



CICS Transaction Server V4.1

8272: Best Practices for CICS Systems Management

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More Important Disclaimer

This presentation does not contain the collected wisdom of a 30+ year CICS & CICSplex SM veteran. I have accumulated just 8 years in two separate tours of duty (CICS/ESA and CICS TS respectively) with another 4 years in the distributed world (CICS for OS/2). However, I have picked the brains of a few SMEs in Hursley.

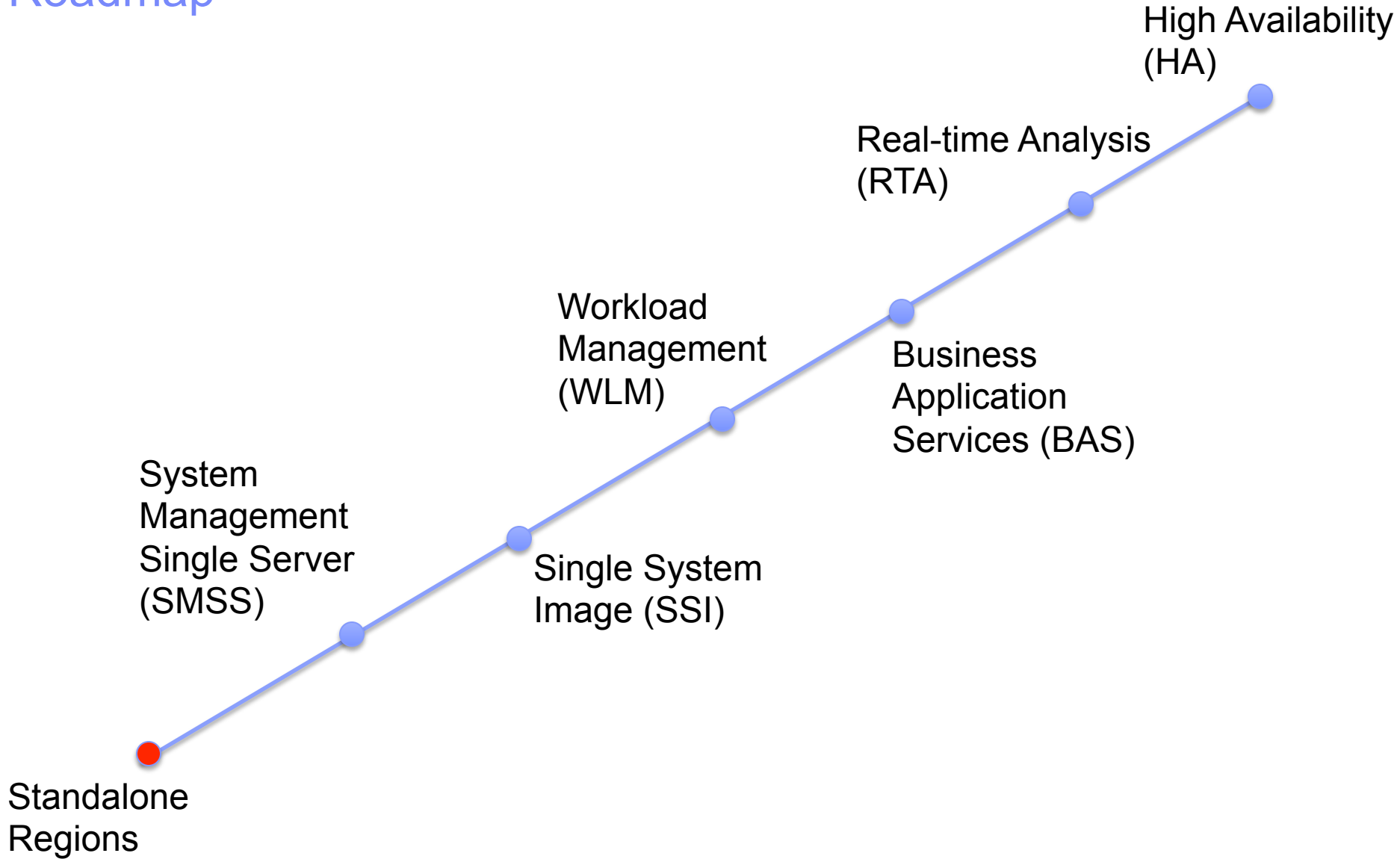
Inspired by “**6 reasons to start using CICSplex SM today**” post by Chris Hodgins on The Master Terminal and “**CICS, CPSM and BAS, All for One and One for All**” session by Glenn Schneck at SHARE Orlando 2008.

We don't always have a great story. Sometimes the route to best practice lies outside our domain. Other times we are still getting there so watch this space!

Acknowledgements

- **Grant Shayler**
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- **Phil Wakelin**
 - CICS Java & CICS Transaction Gateway
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 - VSAM, DB2, WebSphere MQ, IMS
- **Chris Hodgins**
 - CICSplex SM developer
- **Paul Kettley**
 - Manger (giving me the wonderful opportunity to research, create & present this session)

Roadmap



Approach

- **Before you start you must have a strategy: what do you want to achieve?**
- **Get the most of what CICSplexSM has to offer**
- **Be prepared. To achieve HA you will need to collaborate with platform, sub-systems & even application teams**
- **Everything you need to know is in the InfoCenter**
- **You can stop at any point on the roadmap**

Environment

- **For the purposes of this session I will assume you have (or will have) CICS TS 4.1**
 - Full Explorer support only available at V4.1 (CMCI)
 - Numerous enhancements
 - However, most of the advice applies to CICS V3
- **CICSplex SM exploitation is central to the roadmap**
 - Already in the box (although it betrays its heritage by introducing new terms e.g. CMAS, MAS, BAS, ...)
 - Continuous improvements to installation and configuration
 - Stepwise adoption
- **CICS Explorer**
- **CICS Tools**
 - Not required but often makes steps easier

Monday

8262: [CICS TS 4.1 Technical Overview](#)

CICS Tools

- **CICS Configuration Manager (CM)**
 - Business Application Services (BAS): DREP/CSD coexistence
 - Change control, approvals, audit trails
 - Warm start analysis
- **CICS Deployment Assistant (DA)**
 - Single System Image (SSI)
- **CICS Interdependency Analyzer (IA)**
 - Workload Management (WLM)
- **CICS Performance Analyzer (PA)**
 - Open Transaction Environment (OTE)

Standalone Regions

- **What?**
 - CICS Regions not connected to CICSplex SM. Can still form part of a traditional TOR-AOR-FOR/ROR topology. May span multiple LPARs
- **Where?**
 - DEV, TEST or PROD
- **When?**
 - One or more legacy applications with specific resource dependencies
- **Why?**
 - Systems managed by different people/groups
 - Mergers, reorganization, history
 - Too difficult or expensive to implement CICSplex SM

System Management Single Server (SMSS)

- **What?**
 - Full operations & administration (CEMT & CEDA) capability for a standalone region (not connect to CICSplex SM) using CICS Management Client Interface (CMCI) introduced in CICS TS V4.1
- **Where?**
 - DEV/TEST
- **When?**
 - Getting started with CICS Explorer
 - Allow application developers, especially those concerned with “modern” workloads i.e. Web Services, Java, dynamic scripting
- **Why?**
 - SMSS = MAS + CMAS + WUI so carries some overhead
- **How?**
 - See *“Setting up CMCI in a stand-alone CICS region”*

CICS Explorer

- **Start using CICS Explorer**

- Integrating interfaces: CICSplex SM + CICS + z/OS
- Integrating tools: CICS Tools, CICS PD Tools, CICS Transaction Gateway, ...
- Integrating roles: CICS SM perspective for Rational Developer for System z, Explorer SDK

- **“New Face of CICS”**

- Some capability e.g. CICS bundles has limited or no support in 3270 interfaces

- **Free feature CICS V3**

- **Security**

- <http://masterterminal.wordpress.com/2009/08/21/cics-explorer-security/>

- **Sophisticated interface designed to address skills issues by appealing to both experience users and those new to CICS**

Thursday

8514: [CICS Explorer Update](#)

Single System Image (SSI)

- **What?**

- CEMT-like capability (operations) across all regions in a CICSplex: Regions, Tasks, resources, ...

- **Where**

- DEV, TEST or PROD

- **When?**

- “If you’ve got more than one region you should be using CPSM”, Glenn Schneck

- **Why**

- Saves you having to logon to individuals systems, gives you a global picture (not just one CICSplex) and allows user to perform actions on resources across multiple Regions
- Reorganization, skills, ...

- **How?**

- You will need to define two new regions: a CICS Managing Address Space of CICSplex SM Address Space (CMAS) and a Web User Interface (WUI) server
- Configure each region in the CICSplex to be a Managed Address Space (MAS)
- Can still be used in conjunction with Explorer CSD access over CMCI for administration

CICS Deployment Assistant (DA)

- **New member of the CICS Tools family. Host component installed through SMP/E. Plug-ins for CICS Explorer (and Eclipse with Explorer SDK)**
- **Using CICS DA you can perform the following tasks:**
 - Discover and visualize CICSplexes and CICS regions in a sysplex.
 - Discover connectivity relationships and major subsystem dependencies.
 - Clone existing CICS regions by creating and submitting JCL directly from CICS Explorer.
 - Add an existing CICS region to a CICSplex.
 - Cheat to assist with CICSplex
 - SM implementation.
- **Assist with achieving SSI as well as validating later adoption milestones e.g. HA**

Workload Management (WLM)

- **What?**

- Dynamic routing program that sends eligible requests to a suitable target region
- DPL requests
 - CICS Web Interface
 - CICS Transaction Gateway
 - Program LINK
- START requests

- **Where**

- TEST/PROD

- **When?**

- Maximize resource utilization by automatically routing requests

- **Why?**

- Greatly simplifies management of multiple applications across multiple regions (groups)

- **How?**

- Define WLM specification and choose QUEUE or GOAL mode
- Define routers (TOR) & targets (AOR)
- Remove application affinities to allow them to run anywhere or define workload separation where required

Workload Management, Balancing & Separation

- **Workload Management**

- Automatic routing of requests according to policy, resource usage and system state

- **Balancing**

- Isn't balanced (poor name)
- No round-robin implementation

- **Separation**

- Compensates for certain affinities or restrictions i.e. a Region can only connect to one DB2 at a time
- Allows certain requests to be routed to a particular Region or group

CICS Interdependency Analyzer (IA)

- **Identify resources used by an application**
 - Load module scanner
 - Runtime collector and DB2 database
 - CICS Explorer plug-in
- **Using CICS IA you can do the following:**
 - view resource relationships by region, transaction, program and in CICS TS V4.1 Application
 - Compare the results of previous queries; for example, to show resource usage change before and after application change
 - Track the detailed resource inter-relationships with the "Uses" and "Used by" views
- **Use IA to find affinities**

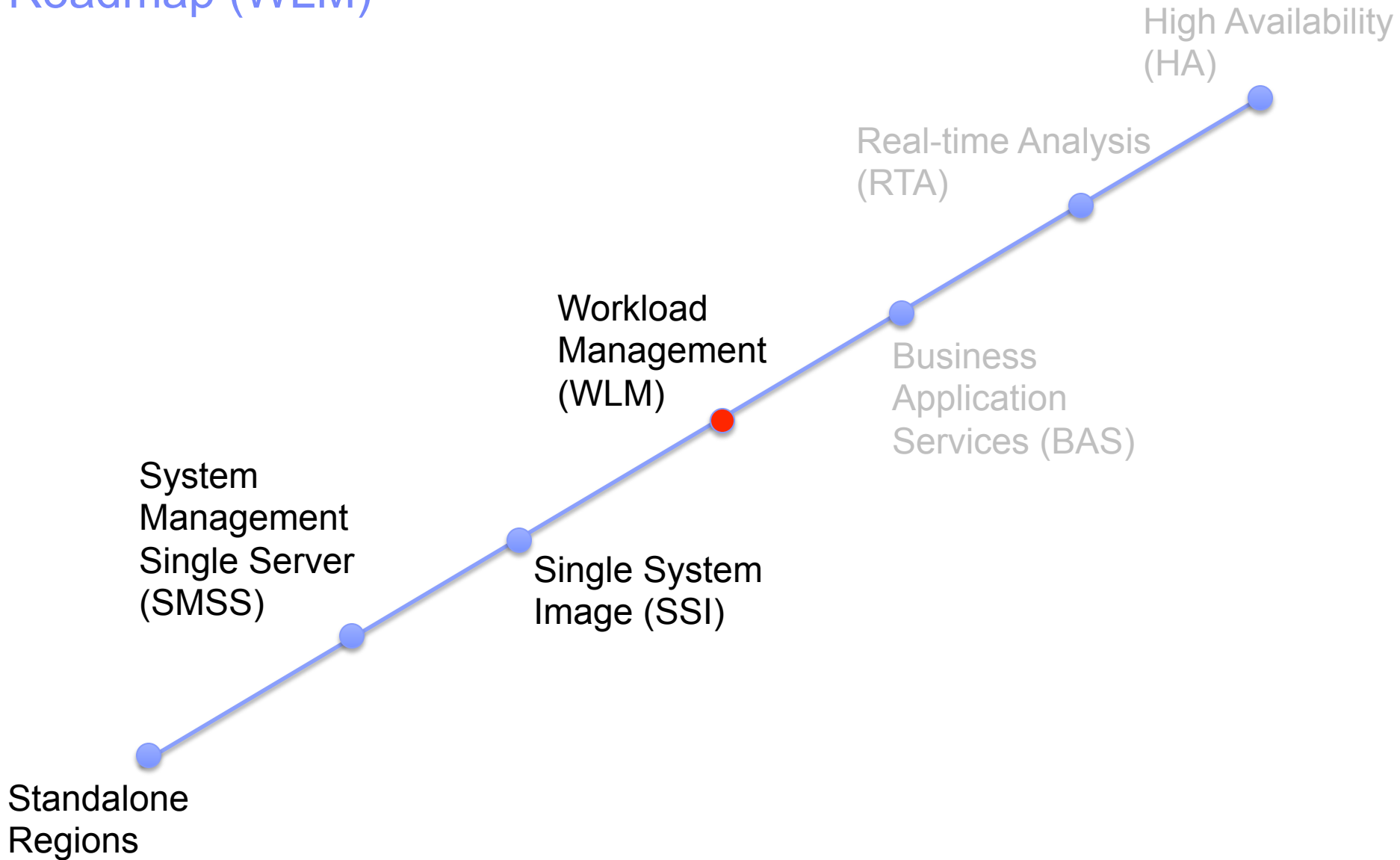
System z/OS Platform

- **VSAM Record Level Sharing**
 - Remove FOR as single point of failure
- **VTAM Generic Resources**
 - Remove TOR as single point of failure
- **TCP/IP**
 - Port Sharing: Balances requests across cloned server regions running on the same IP stack (LPAR)
 - Sysplex Virtual IP Addressing (VIPA)
 - Efficiently balance socket connections across multiple LPARs
 - Move an IP address from one network interface to another without disrupting *existing* socket connections
 - Move an IP address from one LPAR to another when a sub-system is restarted on a different LPAR (dynamic VIPA activation)
 - Sysplex Distributor: load balancing across applications in different IP stacks/LPARs

Database

- **DB2**
 - Shared data
 - Use DB2 Group Attach
- **WebSphere MQ**
 - Shared queues
 - Use MQ Group Attach in CICS TS V4.1
- **IMS**

Roadmap (WLM)



Business Application Services (BAS)

- **What?**

- *“Slap a pair of underpants on the outside of CEDA’s clothes and sew a great big S on it’s chest and you have BAS”, Chris Hodgins*

- **Where?**

- Uses the Data Repository (DREP) which is like a shared CSD for the CICSplex

- **When?**

- You can use BAS for all your definitional needs. However, some customers prefer to reserve BAS for applications while continuing to use CSD for system definitions & vendor products. Good news is that access is largely transparent in Explorer!

- **Why?**

- Don’t be confused by the name. BAS allows a huge range of control from installing single definitions, defining groups to managing whole “applications”
- Allows “scope” of install to be managed i.e. where as well as what. This is determined using the same groups that determine your topology
- Will automatically create local & remote resources from a single definition

- **How?**

- Define resources in the same way as you would for CSD
- BATCHREP utility for batched updates or migrating from CSD
- Ability to automatically install resources and CICS startup

CICS Configuration Manager

- **CICS CM is server component, installation agent and Explorer plug-in**
- **With CICS CM you can do the following**
 - manipulate definitions across CSD files and CICSplex SM data repositories providing an easy migration path if you are planning to use BAS
 - keep audit trail of changed resources, dates, and times making it possible for changes to be backed out to any previous version of the definitions
 - enable change control for definitions
- **Seamless management of both CSD (including shared) & BAS resources**

Real-time Analysis (RTA)

- **What?**
 - Automatic, external, notification of conditions in which you have expressed an interest
 - Events view in CICS Explorer
- **Where?**
 - PROD
- **When?**
 - Need to real-time notification of potential problems and even take action e.g. reopen File closed by accident
- **Why**
 - Potential problems are detected and corrected before they become critical
 - The volume of information is reduced by filtering out unnecessary messages.
- **How?**
 - System Availability Monitoring (SAM) monitors CICS systems during their planned hours of availability
 - SOS
 - DUMP
 - MAXTASK
 - Using MAS resource monitoring (MRM) function, you can monitor the status of any CICS resource
 - Status e.g. ACQUIRED
 - Transaction response time
 - Monitor external resources through user routines

CICSplex SM API

- **What?**
 - CICS SPI on steroids
 - API used by CICSplex SM WUI and CMCI under the covers
- **Where?**
 - DEV/TEST/PROD
- **When?**
 - Automate regular tasks such as resource availability
- **Why?**
 - Schedule events for a particular time of day
 - Perform CICSplex-wide updates
- **How?**
 - Write a REXX or COBOL program
 - Run online or in batch

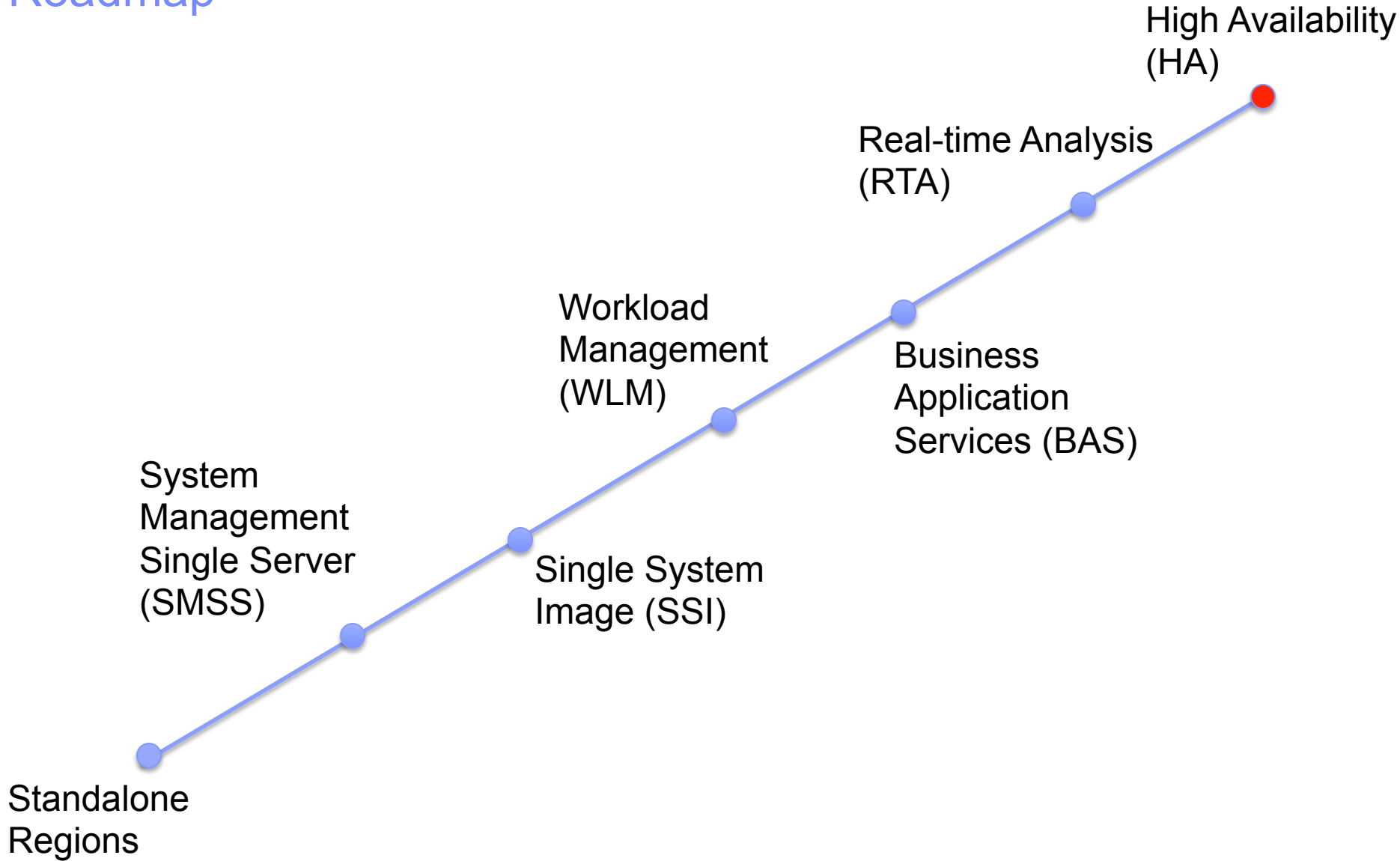
High Availability (HA)

- **What?**
 - Applications will appear continuously available to end users
- **Where?**
 - PROD
- **When?**
 - Need to meet service level agreements (SLA) and other obligations
- **Why**
 - Remove the need to shutdown CICS for planned activities
 - Defining and installing resources
 - Deploying a new version of an application
 - Minimize the impact of an outage
- **How?**
 - Utilize Parallel Sysplex capabilities of the operating system, network, and database systems
 - Implement cloned CICS regions to eliminate points of failure
 - Workload balancing mechanisms
 - Eliminate or reduce impact of application affinities
 - Single LPAR, multiple LPARs, multiple CEC (“full HA”)

Wednesday

8276: [CICS High Availability](#)

Roadmap



Recommended Service Upgrades (RSU)

IBM z/OS Consolidated Service Test and the RSU

http://www.ibm.com/systems/z/os/zos/support/servicetest/

United States [change]

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Consolidated Service Test and the RSU

CST Getting an RSU Mission ISVs Contact & Links

As part of IBM's commitment to quality and continuous improvement, we established an additional service testing environment called Consolidated Service Test (CST). As a result, we're redefining our RSU (Recommended Service Upgrade) for the z/OS platform so that it contains service that has been through CST testing. Now, the CST team tests all the current PTFs for these products together, so that we can recommend PTF service for z/OS and key subsystems together in one RSU sourceid, free of charge to all z/OS customers. That means that when you order the current service deliverable ([ShopzSeries](#)) you'll [receive and install](#) tested service for all of the following products:

- CICS Transaction Gateway for z/OS
- CICS Transaction Server for z/OS
- DB2 for z/OS
- DB2 Connect
- Geographically Dispersed Parallel Sysplex (GDPS/PPRC)
- IMS
- IRLM
- JAVA
- WebSphere Application Server for z/OS
- WebSphere MQ for z/OS
- z/OS
- z/OS Problem Determination Tools
- IBM DB2 and IMS Tools
- IBM Tivoli (products listed in quarterly report)
- IBM Tivoli Composite Application Manager for Transactions
- TKLM (Tivoli Key Lifecycle Manager)

Note: For a complete list of products/tools and levels tested, please consult the [CST Quarterly Report](#), specifically the *What Service was Installed* section.

[Register here](#) if you'd like us to notify you by e-mail when we've completed testing of a new RSU.

Quick answers

- What PTFs are in an RSU?
- How do I get an RSU?
- When will the next RSU be tested?
- What's our schedule for testing new products and releases?
- What's our schedule for discontinuing testing of products and releases?
- How do I report problems encountered with my ShopzSeries id?

Summary

- **Standalone Regions**
- **System Management Single Server (SMSS)**
- **Workload Management (WLM)**
- **Business Application Services (BAS)**
- **Real-time Analysis (RTA)**
- **CICSplex SM API**
- **High Availability (HA)**

Questions

Other Sessions

- **Monday**

- 8262: [CICS TS 4.1 Technical Overview](#)

- **Tuesday**

- 8265: [CICS JVM Server](#)

- **Wednesday**

- 8277: [CICS and VSAM RLS User Experience](#)
- 8276: [CICS High Availability](#)

- **Thursday**

- 8272: [Best Practices for CICS Systems Management](#)
- Lunch & Learn 207B: [CICS Requirements and strategic directions](#)
- 8514: [CICS Explorer Update](#)
- 8280: [CICS Question Box and Pot Luck](#)

- **Friday**

- 8281: [TCP/IP for CICS Systems Programmers](#)
- 8263: [Testing Through the Eyes of CICS System and Application Programmers](#)
- 8294: [CICS Systems Management - Hands on Lab](#)

More Information

- **IBM CICS Explorer**

- <http://www.ibm.com/software/htp/cics/explorer/>

- **SHARE (Past Conferences)**

- http://proceedings.share.org/client_files/SHARE_in_Orlando/S1066XX102231.pdf

- http://proceedings.share.org/client_files/SHARE_in_Austin/S1052LF123225.pdf

- http://proceedings.share.org/client_files/SHARE_in_Denver/S1366XX152826.pdf

- **Podcasts**

- <http://itunes.apple.com/us/podcast/did-you-say-mainframe/id275831334>

- **Blog**

- <http://masterterminal.wordpress.com/>



- **developerWorks Forum**

- <http://www.ibm.com/developerworks/forums/forum.jspa?forumID=1475>

