

# Technote: Veritas InfoScale 7.4.1 Agent for IBM DB2 - Windows

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# InfoScale agent for IBM DB2

This document includes the following topics:

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## How the InfoScale agent makes DB2 instances highly available

The InfoScale agent for IBM DB2 provides the ability to configure DB2 instances for high availability (HA). The agent monitors the configured DB2 instances and the cluster nodes on which the instances are running. If an instance or the node on which it is running fails, the agent detects the failure and takes the instance offline. The Cluster Server (VCS) component of the InfoScale Availability or the InfoScale Enterprise product moves the failed instances to another node.

The agent supports multiple DB2 instances on single node. However, it supports only single-partition databases and not multi-partitions databases.

Additionally, the agent also performs detail monitoring of an instance, if you configure it. It lets you specify the list of databases for which to perform detail monitoring.

For details on other InfoScale agents, refer to the *Cluster Server Bundled Agents Reference Guide*.

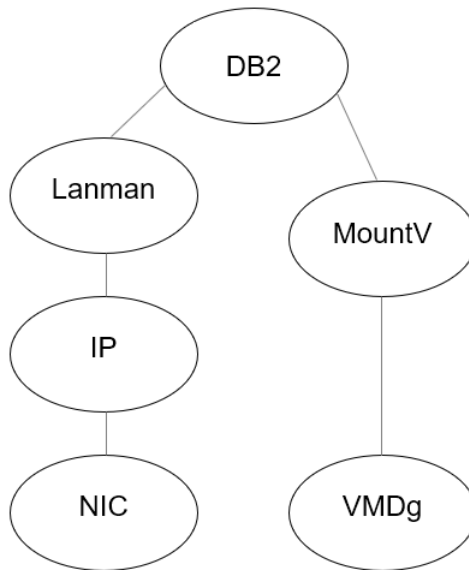
For details on configuring clusters and service groups for various resources, refer to the *Cluster Server Administrator's Guide*.

## InfoScale agent for DB2

VCS agent for DB2 monitors DB2 instances to identify the status of the service. The agent also bring the instance online, takes it offline.

### Dependencies

The following graphic depicts the resource dependencies in a DB2 service group:



### Functions

Function	Description
Online	Starts the DB2 instance service.
Offline	Stops the DB2 instance service.

Function	Description
Monitor	<ul style="list-style-type: none"> <li>■ <b>Basic monitoring</b> Verifies whether the DB2 instance service is running, and: <ul style="list-style-type: none"> <li>■ if the service is running, the agent displays the status of the service group as ONLINE.</li> <li>■ if the service is stopped, the agent displays the status of the service group as OFFLINE.</li> <li>■ if the status if the service cannot be determined, the agent displays the status of the service group as UNKNOWN.</li> </ul> </li> <li>■ <b>Detail monitoring</b> The agent attempts to connect to the database that is specified in the DBList attribute. If the connection succeeds, the agent displays the status of the service group as ONLINE. If the connection fails, and: <ul style="list-style-type: none"> <li>■ if the FaultOnDMFailure attribute is set to 1 (true), the agent displays the status of the service group as OFFLINE.</li> <li>■ if the FaultOnDMFailure attribute is set to 0 (false), the agent displays the status of the service group as UNKNOWN.</li> </ul> </li> </ul>

## State definitions

State	Description
ONLINE	Indicates that the DB2 instance service is running.
OFFLINE	Indicates that the DB2 instance service is not running.
UNKNOWN	<ul style="list-style-type: none"> <li>■ In case of basic monitoring, indicates that the status of the DB2 instance service cannot be determined.</li> <li>■ In case of detail monitoring, indicates either one of the following: <ul style="list-style-type: none"> <li>■ The status of the DB2 instance service cannot be determined.</li> <li>■ The connection to the DB2 instance has failed.</li> </ul> </li> </ul>

## Attributes

**Table 1-1** Required attributes

Attribute	Description
InstanceName	Name of the DB2 instance that is configured for HA.
LanmanResName	Name of the Lanman resource on which the DB2 resource depends.

**Table 1-2** Optional attributes

Attribute	Description
InstancePath	Location of the DB2 instance, for example, C:\Program Files\IBM\SQLLIB.
DetailMonitorInterval	Defines whether the agent performs detail monitoring of the SQL Server instance.  The value 0 (zero) indicates that the agent performs only the basic monitoring of the instance service. A non-zero value indicates the number of monitor cycles that the agent must wait before performing detail monitoring. For example, the value 5 indicates that the agent should perform detail monitoring after every fifth monitor cycle.
DBAdmin	Name of a user who has the necessary permissions to connect to the database.
Domain	Domain of the user account that is specified in the DBAdmin attribute.
Password	Password for the user account that is specified in the DBAdmin attribute.
DBList	List of databases for which the agent should perform detail monitoring.
FaultOnDMFailure	Defines whether the agent faults the DB2 instance resource when the detail monitoring fails.  The value 1 indicates that the agent should fail over the service group if detail monitoring fails to execute. The value 0 indicates that the agent should not fail over the service group, but set its state to UNKNOWN.  Default value: 0

## Resource type definition

```
type DB2 (
    static i18nstr ArgList[] = { InstanceName,
        "LanmanResName:VirtualName", InstancePath,
        DetailMonitorInterval, DBAdmin, Domain,
        Password, DBList, FaultOnDMFailure }
    str InstanceName
    str LanmanResName
    str InstancePath
    int DetailMonitorInterval
    i18nstr DBAdmin
```

```
    i18nstr Domain
    str Password
    i18nstr DBList[]
    boolean FaultOnDMFailure = 0
)

```

## Samples configurations

The following is a snippet of an HA configuration for a DB2 instance with basic monitoring:

```
group SG1 (
    SystemList = { VCSWIN07-V11 = 0, VCSWIN07-V12 = 1 }
    AutoStartList = { VCSWIN07-V11, VCSWIN07-V12 }
)

DB2 res_db1 (
    InstanceName = DB2
    LanmanResName = res_lanman
)

IP res_ip (
    Address = "10.209.58.133"
    SubNetMask = "255.255.252.0"
    MACAddress @VCSWIN07-V11 = 00-0C-29-59-3B-44
    MACAddress @VCSWIN07-V12 = 00-0C-29-10-6C-8C
)

Lanman res_lanman (
    VirtualName = LANDB
    IPResName = res_ip
    DNSUpdateRequired = 1
)

MountV res_mountv1 (
    MountPath = "Z:\\\"
    VolumeName = vol
    VMDGResName = res_vmdg1
)

NIC res_nic (
    MACAddress @VCSWIN07-V11 = 00-0C-29-59-3B-44
    MACAddress @VCSWIN07-V12 = 00-0C-29-10-6C-8C
)

```

```
VMDg res_vmdg1 (  
    DiskGroupName = DG  
)  
  
res_db1 requires res_lanman  
res_db1 requires res_mountv1  
res_ip requires res_nic  
res_lanman requires res_ip  
res_mountv1 requires res_vmdg1  
  
// resource dependency tree  
//  
//   group SG1  
//   {  
//     DB2 res_db1  
//     {  
//       Lanman res_lanman  
//       {  
//         IP res_ip  
//         {  
//           NIC res_nic  
//         }  
//       }  
//     }  
//     MountV res_mountv1  
//     {  
//       VMDg res_vmdg1  
//     }  
//   }  
// }
```

The following is a snippet of an HA configuration for a DB2 instance with detail monitoring:

```
group SG1 (  
    SystemList = { VCSWIN07-V11 = 0, VCSWIN07-V12 = 1 }  
    AutoStartList = { VCSWIN07-V11, VCSWIN07-V12 }  
)  
  
DB2 res_db1 (  
    InstanceName = DB2  
    LanmanResName = res_lanman  
    InstancePath = "C:\\Program Files\\IBM\\SQLLIB"  
    DetailMonitorInterval = 1
```

```
Domain = "winvm.com"
Password = IULwOUvQIoJOkOL
DBList = { NEWDB, NEWDB2, NEWDB1 }
DBAdmin = TestAdmin
)

IP res_ip (
  Address = "10.209.58.133"
  SubNetMask = "255.255.252.0"
  MACAddress @VCSWIN07-V11 = 00-0C-29-59-3B-44
  MACAddress @VCSWIN07-V12 = 00-0C-29-10-6C-8C
)

Lanman res_lanman (
  VirtualName = LANDB
  IPResName = res_ip
  DNSUpdateRequired = 1
)

MountV res_mountv1 (
  MountPath = "Z:\\\"
  VolumeName = vol
  VMDGResName = res_vmdg1
)

NIC res_nic (
  MACAddress @VCSWIN07-V11 = 00-0C-29-59-3B-44
  MACAddress @VCSWIN07-V12 = 00-0C-29-10-6C-8C
)

VMDg res_vmdg1 (
  DiskGroupName = DG
)

res_ip requires res_nic
res_lanman requires res_ip
res_mountv1 requires res_vmdg1
res_db1 requires res_lanman
res_db1 requires res_mountv1

// resource dependency tree
//
//   group SG1
```

```
// {  
//   DB2 res_db1  
//   {  
//     Lanman res_lanman  
//     {  
//       IP res_ip  
//       {  
//         NIC res_nic  
//       }  
//     }  
//     MountV res_mountv1  
//     {  
//       VMDg res_vmdg1  
//     }  
//   }  
// }
```

## Considerations for configuring service groups for DB2 instances

Before you configure an HA service group for a DB2 instance, perform the following tasks:

- Ensure that you set the DB2 service instance to Manual.
- Ensure that you use the correct DB2 instance name for which to create the service group.

To identify the correct DB2 instance name

1. Open the DB2 command window.
2. Type `set DB2INSTANCE` and press **Enter**.

The value of DB2INSTANCE variable is the instance name.

3. Use this value for the InstanceName attribute of the agent.

## Upgrading DB2 version in a clustered environment

To upgrade the DB2 instances and the databases that are configured for HA in an InfoScale cluster, perform the following procedures:

### To upgrade DB2 version on the active node

- 1 Stop monitoring the DB2 instance.

```
hastop -all -force
```

- 2 Follow the standard procedure to upgrade the DB2 instance version.

On the **Install a Product** panel of the DB2 installer, ensure that you select the **Work with Existing** option.

For details, refer to the IBM DB2 documentation.

- 3 Start monitoring the DB2 instance again.

```
hastart -all
```

- 4 Upgrade the DB2 database using the following command:

```
db2 UPGRADE DATABASE databaseAlias USER userName USING  
userPassword
```

For example:

```
db2 UPGRADE DATABASE TestDatabase USER TestUser USING pwd@123
```

### To upgrade DB2 version on each passive node

- 1 Follow the standard procedure to upgrade the DB2 instance version.

On the **Install a Product** panel of the DB2 installer, ensure that you select the **Work with Existing** option.

For details, refer to the IBM DB2 documentation.

- 2 Switch the service group to the passive node and verify that the database connection is successful.

## Custom InfoScale utility for DB2

InfoScale provides a utility name `VxDB2Util.exe` to connect to a DB2 database instance.

The usage of the utility is as follows:

```
VxDB2Util.exe instanceName databaseName [instancePath]
```

If the utility returns the value 0 (zero), it indicates that connection to the database is successful.

The agent uses this utility to perform detail monitoring.

# Considerations for creating databases on shared disks in clustered environments

When you fail over a DB2 service group to another cluster node, the database that is created on first node is not recognized on the other nodes until you catalog the database.

Thereafter, catalog the database on each of the other nodes in the cluster as a one-time activity.

## To catalog a database

- 1 Create a DB2 database on a shared disk on the first node of the cluster.

Follow the instructions in the IBM support article at:

<https://www.ibm.com/support/pages/sql1052n-error-when-you-create-registry-services-database>.

- 2 After failover of the service group to the second node, run the following command on that node:

```
Db2 catalog database databaseName on databasePath
```

- 3 Repeat step 2 on every remaining node in the cluster.