Microsoft

Moving your dev/test environment to the cloud; learnings from the field

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Getting Dev/Test Environments

~~SUCKS!!~~

Is quite hard

Dev-test in the cloud: drivers and concerns

Drivers

Agility

Economics

Scale

Speed

IT admin

Concerns

Integration

Security

Compliance

Performance

Questions

- How to….
  - Provision
  - Connect
  - Manage
  - Migrate
  - Identify (login)
- How do you….
  - Develop
  - Perceive performance
  - Perceive success

Approach

- Dev/Test is not about infra but actually about developers; talk to them! About:
  - The way they (would like to) work
  - The management overhead they might be experiencing
  - The amount of control they need
  - The toolset they're using
  - The performance they need

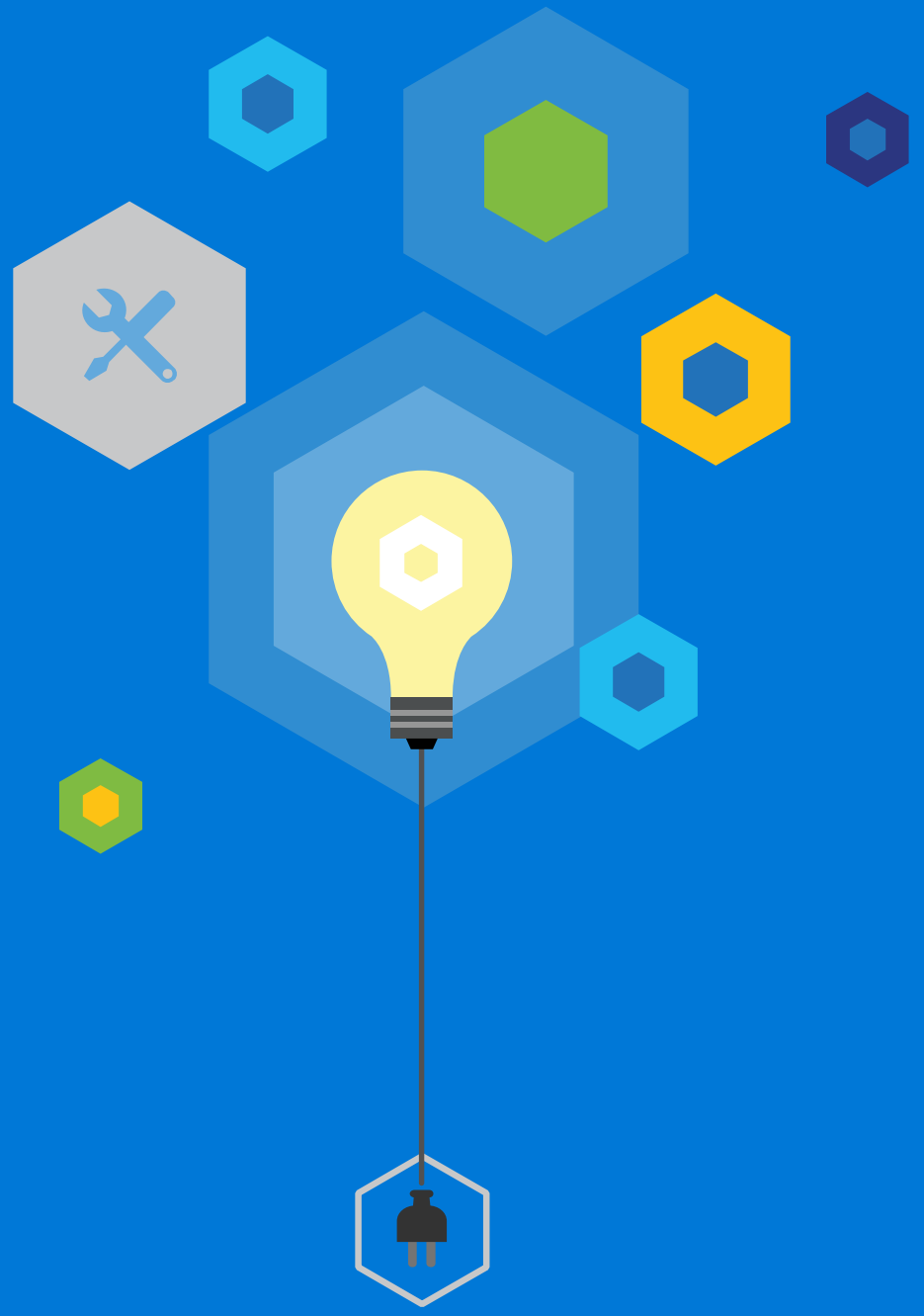
- Form a team with the follow areas of expertise:
  - Developer (representative of dev team)
  - Networking
  - Management (monitoring, configuration etc.)
  - Hypervisor admin
  - Identity (optional)

Approach

- Map workloads:
  - Isolation
  - Dependencies
  - Management

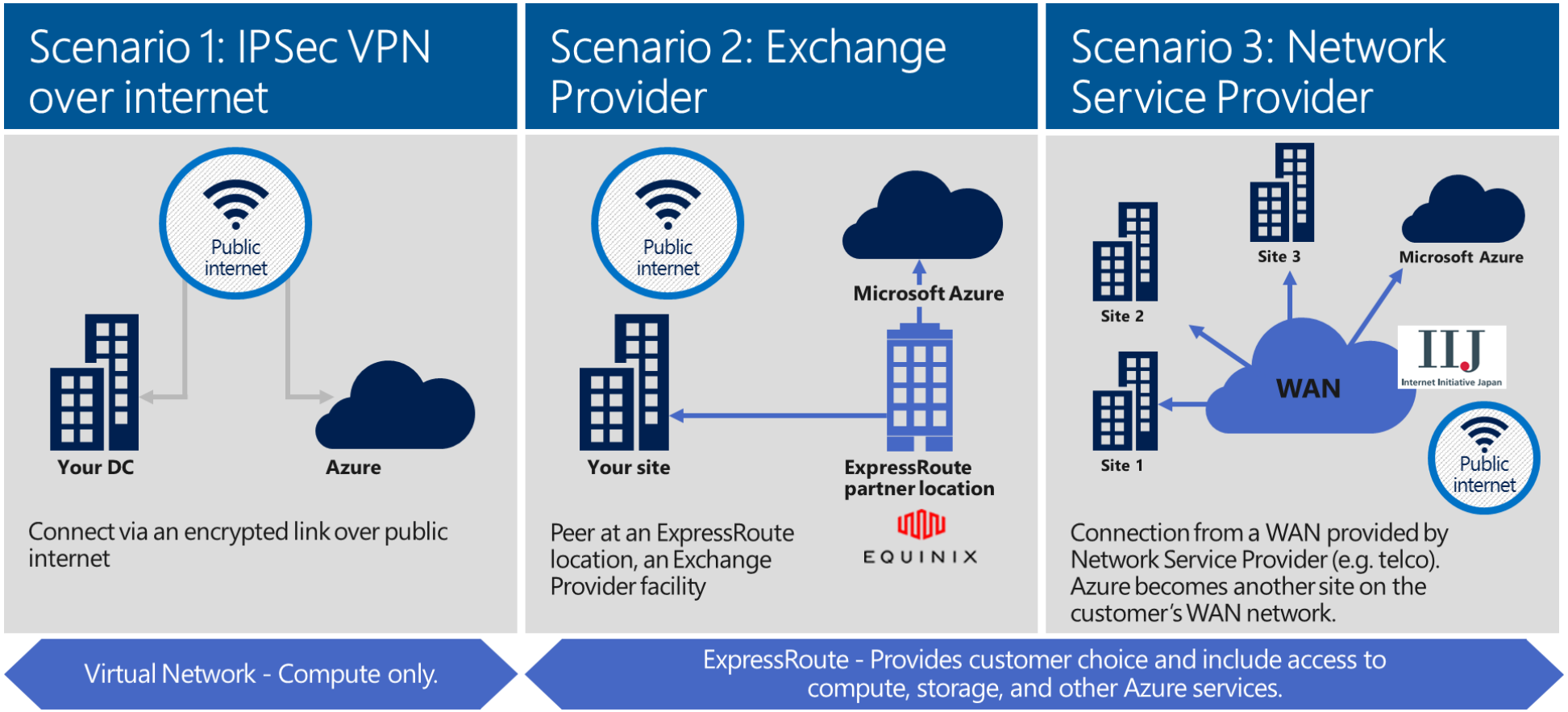
- Determine:
  - Performance baseline
  - Compliancy needs
  - Management services
  - Success criteria

Connectivity & Security

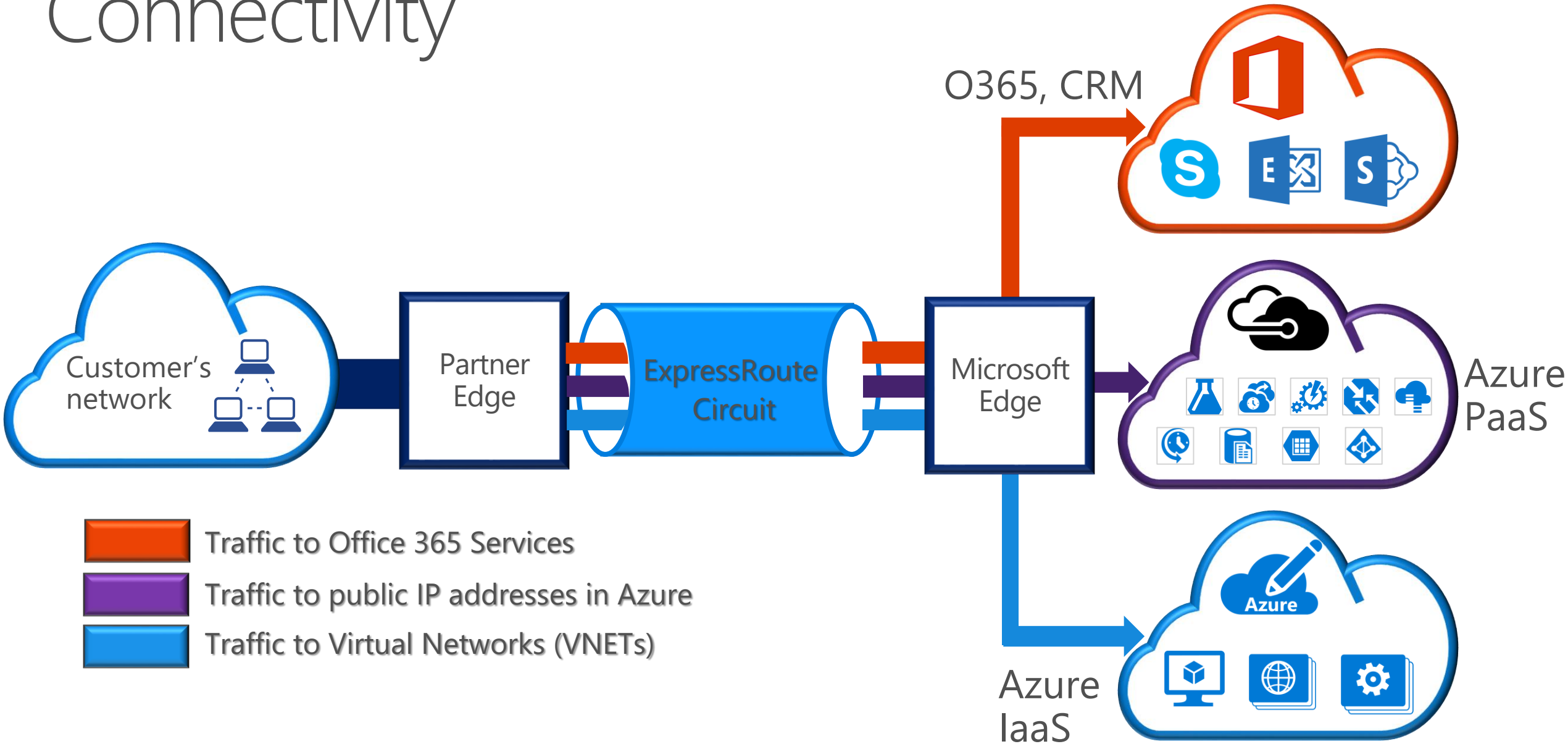


Connectivity

- How do developers access their machines?
  - Route privately or publically?



Connectivity



Connectivity

- EXP: dedicated customer WAN connection meets ER at a partner DC
  - Requires physical installation of WAN access and router in DC
  - Requires cloud interconnect service from partner DC
  - Permits installation of customer monitor and security equipment in data path
  - Layer 3 connectivity is customer responsibility (can be delegated)
  - Lead time 6 – 8 weeks (faster if they're an existing customer)

- NSP: pre-installed, shared connectivity from WAN provider to ER
  - Ready-made service from provider, no dedicated components required
  - Configuration only
  - Does not permit installation of customer equipment
  - Layer 3 connectivity is handled by NSP
  - Lead time hours or days

Connectivity

- Express Route generally gives the best experience

	VPN Gateway throughput	VPN Gateway max IPsec tunnels	ExpressRoute Gateway throughput	VPN Gateway and ExpressRoute coexist
Basic SKU	100 Mbps	10	500 Mbps	No
Standard SKU	100 Mbps	10	1000 Mbps	Yes
High Performance SKU	200 Mbps	30	2000 Mbps	Yes

- Start with a S2S VPN to quickly get started
  - Size the gateway subnet to allow for ER (need at least /28)

Networking & Security

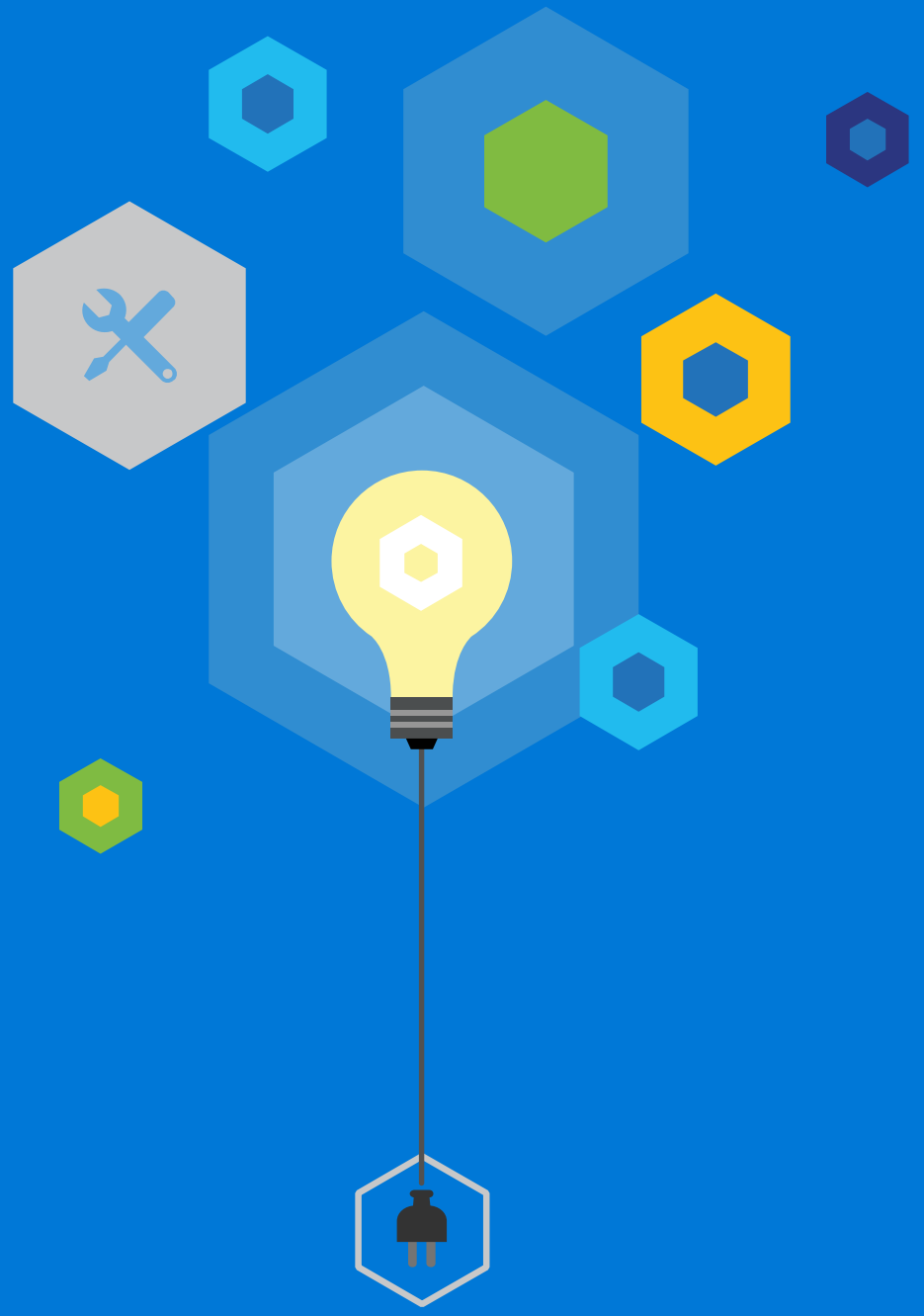
- Sit down with the networking team early, you'll need them!

- Have a discussion on how the customer will treat Azure (trusted / non-trusted)
  - High impact on network design
  - What kind of data will the customer use? (anonymized?)
  - Disk encryption (preview)

- How will dev/test machines reach the internet?
  - Impact on routing and isolation

- When using Express Route;
  - Start small and scale up
  - Engage ER provider

Management & Migration

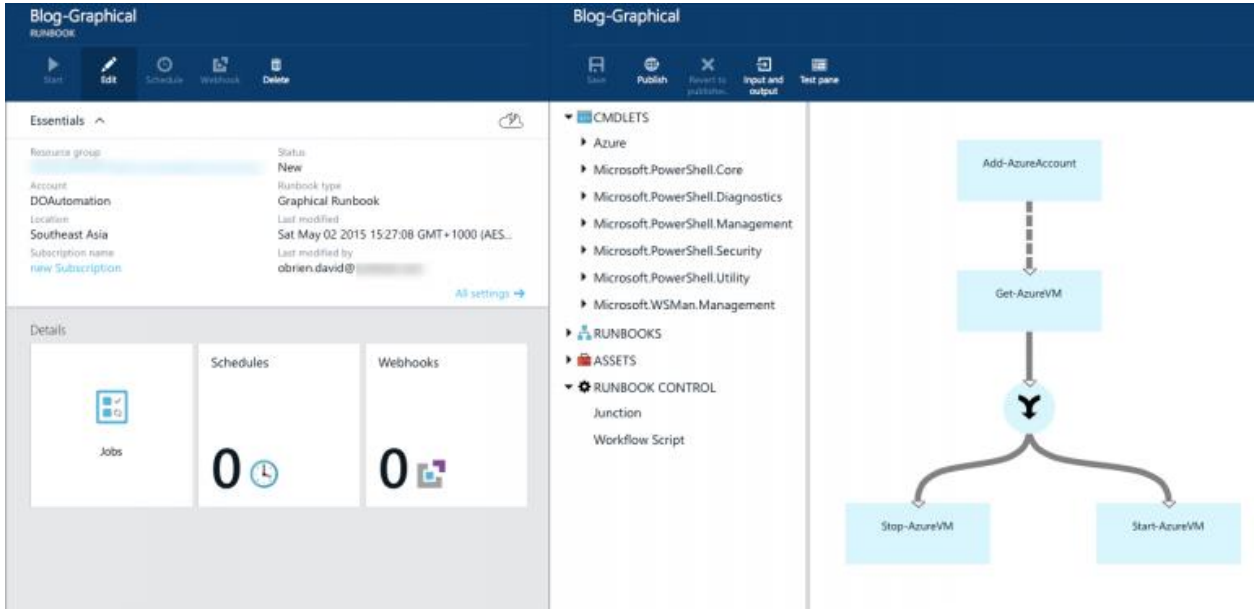


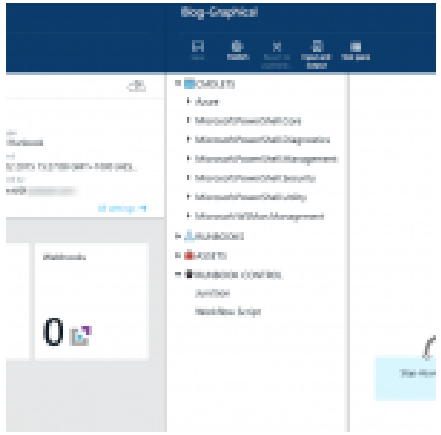
Management

- Have a discussion on “how much” management is needed
  - Bringing in traditional IT management tools is generally overhead
  - Give developers control over the (re)provisioning process (ARM helps with that!)
- Rather redeploy than troubleshoot (and automate this process)
- Mind cost overhead of management components in the cloud
- Consider the use of cloud-native management tools
- Shutdown your VM’s!

Azure Automation

- Leverage gallery scripts for scheduled shutdown & startup of VM's
- Leverage the DSC pull provider for in-guest configuration and baselining





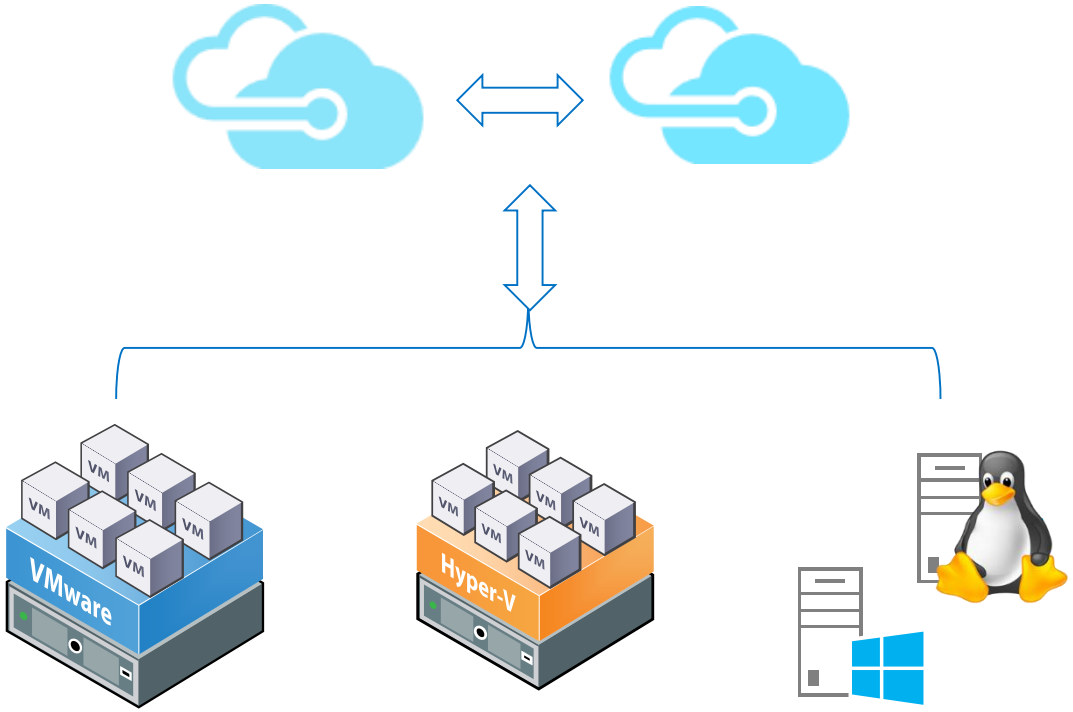
Migration

- Consider if you need to migrate assets, very time consuming
- Consider if you **really** need to migrate assets
- Consider if you **really really** need to migrate assets
- If you **really** need to migrate assets; use Azure Site Recovery services (free for 90 days when migrating)

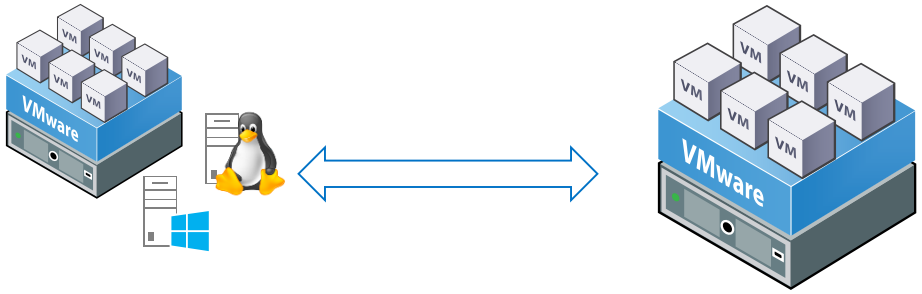
- VM Sizing in Azure usually differs from on-premises
- After migration create a process to deploy new machines directly in Azure (upload image/create template)
- Mind supported OS versions (also VMWare)

Azure Site Recovery: The Complete Disaster Recovery/Migration Solution

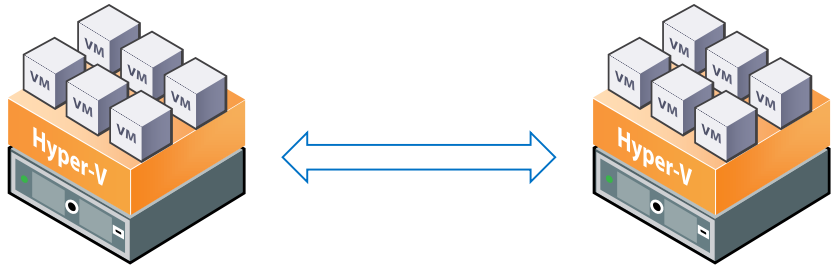
Site to Azure | Any Cloud | **Site to Site**



VMware Hyper-V Physical



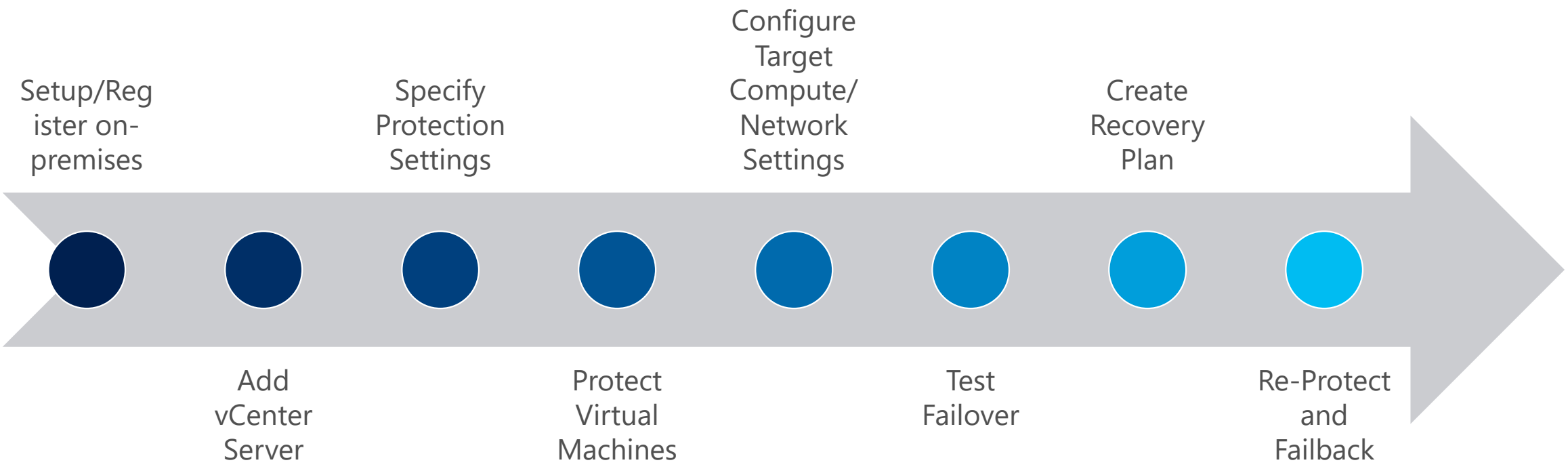
Physical/VMware to VMware



VMM to VMM

Windows | Any OS | Linux

End to End Steps



Migration

- If you decided you want to migrate and use ASR, mind the following:
  - Estimate size and number of on-prem PS VMs based on VM churn rate
  - Estimate storage account requirements
  - Check OS Support
  - No VHDs > 1TB
  - Failover Clusters are challenging
  - No >32 disks per VM
  - Storage performance
  - Check capacity planner: https://azure.microsoft.com/en-us/documentation/articles/site-recovery-capacity-planner/

Guest OS Support Matrix

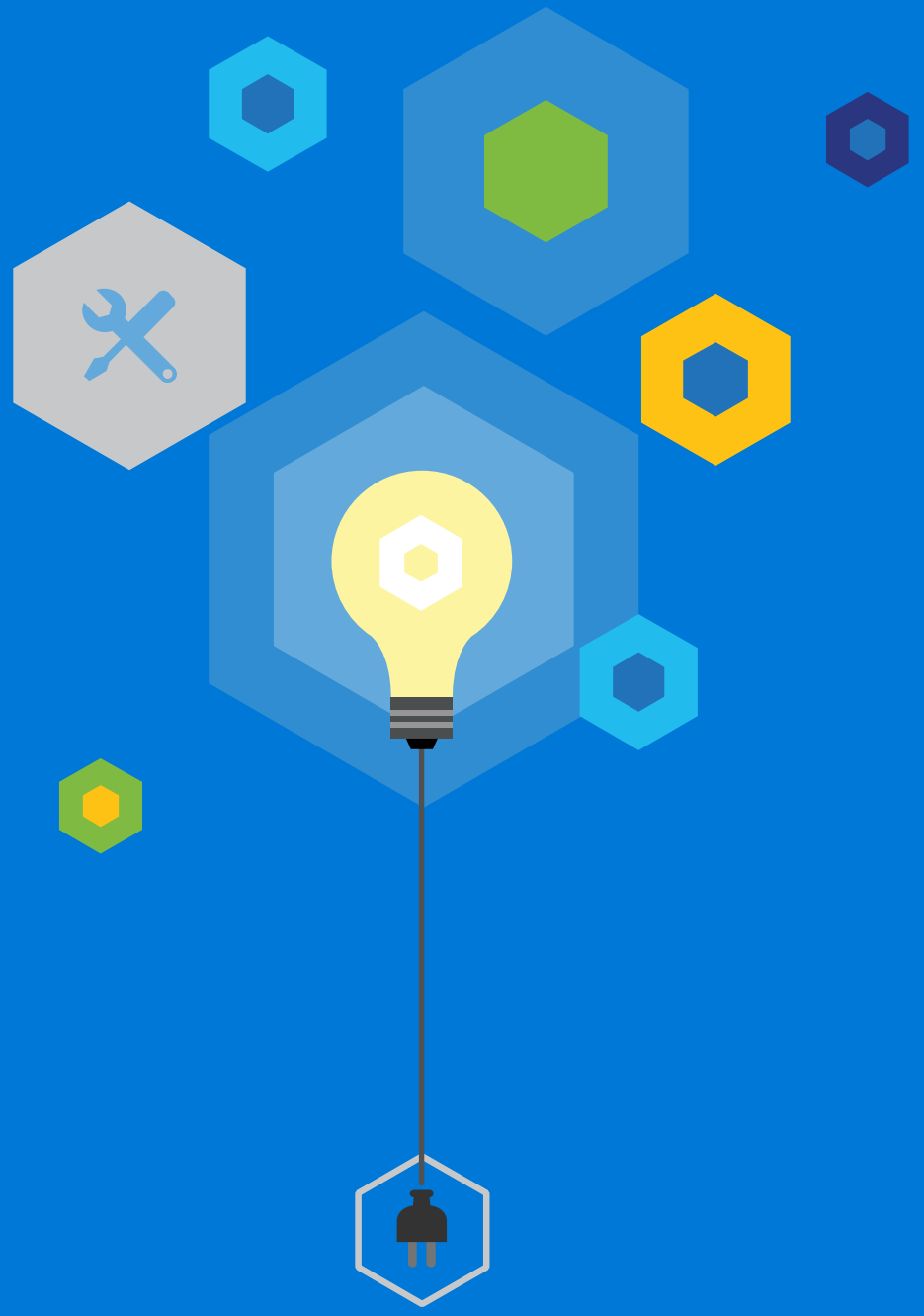
Windows

- ✓ Windows Server 2003 R2*
- ✓ Windows Server 2008 R2 SP1
- ✓ Windows Server 2012
- ✓ Windows Server 2012 R2
- ✓ Localized OS

Linux

- ✓ Red Hat Enterprise Linux 6.7
- ✓ Centos 6.5, 6.6,6.7
- ✓ Oracle Enterprise Linux 6.4, 6.5 (RHEL compatible or UEK3)
- ✓ SUSE Linux Enterprise Server 11 SP3.

Performance



Performance

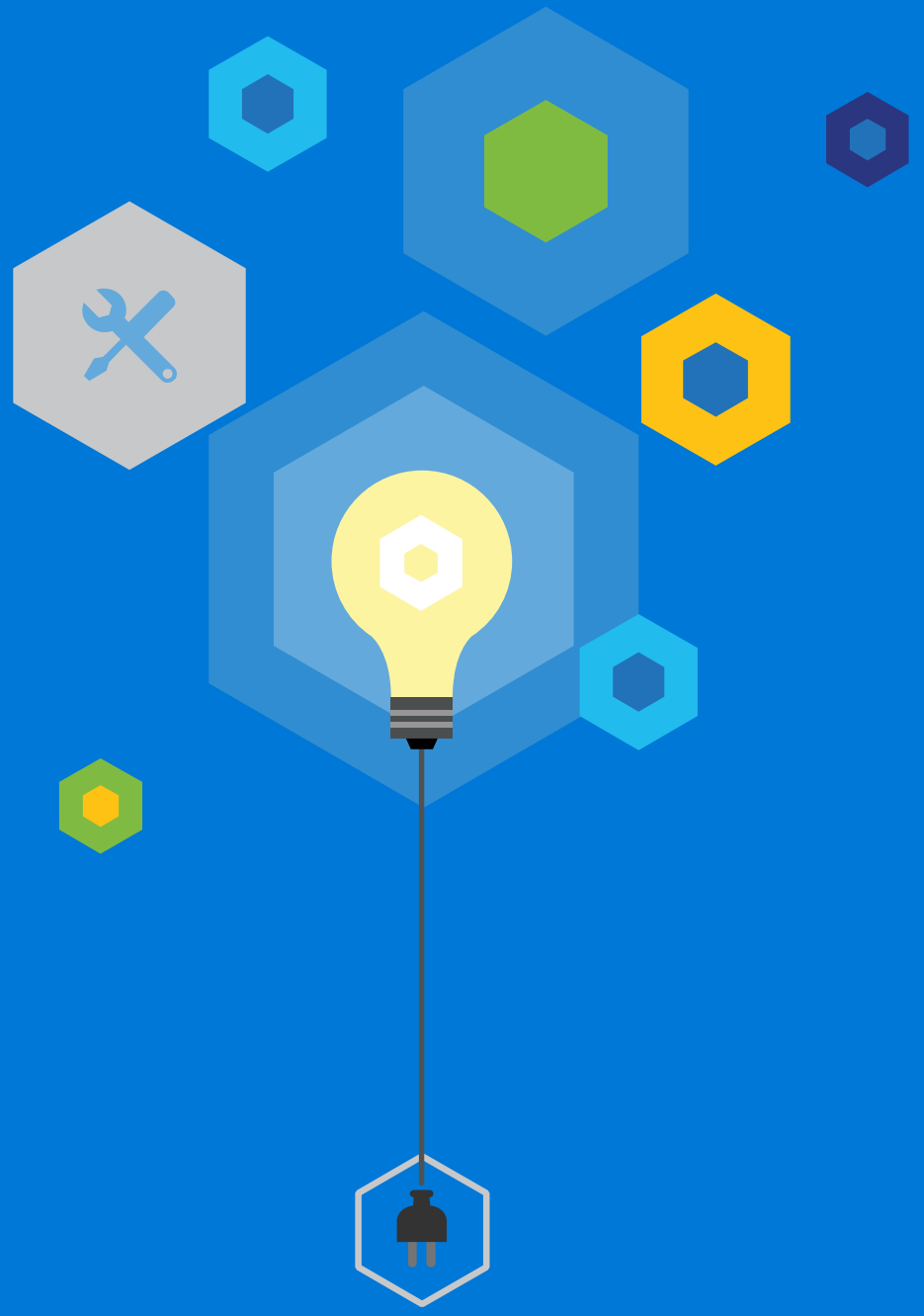
- Benchmark performance & gather performance requirements
  - Analyze characteristics of workloads & usage (time common actions)
  - Basic, Standard, A, D, Dv2, G
  - Use Azure Compute Units to help predict performance on other tiers (https://azure.microsoft.com/nl-nl/documentation/articles/virtual-machines-size-specs/)

- IaaS Performance
  - For non persistent data use D: (e.g. cache)
  - Never use OS disks for read/write intensive tasks
  - Play around with host caching modes on data disks
  - When scheduling startup/shutdown calculate some time to properly startup the VM (Schedule in batches)
  - Make a proper storage account design (20K IOps/account)

Performance

- Development tool specific:
  - Location of developer artifacts (TFS, NuGet etc.)
  - Re-sharper can be resource intensive
  - Visual Studio Plugins
  - Deleting website cache can speeds up VS tasks (iisreset)

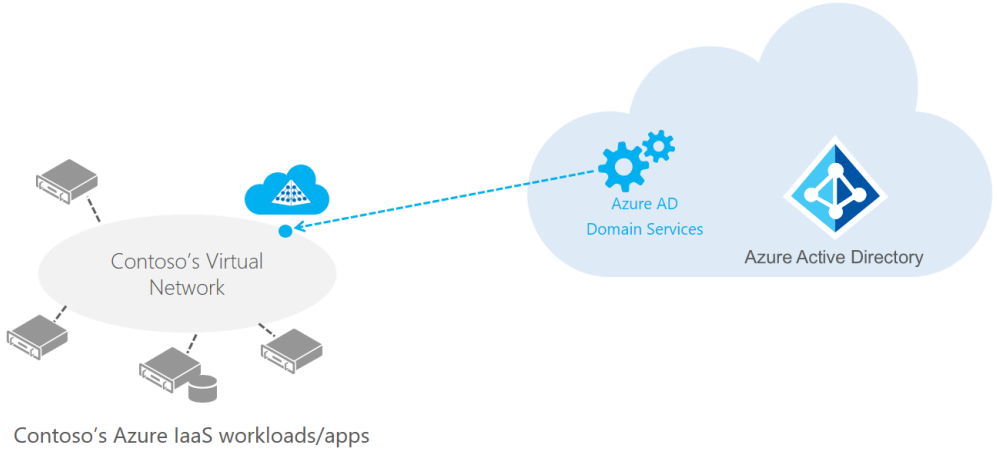
Identity



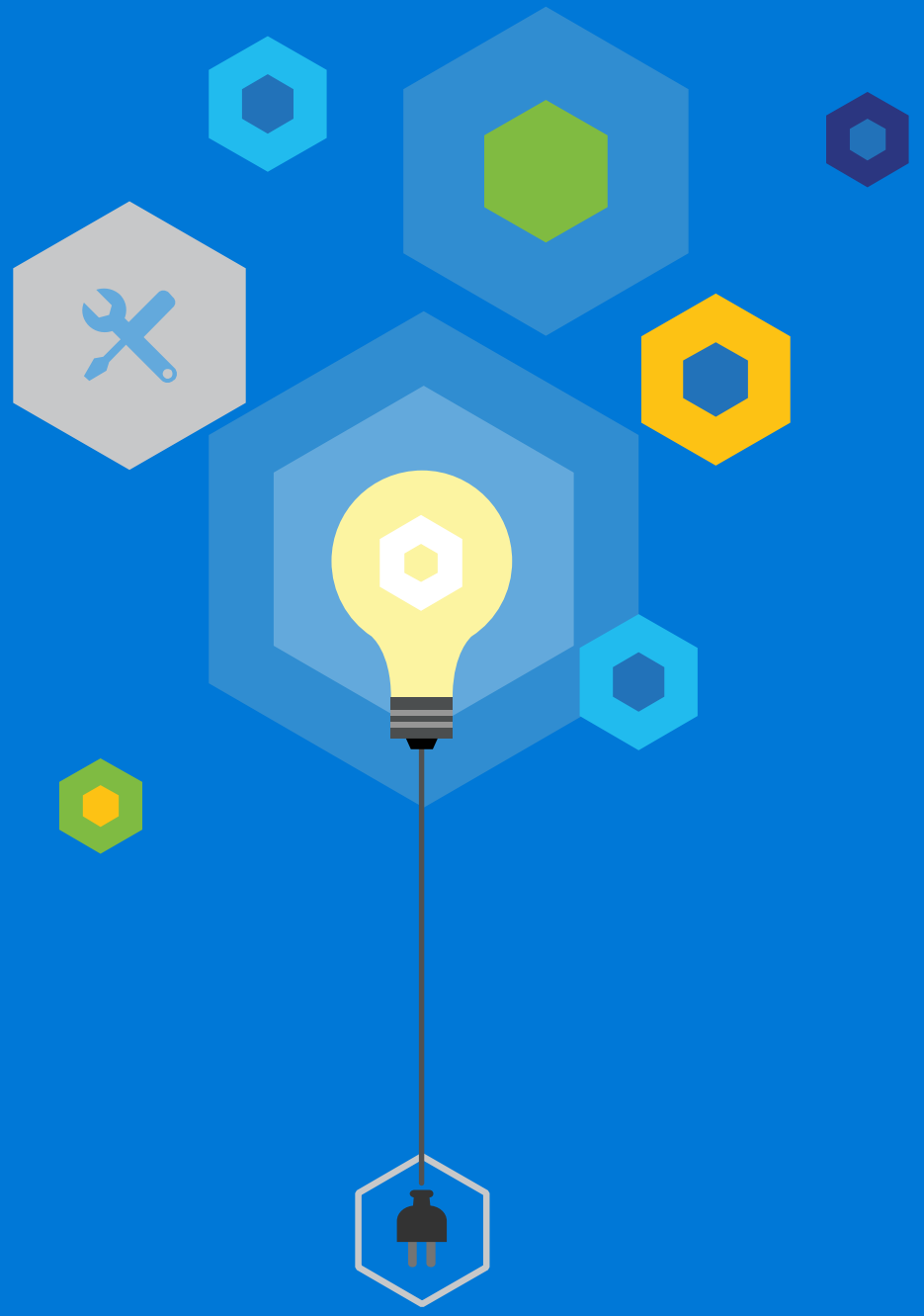
Identity

- How and where do users authenticate?
  - Local or centralized

- Azure Active Directory domain services vs. Domain Controller
  - https://azure.microsoft.com/en-us/documentation/articles/active-directory-ds-overview/



In review: Learnings



Learnings

- Have a developer focused conversation!
  - Try to optimize the way they work
- Try not to lift & shift (migrate)
  - Replicate/rethink deployment procedure in Azure
- Customer new to cloud services? Work agile
  - Don’t try to change the world at once
- Benchmark performance & gather performance requirements
- IaaS is the lowest entry point but shouldn’t be the end goal

Learnings

- Business case on IaaS can be positive (when machines get shutdown) but there are other benefits moving to cloud (speed, capacity, flexibility, innovation and developer enablement)
  - MSDN subscribers? Use MSDN benefits!
  - Be transparent about costs & find somebody at the customer to take on this responsibility
  - Try to quantify management overhead for developers

Something to make your life easier in the future

Azure Dev/Test Lab

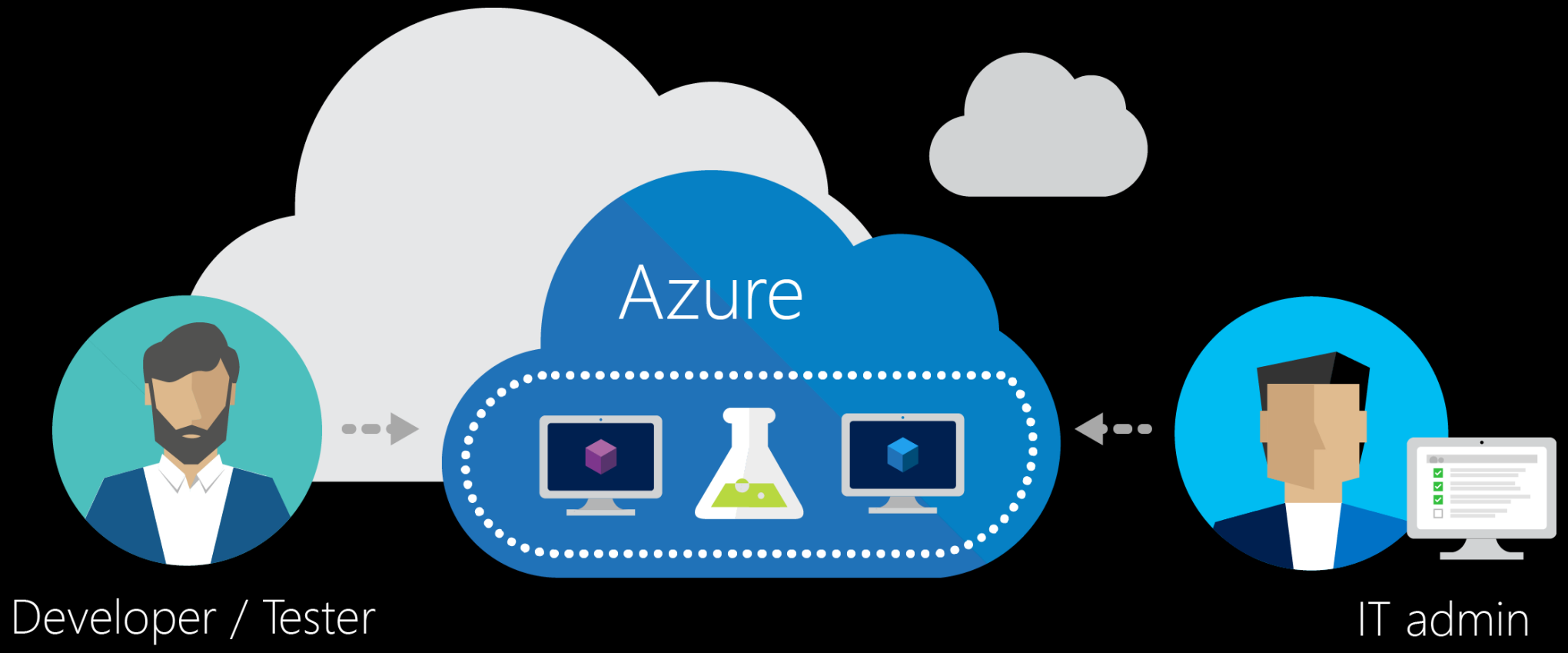
65% of developers say it is too complicated and time-consuming to get Dev/Test resources

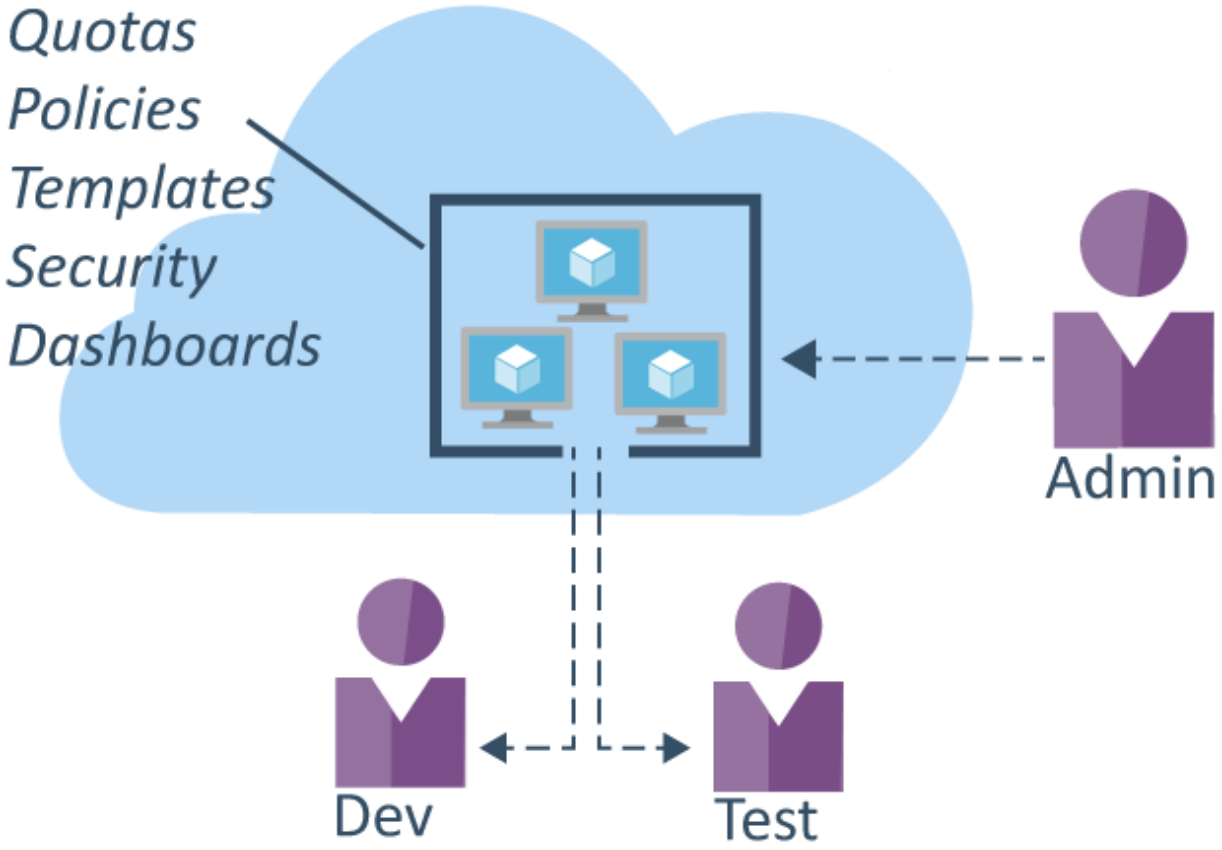
10% Average utilization of dedicated Dev/Test infrastructure

Source: Business Case for Test Environment Management Whitepaper, Cognizant

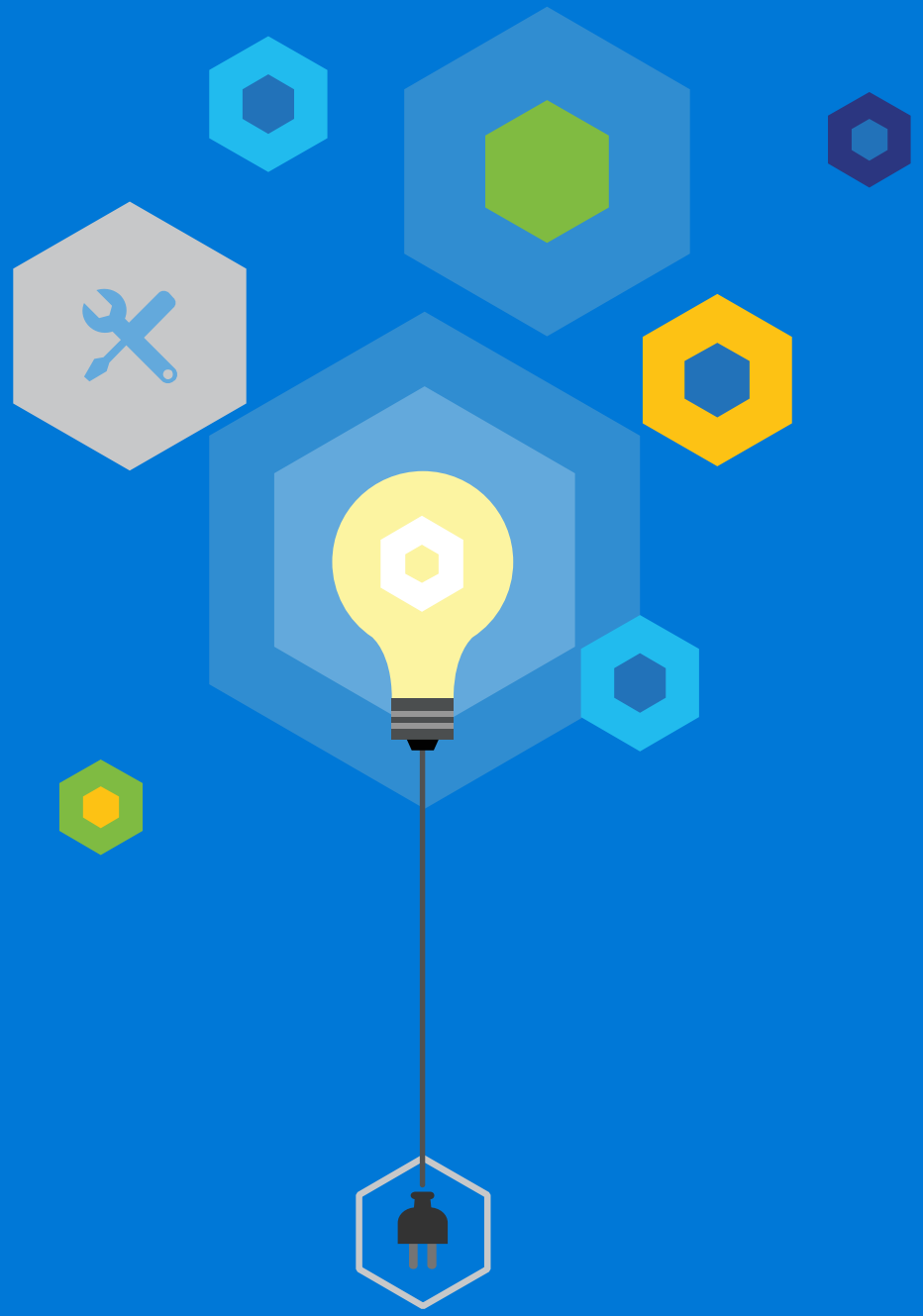
Azure DevTest Labs

Fast, easy, and lean Dev/Test environments in Azure. Specifically for your team. On demand.




Quotas
Policies
Templates
Security
Dashboards
Admin
Dev
Test

Demo



WE WANT YOU!

https://azure.microsoft.com/en-us/services/devtest-lab/