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Data Management

Introducing DB2 Health Advisor Service

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> Executive's Message



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> Featured Speaker



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IBM



Minimizing Unplanned Outages with DB2

- **20% of unplanned outages are avoidable**
 - Inadequate system and/or database resources
 - Software patches/levels that are not at the “recommended levels”
 - Configuration settings contrary to established best practices
 - etc
- **DBAs are busy... who has time to check the finer details?**
 - Less experienced DBAs are managing mission critical systems
 - Overworked DBAs have broad and significant responsibilities
- **DB2 has an answer – and it’s FREE and EASY!**
 - The DB2 Health Advisor Service



New



Example: Resolving outages at a large business in AP

- **History of the situation**
 - 3rd party consulting company was managing DB2 for a large business in AP
 - Data corruption outages started to occur after an operating system upgrade
 - DB2 HAS team went on site and found the problem immediately
- **What was the problem?**
 - A well known patch related to file system corruption was not installed during the OS upgrade
 - Everyone assumed that someone else had checked... no one did!
 - Installing OS patch resolved the issue completely
- **How to prevent this and similar problems from happening?**
 - Run DB2 HAS after operating system upgrades
 - Run DB2 HAS regularly (e.g., on a monthly basis)



Simple to Use: How easy is easy?

- No install, no configuration required
- Type in 60-70 characters and get a detailed report

Run the DB2 Health Advisor Service on-site data collector:

```
db2has -icn 123456 -systype "test" -email "email@somecompany.com" -send
```

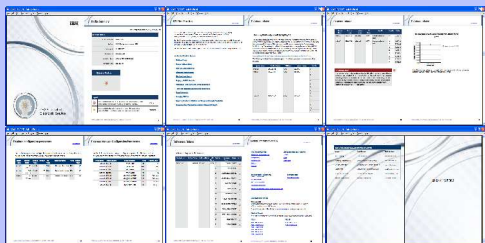
IBM Customer Number

System Type
(production, test, DR)

Email that will receive the report

FTP to IBM's support site

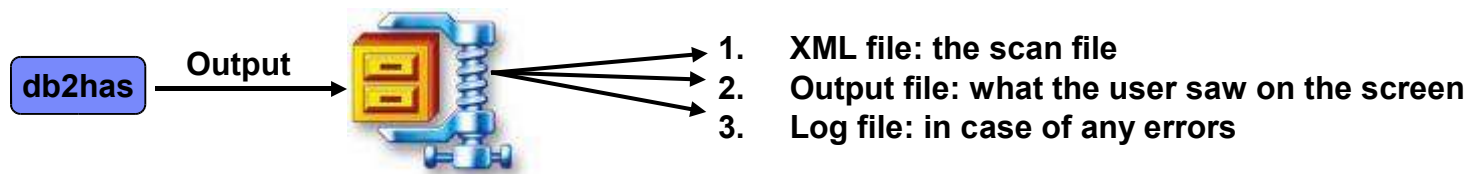
Report is sent to the requested email address



"email@somecompany.com"

The Data Collector

- **Shipped with DB2 (in 9.1 and 9.7, 9.5 coming)**
- **Collect 3 types of information**
 1. Environment: OS, hardware, patches, etc
 2. DB2 configuration
 3. Workload: light weight KPIs (those related to PMRs)
- **Simple and Non-intrusive**
 - Independent of DB2 installations
 - Performance impact < 0.07% (TPC-C)
 - Typically 1-10 MB output archive file
 - Can ftp directly to IBM's support web site.



Support as a Software Service

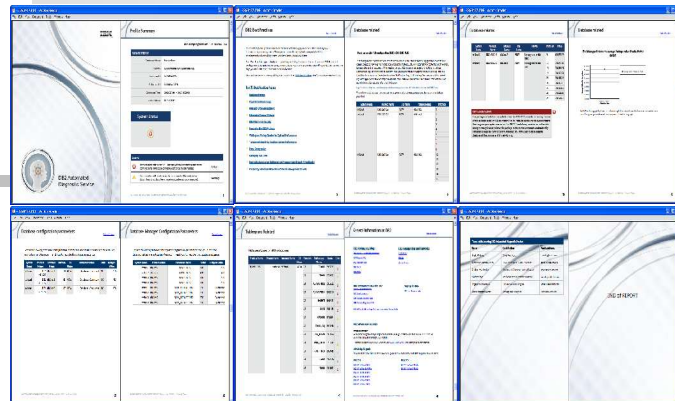
Low/No Risk and High Value

DBA, IT Manager, CTO



Receive Health Check Report

Professional Report with Recommendations



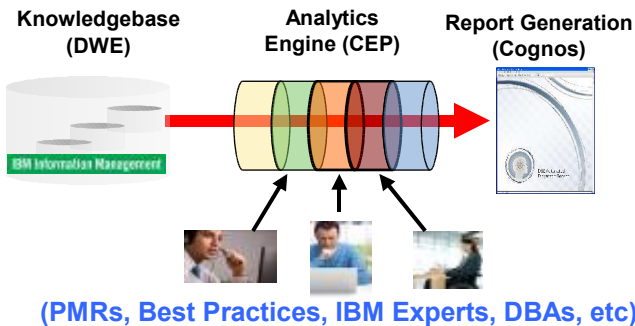
Information about Environment, Configuration and Workload



db2has

Send to IBM Health Advisor Service

Back At IBM...

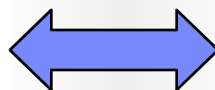


Experience:

- Non-intrusive
- Fast: usually 1-2 minutes
- Small: ~1-10MB output
- Any version or fixpack
- Easy to deploy
- Nothing to maintain

What's collected:

- Patch levels
- Configuration
- Workload information
- Operating System details
- Firmware levels
- Diagnostic information



Analysis and Intelligence

- Proactive outage avoidance
- Basic configuration tuning
- Common mistakes
- End of service warnings
- Prerequisites checking
- Log and stack analysis
- Compare (what changed?)

Technology

- Built on IBM technology
- Leveraging IBM research
- DB2, Cognos, Complex Event Processing, etc
- 90% Back at IBM to reduce customer impact



Report: Simple, clean, valuable, professional

- Reports are usually in the range of 15-60 pages. Sample:

The image displays a series of 10 screenshots from an IBM DB2 Automated Diagnostic Service report, arranged in a grid. Each screenshot shows a different section of the report, which is presented in a clean, professional layout. The sections include:

- Profile Summary:** Shows customer information (Frank Tam, IBM Watson) and system status.
- DB2 Best Practices:** Provides recommendations for optimizing DB2 performance, such as enabling log file history and monitoring the Administration Configuration log.
- Database related:** Contains tables of database configurations and a graph showing average package cache hit ratio.
- Database configuration parameters:** Lists various parameters like 'Database/Commitment' and 'Database/Consistent' with their values and default values.
- Tablespace Related:** Shows a list of tablespaces with details like 'Product Name', 'System Name', and 'Instance Name'.
- General information on DB2:** Includes community links, DB2 communities and networks, and information links for the DB2.
- Team behind IBM DB2 Automated Diagnostic Service:** Lists team members like Mark Waring, Srinivas Jambhale, and Srinivas Manjunath with their roles and contact information.

The final screenshot on the right shows the text "END OF REPORT".



Health Check Table

- A high level overview of system and DB2 health
- DBAs that have well configured instances get confirmation
- Hyperlinks jump to specific sections/recommendations in the report
- DBAs have something to show their management!

test88-2009-04-30-05.55.06-ADSR.PDF - Adobe Reader

File Edit View Document Tools Window Help

3 / 8 75% Find

DB2 Server - Health Check Table

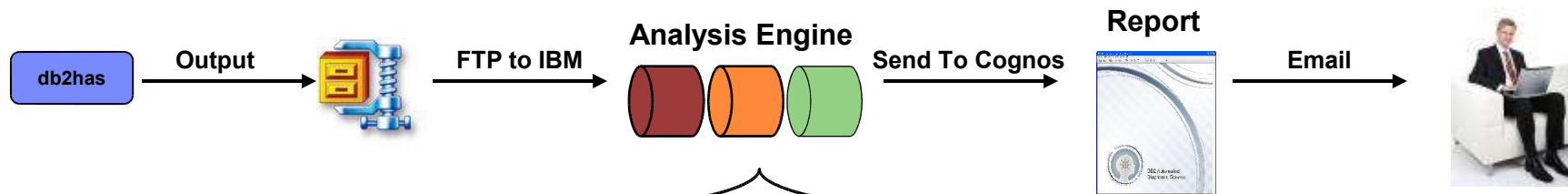
Software and Hardware Level Check	Sub Category	Status	Comments
Operating System and Software Version	Base OS Version	✓	Passed
	Installed Packages	✓	Passed
DB2 Version	End of Support	✓	Passed

Operating System	Sub Category	Status	Comments
Memory	CPU Memory	ⓘ	1 Potential Improvement(s)
	Shared Memory	✓	Passed
File System	Files and Permissions	✓	Passed

Product Health Check: DB2 LUW	Sub Category	Status	Comments
General Health	Instance Configuration	ⓘ	1 Potential Improvement(s)
	Database Configuration	✓	Passed
	Registry Variables	✓	Passed
	Database Logs	✓	Passed
	Performance and Capacity	✓	Passed
	Tablespace Usage	✓	Passed
	Tablespaces/ Bufferpools	✓	Passed

Additional Features	Sub Category	Status	Comments
Availability Optimization	Recommended Levels	✓	Passed
Historical Comparison	Previous Scan Comparison	✓	Passed

DB2 Health Advisor: Remote proactive/reactive support



Feature	Description
Availability Optimization	Checks for known outage factors (~20%)
Recommend SW Check (OS, Java, etc)	Check for minimum and recommended software levels
Tuning Check (based on PMRs)	General tuning based on configuration and KPIs
End of Support	Warnings indicating end of standard support is near
Rules of Thumb	Optimal hardware ratio, etc
Resource Utilization	Out of memory, disk, paging rates, etc
Comparison Feature	Comparison to previous scan or comparison to similar system
TCO analysis	Checks for cost reduction best practices
Log Analysis	Analysis of db2diag.log (coming for 2Q/2010)
OS configuration	Checking of OS tuneables (enhancements for 2Q/2010)
Difference from "normal"	2H, 2010
Stack matching to APAR	2010



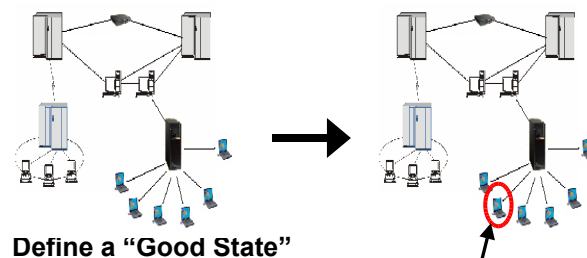
Usage Scenarios

Proactive Support

- Once a month as a regular check up
- Before going live with a new line of business
- To validate a configuration
- To receive targeted notifications from IBM



System or Historical Comparison



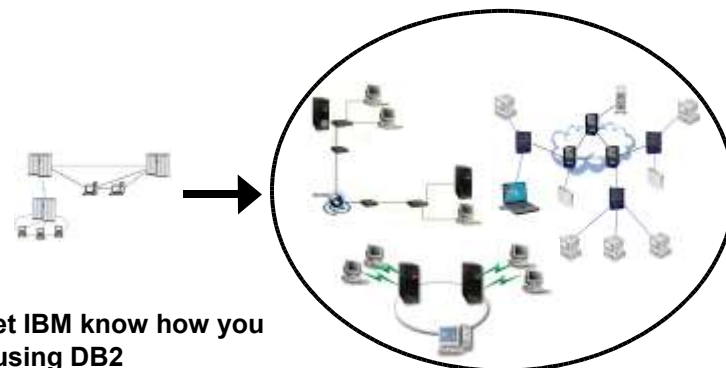
- Comparisons can quickly identify differences that cause changes

Reactive Support

- PMR avoidance
- Light weight, can be run any time
- To validate a configuration
- Report is received automatically
- Note: **This is in development**



Environment, Configuration and Usage



- To let IBM know how you are using DB2
- To help ensure new DB2 features and enhancements take your DB2 usage and environment into account.



How does this compare with...

- **Complimentary to Lab Services**
 - Does not replace an on-site visit but rather focuses on preventative issues
 - DB2 Health Advisor Service includes an option to request IBM services
 - “-engagement <services>[:<email>]”
- **Complimentary to IBM DB Administration Tools (Optim Data Studio, etc)**
 - IBM DB Administration tools are for day-day use and can drill down on more complex issues
 - DB2 Health Advisor is not a day-day tool (no “live” UI)
 - DB2 Health Advisor can identify issues and confirm best practices for the OS and for DB2
- **DB2 Health Advisor Service is based on support related issues and problem avoidance**



Feedback: DB2 Health Advisor Service



- **Initial feedback from DB2 clients:**
 - “I have been waiting for this for years”
 - “I like this service a lot...”
 - “We are enthusiastic...”
 - “I recommend this service to any DBA, team lead or manager of DBA's who support DB2 LUW environments...”
- **Health Advisor Service: Valuable and Simplicity**
 - Impact on system is negligible
 - Receive detailed report in an hour or less
 - Recommendations based on IBM best practices and support issues
 - Proactively identify potential issues
- **There is real value and yet it is FREE and EASY!**



Feedback from a major U.S. insurance company

- **Data collection**
 - db2has has been run against several environments
 - “It did not have negative impact on our environments when we run it”
 - “The program is easy to install and simple to run”
- **Analytics**
 - “In most cases it confirmed what we already knew about our environments and that the best practices that we implemented in recent years are in line with what IBM recommends. In some cases however, we discovered there were some subtle differences in our interpretation of these best practices compared to the results reported by the DB2 Health Advisor Service”
 - **“We made some changes, tested the results and improved performance in our DB2 LUW environments”**
 - “I implemented a fixed value for catalog cache instead of the -1 default that is 5 times MAXAPPLS which was set to AUTOMATIC. This was not performing as well as the fixed value and **we are measuring higher catalog cache hit ratios**”
 - “Another change implemented was to set the max requester I/O block size to 65535 on our application servers so that the ETL (extract, translate and load) connections through the DB2 Client on the application servers is blocked at the same level as the database servers. We were not aware that having the default size of 32767 for the DB2 client and 65535 for the DB2 server caused the server to change back to 32767 every time information was exchanged between the servers. **Our application teams have seen an improvement in the ETL job performance** due to this change and our network team reported a decrease in the number of packets exchanged between the servers”
- **“I am very pleased with the results”**



Getting started...

Release/fixpack	When	How to use
DB2 9.7, fixpack 1	Now (as of November 26, 2009)	Just run it!
DB2 9.5, fixpack 6	Coming soon...	Just run it (once available)!
DB2 9.1, fixpack 9	Now (as of April 8, 2010)	Just run it!

- **For earlier fixpacks, get started now by downloading from the official IBM download website:**
 - <https://www.ibm.com/services/forms/preLogin.do?source=swg-beta-db2hasvc>
 - IBM ID is needed to access a download webpage
- **Questions/comments:** db2has@ca.ibm.com
 - This goes directly to the DB2 HAS development team



Summary

DB2 Health Advisor provides real value

- Based on expertise from around IBM
- Broad set of automated recommendations
- Designed to make DBA's lives easier

It's **FREE**. It's **EASY**.

- Low/no impact
- Ultra-simple

Get started in minutes

- It is either already installed or easy to get



See what it finds on your systems!

> Questions



Additional Info and FAQ



FAQ

- **Q: Where do I get more information on DB2 Health Advisor Service?**
 - A: Data collector, db2has, is documented in DB2 InfoCenter where command line options and examples of usage are described. Another way to get information on tool's usage is help pages. To get a list of available options, issue the "**db2has -help**" command. To get detailed help on all options run the "**db2has -help all**". To get help on tool's usage and to see examples, issue the "**db2has -help examples**" command
- **Q: What does the service do? What types of things does it check?**
 - A: DB2 HAS data collector, db2has, is run by an instance owner to collect information about a DB2 server and its operating environment. The following checks are performed:
 - The Prerequisite Check on hardware, operating system, software and service packs
 - The Availability Optimization can identify roughly 20% of the future outages before they occur. The check is performed to validate the recommended operating system settings, memory and disk space, OS resources, etc.
 - The Performance Check which helps in tuning the DB2 parameters/KPIs (key performance indicators), which might improve the overall DB2 system performance
 - The Comparison of the current system state to the previous. It helps in highlighting the differences between good and a bad state of the system
 - The Log Analysis helps in analyzing the DB2 diagnostic log for various ADM messages. It also provides recommendations using Tivoli's log and trace analyzer
 - The check on Cost Reduction that helps in reducing the actual cost of DB2 system



FAQ (cont.)

- **Q: Is there a detailed list of system requirements?**
 - A: Executables are about 5-6 MB in size. The tool usually requires about 120-150 MB of memory to run. Output files are usually less than 10 MB but on very large systems they could be up to 200-300 MB. Zip files are usually in the range of 0.5-10 MB
- **Q: Why db2has is not supported on Windows platform?**
 - A: Due to technical differences/gaps between Windows and Unix there is no Windows version today. More specifically, due to the non-intrusive requirements for the data collector, the design requires some special considerations at the operating system layer. The non-intrusive methods used are standard across the Linux, AIX and Unix platforms but unique and more difficult on Windows. IBM and DB2 are fully committed to the Windows platform and the data collector will support Windows as soon as the same level of non-intrusiveness is achieved
- **Q: What is the benefit to me of sending the data back to IBM?**
 - A: The data collected will be analyzed and various health checks will be performed. All findings together with our recommendations will be put into a PDF report which will be sent back to you



FAQ (cont.)

- **Q: How often should I run the service?**
 - A: On average once a month would be enough. It is recommended to run the service at least once after migrating to a new release/fixpack and/or before moving to production from a test system. It is also recommended to run the service to get a scan of a system that performs well so this scan would serve as a baseline for subsequent scans
- **Q: Does the data collector sample over a period of time?**
 - A: Not at the present time although this feature could be added over a time
- **Q: Can I use data collector from DB2 version X on DB2 version Y?**
 - A: Yes, the data collector executable can be run on systems with various DB2 versions installed provided that OS level is compatible between releases for supported hardware
- **Q: What impact/overhead does the data collector have?**
 - A: Data collector has a very small performance impact. It was measured as less than 0.07% when running the data collector during the TPCC benchmark workload. With the lowest priority set during the same test performance impact was negligible



FAQ (cont.)

- **Q: What type of information gets sent back to IBM?**
 - A: Information about operating system environment (CPU, memory, disks, file systems, network, etc.) and DB2 operating environment (db2level, registry variables, output of various db2pd commands, dbm and db snapshots, diagnostic logs, trap files, etc.) is collected. It's just metadata... no actual data from database tables is collected
- **How can I see the information that is being sent to IBM?**
 - A: The db2has data collector creates compressed file, `db2has_hostname_timestamp.zip`, in the default working directory, `~/sqllib/db2hasdir`. The collected data will be stored in the XML format inside the zip archive in the `db2has_hostname_timestamp.xml` file. This file can be easily extracted and examined
 - A: We encourage people to look at the XML file
- **Q: Is network information collected?**
 - A: Yes. But this specific collection can be skipped
- **Q: Can I disable the network information?**
 - A: Yes. To disable gathering the network information add the "-exclude IP" option



FAQ (cont.)

- **Q: How do I send the data back to IBM?**
 - A: To send the data to IBM one should use the -send option. The data will be uploaded to ECuRep (Enhanced Customer Repository) site from where it will be sent to DB2 HAS server. Another option could be to send e-mail with the resulting zip file from the ~/sqllib/db2hasdir directory to db2has@ca.ibm.com
- **Q: What do I do if I have a firewall and -send doesn't work?**
 - A: One could ftp the resulting zip file from the ~/sqllib/db2hasdir directory to ECuRep repository at ftp://anonymous@ftp.ecurep.ibm.com:21/toibm/im. Another option could be to send e-mail with the zip file as an attachment to db2has@ca.ibm.com
- **Q: What about systems without Internet access?**
 - A: Using email gateway: db2has@ca.ibm.com
 - A: ftp proxy or redirect will work
- **Q: Why is all of the technology back at IBM?**
 - A: To eliminate any installation and maintenance costs



FAQ (cont.)

- **Q: Is this a free service?**
 - A: Yes. This is a free service
- **Q: Will IBM charge for this service at some point once we're using this?**
 - A: IBM reserves the right to charge for this service in future but currently there are no such plans
- **Q: Is the information used for any other purpose (e.g. license compliance checking)?**
 - A: No. There is no license checking and no plans for license checking
- **Q: Does the data ever get deleted?**
 - A: The data is not deleted. Having historical data allows for more accurate analysis and to find problems that may occur between scans
- **Q: How long does it take to get a report?**
 - A: It could take from less than an hour up to a day or two depending on the method of sending a scan to DB2 HAS server (ftp or e-mail) and also on the number of scans that are currently in server's queue

Thank You!

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Thank you for attending!

