


UK Windows Virtual Desktop User Group

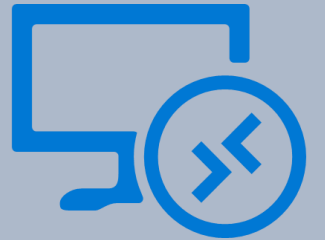


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Landing Zones and Enterprise Scale considerations for WVD



Jake Walsh

Principal Consultant @ CDW UK



Twitter: [@jakewalsh90](https://twitter.com/jakewalsh90)

Website: jakewalsh.co.uk

Please note: the views and opinions in this presentation are entirely my own!

Overview

- **Landing Zones** – an overview
- **Enterprise Scale for WVD** – what needs to be considered?
- **Useful Resources**



Landing Zones – What are they?

"Azure landing zones are the output of a multisubscription Azure environment that accounts for scale, security, governance, networking, and identity." – *Microsoft Cloud Adoption Framework*

- **A foundation for Scalable and Modular growth** – getting the basics in place ready to consume Azure Services.
- **Enterprise Scale focuses on 8 Common Design Areas** – covering the key areas that need consideration when designing with scale in mind.
- **Usually deployed through automation, but not always** – all organizations are different and have different needs.

Landing Zones – What are they?



Network Topology &
Connectivity



Identity



Resource
Organization



Governance
disciplines



Operations
baseline



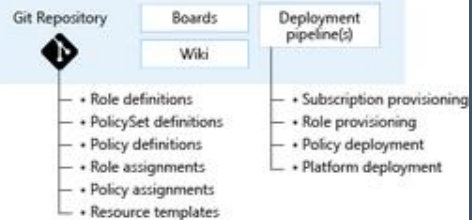
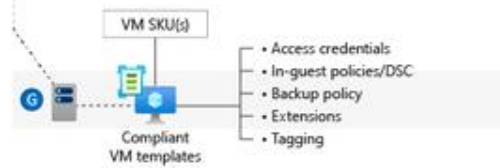
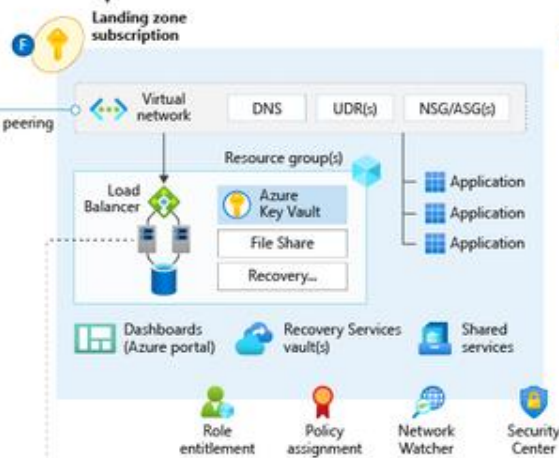
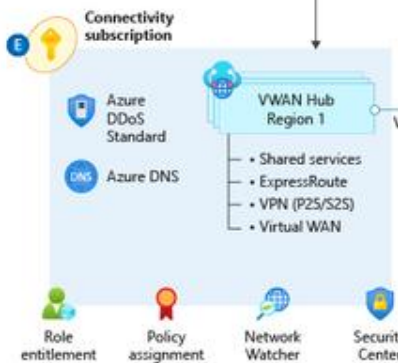
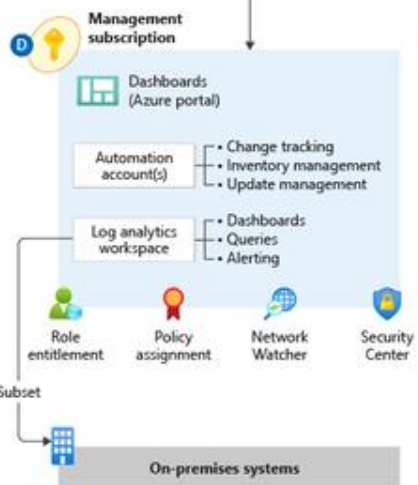
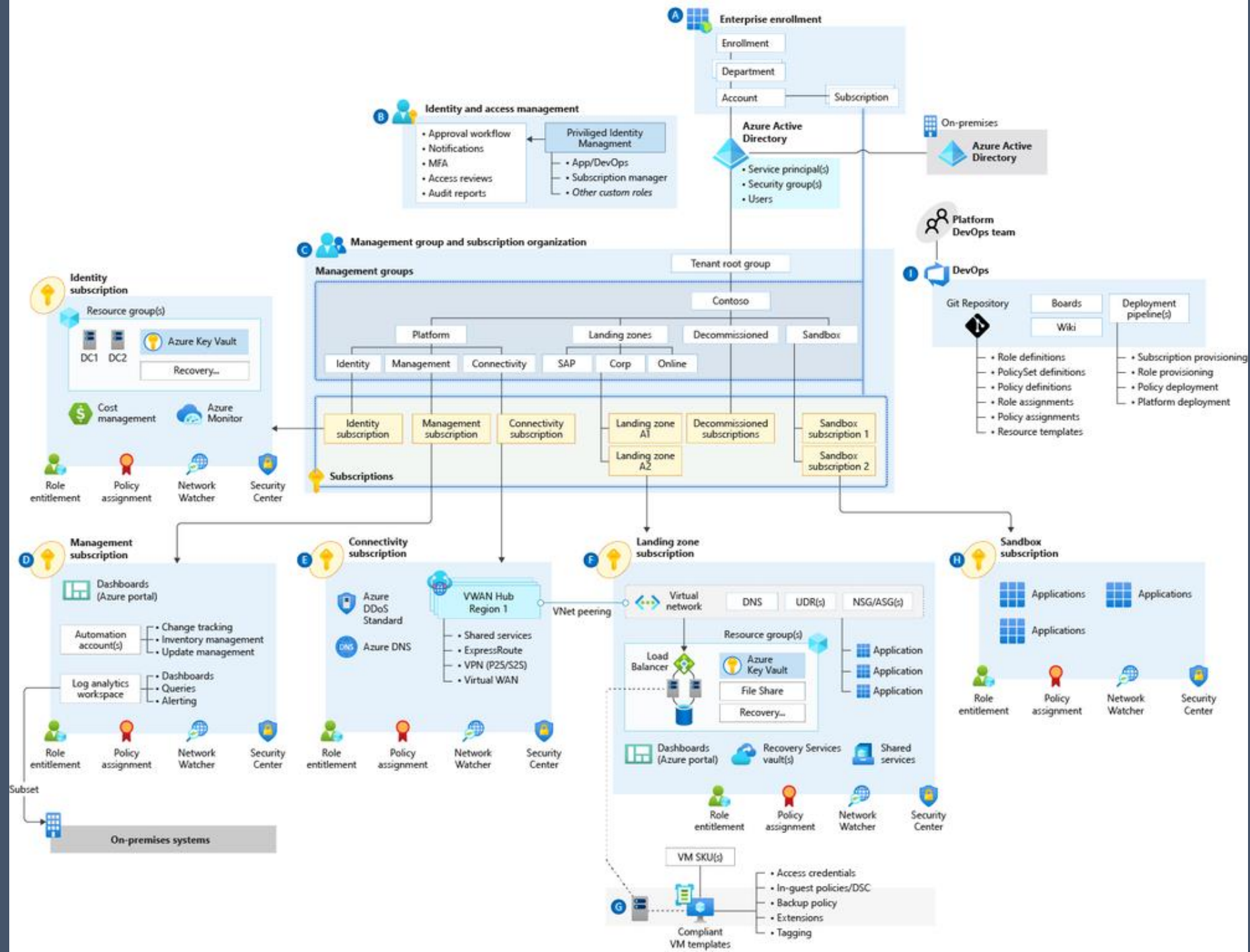
Enterprise Enrolment



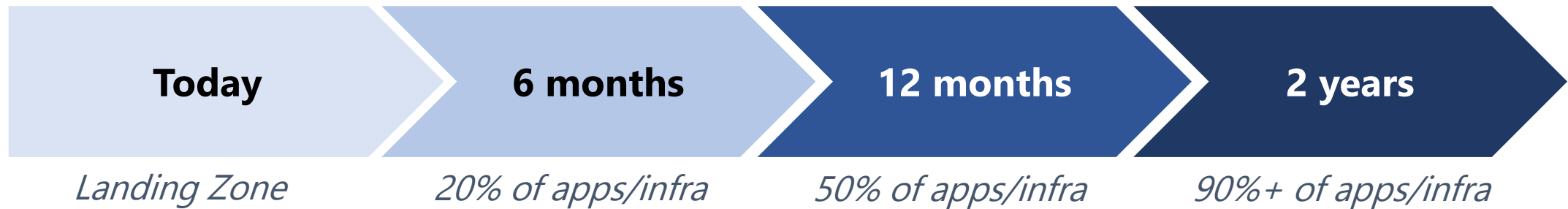
Deployment options



Business Continuity
& Disaster Recovery



Landing Zones – Time matters!



Essential to consider an Organization's growth and uptake of Azure Services over **time**.

Considering needs now – with a view on expansion needs and changes in the future.

For example:

- Business growth/acquisition and changes in structure
- New services/applications
- Future Azure Services an Org may consume

Why are Landing Zones important?

- Essential to get the right start in Azure – for some organizations, this means **Enterprise Scale**, for others, **starting small and expanding as needs dictate**.
- Provides the foundational resources required – the **essential baseline** resources for **consumption/growth** at scale.
- Helps remove the “we need X in place before we can use Y” issues of Cloud Adoption – by ensuring **supporting elements are in place from the offset**.
- For WVD – ensures we have a **baseline of resources in place to allow growth and scale**

Growth and Scale

In some cases...

Enterprise scale



Enterprise Scale

Landing Zones provide a [foundation for scalable and modular growth](#) – using common design areas. But what about Scale and Growth of Windows Virtual Desktop?

- WVD has unique scale implications – beyond just compute resource
- Essential area to consider when planning for worldwide or resilient rollouts – cross region deployments for example
- Considering the 8 Design Areas...

Enterprise Scale for WVD



Note: the next slides are not an exhaustive list!

Key Areas for consideration – these will vary between needs/organizations/use cases etc.

Enterprise Scale Considerations: Network Topology and Connectivity



Network Topology – Clear need to provide a network for WVD, ensuring subnet space, and ensuring appropriate bandwidth. Taking the view of the whole topology – and any growth!

Backend Applications – Ensuring our deployment locations for WVD can access any backend applications. Within Azure this is usually a case of VNET peering or NSGs.

Legacy Applications – Ensuring our deployment has access to any on-premises resources our business needs, and that appropriate connectivity is therefore in place.

Firewalling and Security – Organizational requirements? Security Baselines and Frameworks? Web Filtering?

DNS – it is ALWAYS DNS! (No really... DNS is important).

User Access and Experience – How, and from where, will users access the environment? What devices will they use to connect? Could we utilise something like RDP Shortpath? Experience Estimator is useful here.

Enterprise Scale Considerations: Identity



Identity

Azure Active Directory – Essential for WVD – as it is the first point of authentication. MFA/Conditional Access requirements? Security needs and requirements, and any existing arrangements/conditions need consideration here. Azure Security Benchmark – Standardize Azure AD as the central identity and authentication system!

Windows Active Directory – Session Hosts need to be joined to Windows Active Directory for Authentication/GPO/Management. Consider also supporting services – Azure Files and Azure NetApp Files.

Management Access, Roles, and Permissions – These are critical for ongoing management – ensuring relevant permissions are in place. Consider support needs and structures. Management Groups may be needed for larger organizations.

Supporting Services – Scale needs to account for any support services as well as Session Hosts. Profile Storage, Applications – if WVD grows, do the authentication/identity requirements for these also grow?

Applications – Are we deploying a LOB application alongside WVD? If so – what requirements does this have?

Enterprise Scale Considerations:

Resource Organization



Subscriptions – A billing and management function – when working at Scale we may need geographic, or business unit specific subscriptions, for example. Consider here Dev/Test needs too. These may need to align with existing Subscriptions.

Locations – Locations are key with WVD – ensuring a balance between user location and any resource location needs. Scale considerations – DR locations for example.

Resource Groups – Consider existing strategies – does WVD fit into this? Grouping by location/functions/region/business unit?

Business Areas/Departments – Potential need for different host pools/locations/and more. Map these out before deployment and consider how each business unit may change.

Tagging – Essential for optimizing resource management. Consider existing tagging strategy – and ensure it provides options around growth and scale. E.g. Locations/Business Units/Criticality

Enterprise Scale Considerations: Governance Disciplines



Governance
disciplines

Management Groups – Essential part of Enterprise environments within Azure – WVD can fit into these well. Consider a WVD management group or groups if managed by different teams/individuals.

Specific Security Requirements – ensure an understanding of organization security or governance requirements, how these may change – e.g. wider compliance requirements?

Azure Policy – essential part of Governance. Use Azure Policy as “Guardrails” for compliance standards - as per the Cloud Adoption Framework.

Locks – Self explanatory really – protect production resources!

Tagging – as per the last section, Tagging can be a great help for Governance and Management. Ensuring compliance with organizational requirements or standards.

Blueprints – Can assist in designing a repeatable set of Azure Resources. Useful for diverse teams in large organizations.

Enterprise Scale Considerations:

Operations Baseline



Operations
baseline

Monitoring – The key for WVD is identifying the key your metrics, and KPIs, and creating ways to interact with that data which provide the level of insight required by your organisation. Consider monitoring from a high level through to a low level – overview dashboards, detailed dashboards, regional dashboards, and specific dashboards for core applications for example.

Service Health – Simple to setup – essential for being kept aware of any health issues! Ensure these alerts get to the right people.

Ongoing Optimization – Adopt practices that support rapid growth and changes. Using Cloud native technologies where possible – augmented by 3rd party applications if your needs dictate.

Patching – Consider methodologies for patching and managing session hosts long term. Automation and image management are essential for scale. Potential need to align with organizational patching or deployment cycles.

Application Deployment – Consider here the need to deploy applications to end users and how growth will impact this. Options here for 3rd party tools, MSIX, Shared Image Gallery for example.

Enterprise Scale Considerations: Enterprise Enrolment



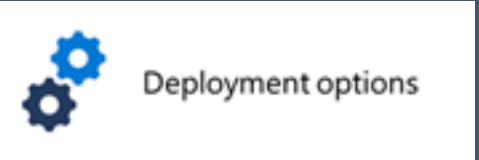
Agreements – A need for these to be in place to support growth – removing blockers to consumption.

Subscriptions – Important here to consider how these will be structured to achieve scale. Considerations needed around Business Units/Teams/Departments and Dev/Test or Regional Units. Consider limits here too!

Billing – Here we need to consider organizational needs around Billing Units and scale plans. Considerations for optimal finance here should be around Reserved Instances, Smart Scaling, Power Management. Also consider “the 2020 test”.

Enterprise Scale Considerations:

Deployment Options



Deployment Method – Likely to need to fit in with existing organizational approaches. Consider how these may need to change – e.g. manual Portal deployment may work today, but will it work if we grow/scale up?

IaC & DevOps – Likely to require organizational change/development/training to adopt – but may provide rapid growth and scaling opportunities moving forward. Potential here for faster deployment and growth using DevOps methodologies.

Image Management – How will updates be managed and replicated? What is our test plan? How do we back up images? What patching tools do we use already? The Image Builder Service can help here.

3rd Party Tools/Enhancements – Great options here for ongoing management and enhancement if you require it – e.g. Nerdio! Tools like this can optimize and enhance the experience – so are worth evaluating.

Enterprise Scale Considerations: Business Continuity & DR



Local Resiliency – Availability Sets/Zones

Regional Resiliency – Regional Host Pools with DR Regions – consider also supporting services e.g. Profile Management

Geographic Resiliency – Consider geographical deployment to protect against major issues e.g. Natural Disasters. Experience estimator can help choose a region

DR Plan – Important to have a plan, and test it regularly. Ensure it works

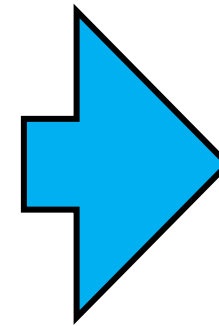
API Limits – There are API limits for Azure, and WVD also has specific limits which may need to be considered and checked. More likely to be an issue for very large environments – and during DR events when rapidly scaling into other regions.

Backups – Essential to ensure our core infrastructure elements and any images are protected. Consider also the need to protect key applications and data – no good having WVD resilient and backed up if these other elements aren't too!

Designing for Scale

4 Key Points:

- Think w i d e
- Think loooooooooooooong term
- Assume and Plan for **growth**



**Cloud
Adoption
Framework**

Resources

Landing Zones:

- <https://docs.microsoft.com/en-us/azure/cloud-adoption-framework/>
- <https://www.techielass.com/what-is-an-azure-landing-zone>
- <https://techcommunity.microsoft.com/t5/azure-architecture-blog/enterprise-scale-for-azure-landing-zones/ba-p/1576575>
- <https://azure.microsoft.com/en-gb/blog/creating-cloud-ready-environments-with-azure-landing-zones/>
- <https://docs.microsoft.com/en-us/learn/modules/microsoft-cloud-adoption-framework-for-azure/>
- <https://channel9.msdn.com/Shows/Azure-Enablement/Start-small-and-expand-Azure-landing-zones-approach--Landing-zones-Ep3--Cloud-Adoption-Framework>
- https://azure.microsoft.com/en-gb/services/blueprints/?WT.mc_id=modinfra-9357-salean
- <https://docs.microsoft.com/en-us/azure/cloud-adoption-framework/ready/azure-setup-guide/organize-resources?tabs=NamingStandards>
- <https://christiaanbrinkhoff.com/2020/03/23/learn-how-to-increase-the-security-level-of-your-windows-virtual-desktop-environment-e-g-windows-client-with-azure-mfa-and-conditional-access/>

Resources

Scale:

- <https://docs.microsoft.com/en-us/azure/governance/blueprints/overview>
- <https://docs.microsoft.com/en-us/azure/azure-resource-manager/management/azure-subscription-service-limits#virtual-machines-limits>
- <https://azure.microsoft.com/en-gb/services/virtual-desktop/assessment/>
- <https://jonnychipz.com/2021/01/25/14-azure-cost-saving-tips/>
- <https://docs.microsoft.com/en-us/azure/virtual-desktop/security-baseline>
- <https://docs.microsoft.com/en-us/azure/virtual-desktop/store-fslogix-profile>
- <https://docs.microsoft.com/en-us/azure/azure-resource-manager/management/azure-subscription-service-limits#api-management-limits>
- <https://docs.microsoft.com/en-us/azure/architecture/example-scenario/wvd/windows-virtual-desktop#azure-limitations>
- <https://docs.microsoft.com/en-us/azure/cloud-adoption-framework/ready/enterprise-scale/architecture>
- <https://docs.microsoft.com/en-us/azure/cloud-adoption-framework/ready/landing-zone/design-areas>



Twitter: [@jakewalsh90](https://twitter.com/jakewalsh90)

Website: jakewalsh.co.uk

Thank You!

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