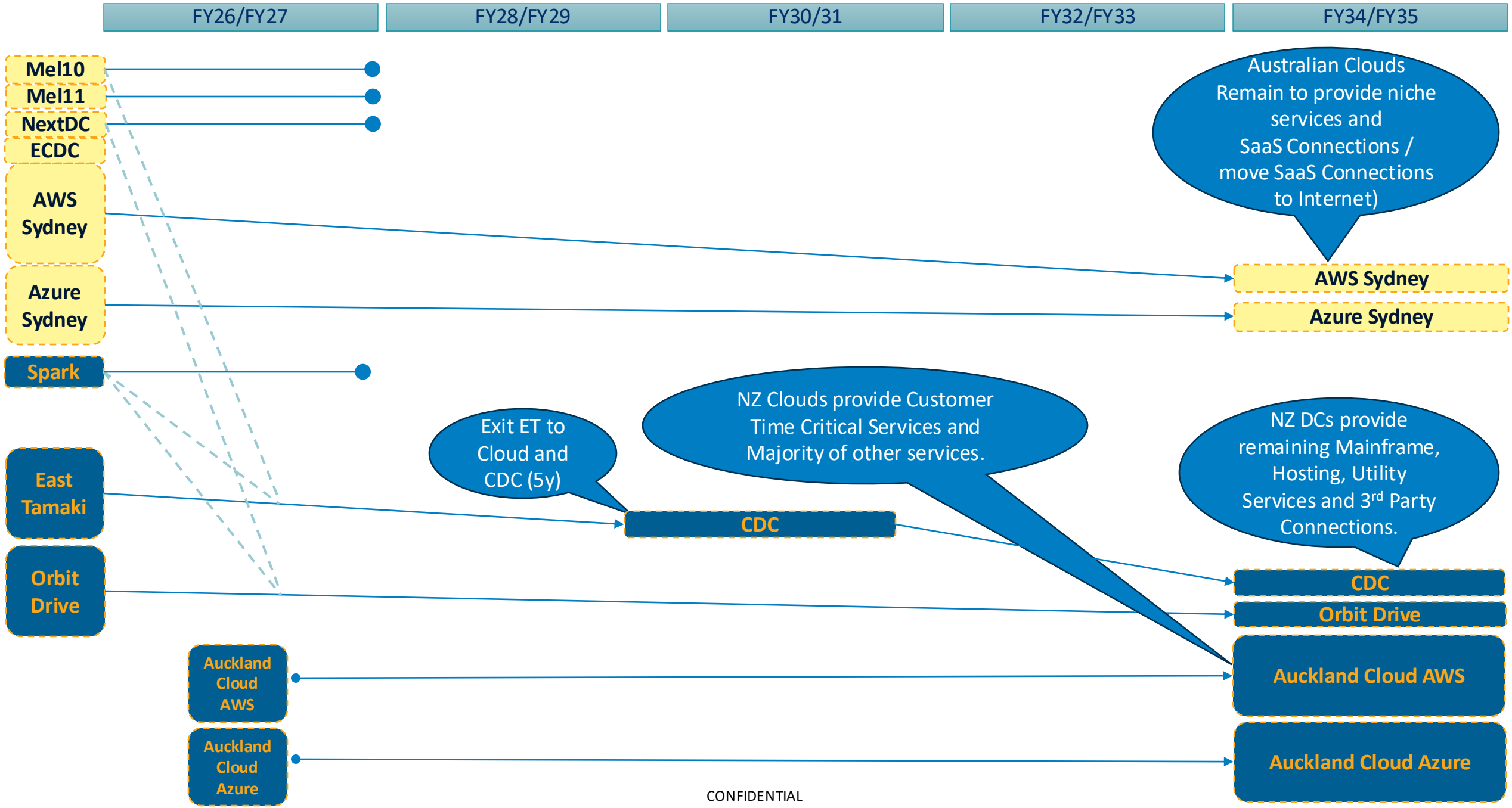
Sydney

Both site locations TBC as BNZ has no on-premise datacentre presence in Sydney currently.

While Sydney in general is moving towards more renewable energy targets, fossil fuels from coal, oil, and gas still play a role in the broader energy mix. Across New South Wales (NSW), the total percentage of renewable energy generation capacity is 53%.

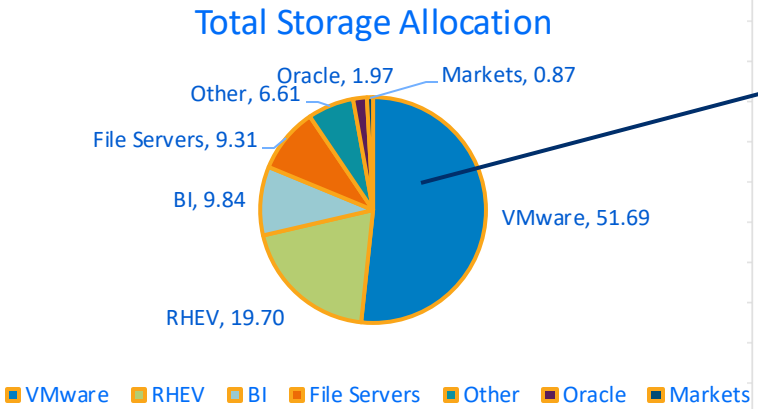
A report on BNZ's Digital Carbon Emissions for 2024 noted that BNZ produced 187.22 tonnes of carbon dioxide equivalent from the use of Azure and AWS cloud computing services, with Azure emissions decreasing by 40% due to cost saving efforts, and AWS emissions increasing by 33% due to the migration of CLR and SaferPayments. A key recommendation in this report is to prioritise datacentres in regions that use renewable energy, especially for contained high energy workloads such as AI and big data processes – for this reason, **the recommended option is Auckland**.

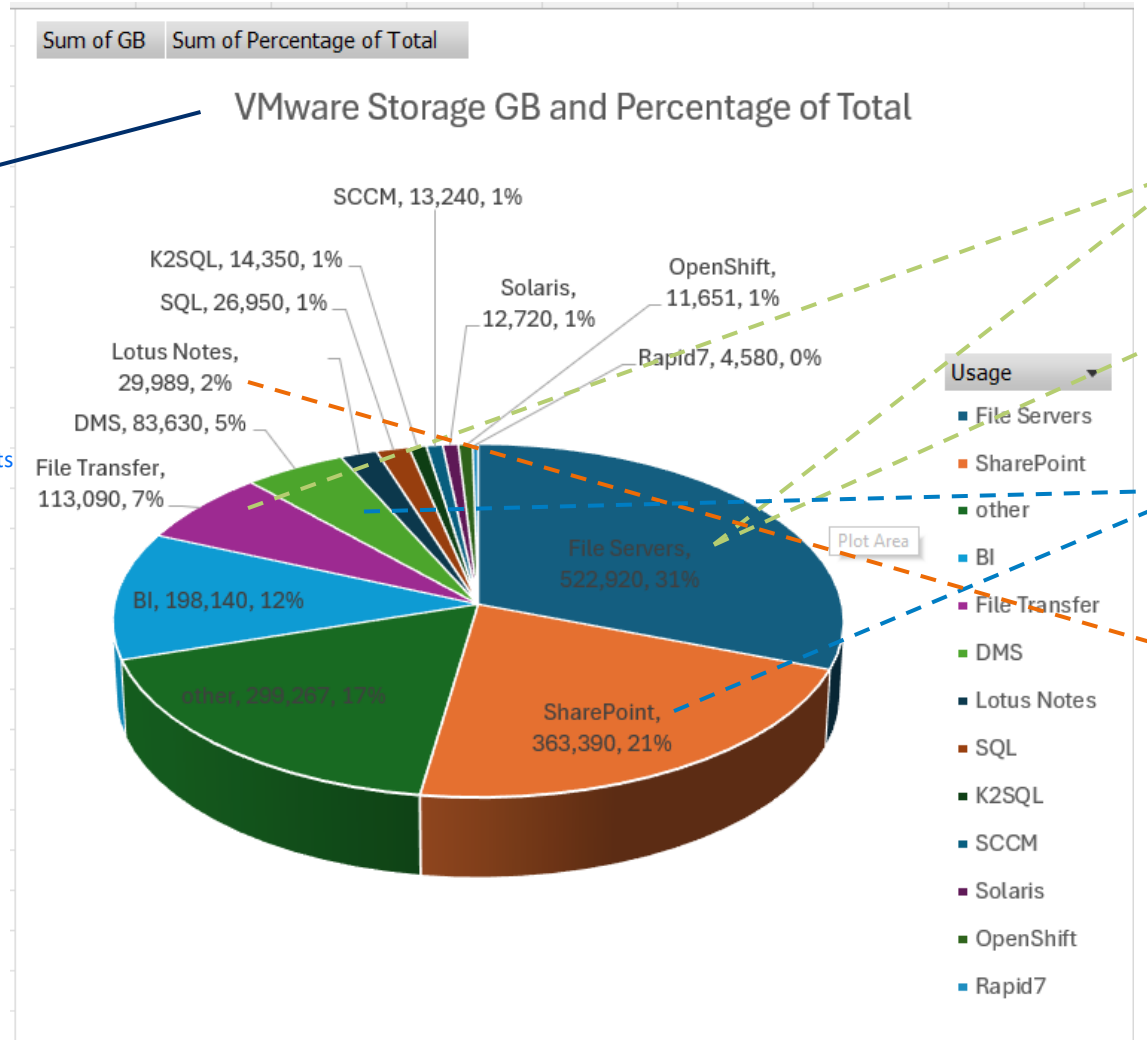
Potential Data Centre Landscape based on strategy to move all we can to Auckland.



Storage
Archive
and Compute

BNZ Storage





Target / Initiative

AWS Storage GW

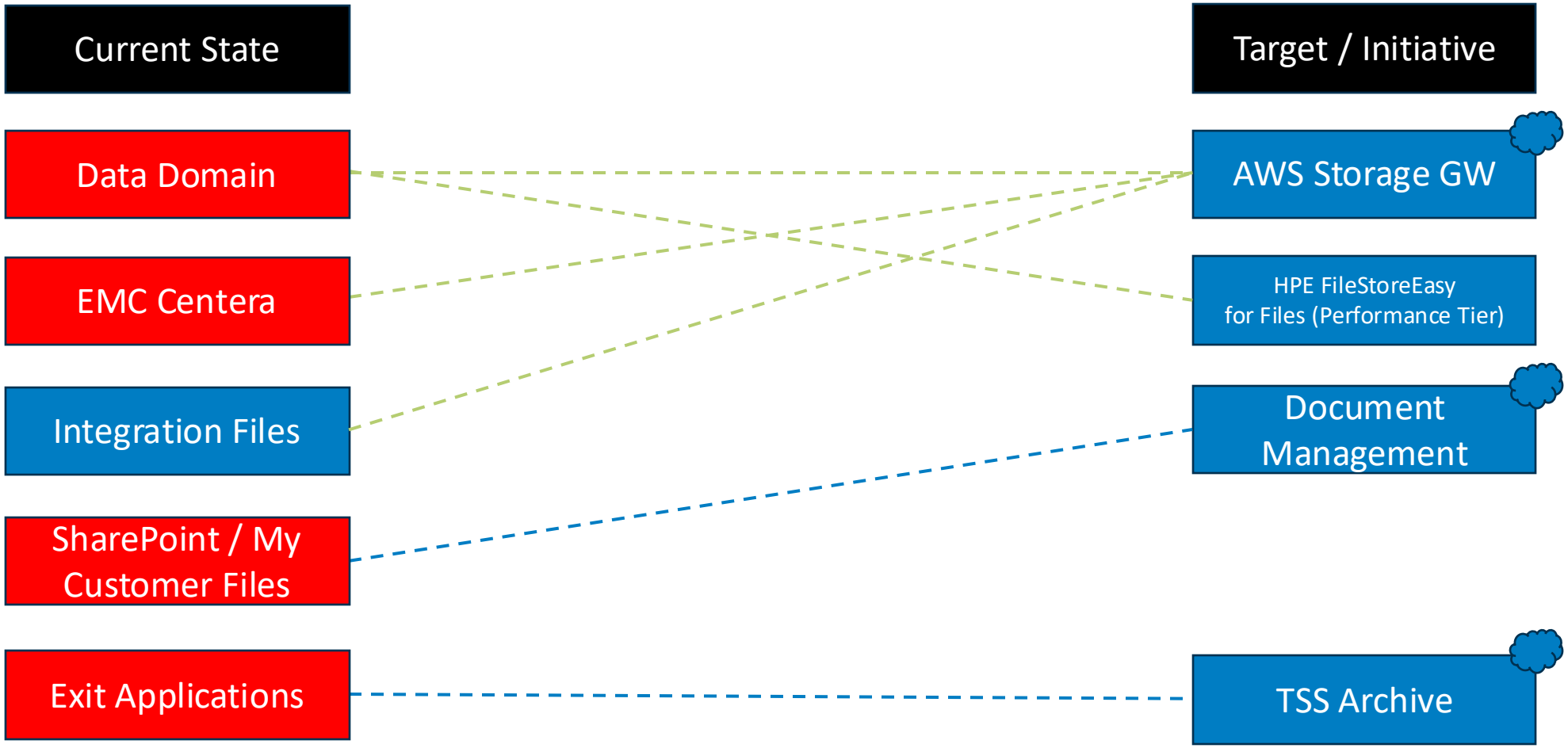
HPE GreenLake for Files (Performance Tier)

Document Management

Exit

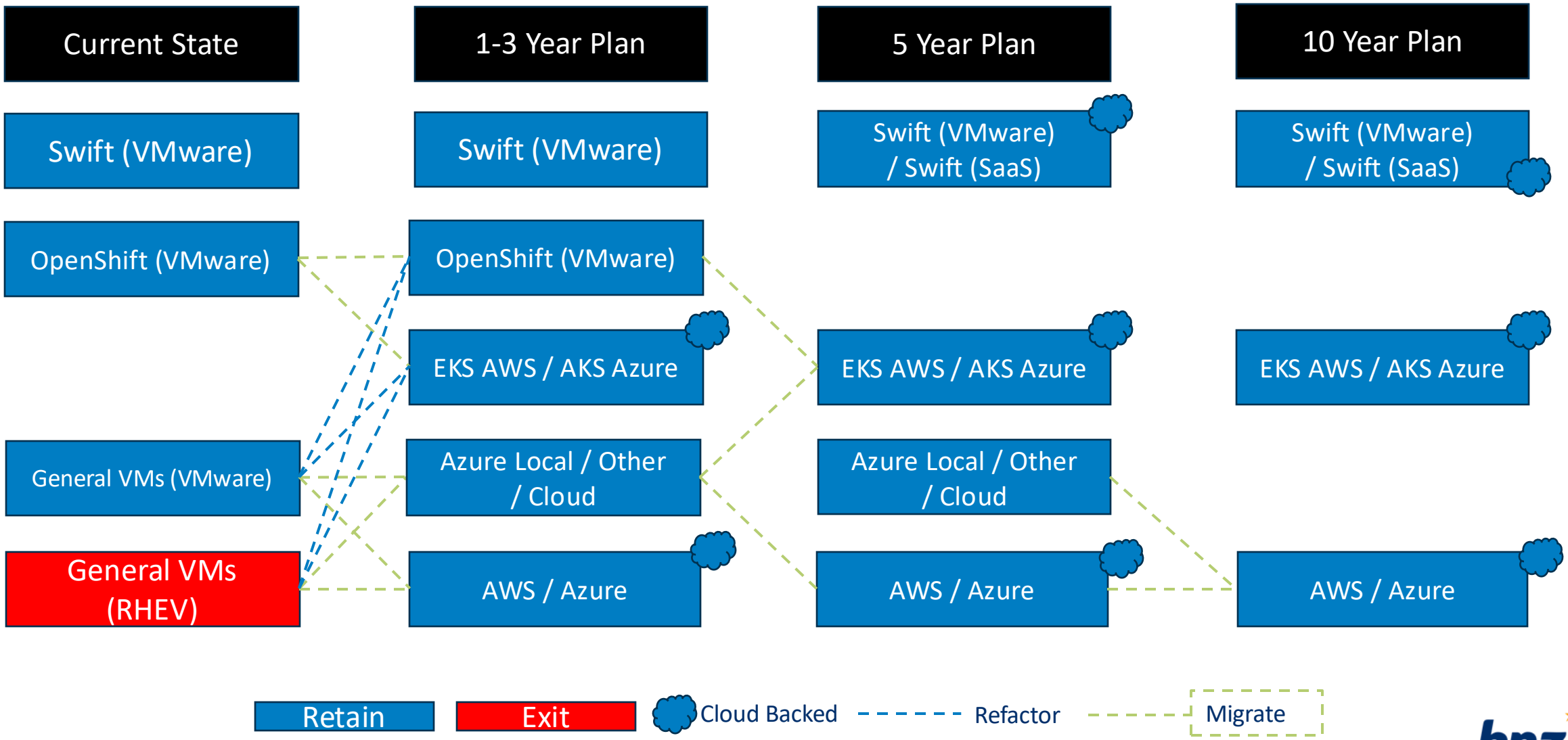
Cloud Backed

BNZ Archive



Exit | Retain | Cloud / Cloud Backed

BNZ Compute


Current State
1-3 Year Plan
5 Year Plan
10 Year Plan
Swift (VMware)
Swift (VMware)
Swift (VMware) / Swift (SaaS)
Swift (VMware) / Swift (SaaS)
OpenShift (VMware)
OpenShift (VMware)
EKS AWS / AKS Azure
EKS AWS / AKS Azure
EKS AWS / AKS Azure
General VMs (VMware)
Azure Local / Other / Cloud
Azure Local / Other / Cloud
General VMs (RHEV)
AWS / Azure
AWS / Azure
AWS / Azure
Retain
Exit
Cloud Backed
Refactor
Migrate

Investment Plan - Recommended actions below

1. C7000 & HPE gen9 & 10 decommission – end of life
2. Decommission Solaris and Redhat-RHEV hypervisor
3. HPE blade compute refresh (case by case)
4. Hypervisor choices (VMware / Microsoft)

Financial ask

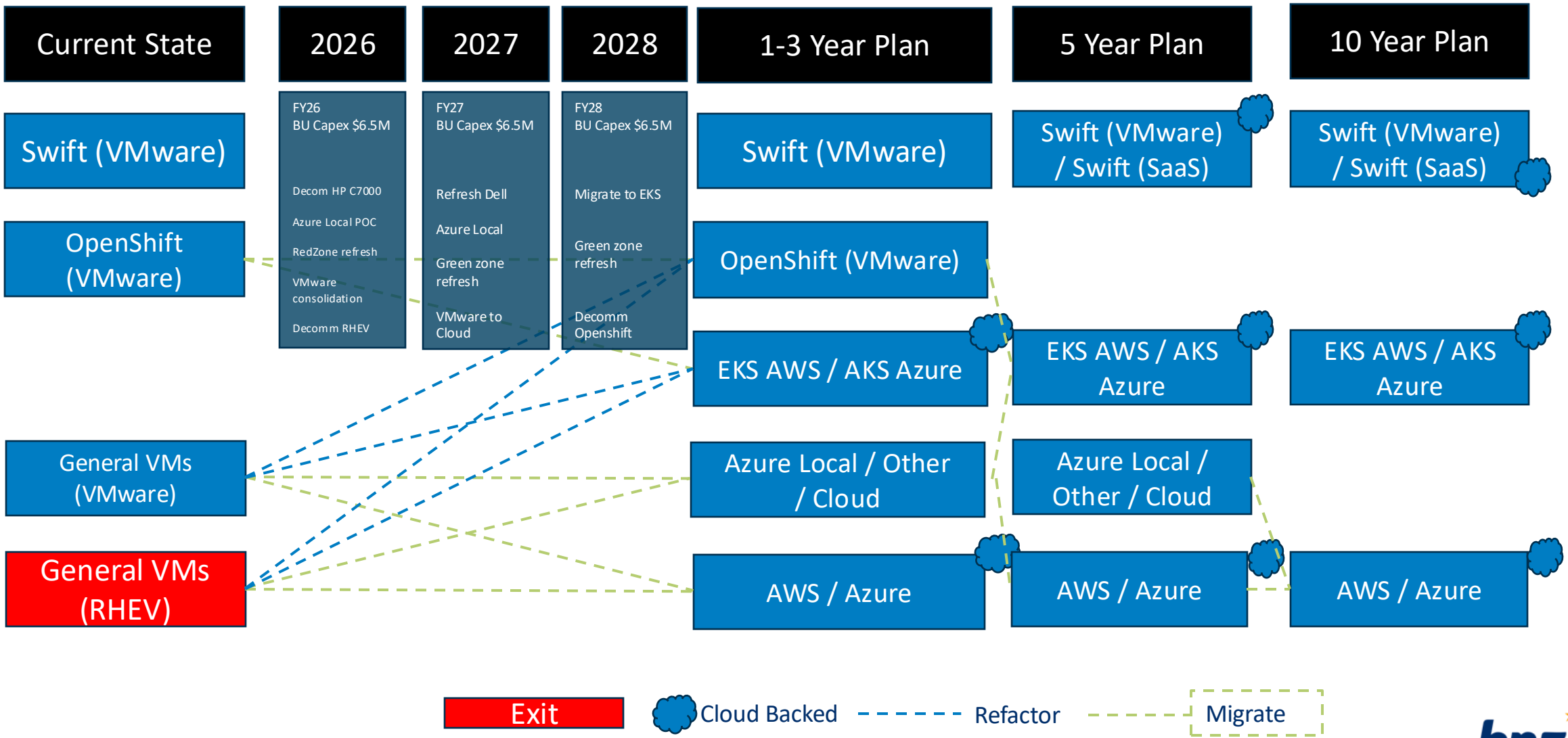
(already in plan for Infra BU Capex – depreciation funded)

FY26 – 6.5M

FY27 – 6.5M

FY28 – 6.5M

BNZ Compute


Current State
2026
2027
2028
1-3 Year Plan
5 Year Plan
10 Year Plan
Swift (VMware)
OpenShift (VMware)
General VMs (VMware)
General VMs (RHEV)
FY26
BU Capex $6.5M
Decom HP C7000
Azure Local POC
RedZone refresh
VMware consolidation
Decomm RHEV
FY27
BU Capex $6.5M
Refresh Dell
Azure Local
Green zone refresh
VMware to Cloud
FY28
BU Capex $6.5M
Migrate to EKS
Green zone refresh
Decomm Openshift
Swift (VMware)
OpenShift (VMware)
EKS AWS / AKS Azure
Azure Local / Other / Cloud
AWS / Azure
Swift (VMware) / Swift (SaaS)
EKS AWS / AKS Azure
Azure Local / Other / Cloud
AWS / Azure
Swift (VMware) / Swift (SaaS)
EKS AWS / AKS Azure
AWS / Azure
Exit
Cloud Backed
Refactor
Migrate

Work in progress options analysis for Hardware refresh & Hypervisor TCO modelling

RHEV & Vmware replacement Option	VEEAM integration	Hardware	hardware managed service or BAU cost over 5 yrs	Hypervisor Software over 5 yrs	Microsoft ARC ESU for 2yrs, hopefully everything is upgraded in 2yrs time	RHEL costs for 5yrs	Provisioning automation work	Migration Capability and cost		Total 5yr TCO
Azure Local	YES	HPE - Synergy	DIY - Datacom and BNZ team operates it as BAU	AzureLocal + AKS price included in Microsoft contract	ESU for Windows and SQL is free of charge	RHEL costs apply	Reuse- Azure2 & Terraform capability	AzureMigrate & VEEAM		
		HPE blades - existing - decom		$0 for AzureLocal $1.2M for Vmware pA						
		Dell - existing - refresh in 2027-28								
		New hardware								
		$ 1,600,000	$ 4,250,000	$ 3,300,000	$ -	$ 2,628,000	$ 100,000	$ 500,000		$ 12,378,000
AWS outpost		AWS specific (5yr term) - 65% discounted	AWS manage their hardware rest managed by Datacom and BNZ	AWS+ EKS	ESU cost still apply	RHEL costs apply	Reuse- AWS capability	Develop new migration pipelines		
RHEV and Vmware clusters		$ 20,298,000	$ 2,550,000	$ 3,300,000	$ 1,344,000	$ 2,628,000	$ 100,000	$ 750,000		$ 30,970,000
RHEV only		$ 4,173,461	$ 6,800,000	$ 7,250,000	$ 1,344,000	$ 2,628,000	$ 30,000	$ 350,000		$ 22,575,461
Vmware		HPE - Synergy	DIY - Datacom and BNZ team operates it as BAU	Vmware	ESU cost still apply	RHEL costs apply	Reuse Terraform- Vmware provisioning	HPE -SOW for migration		
		HPE blades - existing - decom		VMware per year will bump up to 1.4-1.5M per year						
		Dell - existing - refresh in 2027-28								
		New hardware								
		$ 1,600,000	$ 6,800,000	$ 7,250,000	$ 1,344,000	$ 2,628,000	$ 30,000	$ 350,000		$ 20,002,000
Stay on RHEV4.4	need to cost up the this option									
Openshift -Virt	Failed, Hardware architecture is not aligned to BNZ investment on Greenlake storage.	$ 1,600,000	$ 4,250,000	Openshift Virt cost	$ 1,344,000	RHEL inclusive	New cost	Unknown		??
HPE - VME + Morpheus	Vendor not ready production	$ 1,600,000	$ 4,250,000	VME cost	ESU cost still apply	RHEL cost apply	New cost	Unknown		??
IBM - Openshift applicances -	2618VMs	$ 7,120,000		$ 1,500,000	$ 1,344,000	$ 2,628,000	New cost	Unknown		$ 12,592,000

Work in progress – BU capex forecast for Cloud and Infrastructure

							capitalisation phasing											
Estimated Total Spend	Priority	Op Canvas	PM	Z Code	Funding Source	Existing PR codes	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	Jul-26	Aug-26	Sep-26
$ 1,120,000	1	AWS - Foundations	Deepak	CAPEX z.0436	BU Capex Cloud	PR61210			$ 280,000			$ 280,000			$ 280,000			$ 280,000
$ 1,180,000	1	Azure platform uplifts	Deepak	CAPEX z.0436	BU Capex Cloud	PR61211			$ 295,000			$ 295,000			$ 295,000			$ 295,000
$ 1,400,000	1	Containers - AKS, Openshift and EKS	Hayden	CAPEX z.0436	BU Capex Cloud	PR61212			$ 350,000			$ 350,000			$ 350,000			$ 350,000
$ 1,200,000	2	Cloud Network uplifts	Elisa	CAPEX z.0436	BU Capex Cloud	PR61213							$ 600,000					$ 600,000
$ 4,900,000																		
$ 600,000	1	Compute -Images and Software	Hayden	CAPEX z.0526	BU Capex Infra	PR61214			$ 150,000			$ 150,000			$ 150,000			$ 150,000
$ 830,000	1	Tooling - Toolchain Infrastructure	Hayden	CAPEX z.0526	BU Capex Infra	PR61215			$ 207,500			$ 207,500			$ 207,500			$ 207,500
$ 700,000	1	Domain services - uplifts & HSM hardware refresh	Elisa	CAPEX z.0526	BU Capex Infra	PR61216			$ 175,000			$ 175,000			$ 175,000			$ 175,000
$ 1,500,000	1	OnPrem Compute infrastructure refresh	Deepak	CAPEX z.0526	BU Capex Infra	PR61217							$ 750,000					$ 750,000
$ 200,000	1	OnPrem hypervisor replacement and consolidation	Hayden	CAPEX z.0526	BU Capex Infra	PR61221			$ 50,000			$ 50,000			$ 50,000			$ 50,000
$ 1,005,000	1	Network - Proxy, Core switches and Firewall upgrade	Elisa	CAPEX z.0526	BU Capex Infra	PR61218							$ 502,500					$ 502,500
$ 845,000	1	Application Delivery Services Uplift	Elisa	CAPEX z.0526	BU Capex Infra	PR61219			$ 211,250			$ 211,250			$ 211,250			$ 211,250
$ 820,000	1	Storage and Backup - San Fabric & FileStore Datadomain Replacem	Deepak	CAPEX z.0526	BU Capex Infra	PR61220			$ 205,000			$ 205,000			$ 205,000			$ 205,000
$ -	2	Last year's PR codes																
$ -																		
$ -																		
$ -																		
$ -																		
$ -						FY26 Captialisation phasingforecast	$ -	$ -	$1,923,750	$ -	$ -	$1,923,750	$1,852,500	$ -	$1,923,750	$ -	$ -	$3,776,250
$ -						FY26 Depreciation uplift phasing			$ 32,063	$32,063	$32,063	$ 64,125	$ 95,000	$95,000	$ 127,063	$127,063	$127,063	$ 190,000
$ 6,500,000																		
$ 11,400,000																		

Detail Slides

Strategic Themes – Challenges and Issues

Current State	Current State	Target State	Why	What needs to change/outcome.	Key Area	2024 Success Looks Like	2025 Success Looks Like
Platform - Tools	Many tools many teams building the same modules bespoke.	**Consolidate Module Development** ▪ **Inner-source** **Consolidate Tools, Align with Engineering** ▪ **(Jenkins + TFE)**	Lots of waste with individual projects/teams doing the same thing over and over, perception of cloud is nothing is 'ready' and all teams have to start from scratch. Collaboration with engineering has improved visibility of standards/demand. Alignment on tools means skill set is well known and Innersource model matures.	**Platforms moves to Jenkins & TFE for CI/CD of platforms modules.** **Industrialization of Modules and Stacks. Not a projects responsibility, but a dedicated effort to identify and mature modules and establish stacks to be as easy to consume as native cloud modules.**	People / Process / Technology	Cloud platforms provide complete jump start modules to build on. Consolidation of tools. Alignment of module ownership Innersource development.	Innersource Development Model becomes embedded, teams contributing to shared modules. Modules consumed in stacks.
Platform - Cloud Modules	Ownership and onus in teams or projects with less access and cloud skillset, slows and taxes teams. Skill uplift is too steep, many permission barriers to overcome. All teams slowed.	**Cloud Platforms get more involved and take ownership of core modules**, work in collaboration with module supporting teams to own / inner-source the code base. ▪ Modules are **quick started by cloud teams**, so the cloud bits (access, base CSAM policy) are sorted, then inner-sourced. ▪ How could we front load the module development and get **more enablement completed**.	Lots of waste with individual projects/teams doing the same thing over and over. Many teams competing, cannot wait for 1 team to deliver or prioritize all features. Skills available just not allowed to contribute.	**Industrialization of Modules and Stacks. Not a projects responsibility, but a dedicated effort to identify and mature modules and establish stacks to be as easy to consume as native cloud modules.** **Innersource - Cloud Platforms Establish the basic modules, then enable** cross organization engineering skill set to do the cloud engineering, then make use of service teams to operate and maintain the outcome. e.g. db. Empower Innersource so any team/contributor can input into enhancements/stacks.	People / Process.	Cloud platforms provide complete jump start modules to build on. Alignment of module ownership, Innersource development.	

Strategic Themes – Challenges and Issues

Current State	Current State	Target State	Why	What needs to change/outcome.	Key Area	2024 Success Looks Like
Platform - Stacks	Modules being developed independent of full stack. Next consumer of similar/same stack has to put it together.	**Consumable compliant full stacks and patterns.**	Speed to market, **consistency, security** approvals of standard stacks. **Reduce waste** of individual projects / teams doing the same thing over and over. Many teams competing, cannot wait for 1 team to **deliver** or prioritize all features. Skills collaborate available just not allowed to contribute.	**Discovery of common stacks, development and compliance built into.**	Technology / Process.	Alignment of module ownership, Inner-source development. Clear backlog and ownership of stack build out, module and stack developers, attain stack compliance.
Compute	Potentially focusing on too many options, do the simple things well.	**Container platforms become the dominant outcome (including DB).** **Common Stacks identified compliance built into** deployable templates e.g. VM + SQL. **Encourage simple cloud services** where long delay is seen, e.g. Cloud Ingress.	Containers (the next generation of virtualization) - enables Modern architecture, **removes the dependency on platforms.**	**Container platforms established.** **Common stacks enabled.**	Technology	Our key strategic cloud platforms are established. Stacks are built out and clear about when they will be available/who can contribute to accelerate.
Cloud Migration	Pushing teams to migrate to Cloud is causing investment in the wrong areas. Legacy is legacy, let it be. Allow for investment where it is of most value.	Practicable approach to cloud migration. ~50% on cloud in 3-5 years.	Some assets are legacy and their is no value in investing / pivoting time into cloud migration for the sake of it. Pick the things we are actively in development with to be cloud first/cloud native.	Migration % Targets, migration mandates changes to enable build and run and engineering to prioritize investment and enable as a priority.	Process.	Migration / refactor cadence is in the owning domains. Forecast is clear of legacy investment needed.

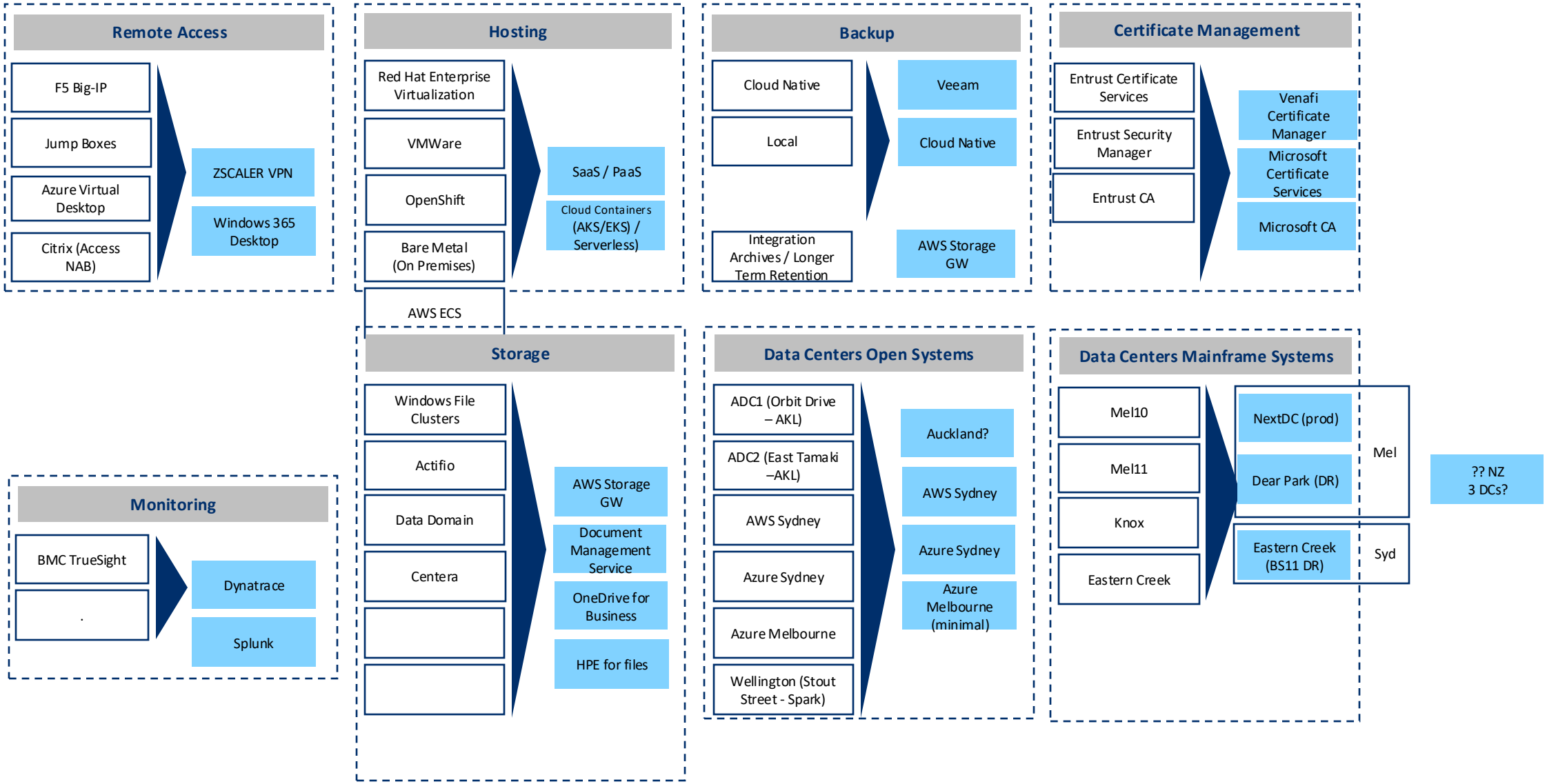
Strategic Themes – Challenges and Issues

Current State	Current State	Target State	Why	What needs to change/outcome.	Key Area
Multi-Cloud	Lack of clarity on key Multi-Cloud patterns.	**Establish data copy service for backups/exports between clouds.** **Veeam backups of key Cloud Resources.**	Required for key Cloud assets. Meet APRA expectations.	Dedicated effort on Architecting and solving for this. Cloud to come into scope once Veeam on premises is matured.	Technology
Security	Embedded Security Roles - Improved perception of Security and step change in agility of the Delivery Teams. - Shift Left. Standardized Pipelines.	Success Measure - **Aligned with the Agility of Development** and Business Enabling Teams. Security is embedded in the delivery **not a request and wait process**. Shift the model. ~~- Make it harder to provision VM based workloads~~ v's **Do the basics** and make it invisible and fully automated to manage **out of the box!**			People & Process
Compliance	- So Many Governance Standards, So Many Compliance Standards - Change to Cloud incurs - SDEC, TAF, PCI DSS, CPS234 - MOI-. CAST, CSAM, G2G.	Simplify - Number of patterns/processes where **security is built into the reusable stack**. Strategic Drivers - Guardrails (built into the developers world) v's Escalations. - Strategic Partnerships - Akamai, Azure, AWS.	Cloud is hard! Organization is slowed drastically by all the compliance burden. Continue with compliance but consolidate to stacks and make them the first (low friction) choice.	Build more compliance into stacks, platforms more involved in resolving compliance for stacks, shift the work left.	Process
Cloud Costs	Deliver and Run! Projects are delivered then the impetus moves onto building the next thing.	KPI on quarterly review of cloud consumption, review driven by Cloud FinOps team, savings opportunities reported to GM.	Extreme cost reduction potential. Cloud is infinite, very dangerous to go unchecked.	Cloud FinOps team domain review cycle / calendar established.	Process

To be updated and added in to meet table of contents.

Target State Treatment Strategy

Achieving target state requires capabilities transitioned to target future state technologies rather than one-for-one technology replacement.



Draft / Not to be presented.

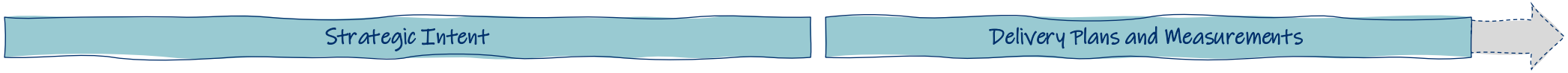
Big 5

1 **Enable End to End Observability (Monitoring) across all Cloud Platforms – Mainframe, Azure, AWS on Premises.**

1 **Reduce reliance on premises, but delivering strong foundations into AWS**

2 **Critical Hygiene.**

3 **Pragmatic Priorities, Services & Realistic Service Placement – Opinionated Cloud**



Technology Platforms Vision and Purpose

Platforms' role in BNZ's goal of becoming New Zealand's best Bank in personal and business, is to ... "Give our colleagues the simplest, most cost effective, and most efficient way of using the bank's underlying world class technology platforms"

Aligned to 5 Principles

Modernise and simplify
Platforms domain is key to produce the building blocks that will accelerate modernisation and simplification

Agile and adaptable
Investing in Technology Foundations platforms will help meet the current and future needs of our organisation

Platform mindset
Technology foundation platforms capabilities to help with enabling platform of platforms strategy

Resilient, secure, safe
Follow the mantra of Secure by Default to reduce the risk and make it easier to build applications

Deeply digital
Automation capabilities to support agility, industrialisation and other initiatives from Engineering and other domains

Powered by tech focus areas

Flexible and scalable networks

Industry leading k8s platform(s)
(Container Orchestration)

Compliance reporting ready
(Operational Excellence)

Secure by Design

Deepen Cloud Adoption

Easier Industrialisation
(Recipe Adoption)

"Perfection is achieved, not when there is nothing more to add, but when there is nothing left to take away."

— Antoine de Saint-Exupéry, Airman's Odyssey

tags: design, exupery, perfection

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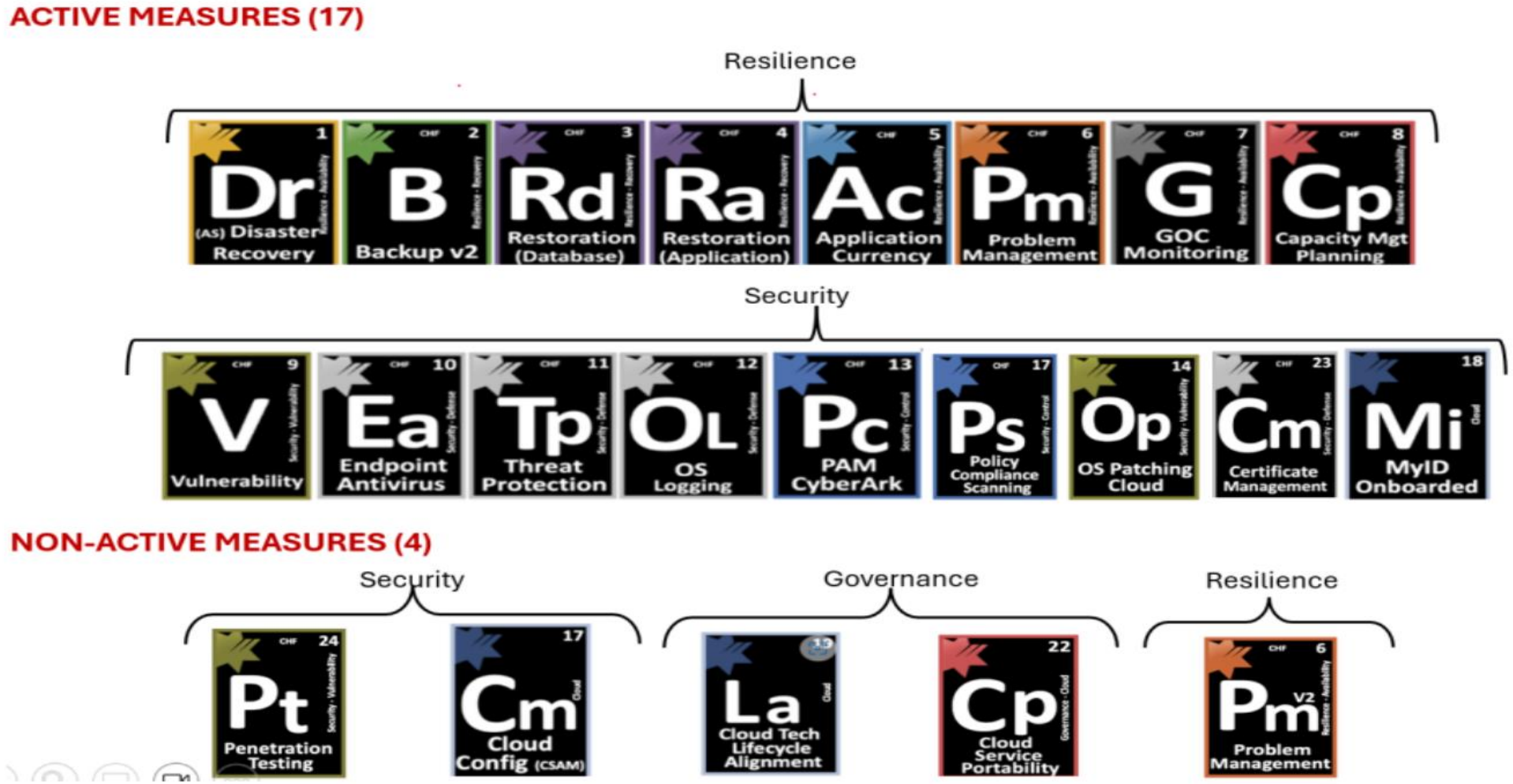
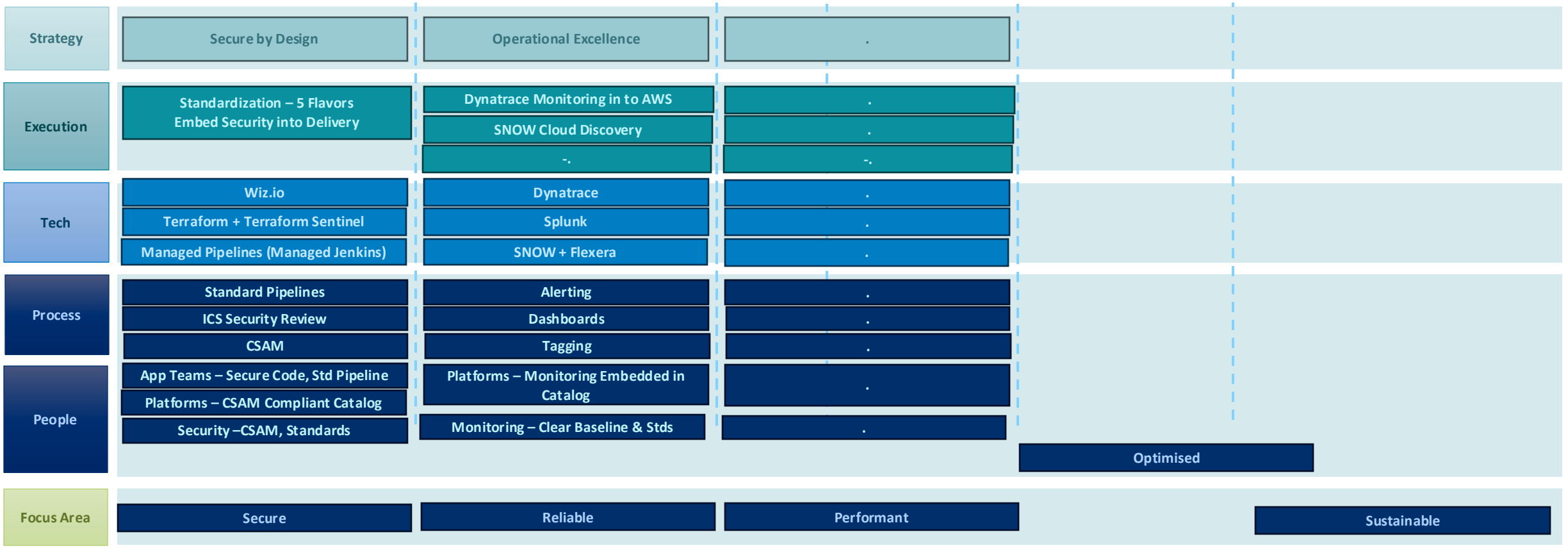
Critical Hygiene Framework



Perfect the Basics - People, Process and Tech



* This is a draft view of a proposed transition roadmap, considering in flight work. Further refinement is required to understand prioritisation and resourcing for delivery, based on the agreed funding envelope.

Adoption / Platforms Phases - Progress and Delivery

Foundation Phase	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Cloud Foundation (Platform Team/Foundation)		Azure AWS				*			
Cloud Foundation 1a - VM & Internal App Hosting									
Cloud Foundation 1b - Web App Hosting		***	***	***					
Cloud Foundation 1c - VM Migration Tooling								?	?
Cloud Foundation 2 - Single Page Applications									
Cloud Foundation 3 - Containers				** **	** **				
Cloud Foundation 4a - Integration - Kafka									
Cloud Foundation 4b - Integration - Kong									
Cloud Foundation 5 - Ingress Web	***	***	***	***	***				
Cloud Foundation 6 - Ingress API GW					**	**			
Cloud Foundation 7 - Egress (Proxy Egress to ZSCALER)									
Cloud Foundation x - Serverless							**		
Cloud Foundation x - SFTP GW, File GW.									

* will need to transition away from AD FS as that is retired.

** not fully industrialized.

*** www/microsites - not fully industrialized.

[Ref: Cloud Big Rocks]

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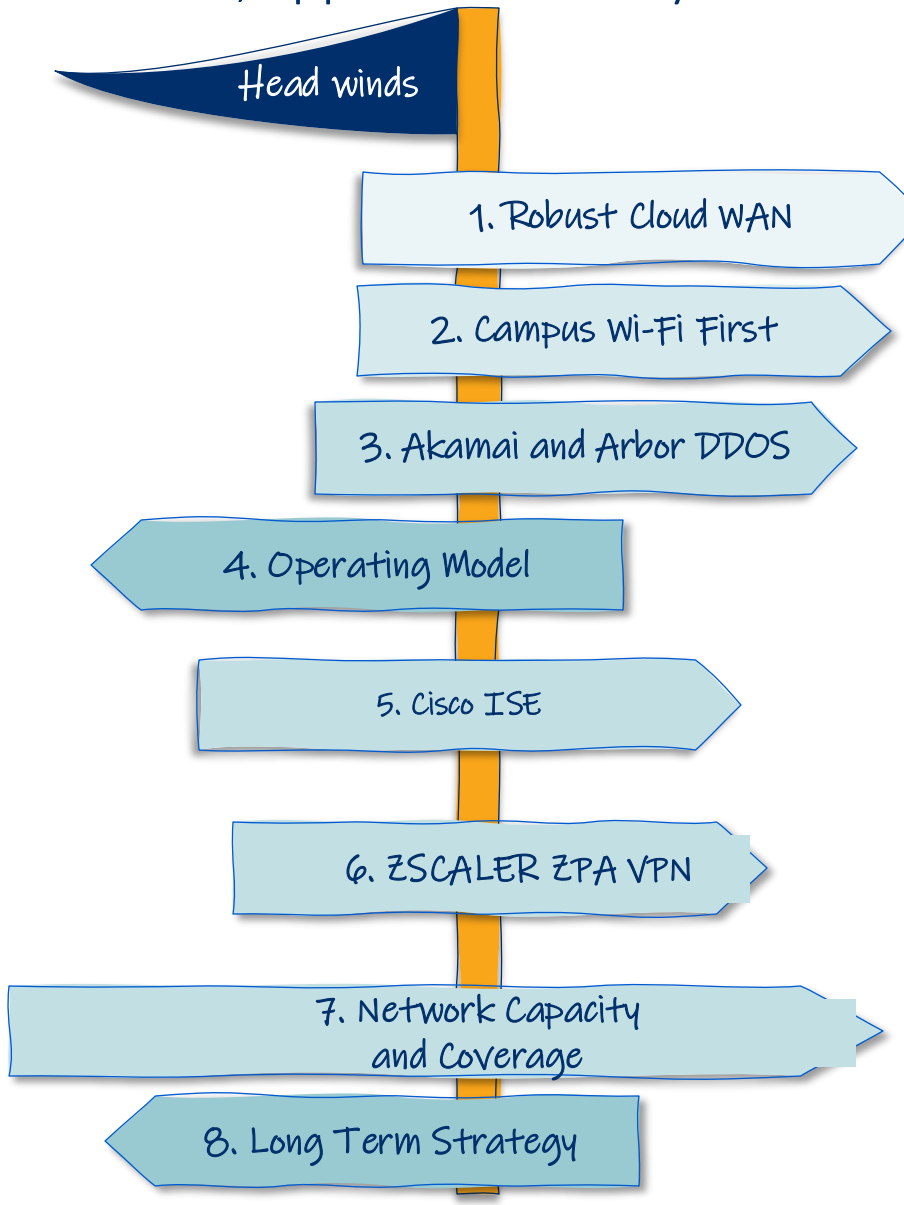
Progress indicators - Network Protection , Application Delivery and Security (ADS), Domain Services.



After complications with the intended Cloud SD WAN POC BNZ decided a traditional network approach which has now been delivered into NZ, AU DCs and both Cloud providers.

Wi-Fi First has been delivered into our Primary Corporate sites.

Akamai replaced Imperva and compliments Arbor network level DDOS support.

Operating Model – As we have distributed the operating model to a Staff Experience, Core/Campus and Network Protection, the skills and practices have been spread thin and support has become more complex to understand.

This has enabled us to segment untrusted / semi trusted and trusted devices across our access network. Legacy devices challenge this.

BNZ have introduced the ZSCALER ZPA VPN, whilst this have been successful there is work to do to set application-level policies to move towards a more secure and Zero Trust application access patterns.

Higher Capacity Networking into BNZ Clouds – AWS and Azure and into BNZ AU / NAB sites allows a more optimised service path for high data/low latency applications.

BNZ has not had a formal Network Architect / Network Enterprise Architect for some years, therefore reliance has fallen on vendors and internal resources.

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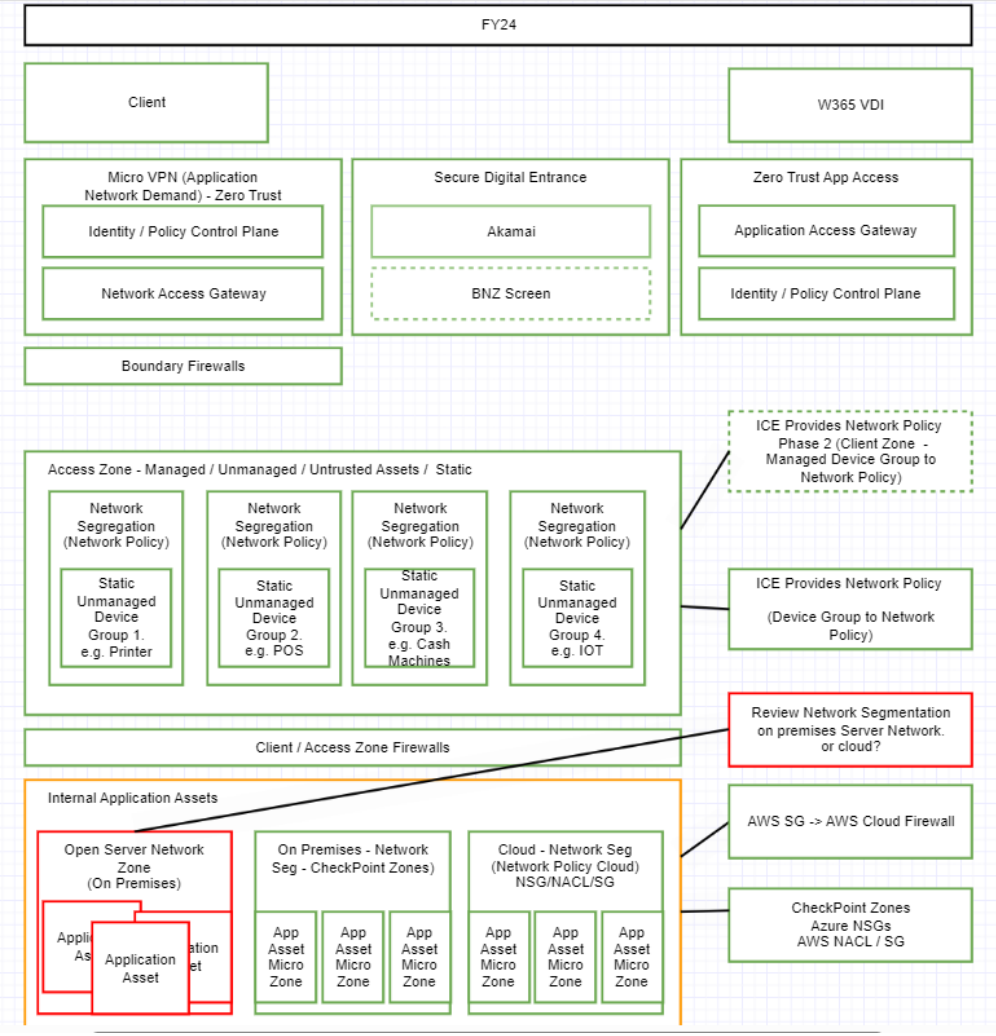
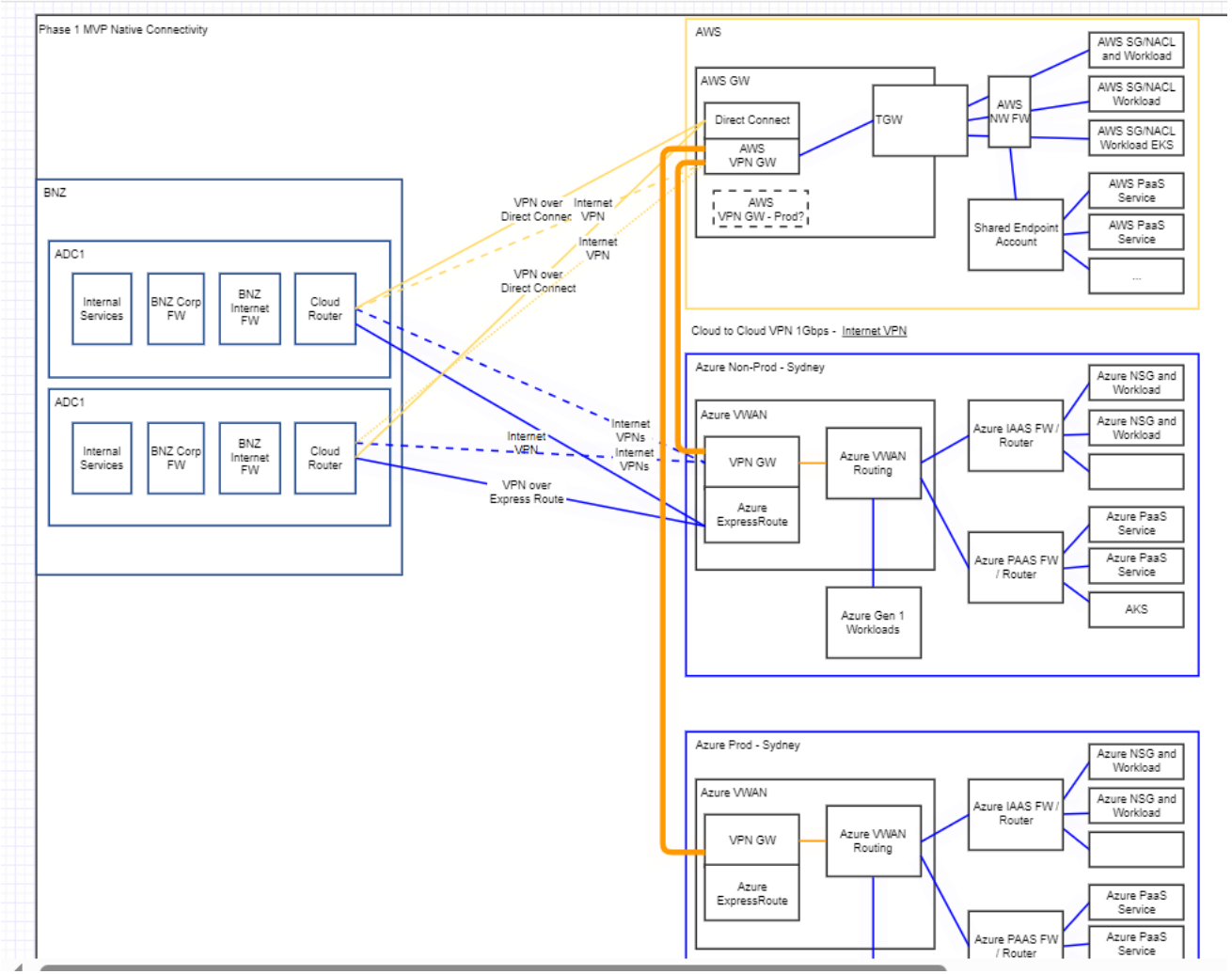
Current State Landscape – Network And Network Security Services Stack



Current State Landscape – Cloud Network Topology



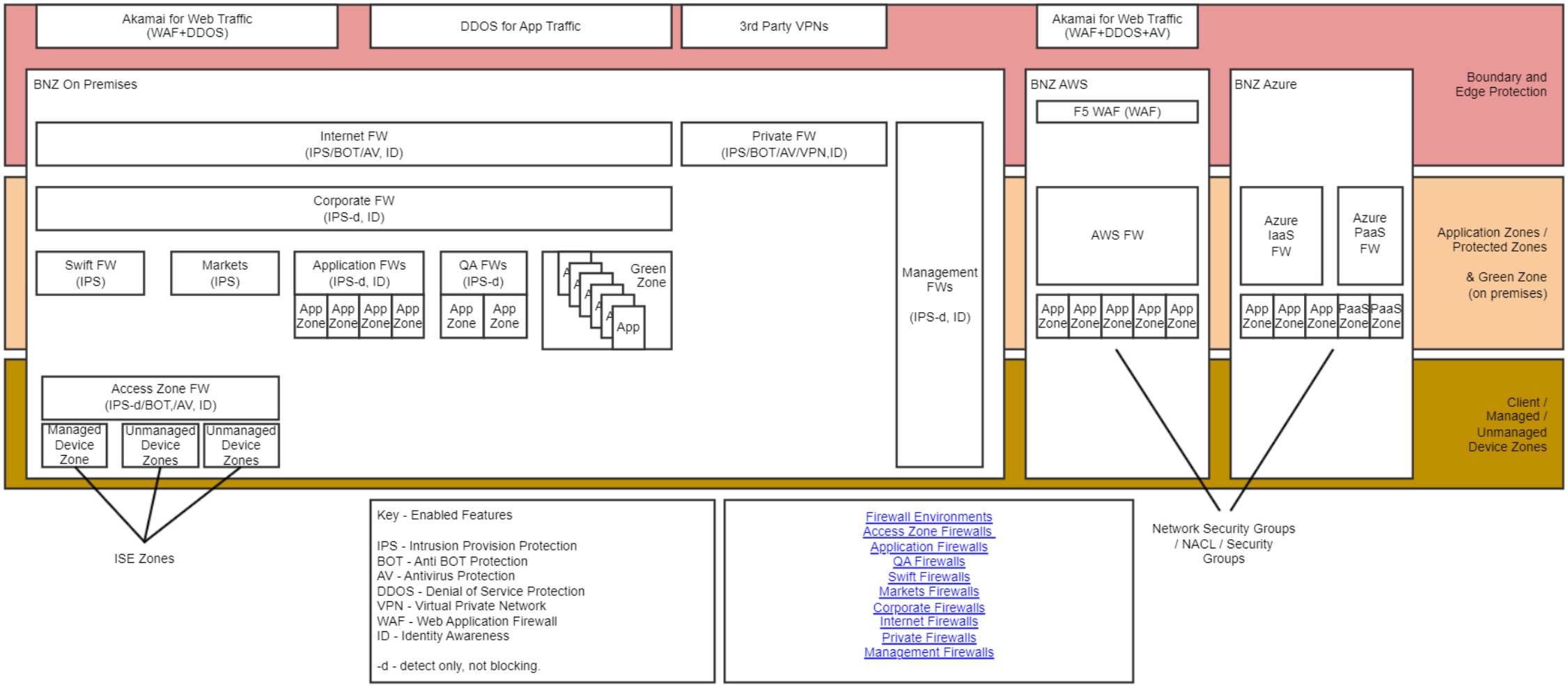
BNZ have deployed a hub and spoke topology across both AWS and Azure, with Cloud Native Firewalls intermediating flows between accounts / services.*

*Migration to AWS FW a work in progress.

Encrypted VPNs over managed circuits between clouds, with Internet backup VPNs.

Spoke Services enable Security Groups / Network Security Groups for finer grained network policy.

Current State Landscape – Network Firewalls



BU CAPEX INFRA

What have we achieved & what is the plan?

FY22

- PAAS - On Prem Container platform
- IAAS capability
- HPE hardware purchases
- Dell hardware Wave1 -
- Storage transitioned to HPE Greenlake
- Network – Next Gen network kicked off

FY23

- Dell hardware – Wave 2&3
- Ansible automation
- Terraform automation
- Hadoop Hardware refresh
- F5 refresh perpectual software license
- SWIFT hardware refresh

FY24

- IPAM replacement
- Self service capability for VMware
- Software Supply Chain - OS Images and pipelines VMware, AWS and Azure - Windows 2022 , RHEL8 and RHEL9
- StoreEasy Fileshare Replacement hardware
- Maestro Firewall hardware refresh
- VTS mainframe service

FY25

- Red Zone HPE hardware refresh
- VMware Self-service
- Storage SAN network refresh
- GreenLake2 to Greenlake3 hardware refresh
- C7000 to Synergy Frame refresh
- RHEV to VMware consolidation
- Transition to Managed Hypervisor
- NZ core Switches
- StoreEasy

FY26

- Dell hardware – wave1 refresh
- VMware to Openshift migration
- Core switch refresh
- Infrastructure API rollout
- Replatform tooling – Octopus & Terraform

What have we achieved?

FY22
- AWS platform
- Azure2.0 platform
- Terraform
- Checkmarx software perpetual license $400614.94
- AWS platform build $1,113,386
- Azure platform build $922,157
- Azure sso automation $263,828
- Build Cloud migration pipelines for AWS and Azure $169,456
- Build container platform on EKS and AKS $744,338
- Cloud network $362,773
- Cloudability $20,444
- Server Images and Controls $599,191
- Teraform and cloud tooling build and training $565,957
- Openshift v4 platform build (SCRR transfer)
- Managed Jenkins pipelines(SCRR transfer)
- Build Cloud migration pipelines (SCRR transfer)

FY23
- CSAM automation for AWS and Azure
- NetworkBuild container platform (EKS and AKS)
- Server Images and Controls
- AWS platform build
- Build Cloud migration pipelines for AWS and Azure
- Teraform and cloud tooling build and training
- Azure platform build

FY24
- AWS Control Tower
- AKS Azure 2
- Azure 1.0 to 2.0 (Web Apps) Migration Build
- Exit Windows & SQL 2012
- AWS SSO ADFS to AAD (MS Entra ID)
- Azure 2.0 CSAM Pattern Enhancements
- Cross Platform Kubernetes Enhancements
- Azure Centralised Storage
- Containers Monitoring & Alerting Enhancements
- NGN
- Azure Monitor Agent Replacement
- BNZ Platform Lifecycle & API
- Server Patching Enhancement & Controls
- Containers Control Cluster

FY25
- AWS control tower
- AWS - Foundations
- AWS - Features
- AWS - Improvement & Enhancement
- Azure - 1.0
- Azure - 2.0 (Melbourne Site)
- Azure - Monitoring Improvements
- Containers - AKS
- Containers - Cross Platform Kubernetes Enhancements
- Containers - Observability
- Storage and Backup - Veam Back Up
- Observability Consult Opex to Capex (Other - Req 20854) Obsr

FY26
- Azure OpenAI platform
- AWS AI - bedrock

Cross Platform Focus Areas

1

Compliant and Mature Components, Recipes and Patterns – Full Stack! (Time to Hello World / Simplification).

- Ensure security (CSAM and ICS compliance) and compliance (CAST/CPS234/CHF) is built in.
- Eliminate manual builds, align on tools and practices.
- Allow for skills to be utilised to fast start stacks / build on features.
- Ensure recipes are maintains for currency, security and compliance.

2

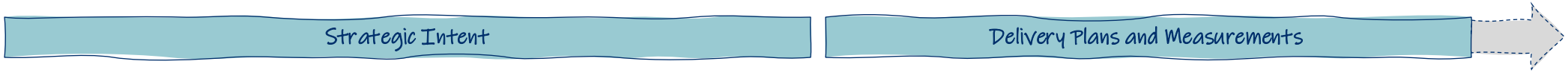
Focused Cloud Enablement – strong collaboration on build and priorities. (Get the Basics Right)

- Ensure we are honest about the funnel, requirements, dependencies and delivery timelines.
- Enable focus on service industrialisation and maturity.
- Use cloud native tech and augment / use available skills sets.

3

Pragmatic Priorities, Services & Realistic Service Placement – Opinionated Cloud

- The answer may be on cloud or premises.
- The answer may be an Enterprise toolset v's cloud native (Backup & Monitoring).
- Multi-Cloud is complex, we may need to revisit.
- Focus maturity, skills, tools and investment.



Strategic Themes

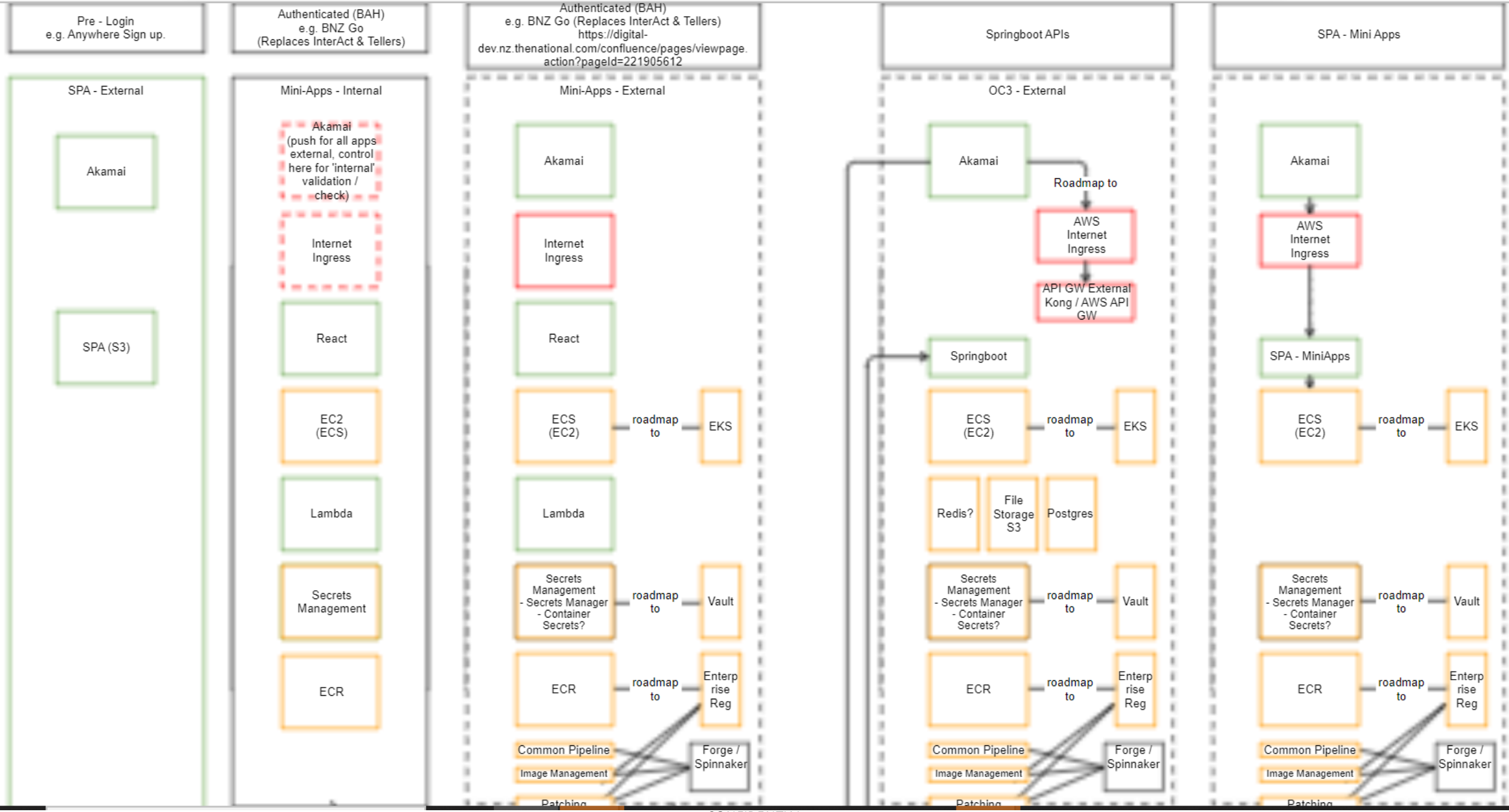
Current State	Current State	Target State	Why	What needs to change/outcome.	Key Area	2024 Success Looks Like	2025 Success Looks Like
Platform - Tools	Many tools many teams building the same modules bespoke.	**Consolidate Module Development** ▪ **Inner-source** **Consolidate Tools, Align with Engineering** ▪ **(Jenkins + TFE)**	Lots of waste with individual projects/teams doing the same thing over and over, perception of cloud is nothing is 'ready' and all teams have to start from scratch. Collaboration with engineering has improved visibility of standards/demand. Alignment on tools means skill set is well known and Innersource model matures.	**Platforms moves to Jenkins & TFE for CI/CD of platforms modules.** **Industrialization of Modules and Stacks. Not a projects responsibility, but a dedicated effort to identify and mature modules and establish stacks to be as easy to consume as native cloud modules.**	People / Process / Technology	Cloud platforms provide complete jump start modules to build on. Consolidation of tools. Alignment of module ownership Innersource development.	Innersource Development Model becomes embedded, teams contributing to shared modules. Modules consumed in stacks.
Platform - Cloud Modules	Ownership and onus in teams or projects with less access and cloud skillset, slows and taxes teams. Skill uplift is too steep, many permission barriers to overcome. All teams slowed.	**Cloud Platforms get more involved and take ownership of core modules**, work in collaboration with module supporting teams to own / inner-source the code base. ▪ Modules are **quick started by cloud teams**, so the cloud bits (access, base CSAM policy) are sorted, then inner-sourced. ▪ How could we front load the module development and get **more enablement completed**.	Lots of waste with individual projects/teams doing the same thing over and over. Many teams competing, cannot wait for 1 team to deliver or prioritize all features. Skills available just not allowed to contribute.	**Industrialization of Modules and Stacks. Not a projects responsibility, but a dedicated effort to identify and mature modules and establish stacks to be as easy to consume as native cloud modules.** **Innersource - Cloud Platforms Establish the basic modules, then enable** cross organization engineering skill set to do the cloud engineering, then make use of service teams to operate and maintain the outcome. e.g. db. Empower Innersource so any team/contributor can input into enhancements/stacks.	People / Process.	Cloud platforms provide complete jump start modules to build on. Alignment of module ownership, Innersource development.	

Strategic Themes Continued

Current State	Current State	Target State	Why	What needs to change/outcome.	Key Area	2024 Success Looks Like
Platform - Stacks	Modules being developed independent of full stack. Next consumer of similar/same stack has to put it together.	**Consumable compliant full stacks and patterns.**	Speed to market, **consistency, security** approvals of standard stacks. **Reduce waste** of individual projects / teams doing the same thing over and over. Many teams competing, cannot wait for 1 team to **deliver** or prioritize all features. Skills collaborate available just not allowed to contribute.	**Discovery of common stacks, development and compliance built into.**	Technology / Process.	Alignment of module ownership, Inner-source development. Clear backlog and ownership of stack build out, module and stack developers, attain stack compliance.
Compute	Potentially focusing on too many options, do the simple things well.	**Container platforms become the dominant outcome (including DB).** **Common Stacks identified compliance built into** deployable templates e.g. VM + SQL. **Encourage simple cloud services** where long delay is seen, e.g. Cloud Ingress.	Containers (the next generation of virtualization) - enables Modern architecture, **removes the dependency on platforms.**	**Container platforms established.** **Common stacks enabled.**	Technology	Our key strategic cloud platforms are established. Stacks are built out and clear about when they will be available/who can contribute to accelerate.
Cloud Migration	Pushing teams to migrate to Cloud is causing investment in the wrong areas. Legacy is legacy, let it be. Allow for investment where it is of most value.	Practicable approach to cloud migration. ~50% on cloud in 3-5 years.	Some assets are legacy and their is no value in investing / pivoting time into cloud migration for the sake of it. Pick the things we are actively in development with to be cloud first/cloud native.	Migration % Targets, migration mandates changes to enable build and run and engineering to prioritize investment and enable as a priority.	Process.	Migration / refactor cadence is in the owning domains. Forecast is clear of legacy investment needed.

Strategic Themes Continued

Current State	Current State	Target State	Why	What needs to change/outcome.	Key Area
Multi-Cloud	Lack of clarity on key Multi-Cloud patterns.	**Establish data copy service for backups/exports between clouds.** **Veeam backups of key Cloud Resources.**	Required for key Cloud assets. Meet APRA expectations.	Dedicated effort on Architecting and solving for this. Cloud to come into scope once Veeam on premises is matured.	Technology
Security	Embedded Security Roles - Improved perception of Security and step change in agility of the Delivery Teams. - Shift Left. Standardized Pipelines.	Success Measure - **Aligned with the Agility of Development** and Business Enabling Teams. Security is embedded in the delivery **not a request and wait process**. Shift the model. ~~- Make it harder to provision VM based workloads~~ v's **Do the basics** and make it invisible and fully automated to manage **out of the box!**			People & Process
Compliance	- So Many Governance Standards, So Many Compliance Standards - Change to Cloud incurs - SDEC, TAF, PCI DSS, CPS234 - MOI-. CAST, CSAM, G2G.	Simplify - Number of patterns/processes where **security is built into the reusable stack**. Strategic Drivers - Guardrails (built into the developers world) v's Escalations. - Strategic Partnerships - Akamai, Azure, AWS.	Cloud is hard! Organization is slowed drastically by all the compliance burden. Continue with compliance but consolidate to stacks and make them the first (low friction) choice.	Build more compliance into stacks, platforms more involved in resolving compliance for stacks, shift the work left.	Process
Cloud Costs	Deliver and Run! Projects are delivered then the impetus moves onto building the next thing.	KPI on quarterly review of cloud consumption, review driven by Cloud FinOps team, savings opportunities reported to GM.	Extreme cost reduction potential. Cloud is infinite, very dangerous to go unchecked.	Cloud FinOps team domain review cycle / calendar established.	Process


Pre - Login
e.g. Anywhere Sign up.
Authenticated (BAH)
e.g. BNZ Go
(Replaces InterAct & Tellers)
Authenticated (BAH)
e.g. BNZ Go (Replaces InterAct & Tellers)
https://digital-dev.nz.thenational.com/confluence/pages/viewpage.action?pageId=221905612
Springboot APIs
SPA - Mini Apps
SPA - External
Akamai
SPA (S3)
Mini-Apps - Internal
Akamai (push for all apps external, control here for 'internal' validation / check)
Internet Ingress
React
EC2 (ECS)
Lambda
Secrets Management
ECR
Mini-Apps - External
Akamai
Internet Ingress
React
ECS (EC2)
roadmap to
EKS
Lambda
Secrets Management - Secrets Manager - Container Secrets?
roadmap to
Vault
ECR
roadmap to
Enterprise Reg
Common Pipeline
Image Management
Patching
Forge / Spinnaker
OC3 - External
Akamai
Roadmap to
AWS Internet Ingress
API GW External Kong / AWS API GW
Springboot
ECS (EC2)
roadmap to
EKS
Redis?
File Storage S3
Postgres
Secrets Management - Secrets Manager - Container Secrets?
roadmap to
Vault
ECR
roadmap to
Enterprise Reg
Common Pipeline
Image Management
Patching
Forge / Spinnaker
SPA - Mini Apps
Akamai
AWS Internet Ingress
SPA - MiniApps
ECS (EC2)
roadmap to
EKS
Secrets Management - Secrets Manager - Container Secrets?
roadmap to
Vault
ECR
roadmap to
Enterprise Reg
Common Pipeline
Image Management
Patching
Forge / Spinnaker

Strategic Intent and Investment

SaaS - Software as a Service (SaaS) e.g. NCINO, Salesforce, Pega Decision Hub.

- Requires investment in integration (Kafka, Kong, Ingress, Egress) to surface data sets to and from SaaS services.

PaaS - Platform as a Service

- Building Cloud Native - PaaS product requires decisions at initiation of requirements, to ensure modern cloud ready products are chosen, which can be faster to deliver and more cost effective. PaaS provides for less maintenance, automated currency, higher value & velocity.

Standardisation and Pattern Building

- Enables design, build, delivery and compliance at a pattern level, enables innovation spend in applications, not toil, true velocity.

IaaS - Legacy (Infrastructure as a Service)

- Continued investment in virtual machine type workloads, requires time, toil and investment in operations, bespoke builds and ongoing currency and management.

APRA Technology Lifecycle Management and Modernisation Risks

1.2 Technology Lifecycle Management and Modernisation		
1.2 A)	BNZ will develop and document a sustainable process and implementation plan to capture all relevant data to enable pro-active and timely life-cycle management for applications and infrastructure at both software and hardware level.	Paul Norman, CIO
1.2 B)	BNZ will continue to develop technology modernisation roadmaps for target state architectures for enterprise technology modernisation. This will include target state, accountabilities, feasible timelines, interdependencies and sequencing, and a governance and reporting mechanism to monitor progress against the roadmaps and the impact on technology risk profiles. BNZ appreciates APRA's proposed due date of 30 June 2025 and BNZ's planned dates reflect its interest in focusing on the highest priority risk assets. We would welcome a discussion on this point, including the definition of "highest priority modernisation platforms", in our upcoming meeting on 9 December 2024. BNZ will document the technology modernisation roadmaps for the target state architecture for the highest priority modernisation platforms and provide these to APRA by 30 June 2025. BNZ will document the technology modernisation roadmaps for the remaining target state architectures by 30 November 2025.	Paul Norman, CIO
	BNZ will develop and communicate with APRA the funding model to enable timely delivery of milestones in the technology modernisation roadmaps.	Peter MacGillivray, CFO
1.2 C)	BNZ will provide APRA and the RBNZ with periodic updates on improvements to life-cycle data and technology modernisation progress for discussion in our quarterly meetings.	Paul Norman, CIO

Appendix - Focus Area Detail

Focus Areas – Service Locations – Platforms Considerations - draft

1

Melbourne / Sydney

- Mainframes remain across Melbourne and/or Sydney
- Cloud services (data gravity) can continue to operate out of Australia
- Australia based NAB / Markets services can potentially be moved to be accessed via the Cloud links.

2

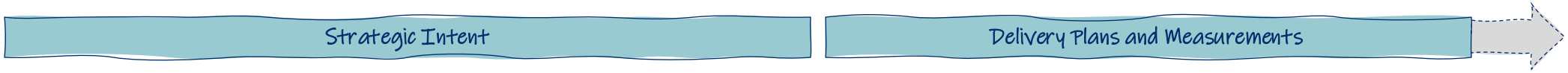
Auckland / NZ

- Mainframes move to Auckland Consolidating services within NZ
- Cloud hosting should target NZ based hyper scalers.
- 1-2 Years establishing foundation (NW, Hosting, Security, Ingress, Observability) in NZ
- Cloud services (data gravity) can potentially continue to operate out of Australia
- Australia based NAB / Markets services can potentially be moved to be accessed via the Cloud links.

3

General Considerations

- Prioritise Cloud hosting over on premises.
- Recommend moving services at refresh, not wholesale (move for the sake of it moves)



Focus Areas – Compliance, Reporting / Operational Excellence

1

Build in compliance into design and delivery

- Determine reporting requirements.
- Consolidate governance and reporting requirements CHF, CAST, PCI – reduce / combine processes / outcomes.
- Understand & document backup, recovery and attestation processes.
- Runnable / ready compliance checks and reporting.

2

Alignment to GIRP / Compliance

- Backup and Recovery
  - Determine process and RACI for backup and recovery.
  - Backup coverage in Cloud

3

Next / Experimentation

- Service Now Discovery Integration (SNOW for Cloud – cloud connector, Flexera into SNOW, Rapid7/Avalor*). DB/Containers. Intune, JAMF.
- Operational Monitoring Standards (system, application, service, logging).
  - Splunk, Dynatrace, etc. supported by native platform tools.
  - Ownership of CRIBL.
- Platforms RACI and Processes clearly defined and documented.

Focus Areas – Mainframe Services

1

Improving the customer experience by reducing outages

- High availability for Connex and CICS resiliency

2

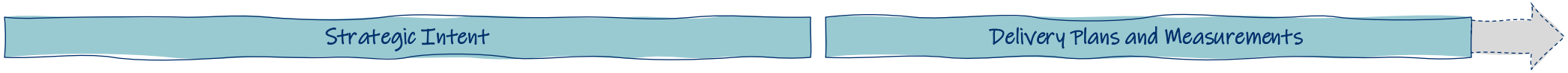
Improving the underlying Security, Visibility, Resilience and Currency of the mainframe environments

- Improving security controls for mainframe identity and access
- Improving visibility through Dynatrace monitoring
- Uplifting resiliency and high availability of core banking infrastructure onto modern hardware through Knox Exit and Group DR
- Ensuring the core banking platform is evergreen and current

3

Next/experimentation

- Optimisation of the mainframe environments and integrations with other environments to ensure a cost effective and efficient approach to running mainframes



Focus Areas – Secure by Design

1

Compliant Patterns and Templates

- Compliant and Secure Images – consistent across platforms, meet operational and security hardening requirements (compliant with NAB group standards).
- Codifiable Security Policy Statements – enabling compliance checks in pipeline.
- New Functionality integrated with Cloud Security Posture Management (Wiz.io)
- 5 Flavours embedding compliance, security and reporting requirements.

2

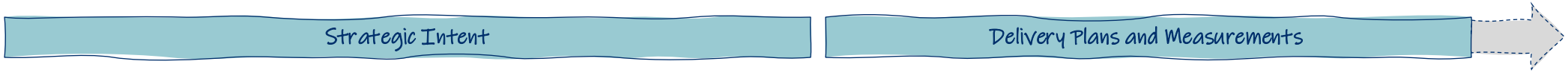
5 Flavors - VM

- Ensure complete service offering, image, application, evergreen, monitoring, logging, compliance.

3

Next / Experimentation

- Ensure complete service offering, image, application, evergreen, monitoring, logging, compliance.



Focus Areas – Deepen Cloud Adoption

1

Leverage our Foundation to enable key Cloud AI and Data Capabilities (multi tenancy)

- Azure Open AI
- Amazon Bedrock
- Amazon SageMaker
- EKS – Ingress, PCI, Multi-Tenant

2

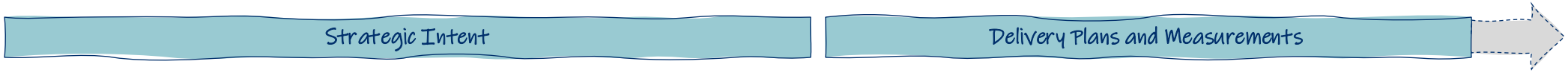
Finish one Cloud well - complete AWS Platform Offerings

- Firewall
- Egress
- Dynatrace
- WAF

3

Next / Experimentation

- HSM in support of Payments Gateway
- Compliance of Backups and Recovery (Veeam enablement across AWS and Azure)
- Education, Guild, Perfect the Basics (Well Architected, Cost Optimisation etc.)



Focus Areas – Easier Industrialisation (Recipe Adoption)

1

Consistency of Tooling and Onboarding

- Consolidate to Terraform for Enterprise for Foundation Platform
  - Landing Zone Request Fulfillment
  - Foundation Platform Services
    - Landing Zone, Networking, base services VM, Storage etc (maybe calling existing catalogue).

2

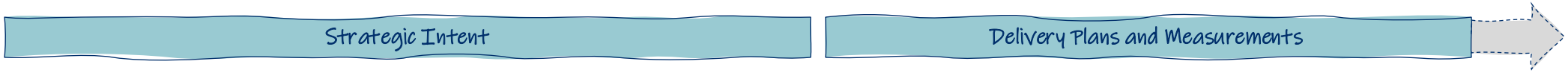
Platform Capabilities are designed for Multi-Tenant use.

- Azure Open AI

3

Next / Experimentation

- Default configurations
  - Non-prod – e.g. power, backup, log retention.
- Tag Enforcement – refer Cloud Tagging Standard (Roll into Compliance Reporting)



Focus Areas – Flexible and Scalable Networks

1

Lightweight dynamic services

- NGINX Plus replacing F5 Load Balancer and WAF

2

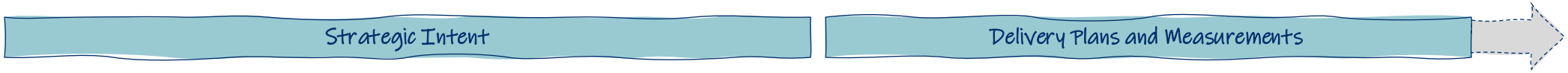
Firewall Reporting and Change Management

- Basic standards applied across all firewalls
  - Process, RACI, Change Management.
- IPAM

3

P

- .



NAB Target State Architectures
https://github.aus.thenational.com/pages/ARCH/platform-architecture/docs/platform-ref-architecture/target-platform-architecture

NAB Enterprise Roadmaps are here
https://nabcts.sharepoint.com/sites/EnterpriseRoadmaps/

Instructions on how to access
NAB Sharepoint/Intranet Access - Working with NAB - BNZ Confluence

Enterprise Roadmaps - Enterprise Technology Roadmap FY25 - APPROVED.pdf - Enterprise Roadmaps FY25 Approved List - Grouped by status

Further Links

FinOps Maturity Model
- Cloud FinOps Maturity Model

Platforms Investments and Current State
- Platforms - Roadmap and Investments

Networks Investments and Current State
- Network Security Roadmap and Investments

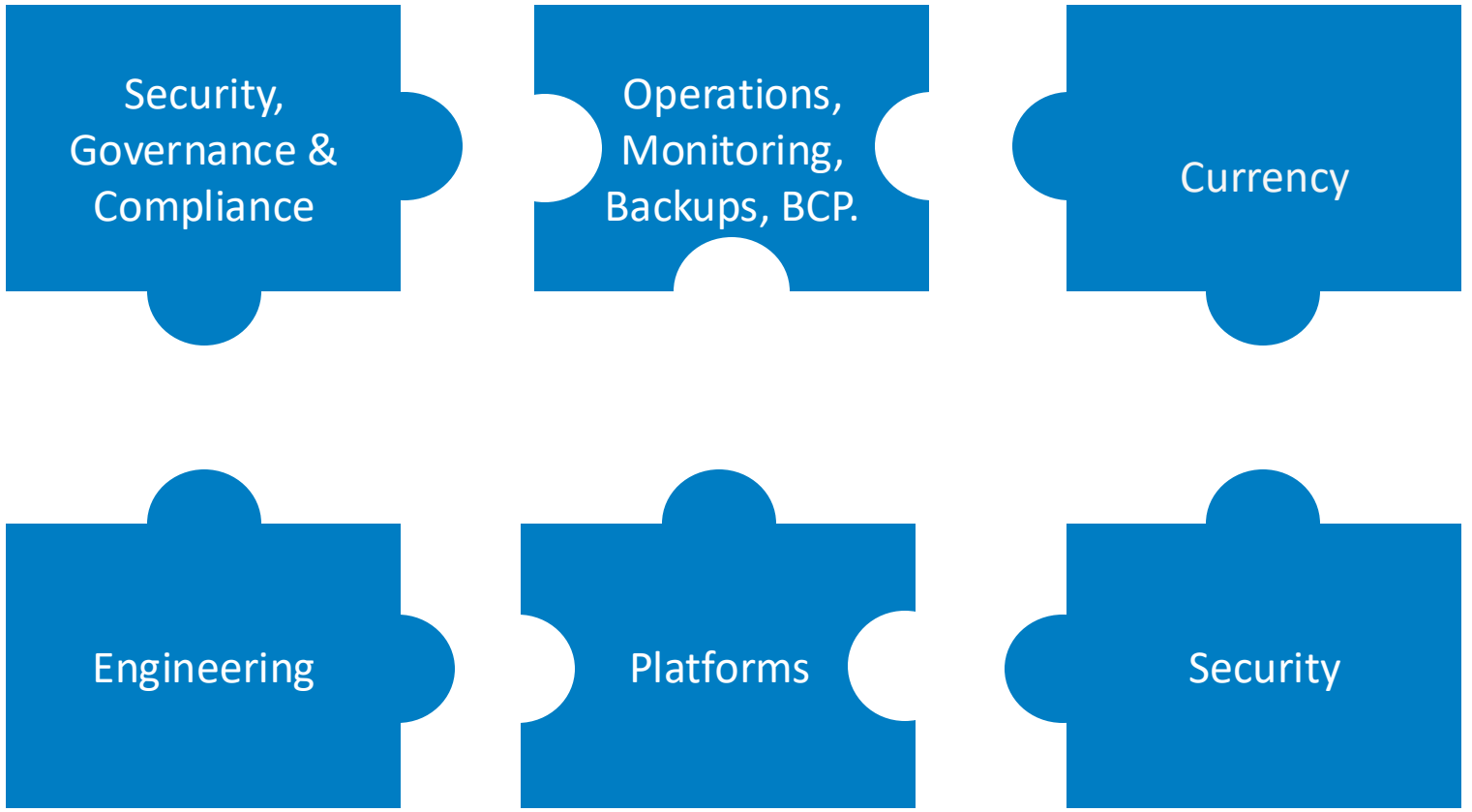
Cloud Strategy
- Cloud Strategy Update (FY21)

BNZ EA Apps on Cloud – Dashboard
- BNZ EA Apps on Cloud | ServiceNow | Service Management (service-now.com)

APRA updates guidance on cloud computing services | APRA
- https://www.apra.gov.au/sites/default/files/information_paper_-_outsourcing_involving_cloud_computing_services_0.pdf

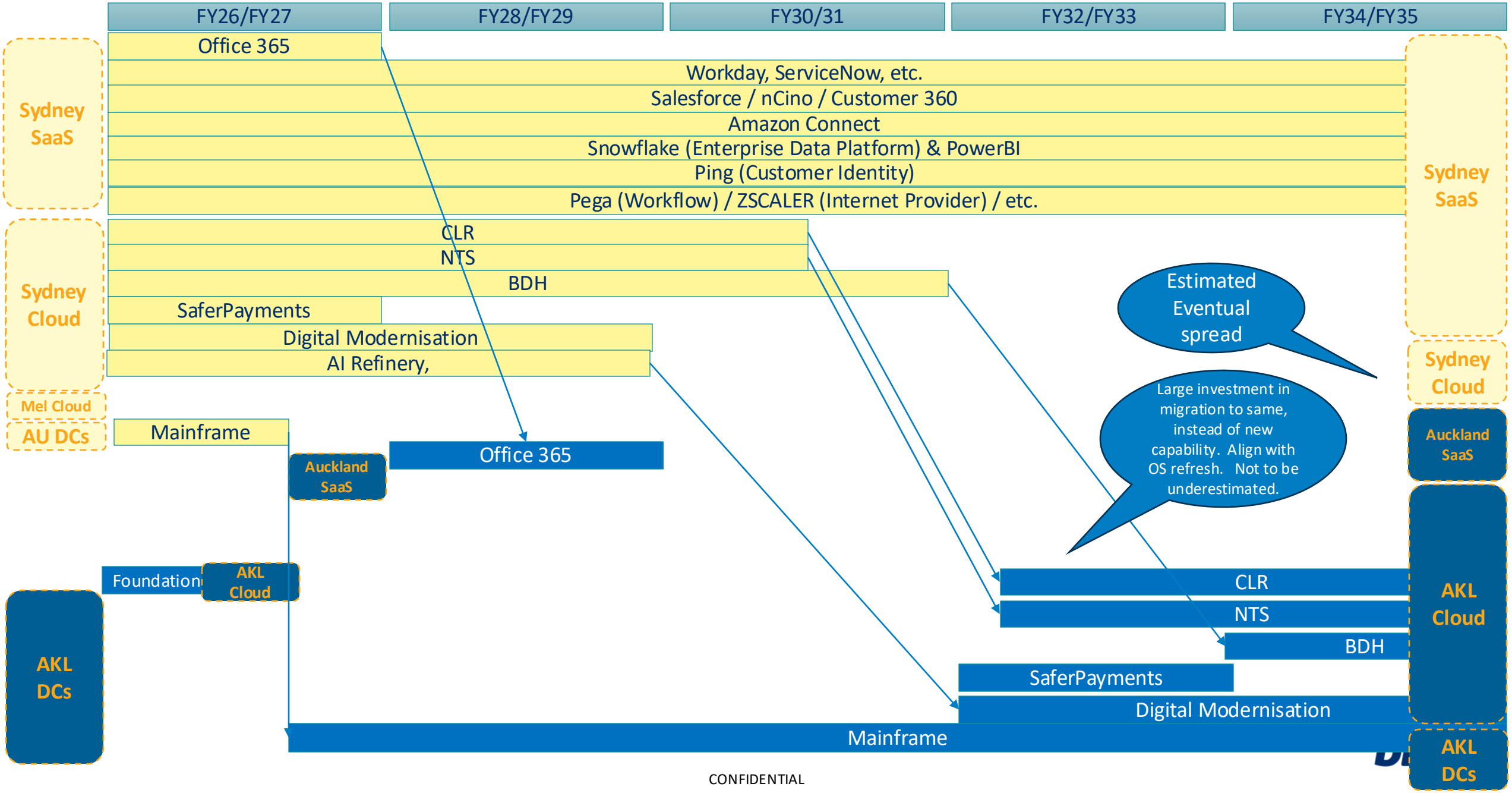
Platform Roadmap Snippets

Roadmap	Tools / Capabilities	Current State	FY25 / FY26	Target State
Monitoring	Dynatrace, Splunk	Splunk tick Dynatrace – On Premies and Azure, AWS to be done.	FY25 Mainframe Enabled FY25 AWS Enabled End to End Application Monitoring	All Platforms Monitored in Dynatrace
Backups	Native & Veeam	Veeam on premises.	FY25 Roadmap for Backups into Cloud FY25 AWS Enabled FY26 Azure Enabled	Veeam backups enabled in AWS and Azure for SOR.
Foundation Network	One.NZ	Firewalls Ingress	Network Review FY25 Egress AWS Enabled	Roadmap for Foundation Network
Network / Firewall Management	Native Cloud, CheckPoint, Algosec		FY25 IPAM Enabled FY25 Firewall Reporting FY26 Automation and Auditing	
5 Flavors			FY25 VM recipe	Templated Stacks
Platform Tools (Foundation and Config Management)	Terraform, CloudFormation, Azure DevOps, Octopus, Catalog.	Terraform, CloudFormation, Azure DevOps, Octopus.	Terraform is our core automation for platforms to consumers.	Terraform + Sentinel Roadmap for Platform tools.
On Premises Hosting and	Hypervisor Hardware	VMware RHEV	FY25 Experiment with VMware succession plan – OpenShift Virt – HPE Virt.	Tba Roadmap based on experimentation.
Storage			FY25 Greenlake for Files. FY25 HomeDrive to OneDrive FY25 Share Drive Migration to HPE Files.	Consolidate file services into managed services.
GenAI (Platform Foundation)		Azure OpenAI Amazon Bedrock		AIOps – define.
Containers	OpenShift AWS EKS Azure AKS		FY25 EKS PCI	Experiment with bare metal, remove VMware.

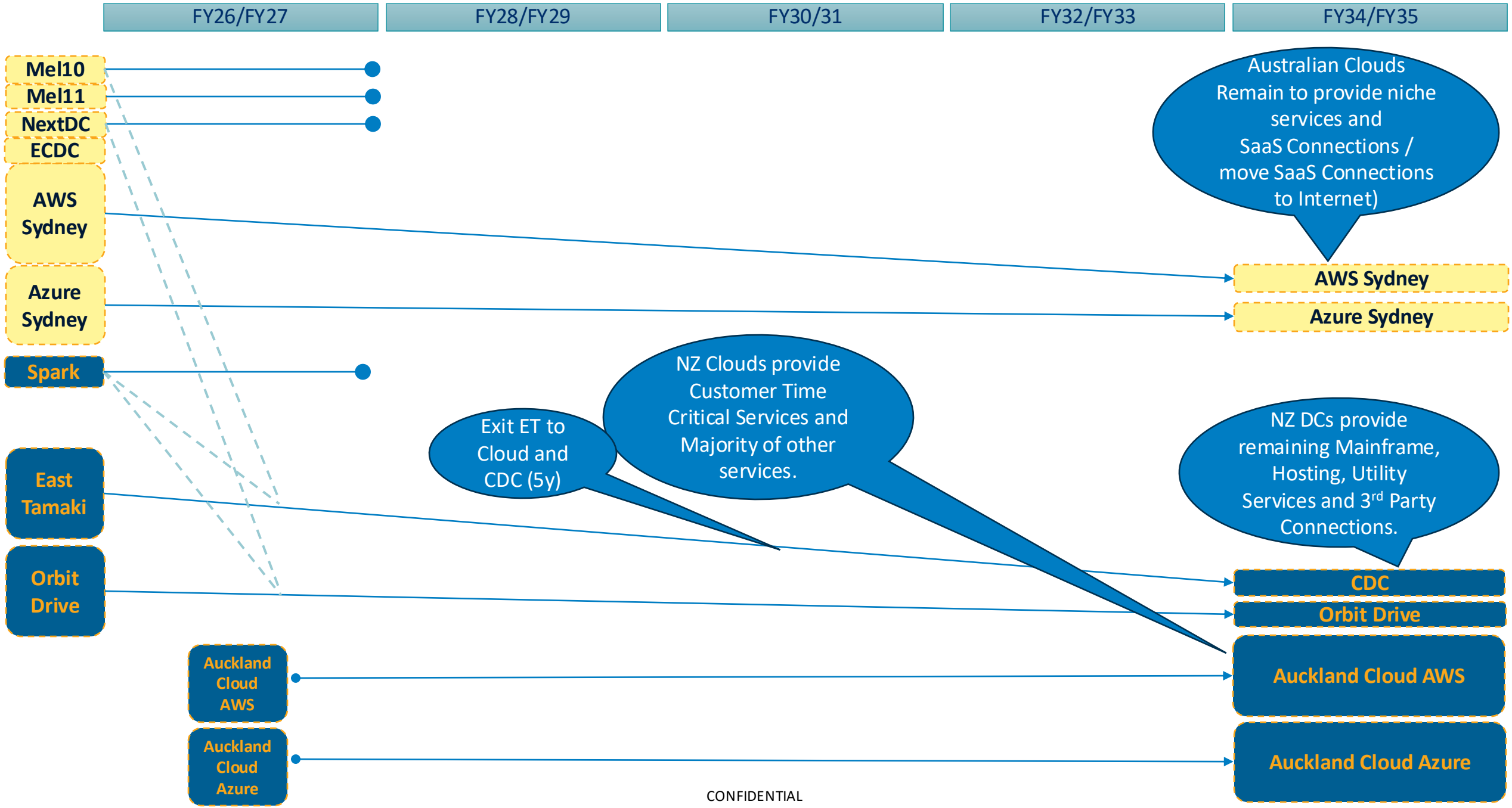

Security, Governance & Compliance
Operations, Monitoring, Backups, BCP.
Currency
Engineering
Platforms
Security

Appendix - Focus Area Data Centres and App Locations

Potential Application and SaaS Landscape based on strategy to move all we can to Auckland.



Potential DC Landscape based on strategy to move all we can to Auckland.



Basic Banking Services / Channels - draft

Provides high level key offshore dependencies for BNZ primary customer channels.

ATM / EFTPOS / Cards

BNZ ATM fleet is outsourced to NCR. Who operate their ATM services out of GCP AU.

Primary Offshore Dependencies

- Google Cloud AU (GCP)

Visa Debit Cards - EFTPOS / Online
- ATM (sav/chq) ok *see above.
- EFTPOS (sav/chq) ok
- PayWave – no (SIN)
- eCommerce – no (SIN)

Primary Offshore Dependencies
- Visa Hub – Singapore (SIN)

Credit Cards - EFTPOS / Online
- EFTPOS / ATM.- Stand in Processing
- PayWave – no (SIN)
- eCommerce – no (SIN)

Primary Offshore Dependencies
- Visa Hub – Singapore (SIN)

Mobile / Internet Banking

Internally Developed - majority of Mobile Internet Banking Services are hosted on premises/AWS, with plans to migrate to AWS in the next 2-3 years.

Migration of the Mobile Internet Banking platform to NZ cloud and hosting of the mainframe in NZ would provide for a viable basic channel.

Primary Offshore Dependencies
- Interbank Payments via Swift.
- Ping SaaS IDP
- App Stores (Apple/Google) / App 2FA Notifications.

Branch

BNZ's Physical Branch network provides in person services based on a range of the other channel services.

Primary Offshore Dependencies

- Amazon Connect (AU)
- Salesforce / nCino (AU)
- .

Contact Centre / IVR

The Amazon Connect platform is delivered to out of AWS Australia.

Amazon have said they could provide the Amazon Connect platform out of NZ, provided they get enough customers to make it worthwhile building it here.

Primary Offshore Dependencies

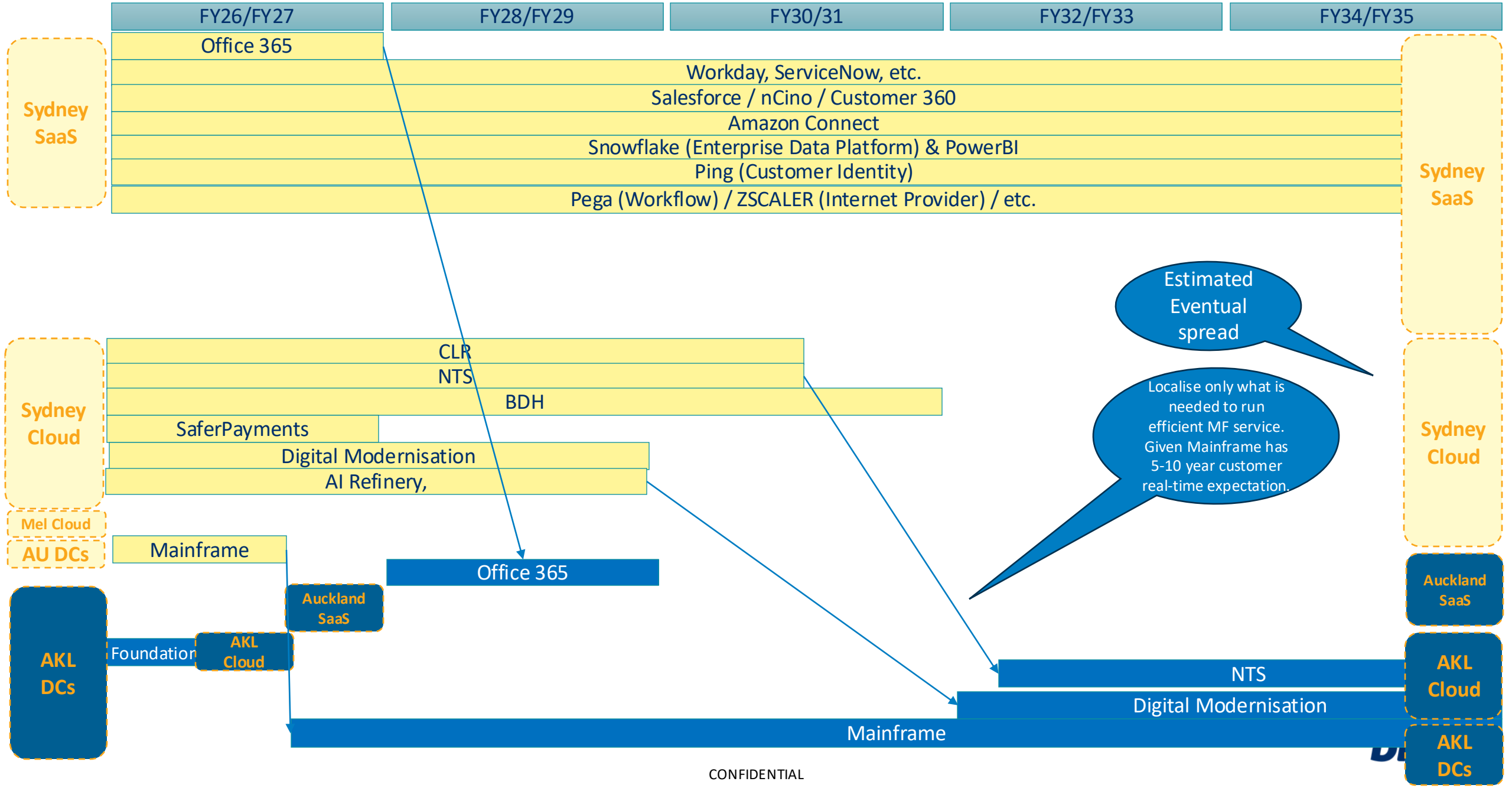
- Amazon Connect (AU)
- Salesforce / nCino (AU)

Clearing / Settlement

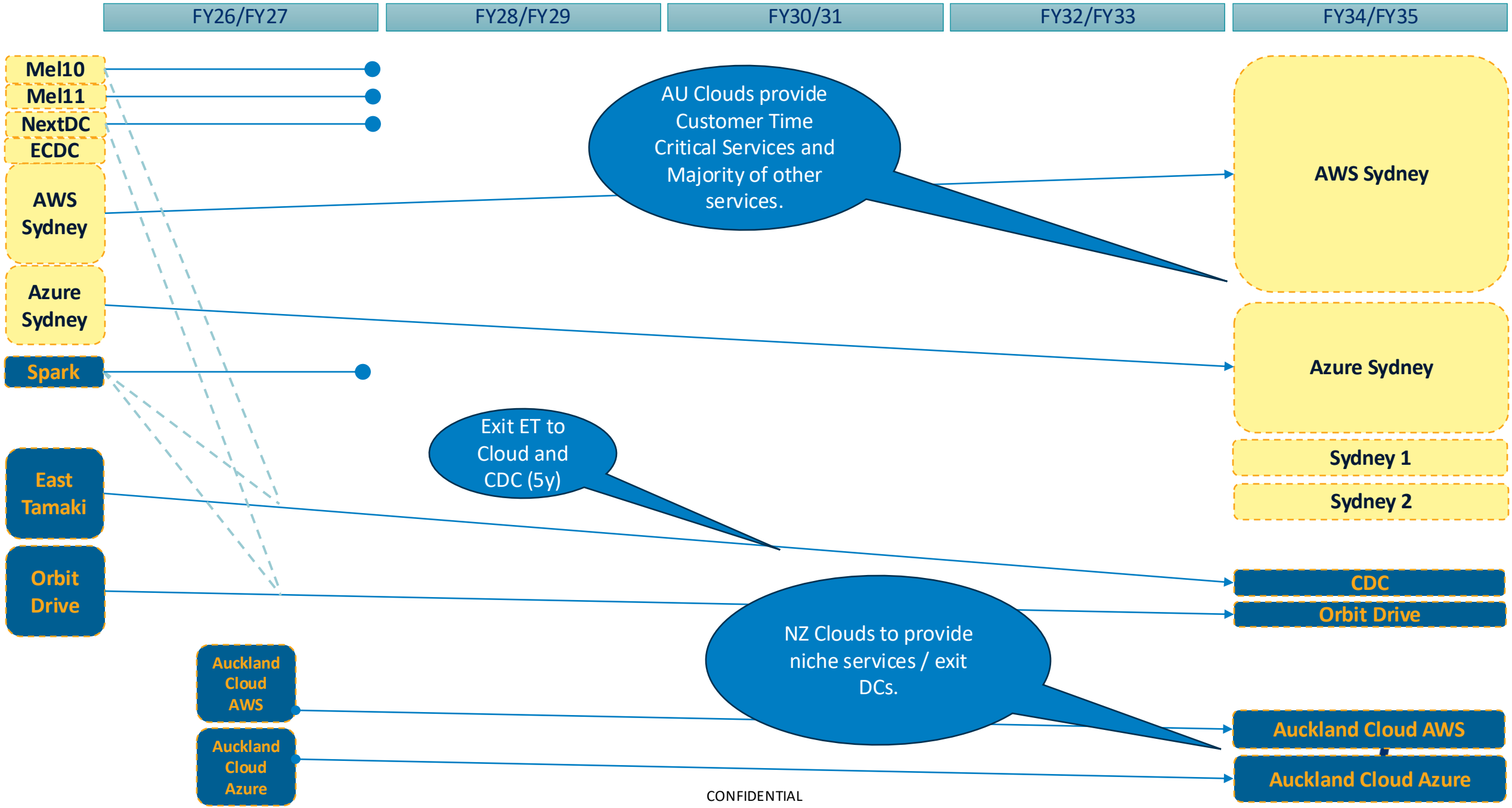
BNZ use the Swift Application and Network to interchange between local banks / RBNZ.

Primary Offshore Dependencies
- Relies on the USA (backup regions Netherlands / Switzerland).
- Fircosoft sanctions / payments management system hosted in BNZ AWS, could move to NZ.

Potential Application and SaaS Landscape based on current data gravity / close to host strategy (AWS Sydney as primary cloud).

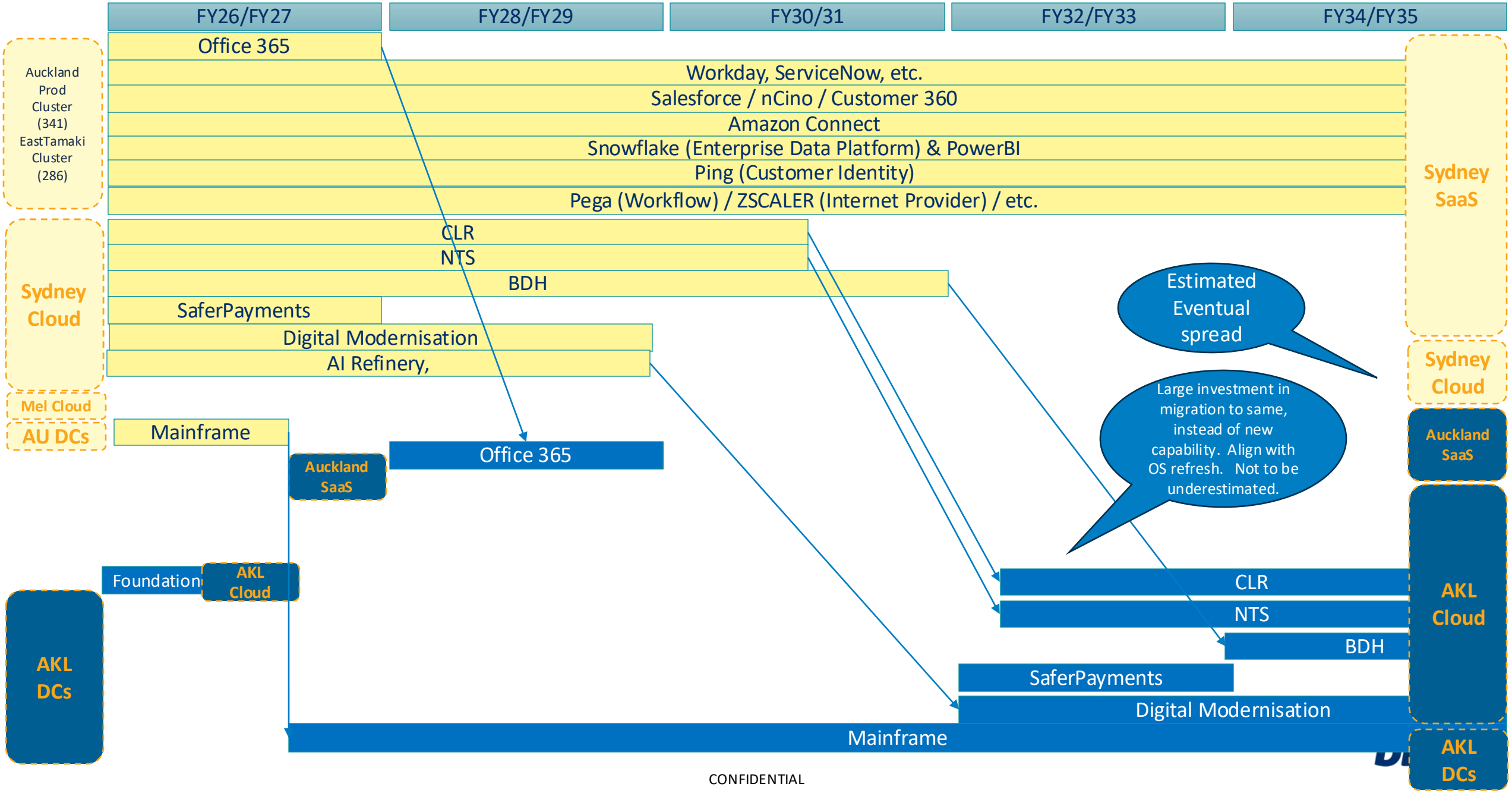


Potential DC Landscape based on current data gravity / close to host strategy (AWS Sydney as primary cloud).



Appendix – On Premises Hosting and Storage

Potential Application and SaaS Landscape based on strategy to move all we can to Auckland.



Potential DC Landscape based on strategy to move all we can to Auckland.