

Cheryl Watson's GoalTender™

How to Manage WLM

Cheryl Watson Session 2539; SHARE 104 in Anaheim March 2, 2005

Watson & Walker, Inc. home of Cheryl Watson's TUNING Letter, BoxScore & GoalTender

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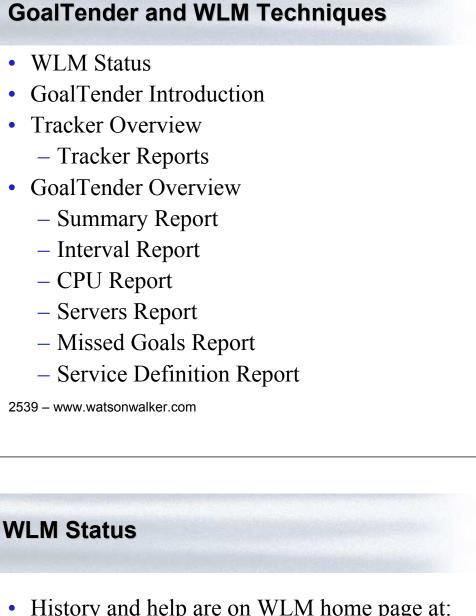
Session Abstract



1

This vendor session describes our new WLM software monitoring product called *Cheryl Watson's GoalTender*TM. The product is designed to let you analyze your WLM environment as we would do it manually. The session should still be valuable to any goal mode installation, even those sites not interested in purchasing software, because we describe the process of analysis.

We'll look at several common problems and describe our solutions.



- History and help are on WLM home page at: www.ibm.com/zseries/zos/wlm
- Most sites are now running in goal mode
- But that leads to several questions:
 - How do you monitor WLM?
 - How often do you monitor WLM?
 - What are the key indicators?
 - How often do you need to modify policies?
 - What has caused missed goals?

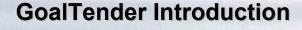
GoalTender Introduction



5

- Cheryl Watson's GoalTender™ is a new product to help you manage WLM goal mode
- Implements our own WLM analysis method
- It's a combination started task and batch job
 - <u>Tracker</u> Started task that runs continually on each system and collects data to record on a common file
 - <u>GoalTender</u> batch job that analyzes the data and produces a series of reports and recommendations
- Written in assembler, so only requirement is goal mode and OS/390 or later
- GA date was March 3, 2004

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- Tracker collects:
 - WLM policies and service definitions
 - Operator changes to service classes
 - SMF type 70, 72 data
- GoalTender runs daily or as needed to identify:
 - Missed goals
 - Operator activities
 - Summary of usage by service class
 - Detailed service class analysis
 - Recommendations and explanations

GoalTender Introduction • Unique – keeps a history of service definitions, including data not kept on SMF (classification rules, application environments, resource scheduling, descriptions) • Uses industry *best practices* to evaluate your system • Reduces your time in analyzing performance problems Helps train new personnel Provides comprehensive advice on how to improve your policy Produces easy-to-read reports and service policy • 7 2539 - www.watsonwalker.com **Problem**

Lack of history

- What happens when you are analyzing a problem period from last week, but the policy has changed?
- What was defined in the policy?
- Who knows what changed?
- SMF only contains a portion of the information
- Solution
 - Keep a history of policies
 - Tracker keeps a database of policies and changes to those policies

Tracker – This STC allows you to ...



- Keep historical database of COMPLETE service definitions & policies, including classification rules, descriptions, application environments, etc.
- Identify when service definitions are installed
- Identify when service policies are activated
- Identify when operators get "creative"
 - Operators should have some service classes for their own use, but using things like the CICS service class for TSO users could keep you from meeting your goals
- Identify missing SMF data
- Identify periods when Tracker is down





Tracker Database: WANDW.PLEX3.DATABASE

Report and Fil Log(ALL)	tering Options	:		00	278404	
SMF Contents:	System:SYS0 System:SYS1 System:SYS2	Earliest:17Dec2	003:09:00	Latest:18Dec2003:18:15 Latest:17Dec2003:09:59 Latest:17Dec2003:08:59	SMF-70: .	4 SMF-72:192
Record Counts:	New SC	1 SD 5 Quiesce 0 Goal	2 Resume			

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SY	STEM(SYS0)			
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		200	3-13	Dec	2003)
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LO		1,01 K	,		
L7Feb2004	15.14	Cher	rvl Wa	atson'	s Tracker Utility Page 1
V1R0		01101	-		e Log Report
Date	Time	System	Тур	Msg	Activity
			WLM	T003I	SI STANDARD (Standard Definition) Installed by IBMUSER.
17Dec2003	08:48:59	SYSU			
17Dec2003	08:48:59 08:49:17			T002I	Policy STANDARD(Standard Policy) Activated by IBMUSER.
17Dec2003	08:49:17	SYS0	WLM		SD STANDARD(Standard Definition) Installed at 17Dec2003 08:48:59.
17Dec2003	08:49:17 09:05:47	SYSO SYSO	WLM OPR	T029I	SD STANDARD(Standard Definition) Installed at 17Dec2003 08:48:59. Job WANDWDOG(JOB00055) SC Changed from PRDBATHI to HOTBATCH by WANDW.
17Dec2003	08:49:17	SYSO SYSO SYSO	WLM OPR OPR	T029I T030I	SD STANDARD(Standard Definition) Installed at 17Dec2003 08:48:59. Job WANDWDOG(JOB00055) SC Changed from PRDBATHI to HOTBATCH by WANDW. Job WANDWDG2(JOB00059) Quiesced from SC PRDBATMD by WANDW.
17Dec2003	08:49:17 09:05:47 09:07:32	SYSO SYSO SYSO SYSO	WLM OPR OPR OPR	T029I T030I T031I	SD STANDARD(Standard Definition) Installed at 17Dec2003 08:48:59. Job WANDWDOG(JOB00055) SC Changed from PRDBATHI to HOTBATCH by WANDW.
17Dec2003	08:49:17 09:05:47 09:07:32 09:08:01	SYSO SYSO SYSO SYSO SYSO	WLM OPR OPR OPR	T029I T030I T031I T029I	SD STANDARD(Standard Definition) Installed at 17Dec2003 08:48:59. Job WANDWDOG(JOB00055) SC Changed from PRDBATHI to HOTBATCH by WANDW. Job WANDWDG2(JOB00059) Quiesced from SC PRDBATMD by WANDW. Job WANDWDG2(JOB00059) Resumed in SC PRDBATMD by WANDW.
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17Dec2003	08:49:17 09:05:47 09:07:32 09:08:01 09:09:05 09:55:19	SYSO SYSO SYSO SYSO SYSO SYSO	WLM OPR OPR OPR OPR OPR	T029I T030I T031I T029I T029I T030I	SD STANDARD(Standard Definition) Installed at 17Dec2003 08:48:59. Job WANDWDG(JOB00055) SC Changed from PRDBATHI to HOTBATCH by WANDW. Job WANDWDG2(JOB00059) Quiesced from SC PRDBATMD by WANDW. Job WANDWDG2(JOB00059) Resumed in SC PRDBATMD by WANDW. Job WANDWDG(JOB00062) SC Changed from PRDBATHI to HOTBATCH by WANDW. Job WANDWDG(JOB00087) SC Changed from PRDBATHI to HOTBATCH by WANDW.
17Dec2003	08:49:17 09:05:47 09:07:32 09:08:01 09:09:05 09:55:19 09:55:45 09:56:06	SYSO SYSO SYSO SYSO SYSO SYSO SYSO	WLM OPR OPR OPR OPR OPR OPR	T029I T030I T031I T029I T029I T030I T030I	SD STANDARD(Standard Definition) Installed at 17Dec2003 08:48:59. Job WANDWDOG(JOB00055) SC Changed from PRDBATHI to HOTBATCH by WANDW. Job WANDWDG2(JOB00059) Quiesced from SC PRDBATMD by WANDW. Job WANDWDG2(JOB00059) Resumed in SC PRDBATMD by WANDW. Job WANDWDOG(JOB00062) SC Changed from PRDBATHI to HOTBATCH by WANDW. Job WANDWDOG(JOB00087) SC Changed from PRDBATHI to HOTBATCH by WANDW. Job WANDWDG2(JOB00059) Quiesced from SC PRDBATMD by WANDW.
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	08:49:17 09:05:47 09:07:32 09:08:01 09:09:05 09:55:19 09:55:45 09:56:06 15:36:13	SYSO SYSO SYSO SYSO SYSO SYSO SYSO SYSO	WLM OPR OPR OPR OPR OPR OPR OPR	T029I T030I T031I T029I T029I T030I T031I T029I	SD STANDARD(Standard Definition) Installed at 17Dec2003 08:48:59. Job WANDWDOG(JOB00055) SC Changed from PRDBATHI to HOTBATCH by WANDW. Job WANDWDG2(JOB00059) Quiesced from SC PRDBATMD by WANDW. Job WANDWDG2(JOB00059) Resumed in SC PRDBATMD by WANDW. Job WANDWDOG(JOB00062) SC Changed from PRDBATHI to HOTBATCH by WANDW. Job WANDWDOG(JOB00087) SC Changed from PRDBATHI to HOTBATCH by WANDW. Job WANDWDG2(JOB00059) Quiesced from SC PRDBATMD by WANDW. Job WANDWDG2(JOB00059) Resumed in SC PRDBATMD by WANDW. Job WANDWDG2(JOB00059) Resumed in SC PRDBATMD by WANDW. Job WANDWDG2(JOB00059) SC Changed from TSOPRD to HOTBATCH by *BYPASS*.

Problem



Too much data

- Reams of reports to review
- Which are peak activity periods?
- Which are worst periods for missing goals?
- Did anything change during or right before those periods?
- Solution

Automatically pick peak periods and worst periods

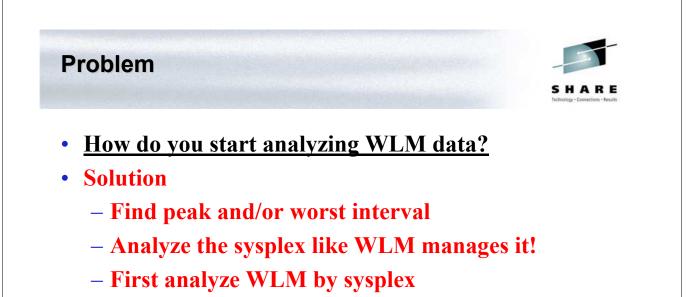
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GoalTender Summary Report

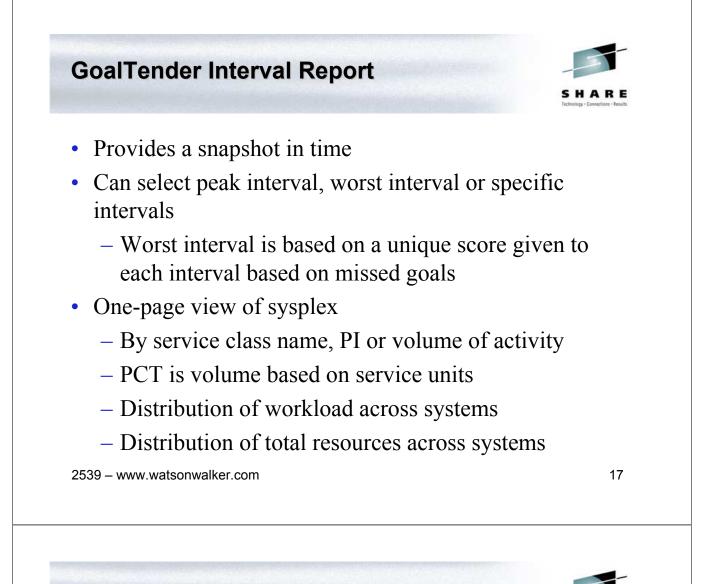
- Produced each time GoalTender is run
- GoalTender usually runs once a day, so summary shows you the results of one day
- Key elements:
 - Top three peak intervals based on service units
 - Top three worst intervals based on a unique weighted score
 - SMF data that is present on Tracker database
 - Number of recommendations and missed goals during the period



					SHAR Inchronizar - Connections - Fee
Service Defir Descriptic	Activation Standard Policy Dition: STANDARD Insta N: Standard Definition od for this policy: 171	ll Date: 1		48:59	
Peak Intervals:	Interval Start Ray	v SUS (K)	Policy Name	Install Date	
	17Dec2003:09:45:00		STANDARD	17Dec2003:08:49:17	
	17Dec2003:09:30:00		STANDARD	17Dec2003:08:49:17	
	17Dec2003:09:15:00	1972	STANDARD	17Dec2003:08:49:17	
Worst intervals:	Interval Start Sco	ore/#Miss	Policy Name	Install Date	
	17Dec2003:09:45:00		STANDARD	17Dec2003:08:49:17	
	17Dec2003:09:00:00		STANDARD	17Dec2003:08:49:17	
	17Dec2003:09:30:00	18 10	STANDARD	17Dec2003:08:49:17	
Tracker Database SMF Contents: System: SYS0	Earliest: 17Dec200			Dec2003:10:45:00	
5,500. 5155	OS Level: z/OS 01.0 SMF-70:8		Cycle: 1.00 SMF-72:	00 seconds	
System: SYS1	Earliest: 17Dec200 OS Level: z/OS 01. SMF-70:4) Latest: 171 Cycle: 1.00 SMF-72:	00 seconds	
Number of SMF re	cords processed: 588				
Number of times	when PIs were missed:	55, Percer	nt of Total:	38%	
Number of usuals	ngs based on SMF data:	75			



- This is WLM's view of the workload
- A PI of 1.0 at the sysplex level doesn't necessarily mean that all systems are meeting the goal
- Then analyze WLM for each system
 - This is what's really going on





- We identify:
 - Missed goals during the interval
 - Missed system goals, even when the sysplex goal is not missed
 - Too much work running above a service class that is missing its goal
 - No/too little /too much work living in discretionary or system categories
 - Distribution of resources as you planned?

7Feb2004 15:14 V1R0 Service Defini Definition	Ir	terval Sampl	-		n's Go	Junand					S	HARE Inology - Connections - Results
V1R0 Service Defini Definition	Ir	nterval	-		n's Go	almand						
V1R0 Service Defini Definition	Ir	nterval	-		n's Go	- 1 m						
Service Defini Definition			Repor							Pag	e 15	
Definition	tion:	oumpr	e Renc									
Definition	tion:		e nepe	100 10	L DIMIG		CIICUCIO					
		STANDA	RD In	stall	Date:	17Dec2	003:08:	48:59	Desci	iptio	n: Stan	dard
							-		~ .			
Policy: STANDA	IRD II	istall	Date:	I/Dec2	003:08	:49:17	Desci	10110	n: Star	laara	Policy	
Worst Interval	. 1704		00.45.	00								
					e	D						
SUs Used=2					erinea.	Perioa	s=23, S	ort=1	ЧР			
Missed Goa	15=12,	Misse	d Scor	e=24								
		Sysp	lex	01/00								
Service Pe	r Imp	0100		SISU	1	SYS1						
Service Pe Class	r Imp											
	er Imp						Pct	PI	Pct	 PI	Pct	
	-	 PI	Pct	PI		PI	Pct	PI	Pct	 PI	Pct	
Class	. (0)	PI 0.0	Pct 3.4	PI 0.0	Pct	PI 0.0	Pct 1.6	PI	Pct	PI	Pct	
Class SYSSTC 1	(0)	PI 0.0 0.0	Pct 3.4	PI 0.0	Pct 1.7 3.1	PI 0.0	Pct 1.6 2.8	PI	Pct	 PI	Pct	
Class SYSSTC 1 SYSTEM 1	(0) (0) 3	PI 0.0 0.0 1.2	Pct 3.4 6.0 2.8	PI 0.0 0.0 1.2	Pct 1.7 3.1	PI 0.0 0.0 0.0	Pct 1.6 2.8	PI	Pct	 PI	Pct	
Class SYSSTC 1 SYSTEM 1 HOTBATCH 1	(0) (0) 3 4	PI 0.0 0.0 1.2 17.5	Pct 3.4 6.0 2.8 57.9	PI 0.0 0.0 1.2	Pct 1.7 3.1 2.8	PI 0.0 0.0 0.0 8.6	Pct 1.6 2.8 0.0	PI	Pct	 PI	Pct	
Class SYSSTC 1 SYSTEM 1 HOTBATCH 1 PRDBATHI 1	(0) (0) 3 4 4	PI 0.0 0.0 1.2 17.5 5.5	Pct 3.4 6.0 2.8 57.9 24.8	PI 0.0 0.0 1.2 23.8	Pct 1.7 3.1 2.8 28.4	PI 0.0 0.0 0.0 8.6 3.1	Pct 1.6 2.8 0.0 29.4	PI	Pct	 PI	Pct	
Class SYSSTC 1 SYSTEM 1 HOTBATCH 1 PRDBATHI 1 PRDBATMD 1	(0) (0) 3 4 4 4	PI 0.0 0.0 1.2 17.5 5.5 2.0	Pct 3.4 6.0 2.8 57.9 24.8 1.0	PI 0.0 0.0 1.2 23.8 11.8	Pct 1.7 3.1 2.8 28.4 5.4	PI 0.0 0.0 0.0 8.6 3.1	Pct 1.6 2.8 0.0 29.4 19.3 0.1	PI	Pct	PI	Pct	
Class SYSSTC 1 SYSTEM 1 HOTBATCH 1 PRDBATHI 1 PRDBATMD 1 TSOPRD 1	(0) (0) 3 4 4 4 5	PI 0.0 0.0 1.2 17.5 5.5 2.0 7.2	Pct 3.4 6.0 2.8 57.9 24.8 1.0 3.2	PI 0.0 0.0 1.2 23.8 11.8 **** 7.2	Pct 1.7 3.1 2.8 28.4 5.4 0.9	PI 0.0 0.0 0.0 8.6 3.1 0.5 0.0	Pct 1.6 2.8 0.0 29.4 19.3 0.1	PI	Pct	PI	Pct	



• High importance work uses a lot of CPU

- It then exceeds its goal and uses cycles that could be used by discretionary or lower importance work (e.g. CICS response time is .3 seconds instead of goal of 1 second). This occurs mainly on uni- or dyadic machines.
- Two results:
 - Discretionary work doesn't get the excess cycles and languishes a long time
 - Users get used to rapid response and complain when response time drops to the goal you all agreed upon
- Solution

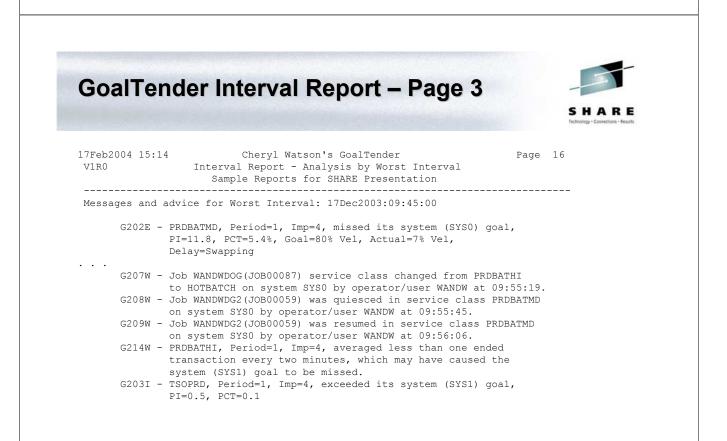
Problem

- Identify whenever PI goes below some limit (e.g. .5)

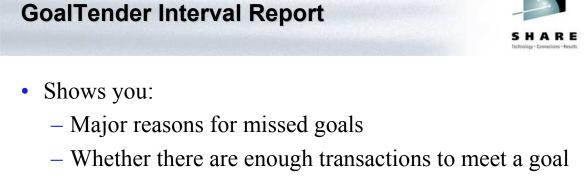
GoalTender Interval Report – Page 2



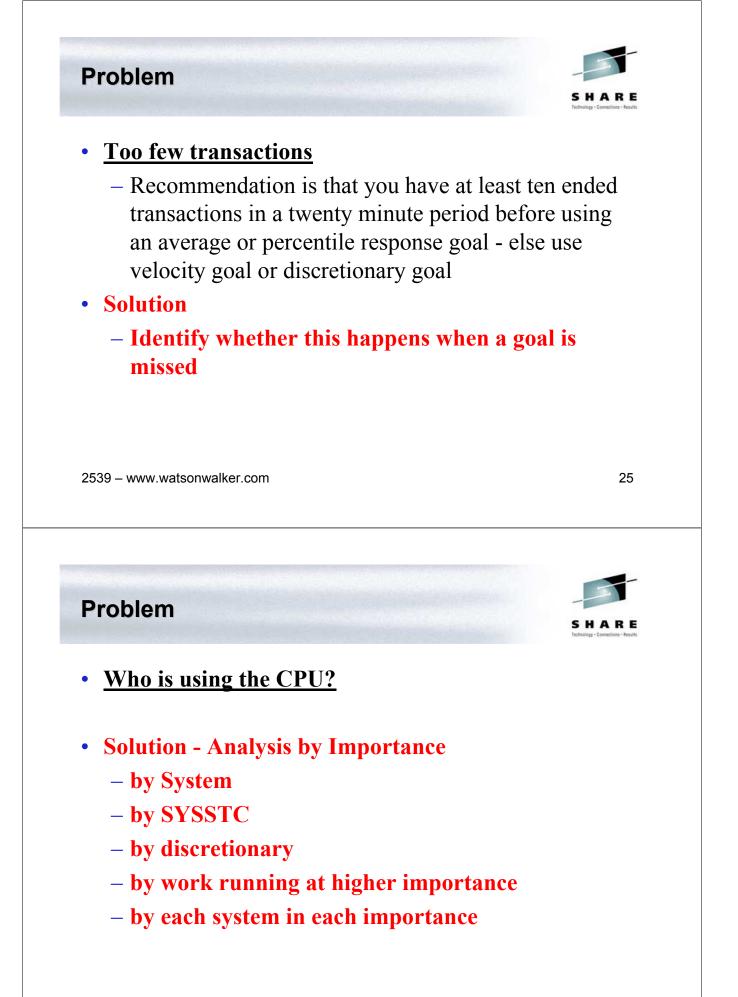
17Feb2004 15:14Cheryl Watson's GoalTenderPage 16V1R0Interval Report - Analysis by Worst Interval Sample Reports for SHARE PresentationFrage 16
Messages and advice for Worst Interval: 17Dec2003:09:45:00
G200E - HOTBATCH, Period=1, Imp=3, missed its goal sysplex wide, PI=1.2, PCT=2.8%, Goal=50% Vel, Actual=41% Vel, Delay=CPU
G200E - PRDBATHI, Period=1, Imp=4, missed its goal sysplex wide, PI=17.5, PCT=57.9%, Goal=15 sc Avg, Actual=263 sc Avg, Delay=Idle
G200E - PRDBATMD, Period=1, Imp=4, missed its goal sysplex wide, PI=5.5, PCT=24.8%, Goal=80% Vel, Actual=15% Vel, Delay=Swapping
G200E - TSOPRD, Period=1, Imp=4, missed its goal sysplex wide, PI=2.0, PCT=1.0%, Goal=80% in 200 ms, Actual=78% in 200 ms, Delay=Idle
G200E - TSOPRD, Period=2, Imp=5, missed its goal sysplex wide, PI=7.2, PCT=3.2%, Goal=80% Vel, Actual=11% Vel, Delay=CPU
G202E - HOTBATCH, Period=1, Imp=3, missed its system (SYSO) goal, PI=1.2, PCT=2.8%, Goal=50% Vel, Actual=41% Vel, Delay=CPU
G202E - PRDBATHI, Period=1, Imp=4, missed its system (SYSO) goal, PI=23.8, PCT=28.4%, Goal=15 sc Avg, Actual=357 sc Avg, Delay=Idle
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	I_ - <i>servclass</i> , Period= <i>per</i> , Imp= <i>import</i> , exceeded its goal sysplex wide, PI= <i>pivalue</i> , PCT= <i>percent</i>
-	ition - A service class period had a PI less than .5 at a sysplex level during the period ntervals (as defined by your PEAK parameter). The .5 default can be changed with the DVERRIDE parameter.
Desc s t	ription - This message only occurs for multi-system sysplexes and indicates that a service class period has greatly exceeded its sysplex-wide goal during a peak interva- it's important for you to set your a value for the PEAK interval because you will cypically exceed your goals during non-peak times. There are two major problems with exceeding your goals during your peak intervals:
5	The users will come to expect this level of service at all times, and your agree upon service will have no meaning. Once users have experienced a certain level of service, it's impossible to reduce that level without complaints. This becomes the r level of service.
	When you exceed your goals for one service class, it's possible that work at lower importance levels may miss their goals. Because of this, you should not set higher goals than you need for any level of importance.
<u>Reco</u> t t	<pre>mmendation - Review any of these messages for to see if you've set your velocity goal coo low or response goals too high for peak period. If so, you should either increas the velocity or decrease the response time. Please review message G200E (Recommendation) because it gives a list of times (e.g. there are too few transaction to determine an adequate goal) when goals are not reasonable.</pre>
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- Whether some service classes are exceeding goals while lower importance ones are missing theirs
- Whether operators moved things into or out of service classes and caused missed goals



7Feb2004 15:14 V1R0	Interval 1	Report - An	n's GoalTender nalysis by Worst Interval or SHARE Presentation	Page 18
Worst Interval: 17	Dec2003:0	9:45:00		
CPU Usage by Impor	tance Leve	el:		
Importance	Sysplex	SYS0	SYS1	
System	9.4%	4.9%	4.5%	
1	0.0%	0.0%	0.0%	
2		0.0%	0.0%	
3		2.8%	0.0%	
4 5		34.8% 3.2%	49.0% 0.0%	
Discretionary			0.3%	
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				-

- Servers and served not assigned correctly
- Causes goals to appear to be missed or met, when the actual situation is reversed

• Solution

Understand all of the server connections and volumes

GoalTender Interval Report - Servers

View of Servers

Sorted by System/Server Class:

System	Server	Served	Count
SYSA	SERVERS	TRANHI	121,931
SYSA	SERVERS	TRANLO	186,674
SYSA	STCMD	TRANHI	44
SYSA	STCMD	TRANLO	102
Total			308,751

Sorted by System/Served Class:

System	Served	Server	Count
SYSA	TRANHI	SERVERS	121,931
SYSA	TRANHI	STCMD	44
SYSA	TRANLO	SERVERS	186,674
SYSA	TRANLO	STCMD	102
Total			308,751

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• What happened during the rest of the day?

• Solution

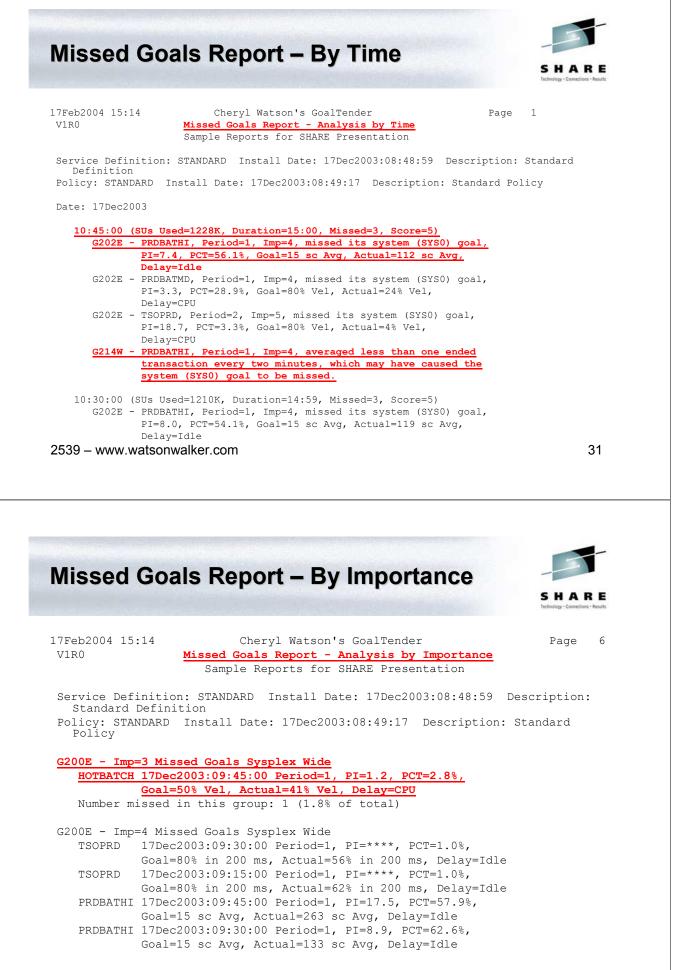
Problem

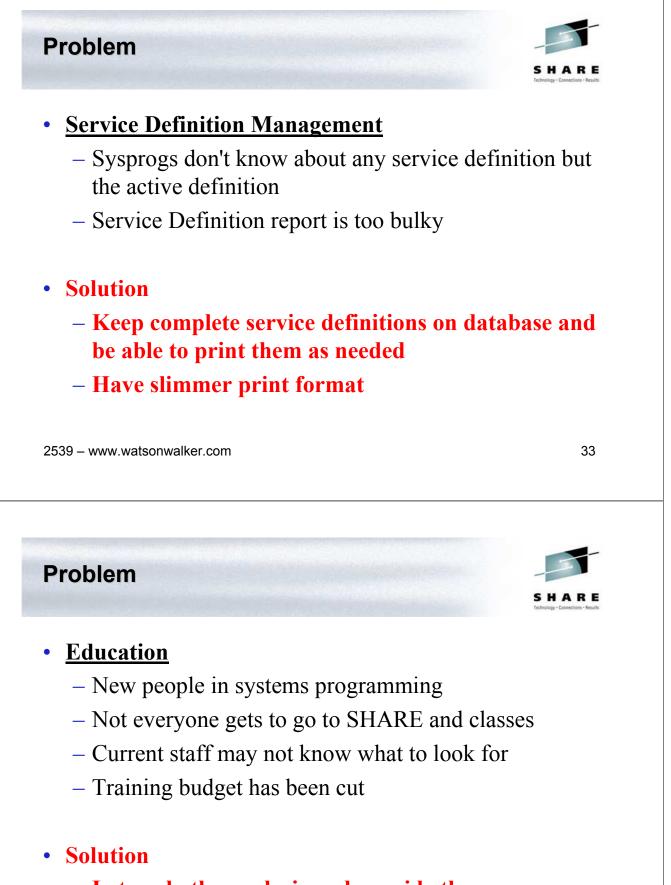
- Use exception reporting
- With GoalTender, we pick the exceptions, but user can modify them
- Review this daily





SHARE Technology - Connections - Results





Let us do the analysis and provide the recommendations

Service Definition Report



- Concise listing of entire service definition
- Recommendations made using 'best practices', including the reasons for the recommendations
- Service classes sorted by both importance and name
- Additional sections not shown here application environments, scheduling environments, scheduling resources
- Can be produced for historical policies (yesterday, last month)

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Service I	Definition Report – 1		
			SHARE Technology - Connections - Results
17Feb2004 15:14 V1R0	Cheryl Watson's GoalTender Service Definition Report with Advice Sample Reports for SHARE Presentation	Page 20	
	n: STANDARD Install Date: 17Dec2003:08:48:59 Standard Definition		
1 resource gr 1 service pol 13 classifica 17 subsystem 27 report cla	8 service class periods with response or velocit oups icies tion groups types sses environments environments	y goals	
IOC = 0.1 MSO = 0.0 SRB = 1.0			
I/O Managemen Dynamic Alias	Management 13 NO		
	Management 15 NO		
Dynamic Alias Notepad: This Quickstar Watson & Walke	t policy was created by Cheryl Watson of r. This updated version was created in A description of this policy can be	00000100 00000200 00000201	

Service Definition Report - 2



Service Policies:

Base: STANDARD - Standard Policy
Workloads:
Workload Service Classes
Workload Description
NEWWORK NEWWORKV
New Workloads
ONLINE ONLPRD, TRANHI, TRANLO, ONLTST, SERVERS
Online Workloads
PRDBAT HOTBATCH, PRDBATHI, PRDBATMD, PRDBATLO
Production Batch
STC STCLO, STCMD, KILLIT
Started Tasks
SYSTEM SYSTEM, SYSSTC, SYSOTHER
(WLM Internal)
TSO TSOPRD
TSO Users
TSTBAT TSTBATHI, TSTBATLO, TSTBATMD
Test Batch

Resource Groups:
Group Limits Resource Description
KILLIT Min=None, Max=1 Logical Swapout for Non-Swap
Used by service classes: KILLIT

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Se	ervice	A						
			Dei	fini	tion Repo	rt -	3	
					CHARLES TO BE AND A DECK			CHARE
								S A A R E Technology - Connections - Results
Serv	vice Class	ses	(in Na	ame Se	quence):			
			T		0	0.017		
	Service Class	Per	Imp	Dur	Goal	Crit	Workload	Svc Class Description
	Class					Crit		
	HOTBATCH	1	3		Velocity=50		PRDBAT	Hot Batch
	KILLIT	1	(6)		Discretionary		STC	Logical swapout for non-swap
	In Kl	ILLI		ource	Group, Min=None, Max	=1		
	NEWWORK	1	3	500	80% within 500 ms		NEWWORK	New Work on System
*1		2	4		Velocity=20		NEWWORK	New Work on System
*1	NEWWORKV	1	3		Velocity=20		NEWWORK	New Work on System (Velocity)
	ONLPRD	1	1		Velocity=50		ONLINE	Online Production Regions
*1	ONLTST	1	5		Velocity=10		ONLINE	Online Test Regions
*2	PRDBATHI	1	4		Avg 15 sec		PRDBAT	Production Batch High
	PRDBATLO	1	(6)		Discretionary		PRDBAT	Production Batch Low
*3	PRDBATMD	1	4		Velocity=80		PRDBAT	Production Batch Medium
*4	SERVERS	1	1		Velocity=70		ONLINE	Server Address Spaces
	STCLO	1	(6)		Discretionary		STC	STC Low
	STCMD	1	3		Velocity=40		STC	STC Medium
	SYSOTHER	1	(6)		Discretionary		SYSTEM	(WLM Internal)
	SYSSTC	1	(0)		Second highest DP		SYSTEM	(WLM Internal)
	SYSTEM	1	(0)		Highest DP		SYSTEM	(WLM Internal)
	TRANHI	1	1		80% within 500 ms		ONLINE	Online Transactions High
*5	TRANLO	1	3		50% within 10 min		ONLINE	Online Transactions Low
	TSOPRD	1	4	500	80% within 200 ms		TSO	TSO Production
		2	5		Velocity=80		TSO	TSO Production
	TSTBATHI	1	3		90% within 10 min		TSTBAT	Test Batch High
	TSTBATLO	1	(6)		Discretionary		TSTBAT	Test Batch Low
	TSTBATMD	1	4		80% within 30 min		TSTBAT	Test Batch Medium

Service Definition Report - 4



Service Classes (in Importance Sequence):

Service Class	Per	Imp	Dur	Goal	CPU Crit	Workload	Svc Class Description
SYSTEM	1	(0)		Highest DP		SYSTEM	(WLM Internal)
SYSSTC	1	(0)		Second highest DP		SYSTEM	(WLM Internal)
ONLPRD	1	1		Velocity=50		ONLINE	Online Production Regions
SERVERS	1	1		Velocity=70		ONLINE	Server Address Spaces
TRANHI	1	1		80% within 500 ms		ONLINE	Online Transactions High
HOTBATCH	1	3		Velocity=50		PRDBAT	Hot Batch
NEWWORK	1	3	500	80% within 500 ms		NEWWORK	New Work on System
NEWWORKV	1	3		Velocity=20		NEWWORK	New Work on System (Velocity)
STCMD	1	3		Velocity=40		STC	STC Medium
TRANLO	1	3		50% within 10 min		ONLINE	Online Transactions Low
TSTBATHI	1	3		90% within 10 min		TSTBAT	Test Batch High
NEWWORK	2	4		Velocity=20		NEWWORK	New Work on System
PRDBATHI	1	4		Avg 15 sec		PRDBAT	Production Batch High
PRDBATMD	1	4		Velocity=80		PRDBAT	Production Batch Medium
TSOPRD	1	4	500	80% within 200 ms		TSO	TSO Production
TSTBATMD	1	4		80% within 30 min		TSTBAT	Test Batch Medium
ONLTST	1	5		Velocity=10		ONLINE	Online Test Regions
TSOPRD	2	5		Velocity=80		TSO	TSO Production
KILLIT	1	(6)		Discretionary		STC	Logical swapout for non-swap
In Kl	LLI	r Res	ource	Group, Min=None, Max	=1		
PRDBATLO	1	(6)		Discretionary		PRDBAT	Production Batch Low
STCLO	1	(6)		Discretionary		STC	STC Low
SYSOTHER	1	(6)		Discretionary		SYSTEM	(WLM Internal)
TSTBATLO	1	(6)		Discretionary		TSTBAT	Test Batch Low

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ervice De	fini	tion Rep	ort - 5	SHAT
lassification G	roups:			Technology - Connection
Group Name	Туре	Description Contents	and Description	
MONITORS	TNG	Monitor Prod RMF* OMON* NETV* TMON* CMF* CA* SDSF	RMF Omegamon NetView	
ONLPRD	TNG	Online Produ DSN* ADABAS* IDMS* ORA* *DIST	ction Regions DB2 Production Regions ADABAS IDMS (If not using OSDI subsystem) (If not using DDF subsystem)	
ONLTST	TNG	MQ* Online Test CICST* IMST*	5	

DB2T* DB2 Testing

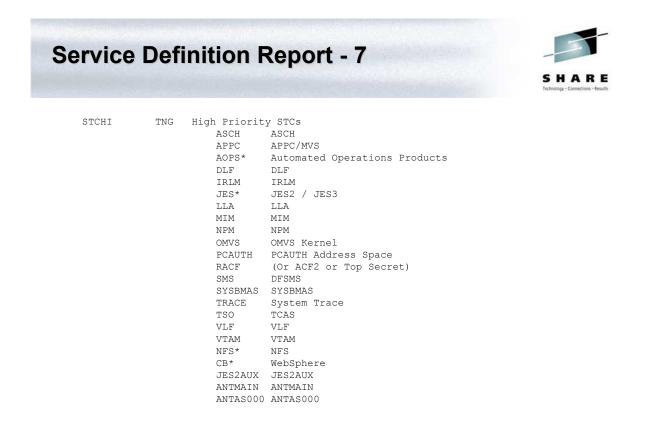
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PRDBATHI	TCG	Production Batch High A (Replace these with the job B classes assigned to your high C priority production jobs)
PRDBATLO	TCG	
		G (Replace these with the job
		H classes assigned to your low
		I priority production jobs)
PRDBATMD	TCG	Production Batch Medium
		D (Replace these with the job
		E classes assigned to your medium
		F priority production jobs)
SERVERS	TNG	Server Address Spaces
		CICS4* CICS
		CICSTS* CICS
		IMS5* IMS
		IMS6* IMS
		IMS7* IMS
		*DIST (If using DDF subsystem)
		ORA* (If using OSDI subsystem)
		MQ* (If using MQ subsystem)

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STCMD	TNG	Medium Priority STCs
		SCHED* Your Scheduler Program
		SPOOL* Your Spooler Programs
		PRINT* Your Spooler Programs
		OPS_JOBS Your Important Operations Work
		OMVSD* OMVS Daemons
TRANCIC	TNG	Important CICS Transactions
		IMPCICA (Replace these with the
		IMPCICB names of your important
		IMPCICC CICS transactions)
TRANIMS	TCG	Important IMS Transactions
		ITRANA (Replace these with the
		ITRANB transaction names of your
		ITRANC important IMS transactions)
TSTBATHI	TCG	Test Batch High
		R (Replace these with the job
		S classes assigned to your high
		T priority test jobs)
TSTBATMD	TCG	Test Batch Medium
		U (Replace these with the job
		V classes assigned to your medium
		W priority test jobs)



Service Definition Report – 9a

Subsystem Classification Rules:

Subsys	Level/Rule	Start	Service Class	Report Class	Reg/ S Tran (Subsystem Description Rule Description
			CIUSS	CIUSS	iran (J I I U	Ruie Description
ASCH	Default		NEWWORK	RASCH			APPC/MVS Users
CB	Default		NEWWORK	RCB			WebSphere Transactions
CICS	Default		TRANLO	RCICS			CICS Workload
	1 SI CICSP*		TRANHI	RCICS	TRAN		CICS Region Name
	1 TNG TRANCIC		TRANHI	RCICS	TRAN		CICS Transaction Name
DB2	Default		NEWWORK	RDB2SQ			DB2 Sysplex Queries
DDF	Default		NEWWORK	RDDF			DB2 Distributed Transactions
IMS	Default		TRANLO	RIMS			IMS Workload
	1 SI IMSP*		TRANHI	RIMS	TRAN		IMS Subsystem Name
	1 TCG TRANIMS		TRANHI	RIMS	TRAN		IMS Transaction Classes
IWEB	Default		NEWWORK	RIWEB			Web Server Transactions
JES	Default		TSTBATLO	RTBATLO			Batch Jobs
	1 TCG PRDBATH	I	PRDBATHI	RPBATHI	TRAN		High Prod Job Classes
	1 TCG PRDBATM	D	PRDBATMD	RPBATMD	TRAN		Medium Prod Job Classes
	1 TCG PRDBATLO	С	PRDBATLO	RPBATLO	TRAN		Low Production Job Classes
	1 TCG TSTBATH	I	TSTBATHI	RTBATHI	TRAN		High Test Job Classes
	1 TCG TSTBATM	D	TSTBATMD	RTBATMD	TRAN		Medium Test Job Classes

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SHARE



Service Definition Report – 9b



Subsystem Classification Rules:

Subsys	Level/Rule	Start	Service Class	Report Class	-	Stor Crit	Subsystem Description Rule Description
LSFM MQ NETV OMVS OSDI SAP SOM STC	Default Default Default Default Default Default Default Default 1 TN GRS 1 TN CATALOG 1 SPM SYSSTC 1 SPM SYSSTC 1 SPM SYSTEM 1 TNG STCHI 1 TNG STCHI 1 TNG STCHI 1 TNG SERVERS 1 TNG MONITOR: 1 TNG ONLPRD	5	NEWWORKV NEWWORKV NEWWORK NEWWORK NEWWORK NEWWORK SYSTEM SYSTEM SYSTEM SYSSTC SYSTEM SYSSTC STCMD SERVERS SYSSTC ONLPRD	RMQ RNETV ROMVS ROSDI RSAP	TRAN TRAN TRAN TRAN TRAN		Lan Server for MVS MQSeries NetView OpenEdition MVS/UNIX Oracle SAP R/3 System Object Model Started Tasks GRS Address Space Catalog Address Space System Tasks High Priority STCs Medium Priority STCs Medium Priority STCs Server Address Spaces Monitor Products Online Production Regions
TSO	1 TNG ONLTST Default		ONLTST TSOPRD	RONLINE RTSO			Online Test Regions TSO Users

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				JAA	
.ros	ss Referer	nce:		Technolog - Connecto	rs - Resul
	Service Class	Subsys	Report Class	Report Class Description	
	NEWWORK	ASCH	RASCH	APPC/MVS Users	
		CB	RCB	WebSphere Transactions	
		DB2	RDB2SQ	DB2 Sysplex Queries	
		DDF	RDDF	DB2 Distributed Transactions	
		IWEB	RIWEB	Web Server Transactions	
		OMVS	ROMVS	OpenEdition MVS/UNIX	
		OSDI	ROSDI	Oracle	
		SAP	RSAP	SAP R/3	
	NEWWORKV	LSFM	RLSFM	Lan Server for MVS	
		MQ	RMQ	MQSeries	
		NETV	RNETV	NetView	
		SOM	RSOM	System Object Model	
6	ONLPRD	STC	RONLINE	Online Systems	
6	ONLTST	STC	RONLINE	Online Systems	
	PRDBATHI	JES	RPBATHI	Batch Production High	
	PRDBATLO	JES	RPBATLO	Batch Production Low	
	PRDBATMD	JES	RPBATMD	Batch Production Medium	
	SERVERS			Online Systems	
	STCLO		RSTC	Started Tasks	
6		STC	RSTC	Started Tasks	
	SYSSTC	STC		Monitor Products	
6		STC	RSTC	Started Tasks	
	SYSTEM	STC		Catalog Address Space	
		STC	RGRS	GRS Address Space	
6		STC	RSTC	Started Tasks	
6	TRANHI		RCICS	CICS Transactions	
6		IMS	RIMS	IMS Transactions	
6	TRANLO		RCICS	CICS Transactions	
6		IMS	RIMS	IMS Transactions	
		TSO	RTSO	TSO Users	
	TSTBATHI	JES		Batch Test High	
	TSTBATLO			Batch Test Low	
	TSTBATMD	JES	RTBATMD	Batch Test Medium	

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Service Definition Report – 11



Service Definition Advice:

(None)

Service Class Advice (Base):

- *1 G113I If work in this period exceeds its goal, discretionary work could run above it.
- *2 G106W Percentile response time goals are much more effective than average response time goals.
- *3 G111I The specified batch velocity goal seems to be unreasonably large.
- *4 G136I The specified STC velocity goal seems to be unreasonably high.
- *5 G108I The response time goal specified for IMS work seems to be unreasonably large.

Service Class Advice (Override):

(None)

Subsystem Classification Rules Advice:

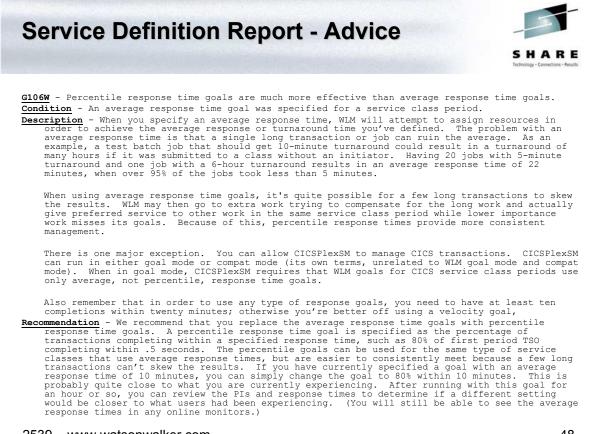
(None)

Report Class Advice:

*6 G116E - Multiple service classes are assigned to the same report class, which may limit your ability to analyze goals.

Summary of Advice Recommendations:

4 Informational Messages Issued 1 Warning Messages Issued 1 Critical Messages Issued 2539 — www.watsonwalker.com



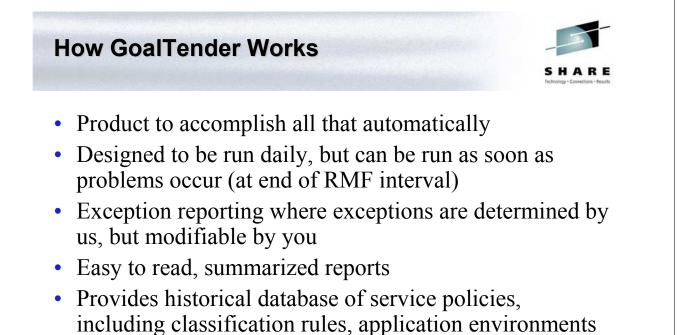
Tending to WLM



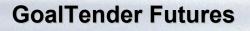
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- Creating a service definition is not a one-time task
- As work changes, hardware changes, software changes (and even user habits change), WLM must be modified
- The good news WLM produces lots of information to help you manage it
- The bad news WLM produces lots of information to help you manage it
- Exception reporting is your only choice
- But what do you look for besides missed goals?

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- and scheduling resources
- Training guide for new WLM sysprogs
- Our best and most comprehensive advice





- Detail analysis
 - Complete analysis with daily and weekly trends of a single service class, including recommendations
 - Specific analysis of CICS and IMS
 - Complete reporting of all RMF/CMF type 72 data, including summaries
- Download for spreadsheet graphs and user analysis
- More report formats on request
- More exceptions
- Additions to recommendations in User Guide

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Questions?



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