

# IMPLEMENTATION OF THE MANRS FRAMEWORK AT REANNZ

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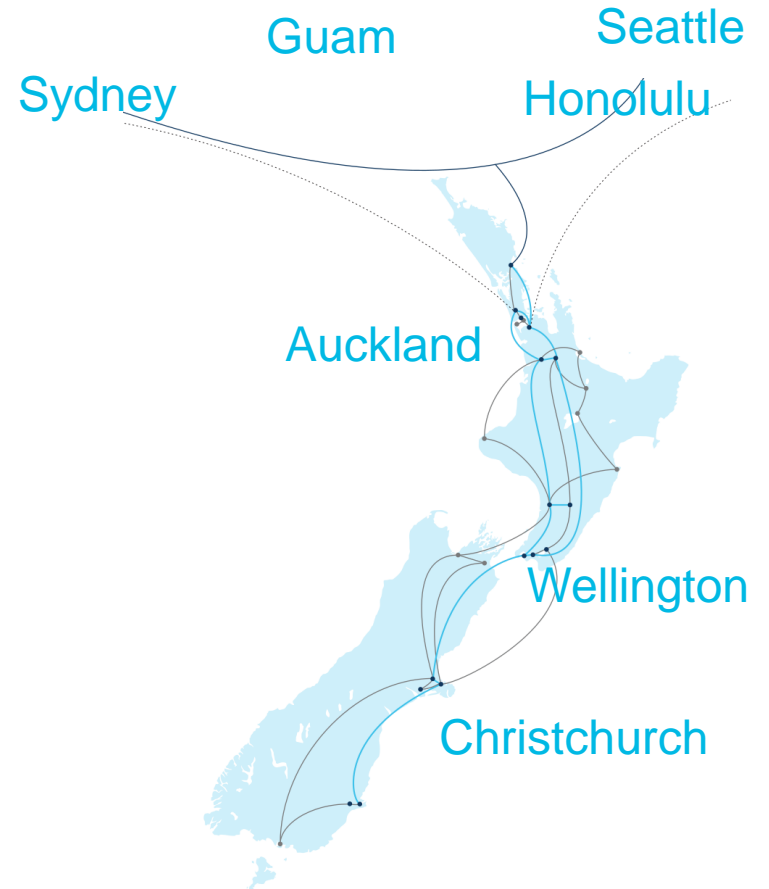
REANNZ



MANRS

## REANNZ PEERINGS

- Internet
- NREN
- Private Interconnects
- Member (Internet Service Handovers)



MANRS

## PRE-MANRS

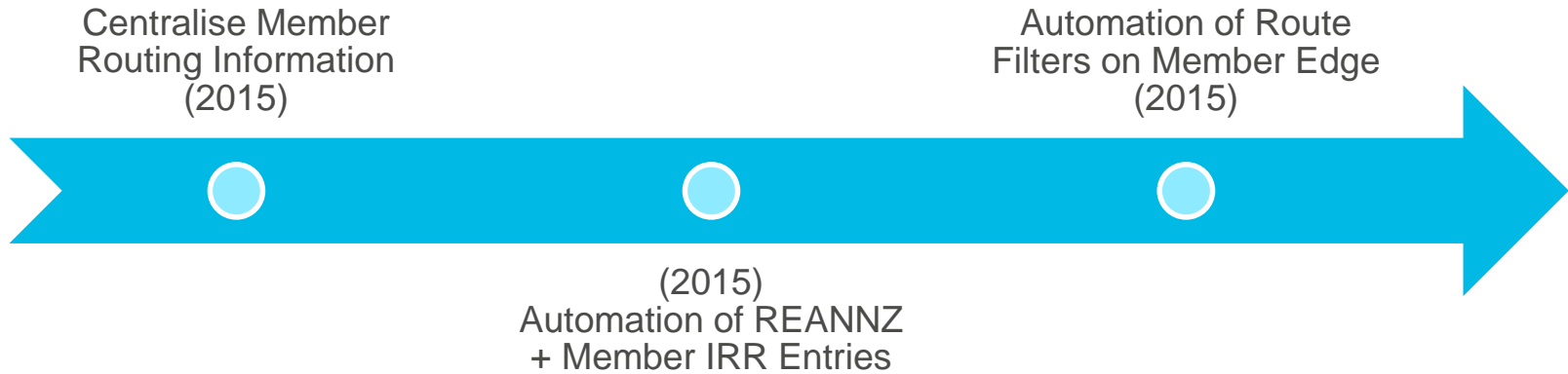


## IP ADDRESS MANAGEMENT (IPAM)

Subnet	Description	OrganisationCode	OriginatingASN	NoExport
> 27.96.64.0/22	> Bay of Plenty Polytechnic	BOP	55524	No
📁 49.0.28.0/22	📁 Eastern Institute of Technology	EIT	55702	No
→ 49.0.28.0/24	→ Eastern Institute of Technology	EIT	55702	No
→ 49.0.29.0/24	→ Eastern Institute of Technology	EIT	139272	No
→ 49.0.30.0/24	→ Eastern Institute of Technology	EIT	55702	No
→ 49.0.31.0/24	→ Eastern Institute of Technology	EIT	55702	No
> 103.10.233.0/24	> Victoria University of Wellington	VUW	132003	No
📁 103.119.168.0/23	📁 Ministry of Education	MOE	24318	No

# MANRS

## PRE-MANRS

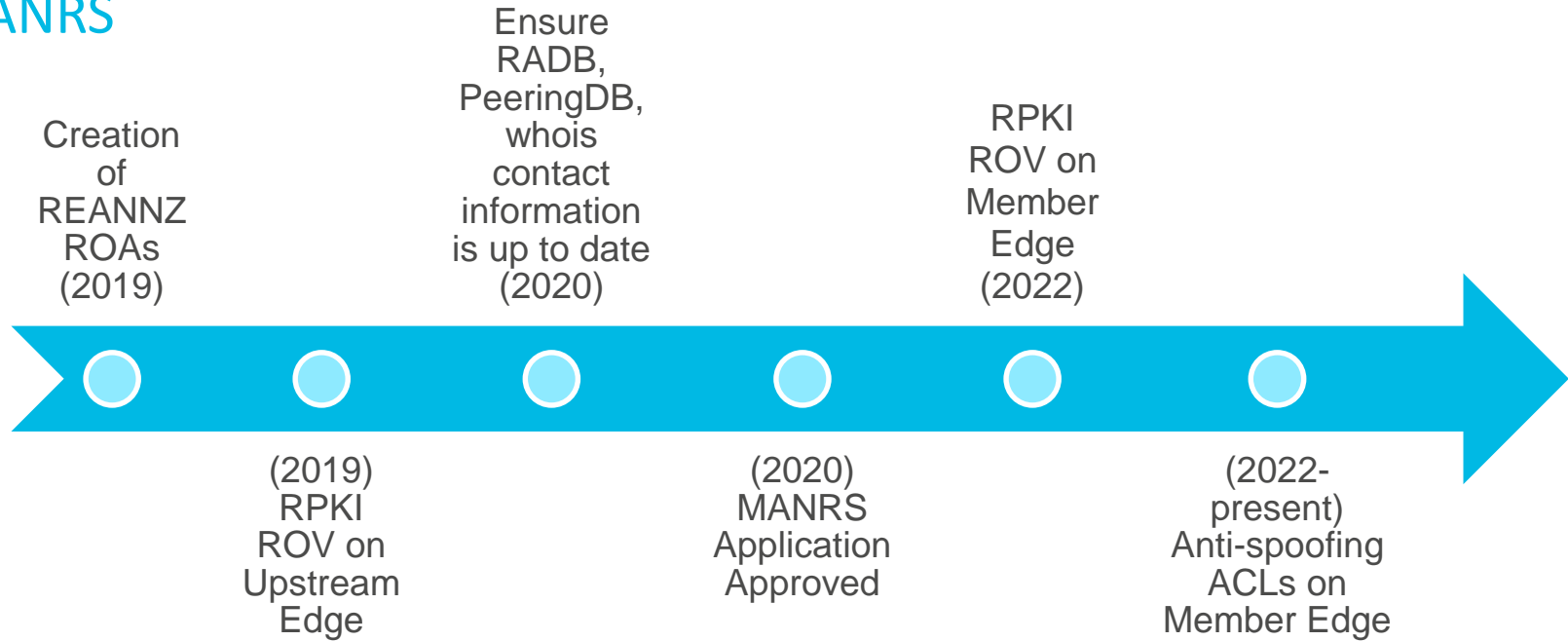


## INTRODUCING MANRS



# MANRS

## MANRS



## ANTI-SPOOFING ACLS - SAFE

```
filter RNZ-filter-autogen-safe {  
  term v4-rpf {  
    from {  
      source-prefix-list {  
        RNZ-rpf-prefixes;  
      }  
    }  
  }  
  then {  
    count RNZ-rpf-pass;  
    accept;  
  }  
}
```

```
term v4-leak-icmp {  
  from {  
    protocol icmp;  
    icmp-type [ unreachable  
               time-exceeded  
               echo-reply ];  
  }  
  then {  
    policer RNZ-rpf-leak-icmp-policer;  
    count RNZ-rpf-leak-icmp;  
    accept;  
  }  
}
```

```
term final {  
  then {  
    count RNZ-rpf-fail;  
    accept;  
  }  
}
```



## ANTI-SPOOFING ACLS - SAFE

	A	B	C	D
1	Member	rpf-fail	rpf-leak-icmp	rpf-rfc1918
2	MOE	750,088	14274	42411
3	TEC	231,409	295	0
4	UOA	159,638	0	6936682
5	END	2,120	0	13
6	EDC	107	0	8
7	UOO	0	0	1248568
8	LND	0	0	28008
9	OTP	0	0	5082
10	SIT	0	0	182
11	PFR	0	0	0
12	GNS	0	0	0
13	MLG	0	0	0

## ANTI-SPOOFING ACLS - FINAL

```
filter RNZ-filter-autogen {  
  term v4-rpf {  
    from {  
      source-prefix-list {  
        RNZ-rpf-prefixes;  
      }  
    }  
  }  
  then {  
    count RNZ-rpf-pass;  
    accept;  
  }  
}
```

```
term v4-leak-icmp {  
  from {  
    protocol icmp;  
    icmp-type [ unreachable  
               time-exceeded  
               echo-reply ];  
  }  
  then {  
    policer RNZ-rpf-leak-icmp-policer;  
    count RNZ-rpf-leak-icmp;  
    accept;  
  }  
}
```

```
term final {  
  then {  
    count RNZ-rpf-fail;  
    discard;  
  }  
}
```

## LEARNINGS

- Routing security is everyone's responsibility
- Community and collaboration is key
- Look for incremental improvements
- Maintain an IPAM
- Automate, automate, automate
  - Validity tests
  - Config generation

## LEARNINGS

- Routing security is a journey, not a destination

Organization Name ▲	Areas Served ◆	ASNs	Action 1 - Filtering ◆	Action 2 - Anti-Spoofing ◆	Action 3 - Coordination ◆	Action 4 - Global Validation ◆
<a href="#">REANNZ</a>	NZ	38022	✓	✓	✓	✓
Organization Name	Areas Served	ASNs	Action 1 - Filtering	Action 2 - Anti-Spoofing	Action 3 - Coordination	Action 4 - Global Validation

<https://www.manrs.org/isps/participants>

7 July 2023

**THANK YOU**

REANVZ





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