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Agile.
Cloud-Ready.

Agenda

- Stories from our Customers
- .NET on Pivotal Cloud Foundry
- .NET Apps
- Operating .NET Infrastructure
- Conclusion

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.NET deployment

A few comments of what customers have told us about deploying on premise

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Deploying a new app

- Provision a VM, IP, DNS, etc
- Windows updates...reboot...update...reboot
- Install IIS
- Create Website, configure app pool
- Configure SSL
- Configure Load Balancer

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...now scale up

- get another VM
- template might have IIS installed
- duplicate your IIS config
- rework the load balancer

After all this, do you ever scale down?

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Phew...now I can deploy my code

- manually doing one of:
  - Package your webapp as an MSI and coordinate pulling nodes out of the cluster to install
  - Login to the machine, download a zip file and copy it to c:\inetpub (or maybe run a .bat file)
  - The really modern teams are using NuGet for bits and most of the rest is the same

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And when you have a problem

- Ops log in to each machine in the cluster and download log files and/or event log
  - A few hours (or days) later you get them and actually get to start diagnosing issues

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Question

You want to do an isolated test of new code and need a place for it to run. Do you:

A. Build a new vm and install everything?
B. Clone an existing VM and hope you don't break anything? If so, how long do you wait?
C. Find a "roomy" dev server and add it there?

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Bonus Question

After that new environment gets created:

A. It lives forever because no one will delete it?
B. I gave a developer admin rights on the box, they'll surely clean it up when they're done.
C. Here is the URL for my ticketing system.

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.NET on Pivotal Cloud Foundry

...with Cloud Foundry

- Deploy: cf push
  - deploy app, configure SSL/load balancing
- Scale: cf scale
  - add/remove app instances, updates load balancer
- View Logs: cf logs
  - Developers can see logs in real time!

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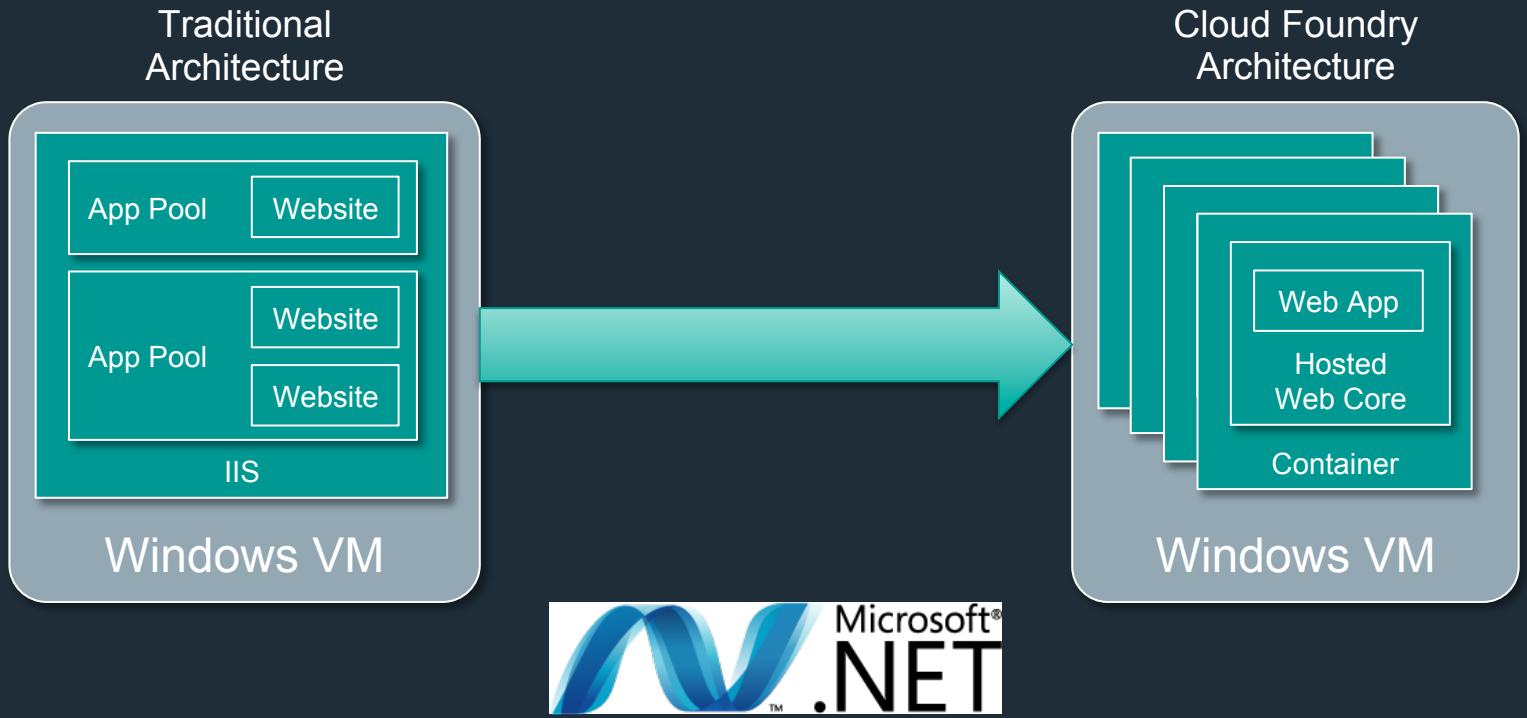
App Pools, IIS, Containers, VM's, oh my.



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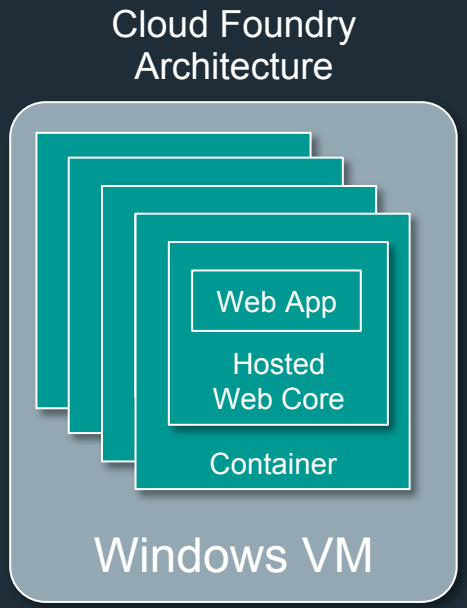
Isolation – Work in progress



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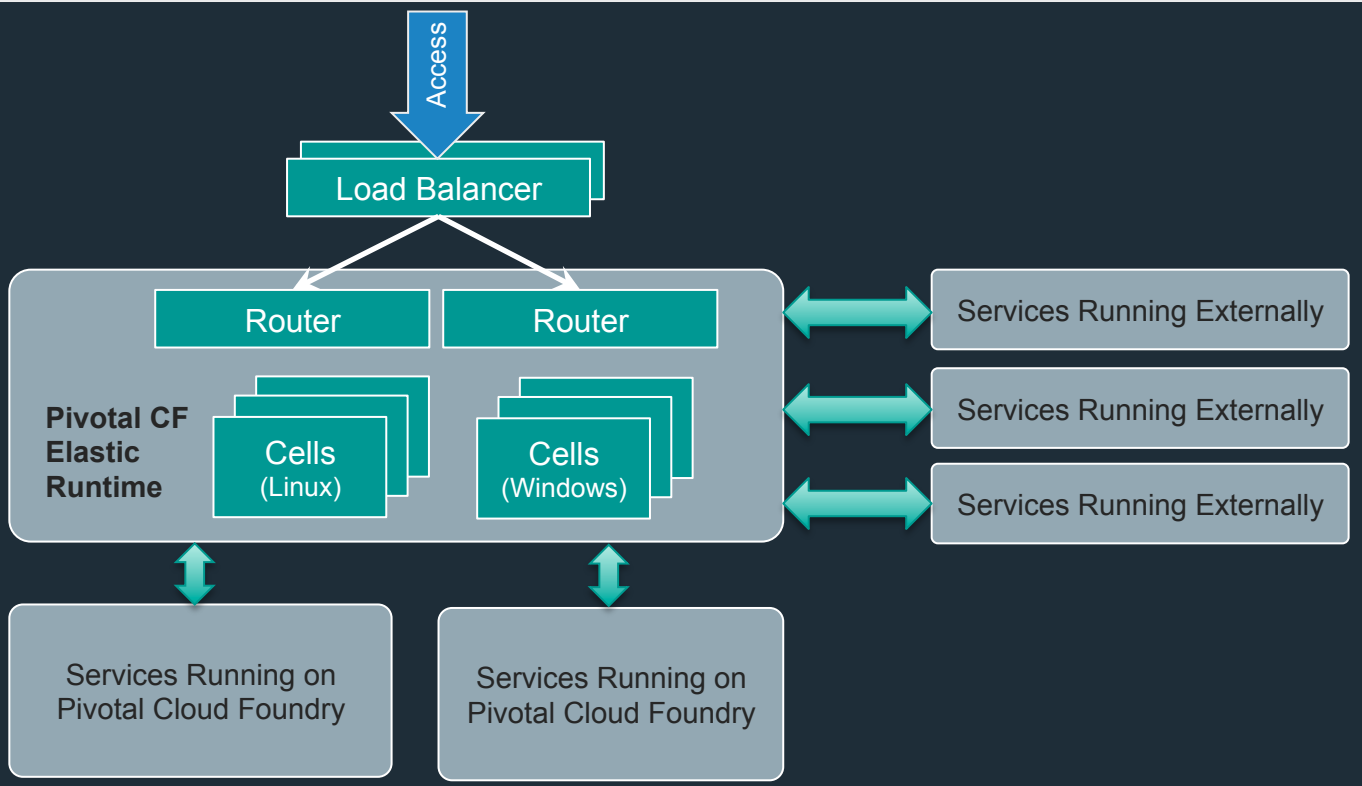
Cloud Foundry Architecture



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Key Features

- High Availability
- Scaling – Manual and Autoscaling
- Notifications
- Security Groups
- Aggregated Logs & Metrics
- Environment Variables
- Marketplace and User-Provided Services

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Integrating with Services

- Marketplace Services
  - –Extract connection details from environment variables

- Connection Strings in Web.config
  - via User Provided Services
  - Spliced into Web.config during staging

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.NET apps

Writing 12 Factor .NET Apps

- Use an external session/cache provider
  - RDBMS, Redis or GemFire
- Override MachineKey in Web.config
- Use environment variables for environment config
- Use OAuth instead of Integrated Windows Auth
- Avoid the GAC and custom ISAPI handlers

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Operating .NET apps on Pivotal Cloud Foundry

Operations with .NET

- Build a pool of Windows VMs and connect to runtime
- Use a separate subnet or OpsManager exclusion list
- Monitor capacity using standard monitoring tools (SCOM, vROps, etc)

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Conclusion

Conclusion

- Cloud Foundry runs .NET apps
  - –just like java, ruby, go, php, python, Node.js … … … ...
- on Windows (not mono)
- in any cloud

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Background Slides

These are probably not useful for customer facing presentations.

Resources

- Slack
  - #greenhouse
  - #sme-pcf-dotnet
- Source code https://github.com/cloudfoundry-incubator/diego-windows-release
- Workshop resources
  - https://github.com/afortener/Humana-Workshop
  - https://github.com/rossr3-pivotal/AudaExplore-Workshop
- Subject Matter Experts
  - Aaron Fortener
  - Rick Ross
- .NET Product Manager
  - Steven Benario

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Pushing a .NET Application

- To push:
  - –binary buildpack
  - –windows2012R2 stack
- Either publish or push from your project folder

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Supported .NET SDK Versions

- All versions of the .NET SDK supported by Windows Server 2012 R2
  - 3.5
  - 4.5.x
  - 4.6

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Supported Application Types

- ASP.NET web applications
- OWIN apps
- Background processes
  - Command line apps

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Supporting .NET apps on Pivotal Cloud Foundry

Diego on Windows - Preparation

- Windows Server 2012 R2
  - Install Windows Updates
  - Needs to be on a different network than BOSH
  - Alternatively assign IP from exclusion range
  - Using RDP? Disable CPU Fair Share http://bit.ly/cpufairshare
- Download bits for network.pivotal.io
  - Setup.ps1
  - Generate.exe

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Diego on Windows - Configuration

- Run setup.ps1
  - Configures Windows features
- Run generate.exe in cmd prompt
  - Specify bosh url (https://un:pwd@director.sys.pcf.com)
  - Provide a Windows username – must be part of Admin group
  - Provide password for the username
  - Specify output directory

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Diego on Windows - Install

- Download bits from network.pivotal.io
  - DiegoWindows.msi
  - GardenWindows.msi
  - Save/Move them to the output folder
- Run install.bat in cmd prompt
  - Generated in the output folder

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Diego on Windows - Verification

- Download bits from network.pivotal.io
  - hakim.exe
  - Creates a container to make sure everything works
- Check Task Manager | Services for running processes
  - GardenWindowsService
  - ContainerizeService
  - MetronService
  - RepService
  - ConsulService
- Run Smoke Tests
  - https://github.com/cloudfoundry/cf-smoke-tests
  - Be sure you enable windows tests in the JSON config file

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Diego on Windows - Uninstall

- Evacuate Cells
  - Use the script here: http://bit.ly/evacuatecell
- Uninstall from Control Panel | Uninstall a program
  - In the following order
    - DiegoWindows
    - GardenWindows

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