Using Bicep for Infra-as-Code deployments - The advanced AVD & W365 edition

Workplace Ninja Summit 2024

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About Esther Barthel

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Books

- Getting started with Bicep
- RDS - The Complete Guide
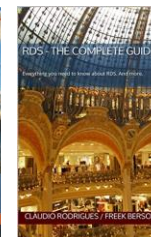
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Agenda

Introduction

Bicep in 60sec, and why this talk?

Reusability

Local modules, ACR and AVM

Deploying in logical groups

Deployment Stacks; create, secure and destroy

Bicep language innovations

User-defined types & functions, Import & export, Extract param from property
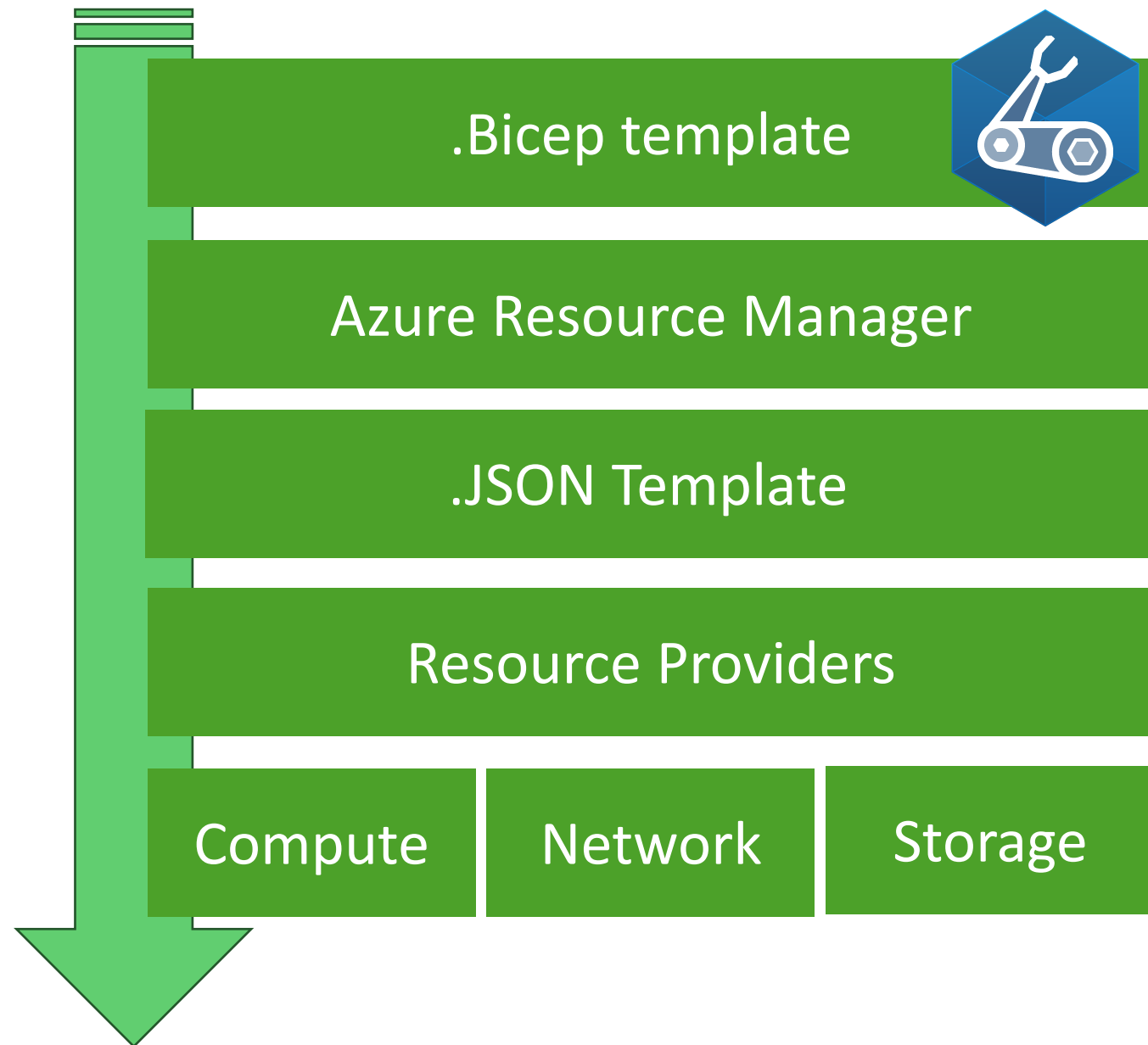
Bicep templates for Microsoft Graph

What's included, what's not (yet)?

Key takeaways:

- **Learn what's new in Bicep**

- **How to get the most out of Bicep for your AVD/W365 deployments?**

What is Bicep

- Declarative
- Idempotent
- Fast

.Bicep template

Azure Resource Manager

.JSON Template

Resource Providers

| Compute | Network | Storage |

Azure Verified Modules (AVM)

- Official Microsoft initiative to streamline and unify the IaC experience
- Evolution of the CARML, TFVM and Bicep Public Registry.
- Developed and tested, ensuring deployment of Azure resources are consistent
- Accelerates delivery of cloud-native or migrated applications
- Composable building blocks that encapsulate groups of resources
- Microsoft Supports it!
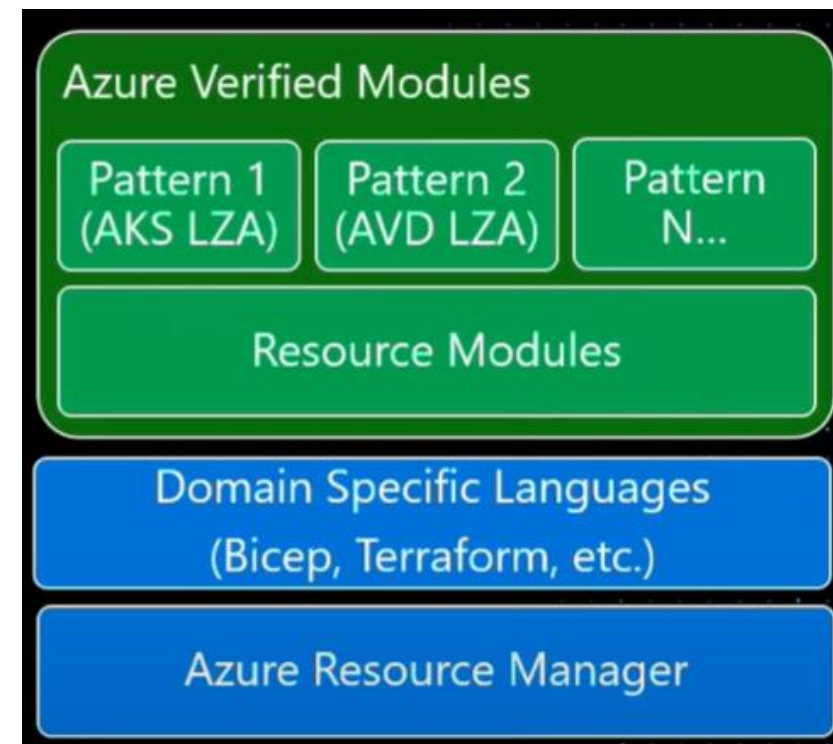
https://aka.ms/AVM

Limitations for AVD

Bicep Modules

The following table shows the number of all available, orphaned and planned **Bicep Modules**.

Language	Classification	Published 🟢 & 👀	Proposed 🆕	SUM 💾
	Resource	135	15	**150**
Bicep	Pattern	13	29	**42**
	Utility	0	1	**1**

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Proposed modules - 🆕

➕ Proposed Modules - Module names, status and owners

No.	Module Name	Display Name	Status & Versions
03	avm/ptn/authorization/management-group-role-assignment	Authorization - Management Group Role Assignment	Proposed 🔷 N/A
04	avm/ptn/authorization/resource-group-role-assignment	Authorization - Resource Group Role Assignment	Proposed 🔷 N/A
05	avm/ptn/authorization/subscription-role-assignment	Authorization - Subscription Role Assignment	Proposed 🔷 N/A
06	avm/ptn/avd-lza/insights	Azure Virtual Desktop (AVD) LZA - Insights	Proposed 🔷 N/A
07	avm/ptn/avd-lza/management-plane	Azure Virtual Desktop (AVD) LZA - Management Plane	Proposed 🔷 N/A
08	avm/ptn/avd-lza/networking	Azure Virtual Desktop (AVD) LZA - Networking	Proposed 🔷 N/A
09	avm/ptn/avd-lza/session-hosts	Azure Virtual Desktop (AVD) LZA - Session Hosts	Proposed 🔷 N/A
29	avm/ptn/virtual-machine-images/azure-image-builder	Custom Images using Azure Image Builder	Proposed 🔷 N/A

Limitations for AVD

bicep-registry-modules / avm / res / **desktop-virtualization** /

Name	Last commit message	Last commit date
..		
application-group	fix: Remove '(Preview)' label from role name - batch 3 (#3223)	5 days ago
host-pool	fix: Remove '(Preview)' label from role name - batch 3 (#3223)	5 days ago
scaling-plan	fix: Remove '(Preview)' label from role name - batch 3 (#3223)	5 days ago
workspace	fix: Remove '(Preview)' label from role name - batch 3 (#3223)	5 days ago

Limitations for AVD

bicep-registry-modules / avm / res / desktop-virtualization / **workspace** /

Name	Last commit message	Last commit date
📁 ..		
📄 README.md	feat: Pre-PR for ut1 module PR (#2999)	last week
📄 main.bicep	fix: Remove '(Preview)' label from role name - batch 3 (#3223)	5 days ago

Example 1: *Using only defaults*

This instance deploys the module with the minimum set of required parameters.

▼ via Bicep module

```
module workspace 'br/public:avm/res/desktop-virtualization/workspace:<version>' = {
  name: 'workspaceDeployment'
  params: {
    // Required parameters
    name: 'dvwsmin002'
    // Non-required parameters
    location: '<location>'
  }
}
```

Example 3: *WAF-aligned*

This instance deploys the module in alignment with the best-practices of the Well-Architected Framework.
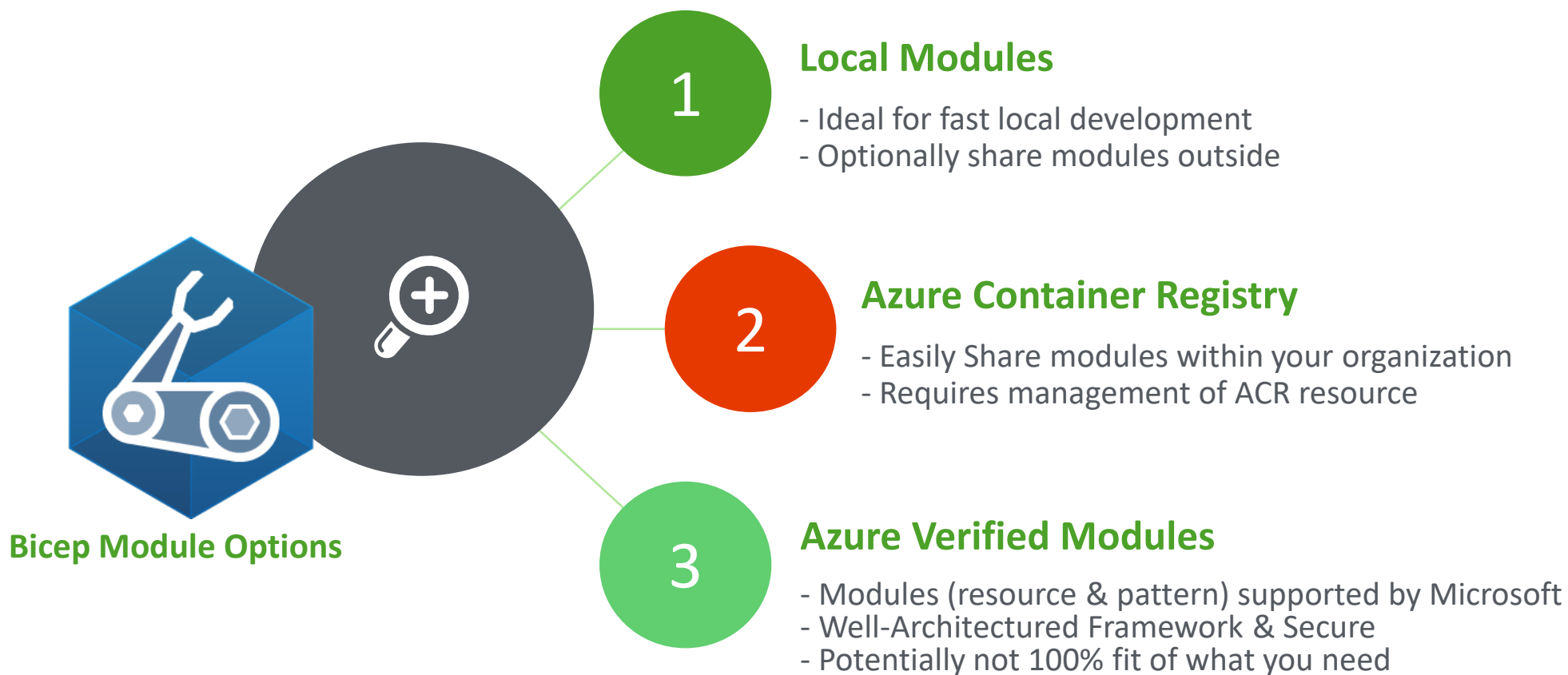
▼ via Bicep module

```
module workspace 'br/public:avm/res/desktop-virtualization/workspace:<version>' = {
  name: 'workspaceDeployment'
  params: {
    // Required parameters
    name: 'dvwswaf002'
    // Non-required parameters
    diagnosticSettings: [
      {
        eventHubAuthorizationRuleResourceId: '<eventHubAuthorizationRuleResourceId>'
        eventHubName: '<eventHubName>'
        storageAccountResourceId: '<storageAccountResourceId>'
        workspaceResourceId: '<workspaceResourceId>'
      }
    ]
    location: '<location>'
    tags: {
      Environment: 'Non-Prod'
      'hidden-title': 'This is visible in the resource name'
      Role: 'DeploymentValidation'
    }
  }
}
```

Reusability

Bicep Module Options

1 **Local Modules**

- Ideal for fast local development
- Optionally share modules outside

2 **Azure Container Registry**

- Easily Share modules within your organization
- Requires management of ACR resource

3 **Azure Verified Modules**

- Modules (resource & pattern) supported by Microsoft
- Well-Architectured Framework & Secure
- Potentially not 100% fit of what you need

DEMO!

Deploying in Logical Groups

Why Deployment Stacks?

☺ Deploy & maintain resources in logical Groups instead of individual

☺ Prevent unwanted removal or modification of individual resources

☺ Easily destroy resources in different resource groups, management groups & subscriptions

Note:

☹ No What-If Support (yet)

☹ Not supported by Microsoft Graph Provider (yet)

DEMO!

Bicep language innovations

VSCode Extension

User Defined Types

Extract param from property

User Defined Functions

Deployment Pane

Export/Import
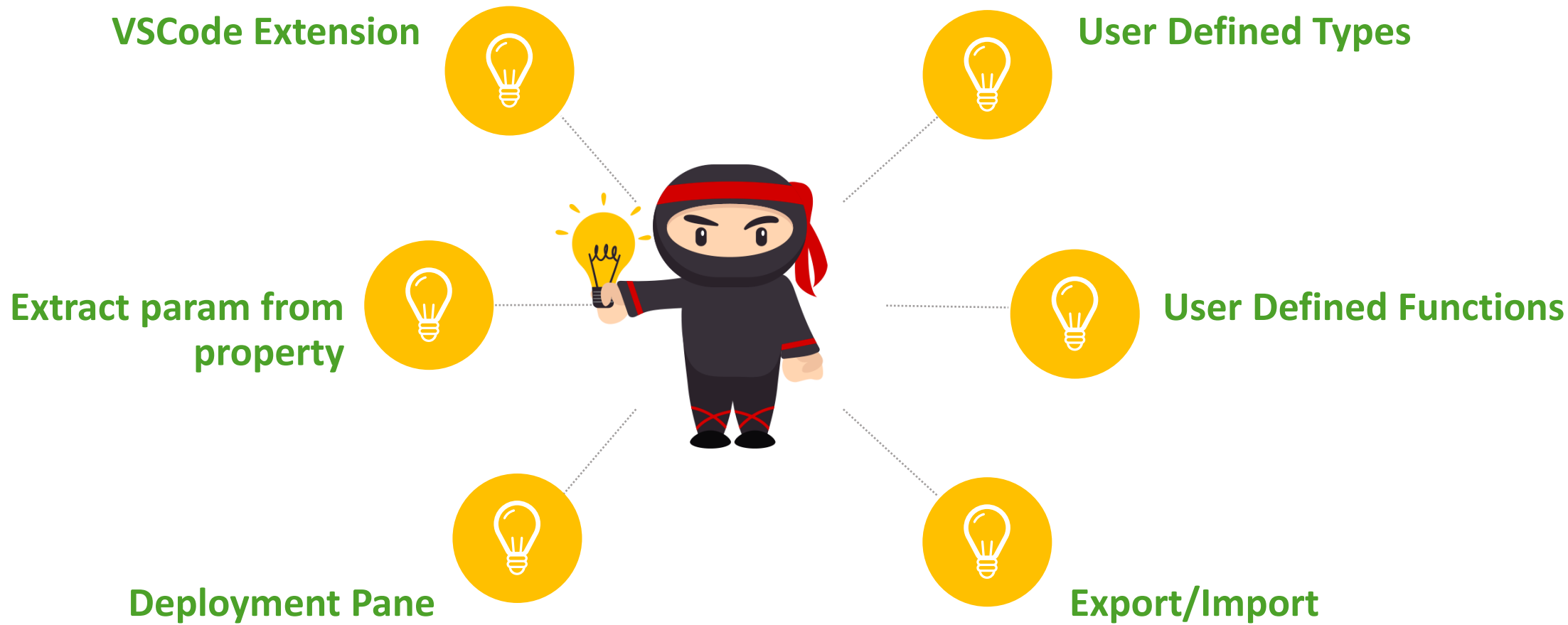
Bicep language innovations
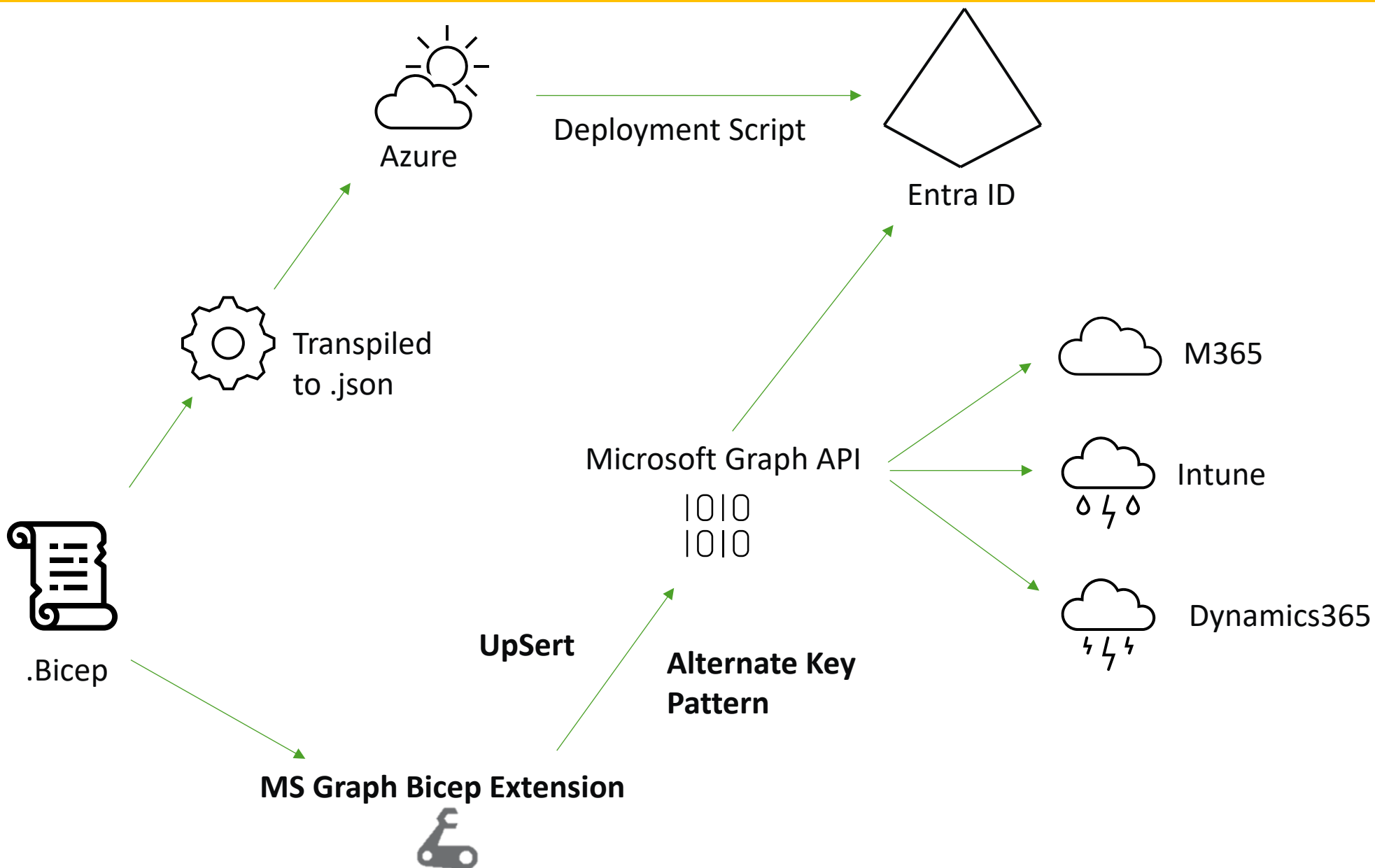
DEMO!

DEMO!

Important Limitations

In v1.0, only these services are supported:
- Applications
- App role assignments
- Federated identity credentials
- Groups
- OAuth2 permission grants (delegated permission grants)
- Service principals

Members of groups are Implemented as non-destructive

Owners of groups are limited to 100

!! Update to owners & members requires breaking change update (released via dynamic types)

Sensitive GA ETA is end of this year or early next year

Future releases

10/1	11/1	TBD	TBD
v0.31	**v0.32**	**v0.***	**v1.0**
Local Deploy	More MSLearn Paths	Pass resource between modules	Strict breaking change policy
		Private registry completions	
		Dynamic type Updates	
		Bicep Deploy	

🎉 Export to Bicep from Azure Portal coming soon (mid-late September)!

Call to Action!

Bicep MS Docs:
Aka.ms/bicep

Bicep Monthly Community call ⭐
surveymonkey.com/r/ARMnews

Bicep GitHub location
github.com/Azure/bicep

Bicep Learning path
docs.microsoft.com/en-us/azure/azure-resource-manager/bicep/learn-bicep

We love Feedback

https://wpninjas24.sched.com/

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Great Session!   Okay Session!   Not so okay Session!

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Thank You

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