

DB2 10 for z/OS High Availability Updates for Distributed Access

Shivram Ganduri
IBM, Senior Software Engineer

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Agenda

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- *Cancel thread improvements.*
- *Optional Domain name*
- *Distributed Correlation Enhancements*
- *Knowing in real time how a DBAT is performing relative to its goals.*
- *Location stats Enhancements*

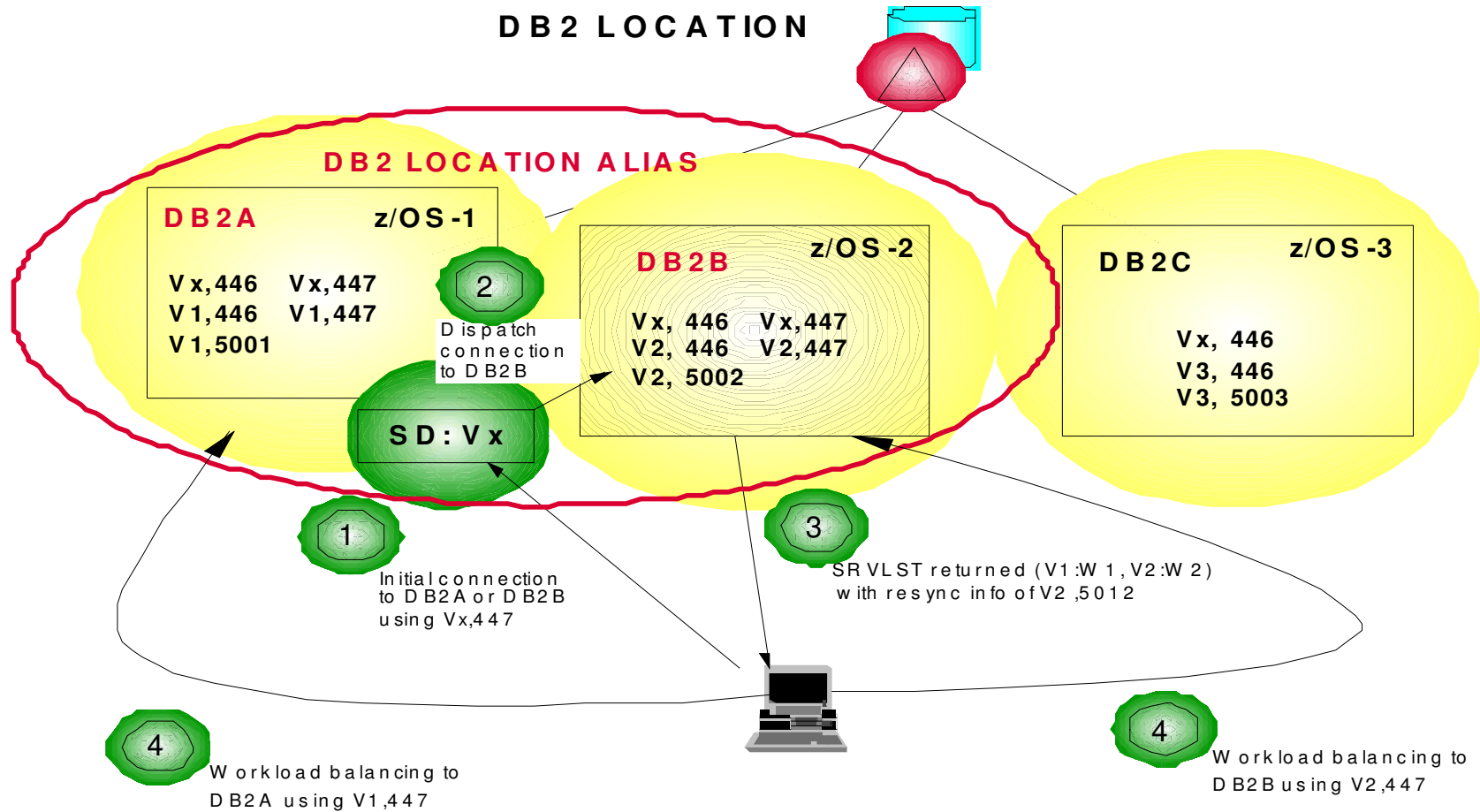
Location Aliases (Used for subsetting within a data sharing group)



By designating subsets of members, you can perform the following tasks:

- Limit the members to which DRDA clients can connect. System and database administrators might find this useful for any number of purposes.*
- When adding DB2 to a data sharing group, you can create an alias for the DB2's new group location name that matches with its old subsystem location name. Doing so enables applications that are coded to connect to the member's old location name and port to continue to work.*

Subsetting configuration



Types of location aliases

- **Static location aliases**

You can use DSNJU003 (change log inventory) utility to define and modify as many as 8 static location aliases. Changes to these aliases require you to stop both DDF and DB2, thus requiring an outage.

- **Dynamic location aliases (New in v10)**

You can use the MODIFY DDF command with the ALIAS option to define and manage as many as 40 location aliases dynamically. You can start, stop, cancel, change, and delete dynamic location aliases without stopping either DDF or DB2. These aliases cannot be defined or managed by the DSNJU003 utility, and the DSNJU004 utility does not print any information about them. You have to use the DISPLAY DDF command to find information about these aliases. Before you can define dynamic location aliases, DB2 must be started, but DDF may or may not be started.

Benefits of dynamic aliases

- **More number of aliases and the ability to manage them dynamically** Unlike aliases configured and managed statically using DSNJU003 after bringing down DB2, dynamic aliases can be configured and managed dynamically, that is, without stopping DB2 or DDF, using the –MODIFY DDF command with the ALIAS keyword. Upto **40** dynamic aliases (in addition to the 8 static aliases) can be defined.
- **Control the IP address returned in the server list :** You can use the –MODIFY DDF command to dynamically control the IP addresses returned in the server list which is used for sysplexWLB and failover.
- **Managing poorly performing app servers :** One can control which members are used for different applications by associating a location alias with an application. One can then use the –MODIFY DDF command with the ALIAS option to control which members are included in the subset dynamically without stopping DB2 or DDF. Thus, dynamic location aliases provide the ability to dynamically manage the group resources used by an application.

-MODIFY DDF ALIAS options (Alias Configuration)



- **ADD**
Creates an alias with the specified name.
- **DELETE**
Deletes the specified alias, if one exists.
- **PORT**
Adds or replaces an existing port that can be used by DDF to accept distributed requests for the specified alias.
- **SECPORT**
Adds or replaces an existing secure port that can be used by DDF to accept secure distributed requests using SSL for the specified alias.
- **NPORT**
Deletes the alias port, if one exists.
- **NSECPORT**
Deletes the alias secure port, if one exists.

-MODIFY DDF ALIAS options (Alias Configuration) - Continued



- **IPV4**
Adds or replaces an existing IPv4 address that can be returned to clients as part of the weighted server list when they connect to the specified alias.
- **IPV6**
Adds or replaces an existing IPv6 address that will be returned to clients as part of the weighted server list when they connect to the specified alias using an IPv6 address.
- **NIPV4**
Deletes the alias IPv4 address, if one exists.
- **NIPV6**
Deletes the alias IPv6 address, if one exists.

-MODIFY DDF ALIAS options (Alias Management)



- **START** : DB2 starts accepting connection requests to the specified alias, if DDF is up. If DDF is not up, then the alias is marked eligible for starting so that it automatically starts when DDF starts next time. If DB2 is part of a data sharing group, DB2 registers the alias with WLM and connections will include this DB2 in sysplex workload balancing.
- **STOP** : DB2 stops accepting new connection requests to the specified alias. Existing data base access threads processing connections to the specified alias are allowed to complete their processing before the alias is stopped. An alias that is stopped is not started automatically when DDF starts. Aliases created by the -MODIFY DDF command are stopped, by default. If DB2 is part of a data sharing group, DB2 unregisters the alias with WLM and DB2 is no longer included in sysplex workload balancing. Inactive connections to the alias are automatically closed.
- **CANCEL** : DB2 stops accepting new connection requests to the specified alias. Existing data base access threads processing connections to the specified alias are cancelled. An alias that is cancelled is not started automatically when DDF starts. If DB2 is part of a data sharing group, DB2 unregisters the alias with WLM and DB2 is no longer included in sysplex workload balancing. Inactive connections to the alias are automatically closed.

Examples :

-MODIFY DDF ALIAS(alias1) ADD

Alias1 is created and is stopped by default.

-MODIFY DDF ALIAS(alias1) PORT(9000)

Alias1 is associated with port 9000.

-MODIFY DDF ALIAS(alias1) IPv4(2.2.2.2)

Alias-specific IP address added for alias1.

-MODIFY DDF ALIAS(alias1) START

DDF will accept requests for alias1 on port 9000. When a client connects to alias1, IP address 2.2.2.2 is returned in the server list.

-MODIFY DDF ALIAS(alias1) STOP

Alias1 is stopped and will not accept new requests. Existing requests will be allowed to complete.

Displaying location alias-specific information

-DISPLAY DDF ALIAS(*alias1*) DETAIL

DSNL080I @ DSNLTDDF DISPLAY DDF (*alias1*) REPORT FOLLOWS:

DSNL087I ALIAS PORT SECPORT STATUS

DSNL088I ALIAS1 9000 5005 **STARTD**

DSNL089I MEMBER IPADDR=::2.2.2.2

DSNL089I MEMBER IPADDR=2002:91E:610::1

DSNL096I ADBAT= 100 CONQUED= 1000 TCONS= 1000

DSNL100I LOCATION SERVER LIST:

DSNL101I WT IPADDR IPADDR

DSNL102I 32 ::2.2.2.2 2002:91E:610::1

DSNL102I 32 ::1.2.3.4

DSNL099I DSNLTDDF DISPLAY DDF REPORT COMPLETE

ADBAT : The number of active data base access threads (DBATs) that are currently processing requests on behalf of the specified alias.

CONQUED : The number of connection requests that are currently queued and waiting to be serviced on behalf of the specified alias.

TCONS : The total number of remote connections that are currently associated with the alias.

Online CDB (Communications DataBase)

- Updates to the CDB tables used to establish TCP/IP connections, specifically, SYSIBM.LOCATIONS, SYSIBM.IPNames and SYSIBM.IPLIST are picked up dynamically, without requiring DDF client to be recycled. Updates do not affect existing connections. Updates take effect for a new connection requested by a new or an existing application. You can use the –DISPLAY LOCATION command to determine which connections to the location are using the updated values. The command output has been enhanced to provide the connection attributes as follows :
 - **AES**
Using security credentials with AES encryption.
 - **TLS**
SSL using Application Transparent-Transport Layer Security (AT-TLS).
 - **WLB**
Using workload balancing connections
 - **IPS**
Using IPSec
 - **TRS**
Using trusted context
 - **XA**
Using XA transaction manager processing.

Cancel Thread improvements



More cancel detection points have been added in DB2, including in areas like sort and work file processing to catch more runaway threads. The goal is to reduce wasted CPU cost that will never be materialized to applications.

Optional Domain name

- *Previously, we did not allow DB2 to process TCP/IP requests without configuring a domain name, even when the IP address that domain name maps to is always fixed.*
- *In v10, for users that specify fixed IP addresses in the DB2 BSDS, a domain name is no longer required to be configured to process TCP/IP requests.*
- *When a domain name is unavailable, A DSNL523I message that contains the BSDS-specified IP address will be issued, in lieu of a DSNL519I message to indicate that DDF is ready to accept requests for that IP address.*

Distributed Correlation - Enhancements

Previously, the correlation token used to correlate work between the client and server was only externalized in DB2 accounting data and not in DB2 messages making it impossible for users to correlate message related failures to the remote client application that is involved in the failure.

In v10, the THREAD-INFO description for key messages will include this token, which will be enclosed in '<' and '>' characters, and contains three components, separated by a period:

- A 3 to 39 character IP address.
- A 1 to 8 character port address.
- A 12 character unique identifier.

Example :

```
DSNL027I > SERVER DISTRIBUTED AGENT WITH  
LUWID=G91702F8.P853.100629180434=4  
THREAD-INFO=ADMF001:mask:admf001:db2bp:*:*:*:  
  <9.23.2.248.38995.100629180434>  
RECEIVED ABEND=04E  
FOR REASON=00D3001A
```


Knowing in real time how a DBAT is performing relative to its goals



- You can use the **–DISPLAY THREAD** command to find out the following WLM characteristics associated with the DBAT (separated by a colon)
 - **Service Class Name** – Named group of work with similar goals and resource requirements.
 - **Service class Period Number** - Performance periods are available for work that has variable resource requirements and for which your goals change as the work uses more resources. You specify a goal, an importance, and a duration for a performance period. You can specify up to eight performance periods.
 - **Importance Level of the period** - The relative importance of the service class period goal. Only used when goal is not being met. The value can be 1-5, 1 being the highest importance.
 - **Performance Index of the service class period** - A calculation of how well work is meeting its goal. For work with response time goals, PI is the actual divided by goal.
 - $PI=1$ (period is exactly meeting its goal)
 - $PI<1$ (period is beating its goal)
 - $PI>1$ (period is missing its goal)

Example

-Display Thread(*) Type(Active) Detail

DSNV401I > DISPLAY THREAD REPORT FOLLOWS -
DSNV402I > ACTIVE THREADS -
NAME ST A REQ ID AUTHID PLAN ASID TOKEN
TEST0001 RA * 1 CTHDCORID001 SYSADM DONSQL1 0050 6
V441-ACCOUNTING=HADERLE
V482-WLM-INFO=DDFSVCLS:1:5:1.1
V442-CRTKN=9.30.113.201.5001.C68EA0176B20
V445-USIBMSY.SYEC717A.C68EA0176B20=6 ACCESSING DATA FOR
(1)::FFFF:9.30.113.201
V447--INDEX SESSID A ST TIME
V448--(1) 447:1027 W R2 1025213462763
DISPLAY ACTIVE REPORT COMPLETE
DSN9022I - DSNVDT '-DISPLAY THREAD' NORMAL COMPLETION

Location Stats – Enhancements

- **24/7 availability and bigger counters** : Previously stat counters were 4 bytes and wrapped quickly. For 24/7 availability, counters have been extended to 8 bytes.
- **New IFCID 365 (class 7)** : Previously, stats for all locations were grouped under DRDA REMOTE LOCS and written to SMF every minute. With IFCID 365, stats can be displayed by location and written to SMF at the interval specified by zPARM STATIME.

Format of the IFCID 365 record

- It is made up of a header field, QW0365HE, and a repeating record structure (QW0365).
- The format of the header is :
 - **Field 1** - Contains the count of the locations in the trace record
Upto 95 locations can be written in one record.
 - **Field 2** – Contains X'80' if another IFCID365 record follows the current one, or blanks, if this is the only or last one.

Thank
You