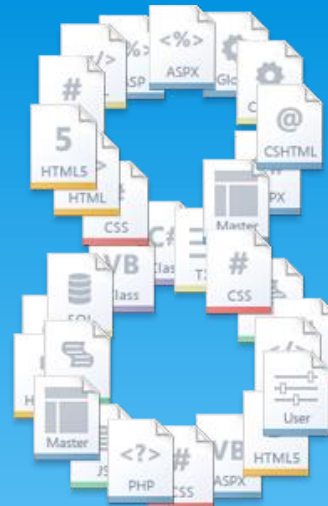
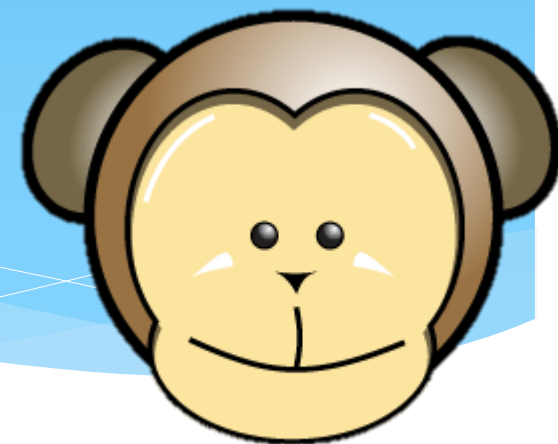


IIS



IIS 8 – Platform for the Future

Andrew Westgarth



Agenda

- * IIS State of the Union
- * ASP.Net Configuration Management
- * Application Initialization
- * Dynamic IP Restrictions
- * FTP Logon Attempt Restrictions
- * Sand-boxing Sites and Applications
- * SSL Scalability
- * Multi-core Scaling on NUMA Hardware
- * Web Sockets

Monkey Business

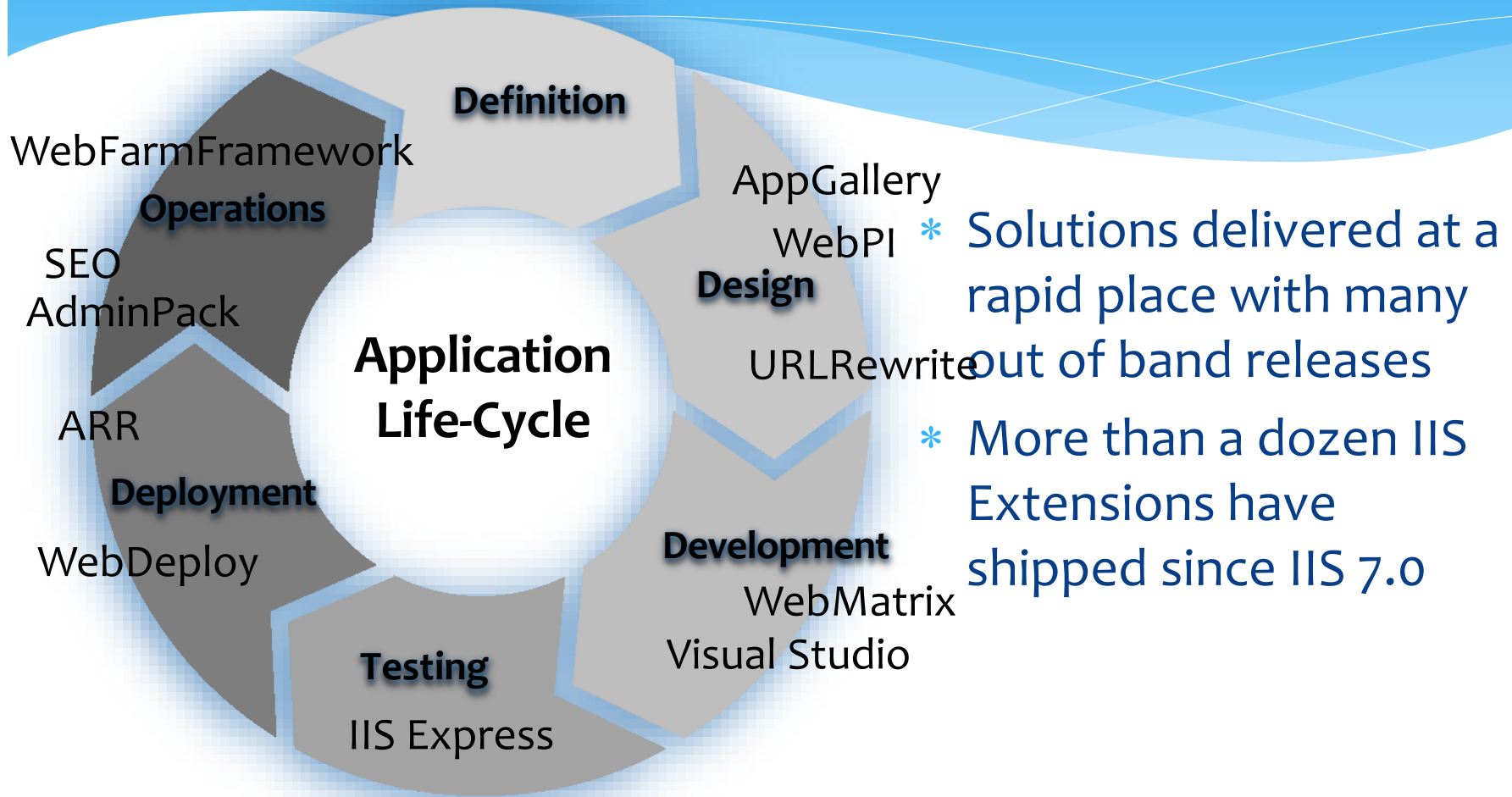
- * Technical Architect at Sage UK
- * ASP.Net Code Monkey
- * Co-founder of North East Bytes (@NEBytes)
 - * User group for IT Pros and Devs in North East
- * @DDDDNorth Founder and Organiser
- * Very Interested in Wartime exploits of 617 Squadron – the Dam Busters
- * Microsoft Most Valuable Professional for Internet Information Services (ASP.Net & IIS)
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- * www.andrewwestgarth.co.uk/blog



State of The Union

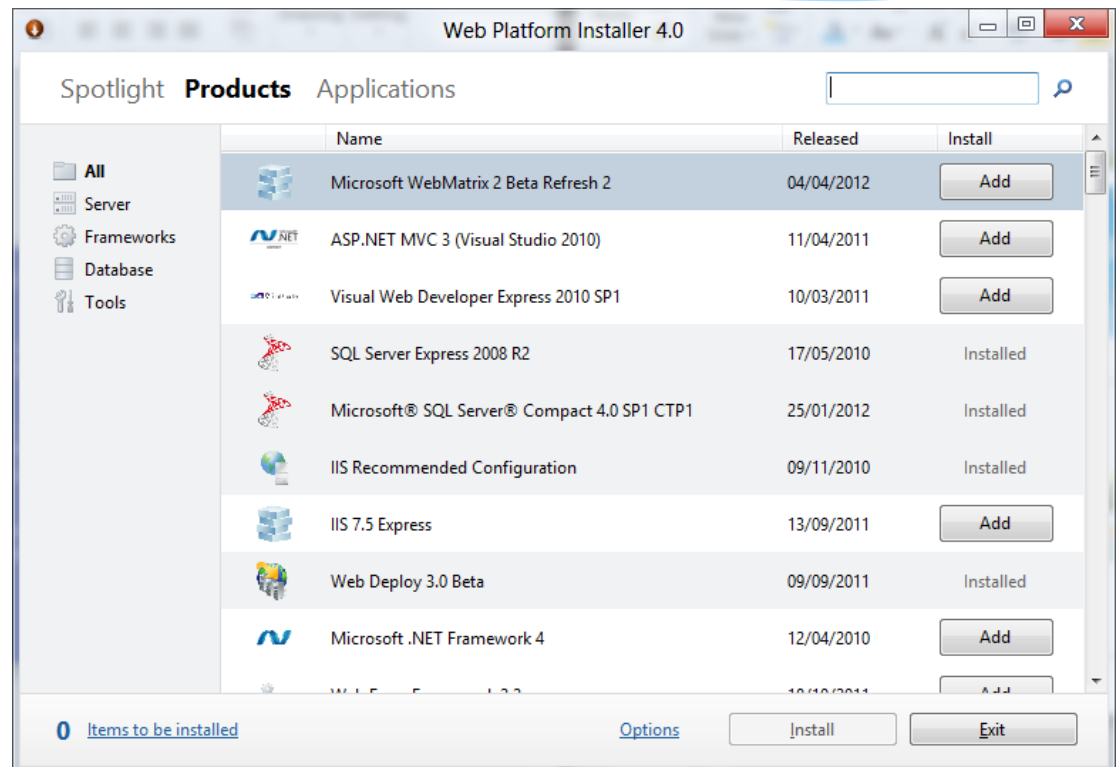
Version	Availability	Status
6.0	Windows Server 2003/R2	Extended Support
7.0	Windows Vista/Windows Server 2008	Mainstream Support
IIS Express 7.0	Windows XP/Vista/7	Mainstream Support
7.5	Windows 7/Windows Server 2008 R2	Mainstream Support
IIS Express 7.5	Windows XP/Vista/7	Mainstream Support
8.0	Windows 8/Windows Server 2012	RTM/GA
IIS Express 8.0	Vista/7/8	RTW

Web Platform Investments



Web Platform Installer

- * Discover
- * Automate installation of Stacks and Apps
- * Works on all versions of Windows



ASP.Net 3.5 and 4.5 on IIS8

- * 3.5 not installed by default
- * ASP.Net Configuration Management Tooling Update for v4.5 on IIS8 only
 - * New Modules - .Net Roles; .Net Users; Providers
- * .Net Compilation
- * Additional Hashing Algorithms for MachineKey
- * Support for Page and controls behaviours

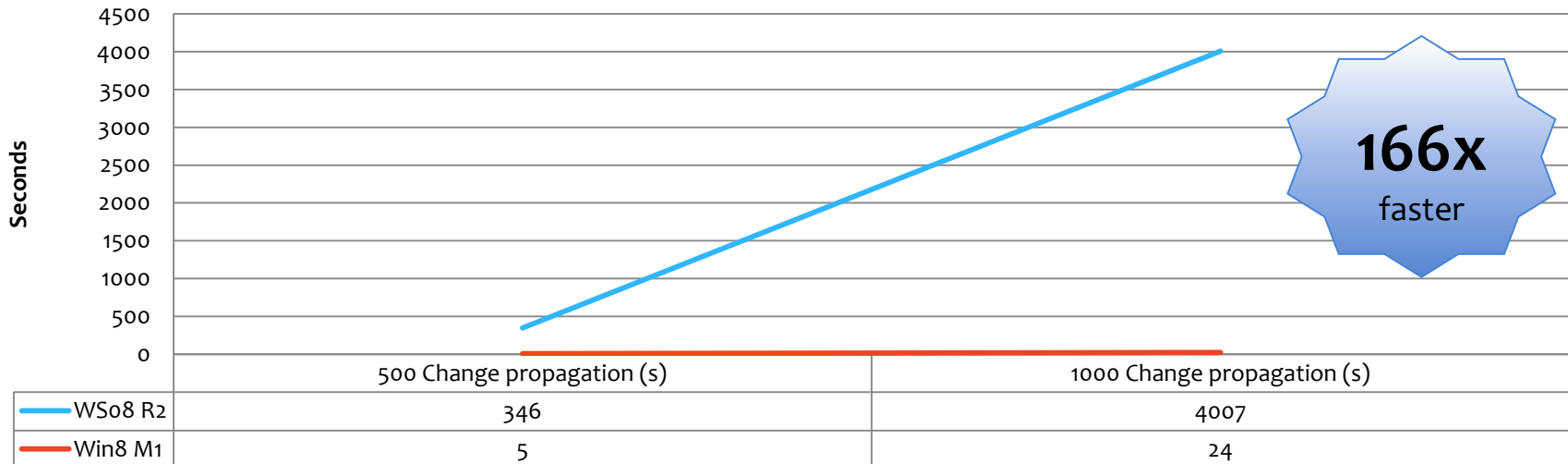
ASP.Net 3.5 and 4.5 - Demo

Configuration Improvements

- * 5.000 sites typical hosting config
- * WSo8 R2 – Config mem usage: 1,400MB
- * WS8 – Config mem usage: 402MB

+3.5X
Less memory
than R2!

Configuration Change Delay



166x
faster

Application Initialization - Problem

- * Administrators often need to perform initialization tasks
 - * Warm up tasks
 - * Prime in-memory caches
 - * Generate content
- * First response impacts User

Application Initialization - Demo

Application Initialization Schema

```
<sectionSchema name="system.webServer/applicationInitialization">
  <attribute name="remapManagedRequestsTo" type="string"
    defaultValue="" />
  <attribute name="skipManagedModules" type="bool"
    defaultValue="false" />
  <attribute name="doAppInitAfterRestart" type="bool"
    defaultValue="false" />
  <collection addElement="add" clearElement="clear"
    removeElement="remove" mergeElement="false">
    <attribute name="initializationPage" type="string"
      required="true" isUniqueKey="true" />
    <attribute name="hostName" type="string" defaultValue="" />
  </collection>
</sectionSchema>
```

Application Initialization

- * SERVER VARIABLES
 - * APP_WARMING_UP
 - * SKIP_MANAGED_MODULES
 - * WARMUP_REQUEST
 - * PRELOAD_REQUEST
- * User Agent Strings
 - * IIS Application Initialization Preload
 - * IIS Application Initialization Warmup

Application Initialization - Solution

- * Module which enables Administrators to
 - * Pro-Actively perform initialization tasks for one or more applications
 - * Can configure IIS to return a splash page as a placeholder until an application has initialized
- * Integrates with URL Rewrite module to support more complex handling of placeholder content.

Application Preload

- * Allows an application to be initialized when the IIS Worker Process Starts
 - * Decide which applications should be preloaded
 - * New process and recycled process behave differently

Application Pool Start Mode

- * Not new has been available in IIS 7.5 for a while
- * Setting on Application Pool
- * More beneficial along with Application Initialization

Dynamic IP Restrictions - Problem

- * Managing IP Restrictions is currently a high maintenance, laborious task
- * HTTP Clients would receive HTTP Error – 403.6 Forbidden
- * Maintain list of individual addresses
- * Log file analysis can be time consuming

Dynamic IP Restrictions - Demo

Dynamic IP Restrictions - Solution

- * Dynamic IP Address Filtering
- * Allows Admins to specify the blocking behaviour
 - * Abort requests instead of returning error codes
- * Includes Proxy Mode

FTP Logon Restrictions - Problem

- * Possible Vulnerability
 - * Brute Force Password Attack
 - * Physical accounts used are primarily Windows Accounts
- * IIS 7 (With FTP7) and IIS 7.5 provided some mitigation
 - * Extensibility API to create custom Authentication Providers

FTP Logon Restrictions – Demo

FTP Logon Restrictions - Solution

- * Built in network security provides functionality to prevent Brute Force Attacks without having to create a Custom Authentication Provider
- * Note – Server-level settings, cannot set per site as the attackers are trying to gain access to server not a single site.

Sand-boxing Sites and Applications - Problem

- * In multi-tenant environments need to provide Sand-boxed environments
 - * Maintain level of service and availability
 - * Prevent impact on other sites/tenants

Sand-boxing Sites and Applications - Demo

Sand-boxing Sites and Applications - Solution

- * Sand-box scoped to Application Pool
 - * Process level security and resource limitations
 - * Achieved by running each tenant under separate user identity
- * CPU Throttling feature
 - * Limit how much each tenant can consume, can be set per tenant
- * **IMPORTANT:** CPU Throttling is not a reservation of CPU Resource rather is a LIMIT of maximum usage

SSL Scalability - Problem

- * More and more e-commerce sites coming online
- * More businesses sharing sensitive data online
- * Challenges
 - * SSL Scalability
 - * IPv4 Scalability
 - * SSL Manageability

SSL Scalability - Demo

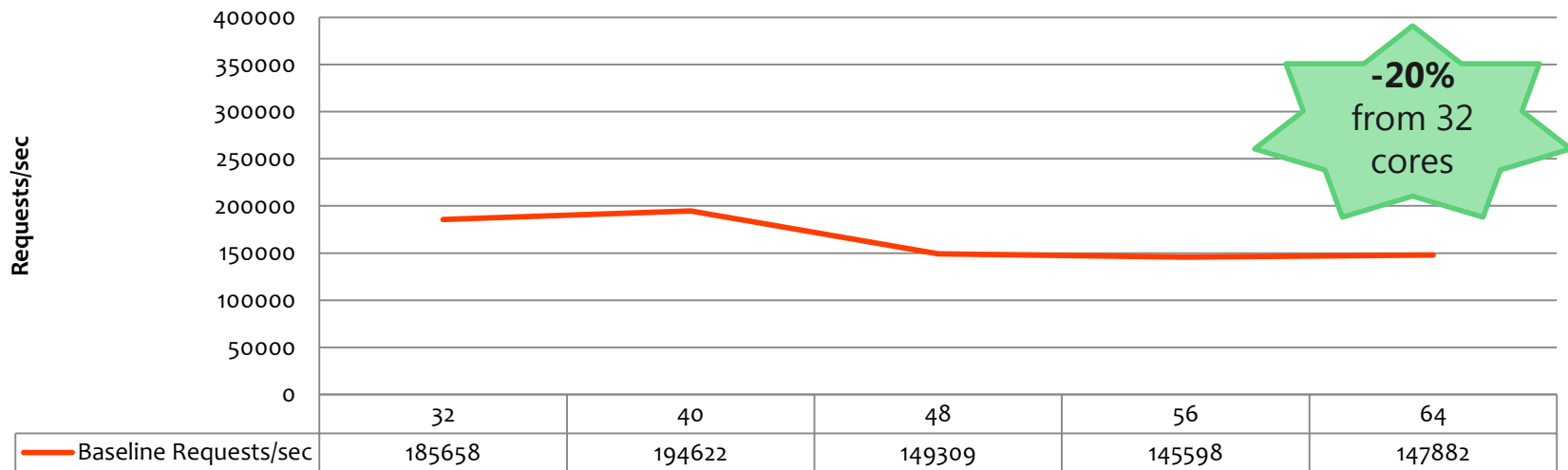
SSL Scalability - Solution

- * Server Name Indication (SNI)
 - * TLS extension which includes virtual domain as part of SSL negotiation
 - * NOTE: Client browsers need to be able to support SNI. Most modern browser provide support
 - * BUT no version of IE on Windows XP supports SNI
- * Centralized SSL Certificate Support

Multicore Scaling on NUMA Hardware - Problem

- * Generally speaking increased hardware in the form of more cores should result in increased performance.

Baseline (requests/sec)



Multicore Scaling on NUMA Hardware - Demo

Multicore Scaling on NUMA Hardware - Solution

- * IIS8 on Windows Server 8 is NUMA-aware providing the optimal configuration
 - * Partition workload through
 - * Run Multiple Worker Processes in one Application Pool (Web Garden)
 - * Run Multiple Application pools in Single Workload/Site
 - * Two methods of Affinitization
 - * Soft Affinity (Default)
 - * Hard Affinity

Web Sockets on IIS8

- * Server Support Out Of The Box
- * WCF 4.5 support for netHttpBinding
- * Supported in IIS Express 8 when using Windows 8

Conclusion and Questions?

Resources



- * What's New in IIS 8.0 - <http://bit.ly/LearnIIS8>
- * Application Initialization – <http://bit.ly/IISAppInit>
- * Dynamic IP Restrictions - <http://bit.ly/IISDynIPRest>