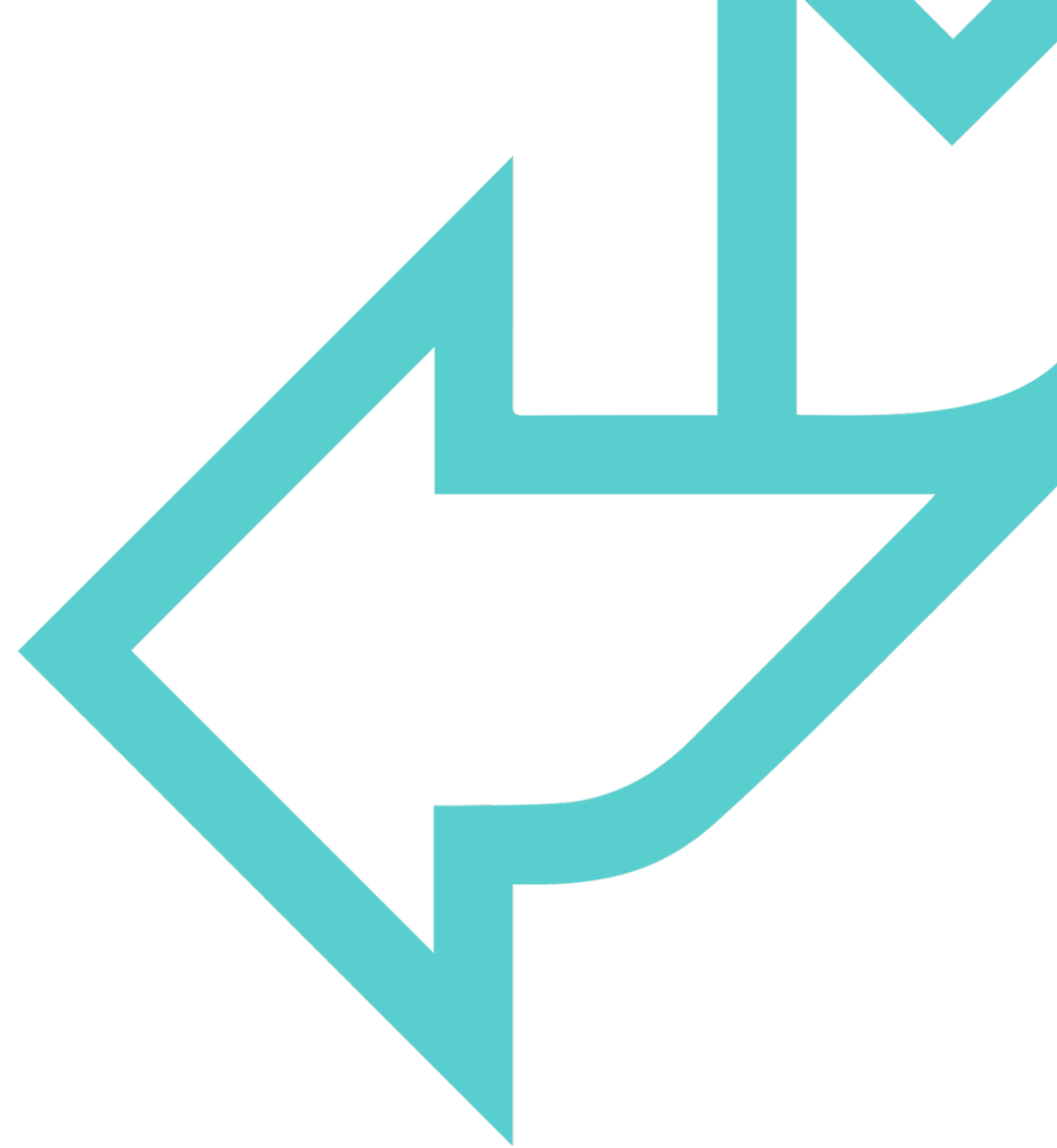




# CLOUD DEPLOYMENTS WITH ACTIONS

Module 5 – Deployment to the Cloud





# RECAP – CLOUD SERVICE TYPES



- Cloud providers offer a wide range of services which may be grouped into three types, based on what responsibilities the cloud provider assumes
- IaaS services offer the greatest configurability, but place most responsibility on the customer
- PaaS services typically offer greater convenience for developers, but less access to underlying resources and therefore less fine-grained control
- SaaS services offer functionality to the customer as an end-user, with minimal, user-specific configuration options
- Both IaaS and PaaS are commonly used to deploy applications to the cloud



# IAAS DEPLOYMENTS



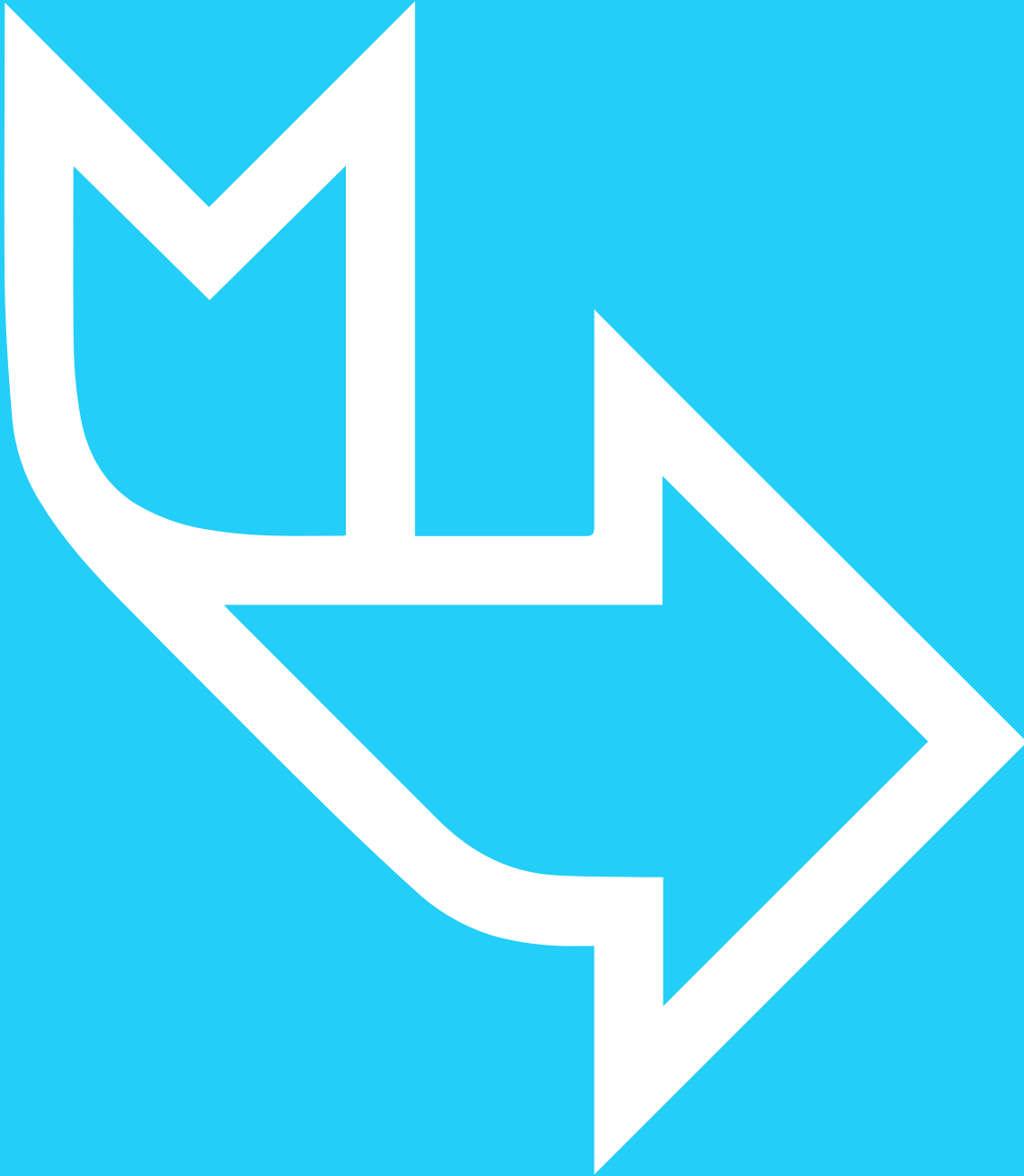
- IaaS services may be used to deploy an application to the cloud
- Deploying using IaaS services is similar to a traditional on-premises deployment – the developer still needs to configure a virtual server, virtual networking, etc
- IaaS deployments are commonly used when migrating existing applications and environments to the cloud
- Whilst technically possible, IaaS deployments using managed CI services are not very common – typically if this is required then the cloud provider's own CD tools would be preferred
- Tools such as Github actions are much more useful for PaaS deployments



# PAAS DEPLOYMENTS



- Cloud native development increasingly deploys applications using PaaS offerings, as these not only offer greater convenience, but guarantees around service availability
- There are many PaaS services which can be leveraged to deploy to the cloud:
  - *App Services* – provide managed environments into which web applications may be deployed – generally a wide range of environments are available with sensible defaults to support a range of languages and frameworks
  - *Functions* – provide environments to host small applications which are intended to be invoked when needed, not run continuously
  - *Container Services* – provide a platform upon which to run containers which host the application being deployed
  - *Kubernetes Services* – provide managed Kubernetes clusters to which Kubernetes objects may be deployed



## Exercise 3: PaaS Options

- In breakout groups, fill out the table provided in the exercise guide



# PAAS OPTIONS

	Google Cloud	Azure	AWS
App Service	Google App Engine	Azure App Service	Elastic Beanstalk*
Function	Google Cloud Functions	Azure Functions	Lambda
Container Service	Google Kubernetes Engine**	Azure Container Instances	Elastic Container Service
Kubernetes Service	Google Kubernetes Engine	Azure Kubernetes Service	Elastic Kubernetes Service

\* Specifically for web apps

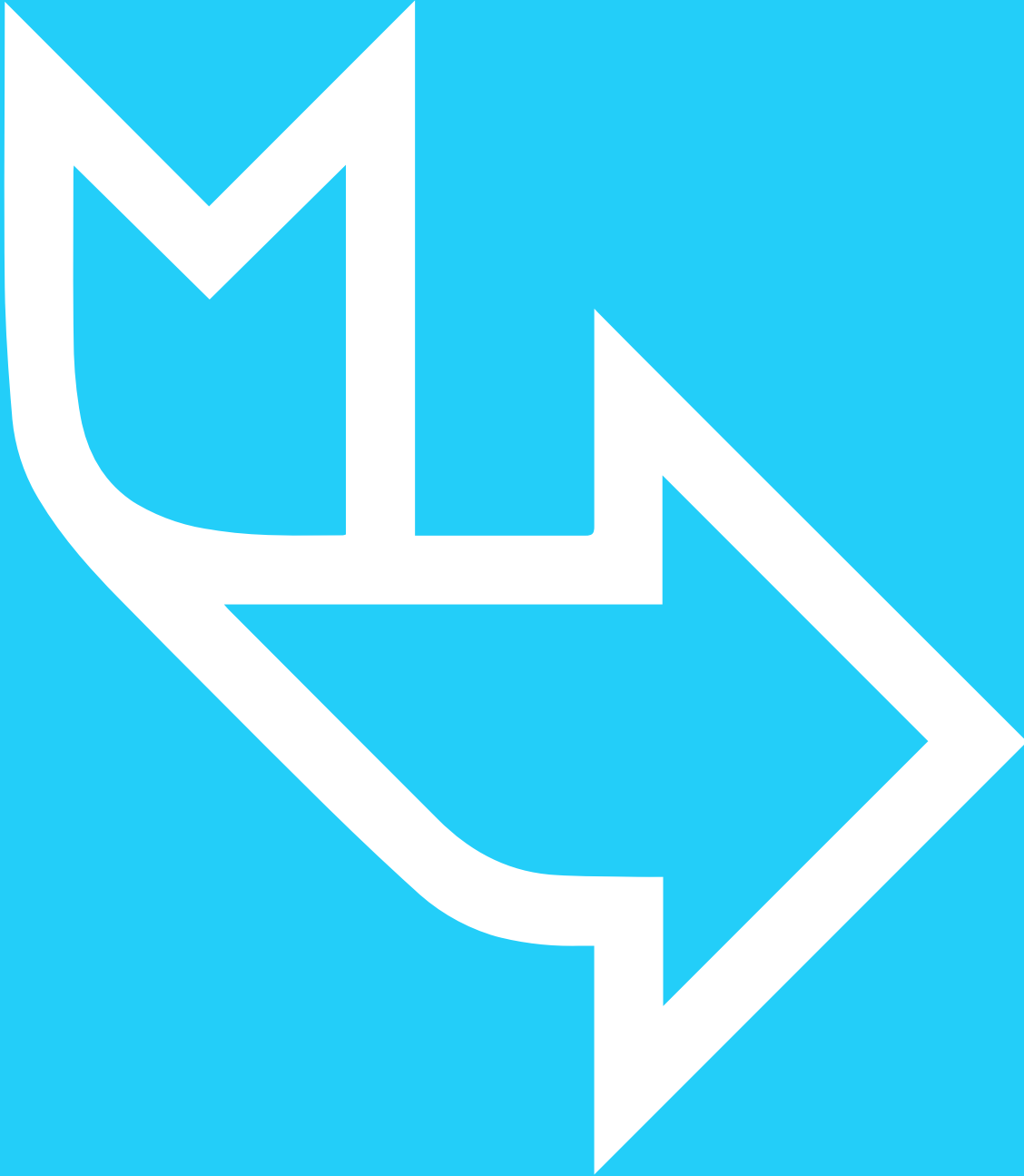
\*\* GCP has no separate service for deploying containers without Kubernetes



# PAAS WITH GITHUB ACTIONS



- GitHub Actions has wide support for the PaaS deployment services discussed previously
- Deployment templates are available for many of these services; these can be configured further as you need
- There are also many third-party actions, offered by the cloud providers and others, which make integration with these services even more convenient
- An example is [this action](#) which deploys a zip file to an Elastic Beanstalk environment
- Even if there is not a pre-defined action for the service you wish to use, you can always configure the appropriate CLI on your jobs' runner to interact directly with the services you need



## **Exercise 4: Workflow Design**

- **Design a GitHub Actions workflow for building and deploying an application which follows the architecture set out in the exercise guide**





# REVIEW

- Cloud providers offer many options for deploying applications to the cloud
- PaaS services offer many benefits in terms of convenience and speed of deployment, and a wide range of PaaS services are offered for deploying all kinds of applications
- GitHub Actions generally has good integration with these services via the range of provider-developed and third-party actions available





**END OF SECTION**

