



Beamline Remote Access at the Australian Synchrotron

MXCuBE-ISPyB Joint Meeting, DLS, UK

17 - 19 November 2025

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Australian Synchrotron

Science. Ingenuity. Sustainability.

Remote User Access

- Our Users Travel to Us

- Travel from around the country, New Zealand and Singapore
- Flights are typically 2-4+ hours
- Users stay in our onsite (50-room) Guesthouse
- Carbon footprint

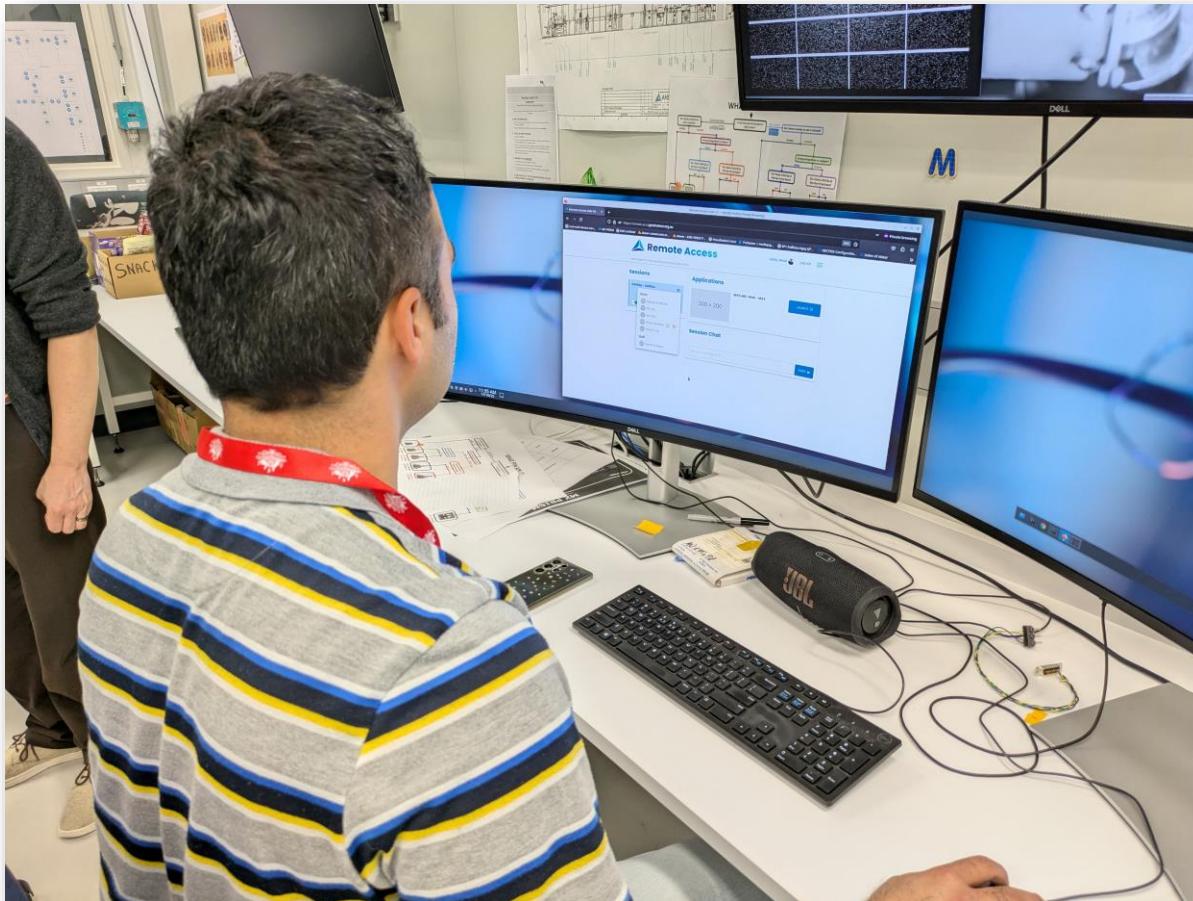
- Remote Access

- Opens up our capabilities to more users
- Provides access to users with limited travel budget
- Allows hybrid experiments
- Reduces carbon footprint



Remote Access is in Production

First hybrid (on-site + remote) user experiment on 17th October 2025



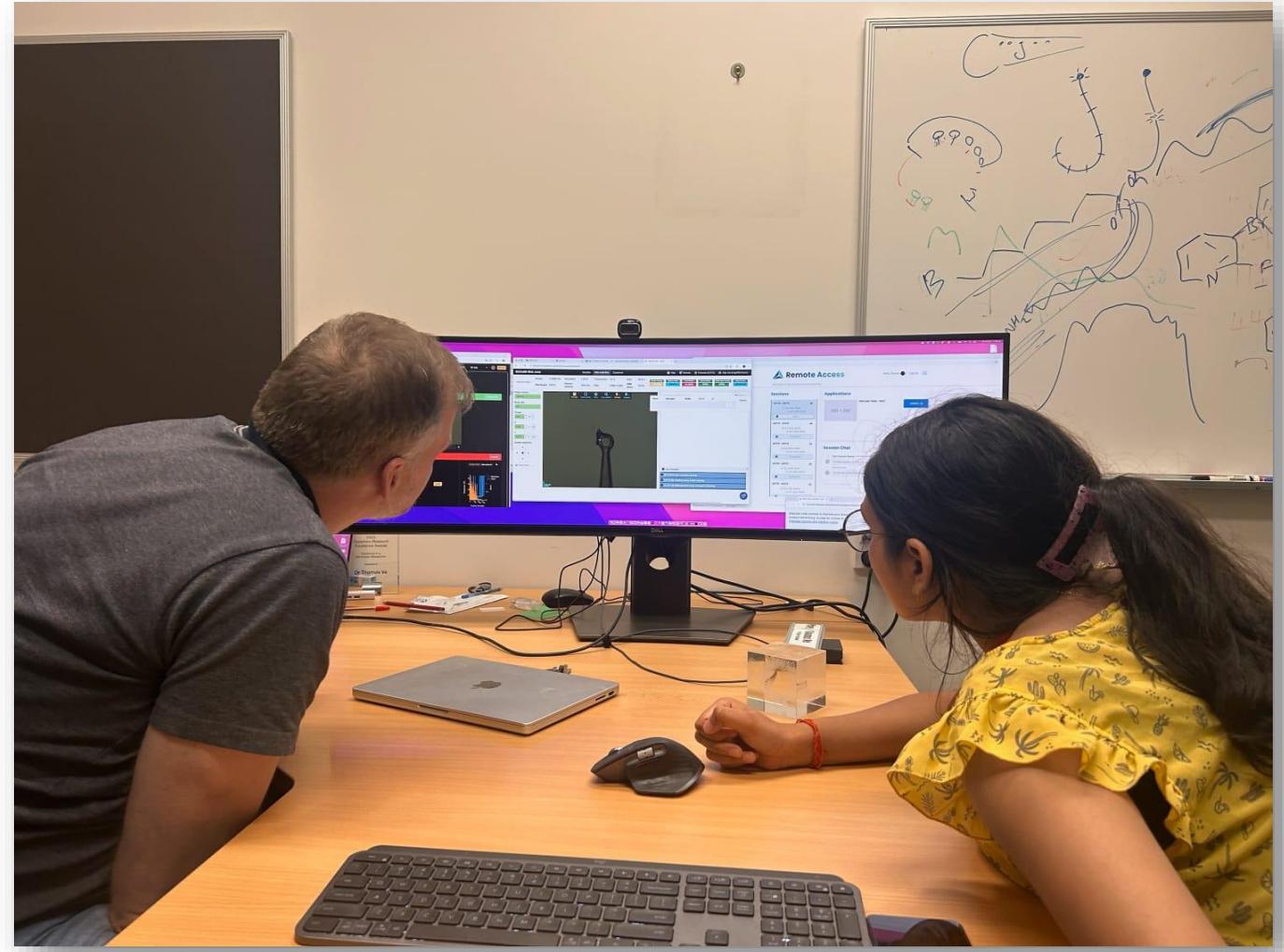
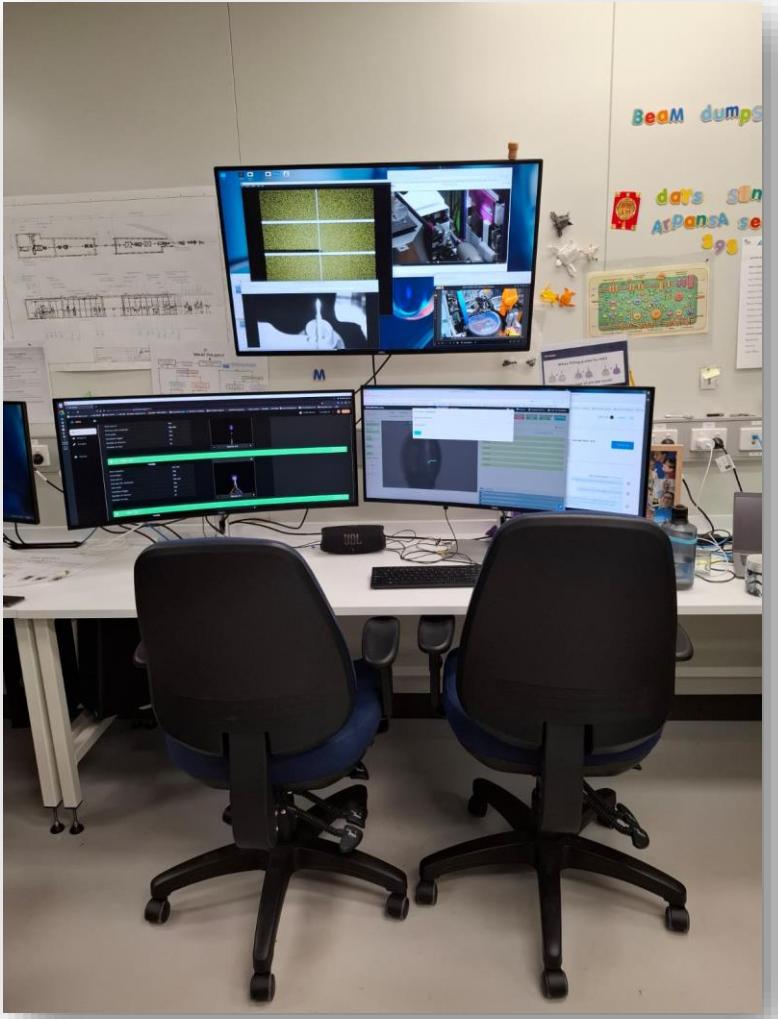
When you don't know it is remote



23rd October 2025

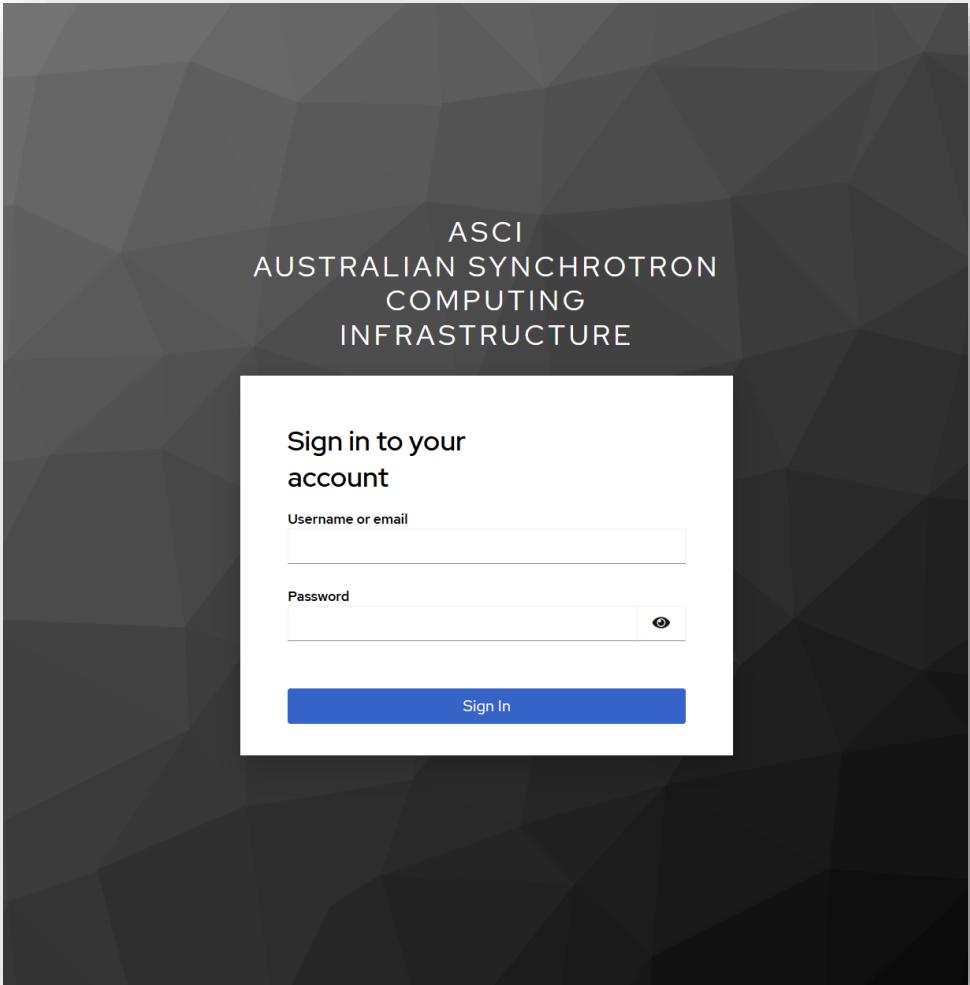
When you know it is remote

24th October 2025
Griffith Uni in Queensland





MFA for Remote Users



Mobile Authenticator Setup

You need to set up Mobile Authenticator to activate your account.

1. Install one of the following applications on your mobile:
Google Authenticator
FreeOTP
Microsoft Authenticator
2. Open the application and scan the barcode:



Unable to scan?

3. Enter the one-time code provided by the application and click Submit to finish the setup.
Provide a Device Name to help you manage your OTP devices.

One-time code *

Device Name

Sign out from other devices

Remote Access Hub

Sessions available to the user

Currently open session for the user to join

Upcoming sessions for the logged in user

The screenshot shows the 'Remote Access' interface for the Australian Synchrotron. At the top, there's a logo and the text 'Remote Access' and 'WELCOME TO THE AUSTRALIAN SYNCHROTRON'. On the right, there's a user profile 'Hello, Andreas' with a 'Log out' button and a menu icon.

Sessions: This section lists sessions available to the user. One session is currently open ('Remote Access Test - MX3Cal20251021') with a green 'Open' button. Other sessions listed are 'Remote Access Test - MX3cal2025104' (Scheduled) and 'Remote Access Test - 24901b' (Scheduled). A blue arrow points to the 'Open' button of the current session.

Applications: This section shows applications available to the user. An application card for 'MXCuBE-Web - MX3' is shown with a 'LAUNCH' button. A blue arrow points to this button.

Session Chat: This section allows real-time communication. It has a text input field 'Type your message here...' and a 'SEND' button. A blue arrow points to the text input field.

Annotations on the left side of the interface point to specific features:

- A green arrow points to the 'Sessions' section with the text 'Sessions available to the user'.
- A green arrow points to the 'Open' button of the current session with the text 'Currently open session for the user to join'.
- A green arrow points to the 'Scheduled' sessions with the text 'Upcoming sessions for the logged in user'.
- A green arrow points to the 'LAUNCH' button with the text 'Applications available to the user'.
- A green arrow points to the text input field with the text 'Open application in either
 - Observer mode
 - Control mode'.
- A green arrow points to the 'SEND' button with the text 'Real-time chat with other remote users and staff'.

Energy:	13.0000 keV	Resolution:	1.164 Å	Transmission:	10.0 %	Cryo:	270.00 k	Sample Changer	Detector State	Fast Shutter	Mono Shutter	White Beam Shutter	Ring Current
Wavelength:	0.95 Å	Detector distance:	100.0 mm	Flux:	2.30e+11 ph/s	DMM Stripe:	2.0 nm	READY	READY	CLOSED	CLOSED	CLOSED	200.00 mA

Phase Control

Centring



Settings ▾

Beam size

20x20

Plate Navigation ▾

Move to Crystal

Omega

311.10

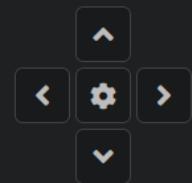
Kappa

11.0

Kappa Phi

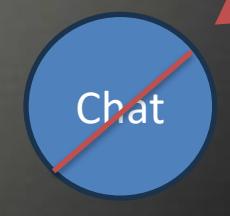
22.0

Sample alignment



50 µm

Show motors ▾



Current

Queued Samples (0)

But...

Log messages:

! [02:47:17]: Flow run encountered an exception: ReadTimeout: timed out

✓ [02:46:33]: Starting workflow (One Shot), please wait.

✓ [02:46:31]: Using default calibration points

Access Control

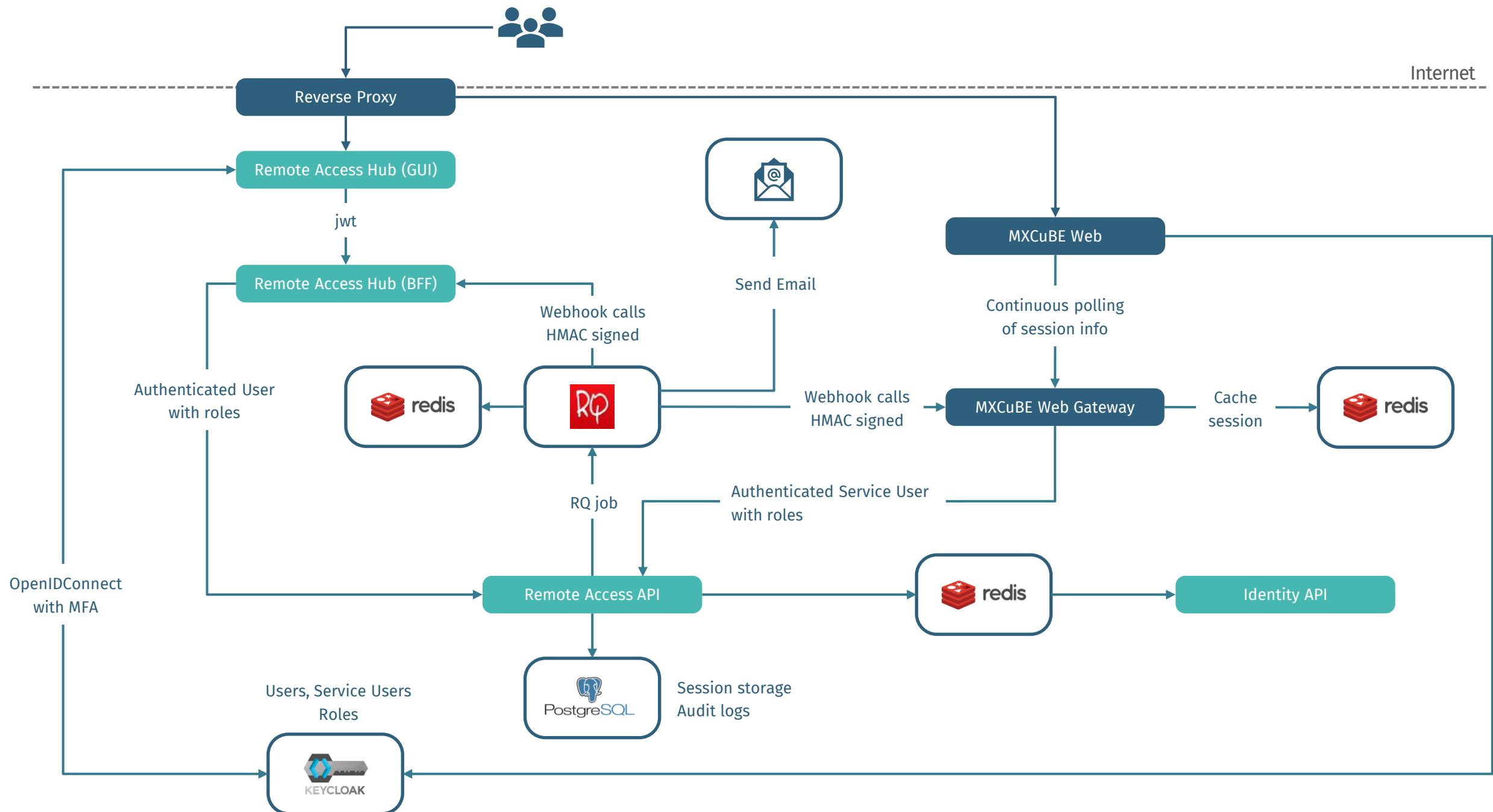
The screenshot shows a user interface for managing sessions. At the top, it displays "Remote Access Test - MX3cal20251014". Below this, there are two sections: "Users" and "Staff". The "Users" section lists six users with their initials and names: Noah Kim (NK), Francisco Hernandez Vivanco (FH), Rosie Young (RY), Daniel Eriksson (DE), Kate Smith (KS), and Andreas Moll (AM). Next to each name is a small circular icon with initials and a red "X" icon. The "Staff" section lists one staff member: Tom Caradoc-Davies (TC) with a monitor icon. At the bottom of the main panel is a blue button labeled "REQUEST CONTROL" with a hand icon. Below this is another section titled "Remote Access Test - MX3cal20251014" with the same date range. It shows the session started on 14 Oct 2025, 17:09 and ended on 15 Oct 2025, 17:09. At the very bottom is a "SEE MORE" button.

- **Only one user in control at any time**

- Drop down shows users in session
- User that is in control has “screen” icon
- Users can request control
- User in control can hand over control

- **Hybrid Experiments**

- Any hybrid experiment is a remote experiment
- Authentication also for on-site users



Cyber Security Controls

The screenshot shows the ASD website's navigation bar with links for About us, Learn the basics, Protect yourself, Threats, Report and recover, and Resources for Business and Government. Below the navigation is a breadcrumb trail: Home > Resources for busi... > Information securit... > Cybersecurity.guid... > Guidelines for software development. The main content area features a large title 'Guidelines for software development' and a content complexity rating of 'Moderate' (one orange dot and two grey dots).

The screenshot shows the api.gov.au website's navigation bar with links for About Us, Standards, API Catalogue, Definitions, Playbook, Community, and Github. The main content area features a title 'Australian Government - API Design Standard' and a sub-section 'Overview'. A sidebar on the left contains sections for 'Getting Started' (with links to 'What is this design standard?', 'How to apply the design standard', 'The choice behind REST', and 'Sample OpenAPI Definition') and 'Design Standards for Whole of Australian Government (WoG) Application Programming Interfaces (API)s.'



- Development based on ASD Controls
- API security based on api.gov.au
 - Authentication for all endpoints
 - Role Based Access (RBAC) for all endpoints
 - HMAC signed requests
- Essential 8 Framework

Tenable on K8S

MX mxnetes

tenable-cloud-security

Cluster Workloads CronJobs DaemonSets Deployments Jobs StatefulSets Pods Apps Service Discovery Storage Policy Monitoring More Resources

13 clusters

MX

See all

Pods

Download YAML Delete

Create

Filter

State	Name	Namespace	Image	Ready	Restarts	IP	Node	Age
Running	kubernetes-cluster-connector-deployment-66655b64b9-kl67n	tenable-cloud-security	containers.tenable.com/cloud-security/kubernetes-cluster-manager:1.1	1/1	0		mxnetes-03	12 hours
Running	kubernetes-cluster-sensor-daemonset-2pttm	tenable-cloud-security	containers.tenable.com/cloud-security/kubernetes-cluster-sensor:1.1	1/1	0		mx3hpc01	12 hours
Running	kubernetes-cluster-sensor-daemonset-2slgf	tenable-cloud-security	containers.tenable.com/cloud-security/kubernetes-cluster-sensor:1.1	1/1	0		mx2hpc02	12 hours
Running	kubernetes-cluster-sensor-daemonset-4fw49	tenable-cloud-security	containers.tenable.com/cloud-security/kubernetes-cluster-sensor:1.1	1/1	0		mx3hpc06	12 hours
Running	kubernetes-cluster-sensor-daemonset-5dq5v	tenable-cloud-security	containers.tenable.com/cloud-security/kubernetes-cluster-sensor:1.1	1/1	0		mx2hpc01	12 hours
Running	kubernetes-cluster-sensor-daemonset-6sqgb	tenable-cloud-security	containers.tenable.com/cloud-security/kubernetes-cluster-sensor:1.1	1/1	0		mx2hpc01	12 hours
Running	kubernetes-cluster-sensor-daemonset-8mq29	tenable-cloud-security	containers.tenable.com/cloud-security/kubernetes-cluster-sensor:1.1	1/1	0		mx2hpc03	12 hours
Running	kubernetes-cluster-sensor-daemonset-54d9k	tenable-cloud-security	containers.tenable.com/cloud-security/kubernetes-cluster-sensor:1.1	1/1	0		mx3hpc05	12 hours
Running	kubernetes-cluster-sensor-daemonset-9484f	tenable-cloud-security	containers.tenable.com/cloud-security/kubernetes-cluster-sensor:1.1	1/1	0		mxnetes-02	12 hours
Running	kubernetes-cluster-sensor-daemonset-bhx48	tenable-cloud-security	containers.tenable.com/cloud-security/kubernetes-cluster-sensor:1.1	1/1	0		mxnetes-01	12 hours

Tenable namespace

Virtual & Physical Nodes

MX1, MX2 and MX3

Observability - Logs

OpenSearch Dashboards

Discover

k8s-*-kube

Selected fields: log

Popular fields: kubernetes.container_name, kubernetes.labels.app_kubernetes_io/instance, kubernetes.pod_name

Available fields: _id, _index, _score, _type, @timestamp, flb-key, kubernetes.annotations.checksum/config, kubernetes.annotations.checksum/secret, kubernetes.annotations.cni_projectcalico_org/containerID, kubernetes.annotations.cni_projectcalico_org/podIP, kubernetes.annotations.cni_projectcalico_org/podIPs, kubernetes.annotations.kubectl_kubernetes_io/restartedAt, kubernetes.container_hash, kubernetes.container_image, kubernetes.docker_id

Search: _index: k8s-spinifex-kube, kubernetes.namespace_name.keyword: space-em-prod

DQL

Last 15 minutes

Show dates Refresh

218 hits

Oct 23, 2025 @ 14:42:08.315 - Oct 23, 2025 @ 14:57:08.315 per Auto

Count @timestamp per 30 seconds

Time log

Oct 23, 2025 10.26.130.155 - [23/Oct/2025:03:57:02 +0000] "GET / HTTP/1.1" 200 971 "-" "kube-probe/1.32" "-"
@ 14:57:02.646

Expanded document

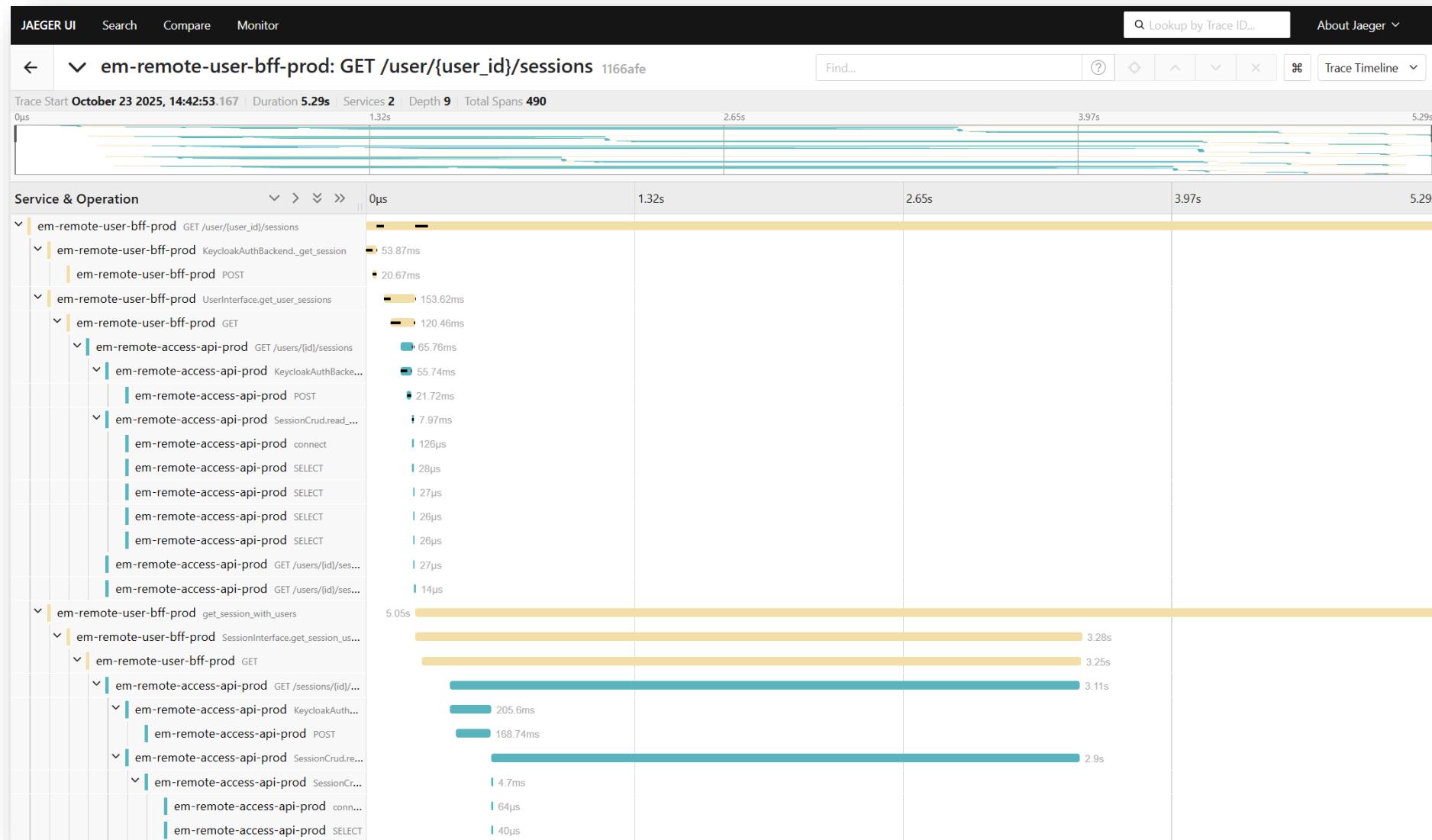
Table JSON

@timestamp	Oct 23, 2025 @ 14:57:02.646
_id	kjk2D5oBWoaLo3Gu16s-
_index	.ds-k8s-spinifex-kube-000133
_p	▲ F
_score	-
_type	-
flb-key	kube.var.log.containers.em-remote-user-ui-prod-db577fdcf-ls7lm_space-em-prod_em-remote-user-ui-da3abd3452bb6485ea7440fc3f27aaa12572b4cf1fe0fbeef66e7e3c2e9ea18d.log
kubernetes.container_hash	
kubernetes.container_image	
kubernetes.container_id	

View surrounding documents View single document

The screenshot shows the OpenSearch Dashboards Discover interface. The top navigation bar includes 'Discover', 'New', 'Save', 'Open', 'Share', 'Reporting', 'Inspect', and a user icon. The search bar filters by index ('k8s-spinifex-kube') and namespace ('kubernetes.namespace_name.keyword: space-em-prod'). The results show 218 hits from Oct 23, 2025, at 14:42:08.315 to 14:57:08.315. A histogram displays the count of log entries per 30-second interval. Below the histogram, a table provides the expanded document details for one specific entry, including fields like @timestamp, _id, _index, _p, _score, _type, flb-key, and various Kubernetes metadata.

Observability - Tracing



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 - ANSTO IT
 - ANSTO Cyber Security

Backup

The workflow

