

IBM Db2 Integrated Pacemaker 101

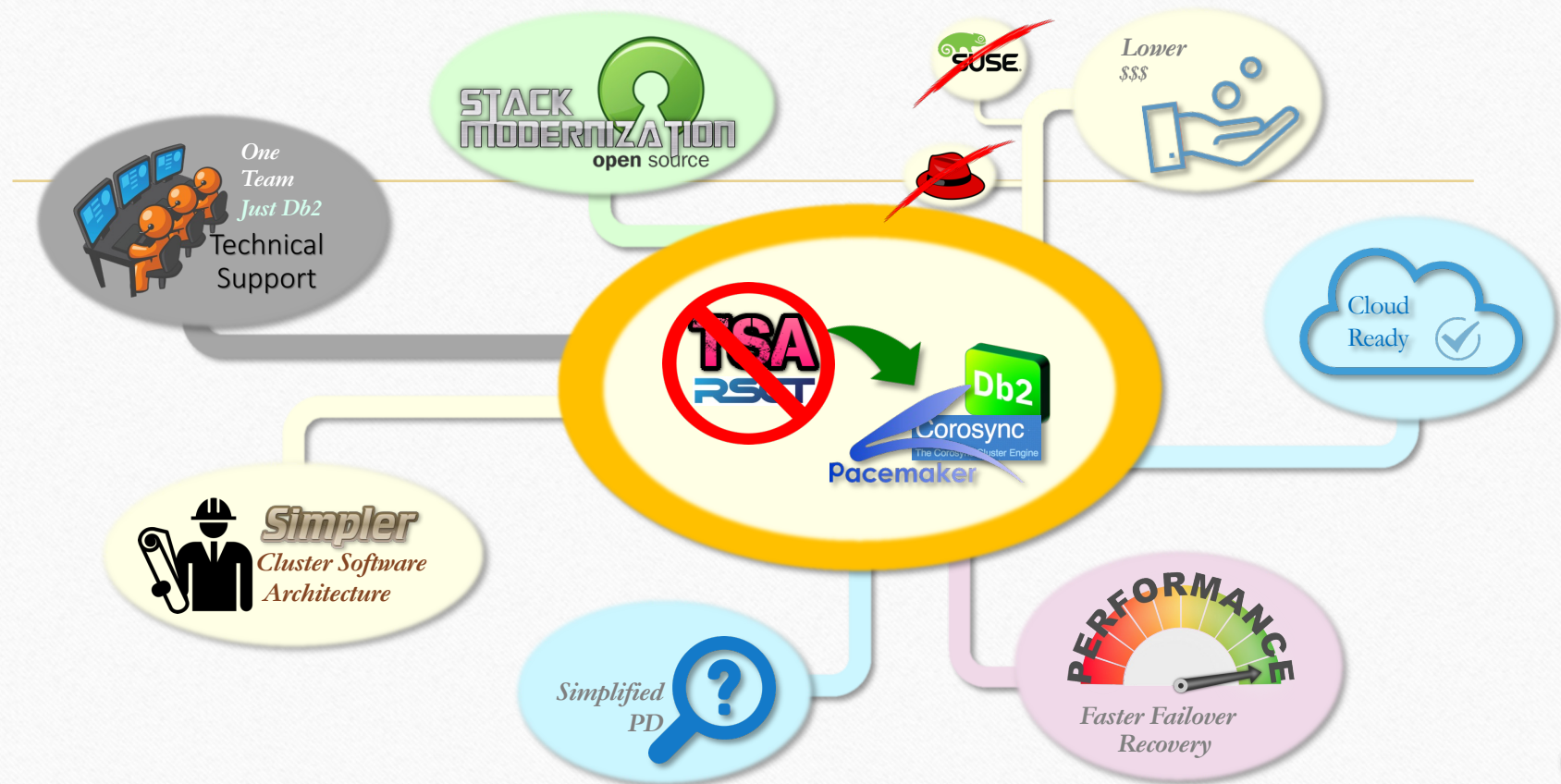
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Agenda

- Why Pacemaker
- Db2 Pacemaker Options
- Db2 Pacemaker Components
- Resource Agents
- Important Diagnostics
- Pacemaker Stack
- Pacemaker Decision Making
- Expected Behaviors
- Scenarios
 - Host Failure
 - Instance Failure
 - Monitor Timeout
 - Network Failure

The Value Propositions



Db2 Pacemaker Options

- Db2 v11.5
 - HADR
 - Mutual Failover (MF)
- Db2 v12.1
 - pureScale
 - DPF
 - HADR
 - MF

Pacemaker Components

- *Resource Model* - Db2 HA resource model is an overall plan/design to help ensure the HA setup stays up and running - Pacemaker options.
- *Resources* – these are components needed to be monitored to ensure the health of the cluster.
- *Resource agents* – these are opensource UNIX shell scripts modified and maintained by Db2. These scripts are responsible for monitoring the resources and taking actions to recover from specific failure
- *Constraints* – these are relationships among the resources defined by Db2.

Db2 Resource Agents

HADR	MF/DPF	pureScale
db2hadr	db2partition	db2cf
db2inst	db2fs	db2member
db2ethmon	db2ethmon	db2cfprimary
		db2idle
		db2ethmonitor
		db2instancehost
		db2mount_ss
		db2fence_ps

<https://www.ibm.com/docs/en/db2/12.1.x?topic=pacemaker-base-component>

Status Monitoring – 11.5

```
[root@pcmk-1159-db21 ~]# crm status
```

Cluster Summary:

- * Stack: corosync (Pacemaker is running)
- * Current DC: pcmk-1159-db22 (version 2.1.6-6.db2pcmk.el9-6fdc9deea29) - partition with quorum
- * Last updated: Sat May 9 06:06:52 2026 on pcmk-1159-db21
- * Last change: Sun May 3 20:51:55 2026 by root via crm_attribute on pcmk-1159-db21
- * 2 nodes configured
- * 6 resource instances configured

Node List:

- * **Online:** [pcmk-1159-db21 pcmk-1159-db22]

Full List of Resources:

- * db2_pcmk-1159-db21_eth0 (ocf:heartbeat:db2ethmon): **Started** pcmk-1159-db21
- * db2_pcmk-1159-db22_eth0 (ocf:heartbeat:db2ethmon): **Started** pcmk-1159-db22
- * db2_pcmk-1159-db21_db2inst1_0 (ocf:heartbeat:db2inst): **Started** pcmk-1159-db21
- * db2_pcmk-1159-db22_db2inst1_0 (ocf:heartbeat:db2inst): **Started** pcmk-1159-db22
- * Clone Set: db2_db2inst1_db2inst1_SAMPLE-clone [db2_db2inst1_db2inst1_SAMPLE] (promotable):
 - * Promoted: [pcmk-1159-db22]
 - * Unpromoted: [pcmk-1159-db21]

Status Monitoring – 12.1

```
[root@pcmk-121-1 ~]# db2cm -status
```

```
2026-05-09-06.11.35
```

```
-----
```

Cluster Summary:

- * Stack: corosync (Pacemaker is running)
- * Current DC: pcmk-121-2 (version 2.1.10-2.db2pcmk.el9-7b38efb) - partition with quorum
- * Last updated: Sat May 9 06:11:35 2026 on pcmk-121-1
- * Last change: Sat May 9 03:35:48 2026 by root via root on pcmk-121-1
- * 2 nodes configured
- * 6 resource instances configured

Node List:

- * Online: [pcmk-121-1 pcmk-121-2]

Full List of Resources:

- * db2_ethmonitor_pcmk-121-1_eth0 (ocf:heartbeat:db2ethmon): Started pcmk-121-1
- * db2_ethmonitor_pcmk-121-2_eth0 (ocf:heartbeat:db2ethmon): Started pcmk-121-2
- * db2_pcmk-121-1_db2inst1_0 (ocf:heartbeat:db2inst): Started pcmk-121-1
- * db2_pcmk-121-2_db2inst1_0 (ocf:heartbeat:db2inst): Started pcmk-121-2
- * Clone Set: db2_db2inst1_db2inst1_SAMPLE-clone [db2_db2inst1_db2inst1_SAMPLE] (promotable):
 - * Promoted: [pcmk-121-2]
 - * Unpromoted: [pcmk-121-1]

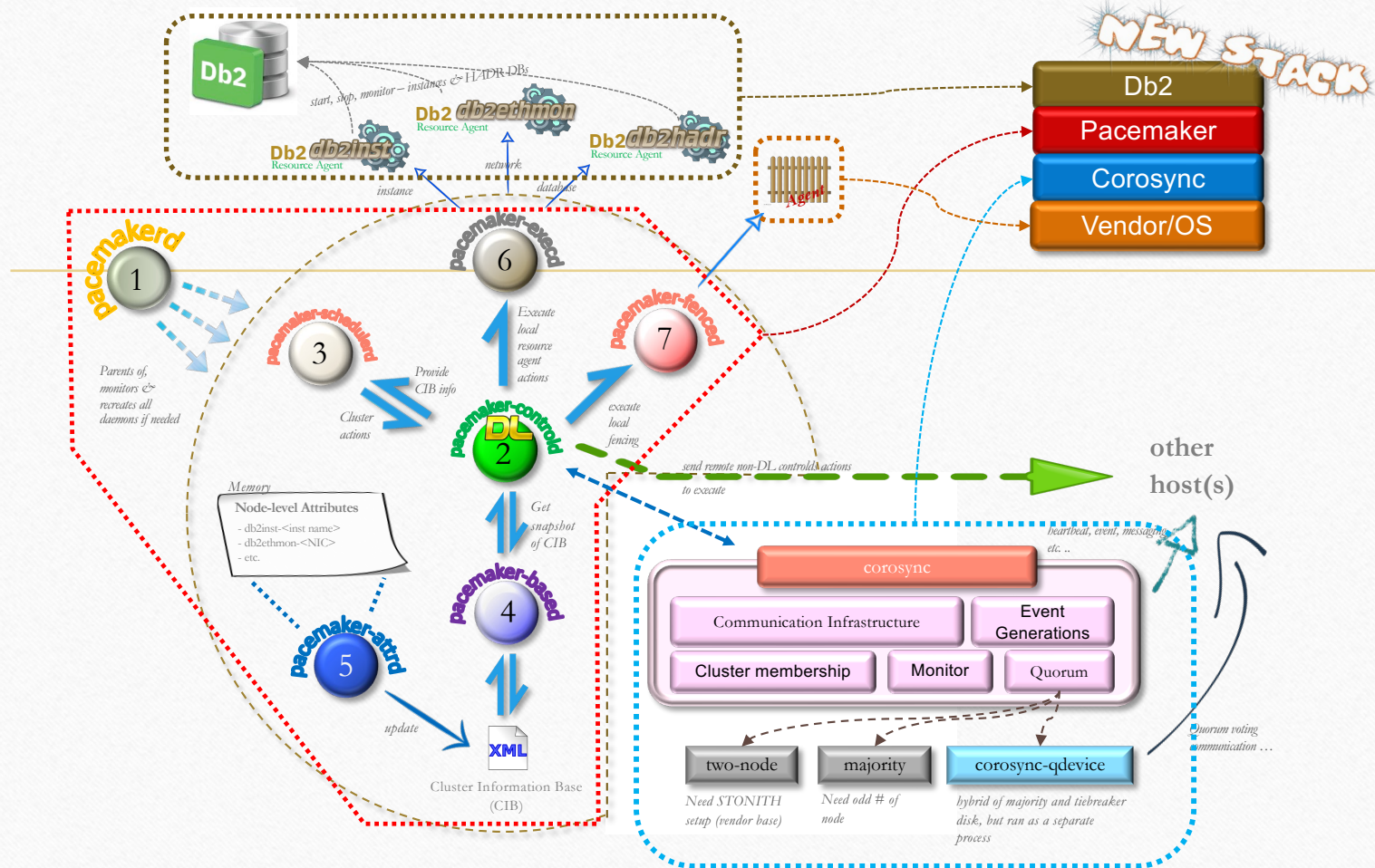
QDevice Information:

- * Not configured

Important Diagnostics

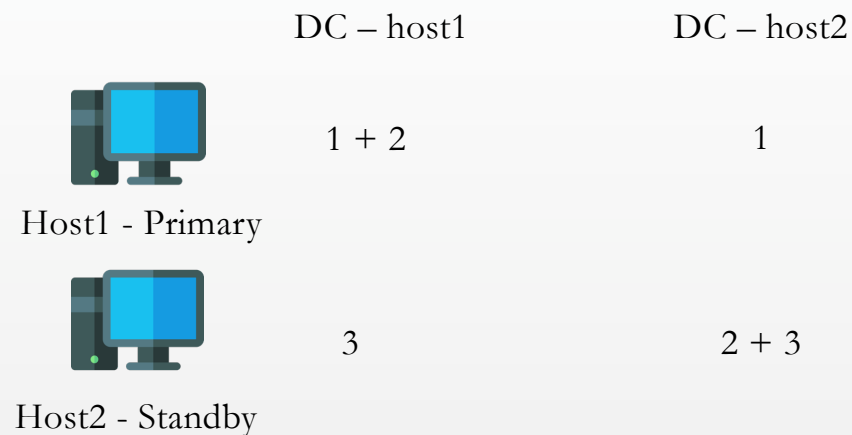
- Pacemaker Logs
 - `/var/log/pacemaker/pacemaker.log`
- Corosync Logs
 - `/var/log/cluster/corosync.log`
- System logs
 - `/var/log/messages`
 - `journalctl`
- Db2 logs
 - `Db2support`
- db2cm run logs
 - `/tmp/db2cm.run.log.2026-05-09_06-13`
 - `/tmp/db2cm/db2cm.run.log.2026-05-09_06-13`

Key processes in the new stack

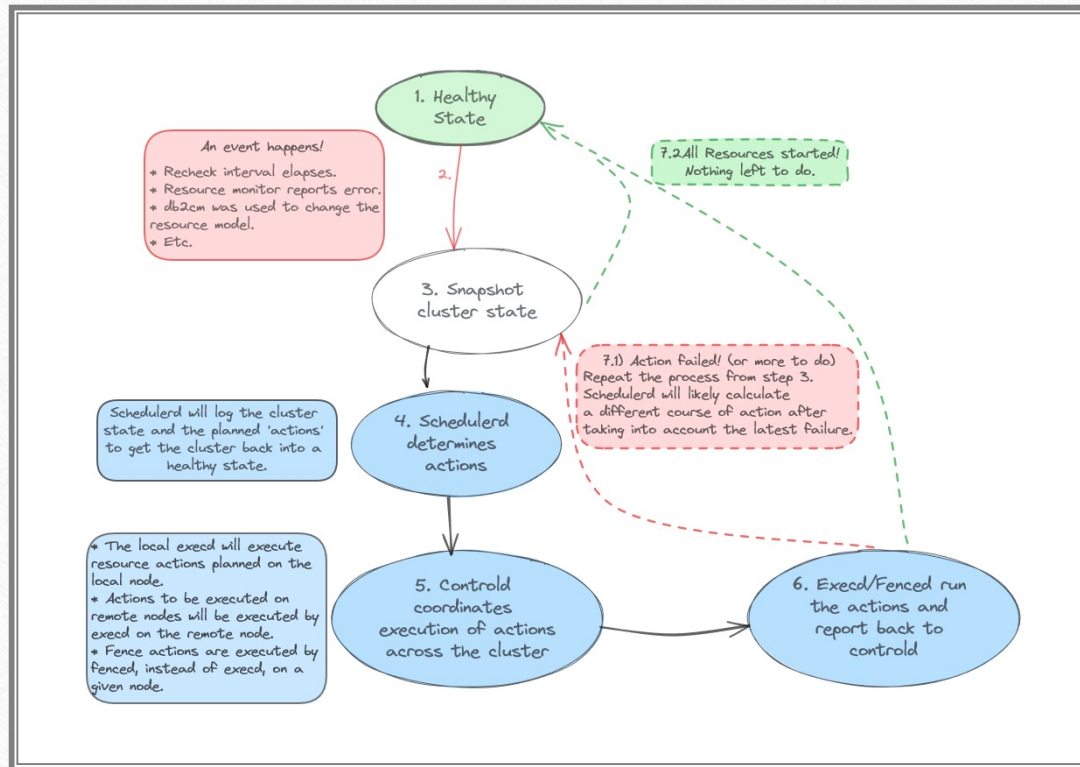


Key Concept #1: Where to find what I am looking for?

- 1) Monitor of Primary database fails for *some* reason.
- 2) Pacemaker calculates a course of action to bring primary back online.
- 3) Pacemaker executes the planned actions, bringing the primary back online.
(Restart or Takeover)



Key Concept #2: The Pacemaker decision-making process.



Pacemaker Behavior

Types of failure	DB Failover?
Host failure / reboot	Yes, for all databases with primary role on the failed/rebooted host
Unplanned Db2 instance failure (e.g., traps or loss of dependent file systems / mount points)	Yes, but only if local restart fails and prior to HADR DB monitor detects the database is not healthy. If local restart succeeds, no failover occurs.
Planned Db2 instance stoppage. (e.g., db2stop [force])	No, because db2stop is fully integrated with Pacemaker. It disables Pacemaker automation at instance level.
Deactivation of DB with primary role	No, because deactivation of database is fully integrated with Pacemaker. It disables Pacemaker automation at database level.
TCP/IP connectivity failure (e.g., adapter failure)	Yes, for all databases with primary role on the host with the failed adapter.
Primary DB monitor returns error	Yes, the database that the monitor runs against will failover.
Standby DB monitor returns error	No, Pacemaker will restart the DB as standby on the same host
Quorum loss	Yes, but it depends on which host got kicked out. All databases with primary role on the evicted host will failover.
Primary VIP failure	Yes, but only if it fails to restart locally first.

Scenario 1: Host Failure on Primary

```
[root@pcmk-1159-db21 ~]# crm status
```

Cluster Summary:

- * Stack: corosync (Pacemaker is running)
- * Current DC: pcmk-1159-db22 (version 2.1.6-6.db2pcmk.el9-6fdc9deea29) - partition with quorum
- * Last updated: Sat May 9 07:42:06 2026 on pcmk-1159-db21
- * Last change: Sat May 9 07:25:10 2026 by root via crm_attribute on pcmk-1159-db21
- * 2 nodes configured
- * 6 resource instances configured

Node List:

- * Online: [pcmk-1159-db21 pcmk-1159-db22]

Full List of Resources:

- * db2_pcmk-1159-db21_eth0 (ocf:heartbeat:db2ethmon): Started pcmk-1159-db21
- * db2_pcmk-1159-db22_eth0 (ocf:heartbeat:db2ethmon): Started pcmk-1159-db22
- * db2_pcmk-1159-db21_db2inst1_0 (ocf:heartbeat:db2inst): Started pcmk-1159-db21
- * db2_pcmk-1159-db22_db2inst1_0 (ocf:heartbeat:db2inst): Started pcmk-1159-db22
- * Clone Set: db2_db2inst1_db2inst1_SAMPLE-clone [db2_db2inst1_db2inst1_SAMPLE] (promotable):
 - * Promoted: [pcmk-1159-db21]
 - * Unpromoted: [pcmk-1159-db22]

Host failure - Host 2

```
//Pacemaker cluster recheck
May 09 07:42:44.286 pcmk-1159-db22.fyre.ibm.com pacemaker-controld [1236] (crm_timer_popped) info: Cluster Recheck Timer just popped | input=I_PE_CALC time=60000ms
May 09 07:42:44.301 pcmk-1159-db22.fyre.ibm.com pacemaker-schedulerd[1235] (determine_online_status) info: pcmk-1159-db22 is online
May 09 07:42:44.301 pcmk-1159-db22.fyre.ibm.com pacemaker-schedulerd[1235] (determine_online_status) info: pcmk-1159-db21 is online
May 09 07:42:44.303 pcmk-1159-db22.fyre.ibm.com pacemaker-schedulerd[1235] (set_instance_role) info: Choosing db2_db2inst1_db2inst1_SAMPLE:1 (Promoted) on pcmk-1159-db21 for promotion
May 09 07:42:44.303 pcmk-1159-db22.fyre.ibm.com pacemaker-schedulerd[1235] (pcmk__set_instance_roles) info: db2_db2inst1_db2inst1_SAMPLE-clone: Promoted 1 instances of a possible 1
May 09 07:42:44.303 pcmk-1159-db22.fyre.ibm.com pacemaker-schedulerd[1235] (rsc_action_default) info: Leave db2_pcmk-1159-db21_eth0 (Started pcmk-1159-db21)
May 09 07:42:44.303 pcmk-1159-db22.fyre.ibm.com pacemaker-schedulerd[1235] (rsc_action_default) info: Leave db2_pcmk-1159-db22_eth0 (Started pcmk-1159-db22)
May 09 07:42:44.303 pcmk-1159-db22.fyre.ibm.com pacemaker-schedulerd[1235] (rsc_action_default) info: Leave db2_pcmk-1159-db21_db2inst1_0 (Started pcmk-1159-db21)
May 09 07:42:44.303 pcmk-1159-db22.fyre.ibm.com pacemaker-schedulerd[1235] (rsc_action_default) info: Leave db2_pcmk-1159-db22_db2inst1_0 (Started pcmk-1159-db22)
May 09 07:42:44.303 pcmk-1159-db22.fyre.ibm.com pacemaker-schedulerd[1235] (rsc_action_default) info: Leave db2_db2inst1_db2inst1_SAMPLE:0 (Unpromoted pcmk-1159-db22)
May 09 07:42:44.303 pcmk-1159-db22.fyre.ibm.com pacemaker-schedulerd[1235] (rsc_action_default) info: Leave db2_db2inst1_db2inst1_SAMPLE:1 (Promoted pcmk-1159-db21)
May 09 07:42:44.304 pcmk-1159-db22.fyre.ibm.com pacemaker-schedulerd[1235] (handle_pecalc_request) info: Input has not changed since last time, not saving to disk

//host1 left the cluster
May 09 07:43:10.885 pcmk-1159-db22.fyre.ibm.com pacemaker-controld [1236] (node_left) info: Group crmd event 8: pcmk-1159-db21 (node 1 pid 1277) left via cluster exit
May 09 07:43:10.885 pcmk-1159-db22.fyre.ibm.com pacemaker-controld [1236] (crm_update_peer_proc) info: node_left: Node pcmk-1159-db21[1] - corosync-cpg is now offline
May 09 07:43:10.885 pcmk-1159-db22.fyre.ibm.com pacemaker-controld [1236] (peer_update_callback) info: Node pcmk-1159-db21 is no longer a peer | DC=pcmk-1159-db22 old=0x40000000 new=00000000
May 09 07:43:10.888 pcmk-1159-db22.fyre.ibm.com pacemaker-attrd [1234] (node_left) info: Group attrd event 8: pcmk-1159-db21 (node 1 pid 1275) left via cluster exit
May 09 07:43:10.888 pcmk-1159-db22.fyre.ibm.com pacemaker-attrd [1234] (crm_update_peer_proc) info: node_left: Node pcmk-1159-db21[1] - corosync-cpg is now offline
May 09 07:43:10.888 pcmk-1159-db22.fyre.ibm.com pacemaker-attrd [1234] (update_peer_state_iter) notice: Node pcmk-1159-db21 state is now lost | nodeid=1 previous=member source=crm_update_peer_proc
```

Host failure - Host 2

```
//schedulerd checks the current cluster status and decides course of action
May 09 07:43:11.961 pcmk-1159-db22.fyre.ibm.com pacemaker-schedulerd[1235] (determine_online_status) info: pcmk-1159-db22 is online
May 09 07:43:11.964 pcmk-1159-db22.fyre.ibm.com pacemaker-schedulerd[1235] (pcmk__primitive_assign) info: Resource db2_pcmk-1159-db21_eth0 cannot run anyw
here
May 09 07:43:11.964 pcmk-1159-db22.fyre.ibm.com pacemaker-schedulerd[1235] (pcmk__primitive_assign) info: Resource db2_pcmk-1159-db21_db2inst1_0 cannot ru
n anywhere
May 09 07:43:11.964 pcmk-1159-db22.fyre.ibm.com pacemaker-schedulerd[1235] (pcmk__primitive_assign) info: Resource db2_db2inst1_db2inst1_SAMPLE:1 cannot r
un anywhere
May 09 07:43:11.964 pcmk-1159-db22.fyre.ibm.com pacemaker-schedulerd[1235] (set_instance_role) info: Choosing db2_db2inst1_db2inst1_SAMPLE:0 (Unpromoted) on
pcmk-1159-db22 for promotion
May 09 07:43:11.964 pcmk-1159-db22.fyre.ibm.com pacemaker-schedulerd[1235] (pcmk__set_instance_roles) info: db2_db2inst1_db2inst1_SAMPLE-clone: Promoted 1 i
nstances of a possible 1
May 09 07:43:11.964 pcmk-1159-db22.fyre.ibm.com pacemaker-schedulerd[1235] (recurring_op_for_active) info: Start 9s-interval monitor for db2_db2inst1_db2in
st1_SAMPLE:0 on pcmk-1159-db22
May 09 07:43:11.964 pcmk-1159-db22.fyre.ibm.com pacemaker-schedulerd[1235] (recurring_op_for_active) info: Cancelling recurring action db2_db2inst1_db2inst
1_SAMPLE:0_monitor_10000 because db2_db2inst1_db2inst1_SAMPLE-monitor-10s configured for Unpromoted role (not Promoted)
May 09 07:43:11.964 pcmk-1159-db22.fyre.ibm.com pacemaker-schedulerd[1235] (recurring_op_for_active) info: Start 9s-interval monitor for db2_db2inst1_db2in
st1_SAMPLE:0 on pcmk-1159-db22
May 09 07:43:11.964 pcmk-1159-db22.fyre.ibm.com pacemaker-schedulerd[1235] (recurring_op_for_active) info: Cancelling recurring action db2_db2inst1_db2inst
1_SAMPLE:0_monitor_10000 because db2_db2inst1_db2inst1_SAMPLE-monitor-10s configured for Unpromoted role (not Promoted)
May 09 07:43:11.965 pcmk-1159-db22.fyre.ibm.com pacemaker-schedulerd[1235] (rsc_action_default) info: Leave db2_pcmk-1159-db21_eth0 (Stopped)
May 09 07:43:11.965 pcmk-1159-db22.fyre.ibm.com pacemaker-schedulerd[1235] (rsc_action_default) info: Leave db2_pcmk-1159-db22_eth0 (Started pcmk-
1159-db22)
May 09 07:43:11.965 pcmk-1159-db22.fyre.ibm.com pacemaker-schedulerd[1235] (rsc_action_default) info: Leave db2_pcmk-1159-db21_db2inst1_0 (Stopp
ed)
May 09 07:43:11.965 pcmk-1159-db22.fyre.ibm.com pacemaker-schedulerd[1235] (rsc_action_default) info: Leave db2_pcmk-1159-db22_db2inst1_0 (Start
ed pcmk-1159-db22)
May 09 07:43:11.965 pcmk-1159-db22.fyre.ibm.com pacemaker-schedulerd[1235] (log_list_item) notice: Actions: Promote db2_db2inst1_db2inst1_SAMPLE:0
( Unpromoted -> Promoted pcmk-1159-db22 )
May 09 07:43:11.965 pcmk-1159-db22.fyre.ibm.com pacemaker-schedulerd[1235] (rsc_action_default) info: Leave db2_db2inst1_db2inst1_SAMPLE:1 (Stopp
ed)

//execution of actions determined by schedulerd, standby is promoted to new primary
May 09 07:43:11.994 pcmk-1159-db22.fyre.ibm.com pacemaker-controld [1236] (do_lrm_rsc_op) notice: Requesting local execution of promote operation for db
2_db2inst1_db2inst1_SAMPLE on pcmk-1159-db22 | transition_key=10:27038:0:4e1a6cb2-d328-4a96-8437-8bd7bdfebd37 op_key=db2_db2inst1_db2inst1_SAMPLE_promote_0
May 09 07:43:12 db2hadr(db2_db2inst1_db2inst1_SAMPLE) [1639850]: INFO: promote: 983: db2inst1: 0: SAMPLE: db2hadr_promote() entry. db="SAMPLE", Master scor
e="8000".
May 09 07:43:12 db2hadr(db2_db2inst1_db2inst1_SAMPLE) [1639850]: INFO: promote: 998: db2inst1: 0: SAMPLE: 1: The database has HADR status STANDBY/PEER/CONN
ECTED and is being considered for promotion.
May 09 07:43:12 db2hadr(db2_db2inst1_db2inst1_SAMPLE) [1639850]: INFO: promote: 299: set_cib_value called by 'db2hadr_promote' at 1028: Setting cib attribu
te db2hadr-db2inst1_db2inst1_SAMPLE_takeover to 1 on host 'pcmk-1159-db22'
```


Host failure - Host 2

```
//takeover completes successfully
May 09 07:43:20 db2hadr(db2_db2inst1_db2inst1_SAMPLE)[1639850]: INFO: promote: 1036: db2inst1: 0: SAMPLE: Debug data: "DB20000I The TAKEOVER HADR ON DATA
BASE command completed successfully.". db2hadr_promote() exit with rc=0.
May 09 07:43:20.078 pcmk-1159-db22.fyre.ibm.com pacemaker-execd [1233] (log_finished) info: db2_db2inst1_db2inst1_SAMPLE promote (call 62, PID 16398
50) exited with status 0 (execution time 8.077s)
May 09 07:43:20.078 pcmk-1159-db22.fyre.ibm.com pacemaker-controld [1236] (log_executor_event) notice: Result of promote operation for db2_db2inst1_d
b2inst1_SAMPLE on pcmk-1159-db22: ok | graph action confirmed; call=62 key=db2_db2inst1_db2inst1_SAMPLE_promote_0 rc=0

//host 1 is back online
May 09 07:43:26.300 pcmk-1159-db22.fyre.ibm.com pacemaker-controld [1236] (pcmk_cpg_membership) info: Group crmd event 9: node 1 pid 1274 joined via c
luster join
May 09 07:43:26.300 pcmk-1159-db22.fyre.ibm.com pacemaker-controld [1236] (pcmk_cpg_membership) info: Group crmd event 9: pcmk-1159-db21 (node 1 pid 1
274) is member
May 09 07:43:26.300 pcmk-1159-db22.fyre.ibm.com pacemaker-controld [1236] (crm_update_peer_proc) info: pcmk_cpg_membership: Node pcmk-1159-db21[1] - co
rosync-cpg is now online

//schedulerd decides actions to bring resources on host 1 back online
May 09 07:43:27.662 pcmk-1159-db22.fyre.ibm.com pacemaker-schedulerd[1235] (determine_online_status) info: pcmk-1159-db21 is online
May 09 07:43:27.666 pcmk-1159-db22.fyre.ibm.com pacemaker-schedulerd[1235] (recurring_op_for_active) info: Start 4s-interval monitor for db2_pcmk-1159-db21
_eth0 on pcmk-1159-db21
May 09 07:43:27.666 pcmk-1159-db22.fyre.ibm.com pacemaker-schedulerd[1235] (recurring_op_for_active) info: Start 10s-interval monitor for db2_pcmk-1159-db2
1_db2inst1_0 on pcmk-1159-db21
May 09 07:43:27.666 pcmk-1159-db22.fyre.ibm.com pacemaker-schedulerd[1235] (recurring_op_for_active) info: Start 10s-interval monitor for db2_db2inst1_db2i
nst1_SAMPLE:1 on pcmk-1159-db21
May 09 07:43:27.666 pcmk-1159-db22.fyre.ibm.com pacemaker-schedulerd[1235] (recurring_op_for_active) info: Start 10s-interval monitor for db2_db2inst1_db2i
nst1_SAMPLE:1 on pcmk-1159-db21
May 09 07:43:27.667 pcmk-1159-db22.fyre.ibm.com pacemaker-schedulerd[1235] (log_list_item) notice: Actions: Start db2_pcmk-1159-db21_eth0
( pcmk-1159-db21 )
May 09 07:43:27.667 pcmk-1159-db22.fyre.ibm.com pacemaker-schedulerd[1235] (log_list_item) notice: Actions: Start db2_pcmk-1159-db21_db2inst1_0
( pcmk-1159-db21 )
May 09 07:43:27.667 pcmk-1159-db22.fyre.ibm.com pacemaker-schedulerd[1235] (log_list_item) notice: Actions: Start db2_db2inst1_db2inst1_SAMPLE:1
( pcmk-1159-db21 )
```

Host failure - Host 1

Sat May 9 07:42:50 AM PDT 2026

```
//Pacemaker is coming back up online
May 09 07:43:20.544 pcmk-1159-db21.fyre.ibm.com pacemakerd [1267] (main) notice: Starting Pacemaker 2.1.6-6.db2pcmk.el9 | build=6fdc9deea29 features:agent-manpages ascii-docs cibsecrets corosync-ge-2 default-concurrent-fencing default-resource-stickiness default-sbd-sync generated-manpages monotonic nagios ncurses remote systemd
//db2ethmon and db2inst1 resource agents notice resources are not running
May 09 07:43:27 db2ethmon(db2_pcmk-1159-db21_eth0)[1300]: ERROR: monitor: 660: Resource tracking validation failed, exit with rc=7
May 09 07:43:28 db2inst(db2_pcmk-1159-db21_db2inst1_0)[1304]: WARNING: monitor: 694: ps did not list any process for db2sysc on node 0 after 5 retries. db2inst_monitor() exit with rc=7.
//starting db2ethmon resource
May 09 07:43:28 db2ethmon(db2_pcmk-1159-db21_eth0)[1388]: INFO: start: 727: db2ethmon_start() entry. OCF_RESOURCE_INSTANCE="db2_pcmk-1159-db21_eth0"
//clean up before starting instance by db2inst1
May 09 07:43:28 db2hadr(db2_db2inst1_db2inst1_SAMPLE)[1305]: ERROR: monitor: 539: No db2sysc process detected in ps output
May 09 07:43:28 db2hadr(db2_db2inst1_db2inst1_SAMPLE)[1305]: ERROR: monitor: 782: db2inst1: 0: SAMPLE: Instance is not up. db2hadr_instance_monitor() failed with rc=7, db2hadr_monitor() exit with rc=7.
//instance start up
May 09 07:43:28.521 pcmk-1159-db21.fyre.ibm.com pacemaker-controld [1274] (do_lrm_rsc_op) notice: Requesting local execution of start operation for db2_pcmk-1159-db21_db2inst1_0 on pcmk-1159-db21 | transition_key=9:27042:0:4e1a6cb2-d328-4a96-8437-8bd7bdfebd37 op_key=db2_pcmk-1159-db21_db2inst1_0_start_0
May 09 07:43:28 db2inst(db2_pcmk-1159-db21_db2inst1_0)[1565]: INFO: start: 455: db2inst1: db2inst_start() entry.
May 09 07:43:29 db2inst(db2_pcmk-1159-db21_db2inst1_0)[1565]: INFO: start: 231: db2inst1: Attempting to start partition(0) via db2gcf...
May 09 07:43:33.805 pcmk-1159-db21.fyre.ibm.com pacemaker-based [1269] (cib_process_ping) info: Reporting our current digest to pcmk-1159-db22: 57b351d6174d84a0ae115354644cfbe1 for 10.679.1
May 09 07:43:37 db2inst(db2_pcmk-1159-db21_db2inst1_0)[1565]: INFO: start: 234: db2inst1: Start via db2gcf returned rc=0.
//database activation and reintegration
May 09 07:43:39 db2inst(db2_pcmk-1159-db21_db2inst1_0)[1565]: INFO: start: 283: db2inst1: Database: SAMPLE
May 09 07:43:39 db2inst(db2_pcmk-1159-db21_db2inst1_0)[1565]: INFO: start: 319: db2inst1: cib_attr: db2hadr-db2inst1_db2inst1_SAMPLE_reint - cib_value: 1
May 09 07:43:39 db2inst(db2_pcmk-1159-db21_db2inst1_0)[1565]: INFO: start: 324: db2inst1: Forcing apps off 'SAMPLE' before reintegration..
//reintegration as standby complete
May 09 07:43:43 db2inst(db2_pcmk-1159-db21_db2inst1_0)[1565]: INFO: start: 331: db2inst1: HADR database 'SAMPLE' successfully reintegrated as standby.
May 09 07:43:43 db2inst(db2_pcmk-1159-db21_db2inst1_0)[1565]: INFO: start: 141: Setting cib attribute db2hadr-db2inst1_db2inst1_SAMPLE_reint to 0 on local host
May 09 07:43:51 db2inst(db2_pcmk-1159-db21_db2inst1_0)[1565]: INFO: start: 446: db2inst1: activateDatabases() exit.
May 09 07:43:53 db2hadr(db2_db2inst1_db2inst1_SAMPLE)[2701]: INFO: start: 576: db2inst1: 0: SAMPLE: Variables set DB="SAMPLE", HADR_ROLE="STANDBY", HADR_TIMEOUT="120", HADR_PEER_WINDOW="120".
May 09 07:43:54 db2hadr(db2_db2inst1_db2inst1_SAMPLE)[2701]: INFO: start: 629: db2inst1: 0: SAMPLE: Skipping database activation since the db is already activated
May 09 07:43:54 db2hadr(db2_db2inst1_db2inst1_SAMPLE)[2701]: INFO: start: 712: db2inst1: 0: SAMPLE: db2hadr_start() exit with rc=0.
//Continue monitoring
May 09 07:43:51.189 pcmk-1159-db21.fyre.ibm.com pacemaker-controld [1274] (log_executor_event) notice: Result of start operation for db2_pcmk-1159-db21_db2inst1_0 on pcmk-1159-db21: ok | graph action confirmed; call=17 key=db2_pcmk-1159-db21_db2inst1_0 start 0 rc=0
```


Scenario 2: Db2 is down on the Primary Host

```
[root@pcmk-121-2 ~]# db2cm -status
2026-05-09-08.44.15
-----
Cluster Summary:
* Stack: corosync (Pacemaker is running)
* Current DC: pcmk-121-2 (version 2.1.10-2.db2pcmk.el9-7b38efb) - partition with quorum
* Last updated: Sat May 9 08:44:15 2026 on pcmk-121-2
* Last change: Sat May 9 03:35:48 2026 by root via root on pcmk-121-1
* 2 nodes configured
* 6 resource instances configured

Node List:
* Online: [ pcmk-121-1 pcmk-121-2 ]

Full List of Resources:
* db2_ethmonitor_pcmk-121-1_eth0 (ocf:heartbeat:db2ethmon): Started pcmk-121-1
* db2_ethmonitor_pcmk-121-2_eth0 (ocf:heartbeat:db2ethmon): Started pcmk-121-2
* db2_pcmk-121-1_db2inst1_0 (ocf:heartbeat:db2inst): Started pcmk-121-1
* db2_pcmk-121-2_db2inst1_0 (ocf:heartbeat:db2inst): Started pcmk-121-2
* Clone Set: db2_db2inst1_db2inst1_SAMPLE-clone [db2_db2inst1_db2inst1_SAMPLE] (promotable):
  * Promoted: [ pcmk-121-2 ]
  * Unpromoted: [ pcmk-121-1 ]

QDevice Information:
* Connected: [ gold1:5403 ]
```

Primary Down – Old Primary / Host 2

```
//Cluster state before Db2 was killed
May 09 08:44:59.547 pcmk-121-2.fyre.ibm.com pacemaker-controld [67064] (crm_timer_popped) info: Cluster Recheck Timer just popped | input=I_PE_CALC time=60000ms
May 09 08:44:59.547 pcmk-121-2.fyre.ibm.com pacemaker-controld [67064] (do_state_transition) info: Progressed to state S_POLICY_ENGINE after C_TIMER_POPPED
May 09 08:44:59.556 pcmk-121-2.fyre.ibm.com pacemaker-schedulerd[67063] (determine_online_status) info: pcmk-121-1 is online
May 09 08:44:59.556 pcmk-121-2.fyre.ibm.com pacemaker-schedulerd[67063] (determine_online_status) info: pcmk-121-2 is online
May 09 08:44:59.557 pcmk-121-2.fyre.ibm.com pacemaker-schedulerd[67063] (remap_operation) info: Probe found db2_ethmonitor_pcmk-121-2_eth0 active on pcmk-121-2 at May 5 15:31:57 2026
May 09 08:44:59.557 pcmk-121-2.fyre.ibm.com pacemaker-schedulerd[67063] (remap_operation) info: Probe found db2_ethmonitor_pcmk-121-2_eth0 active on pcmk-121-2 at May 5 15:31:57 2026
May 09 08:44:59.557 pcmk-121-2.fyre.ibm.com pacemaker-schedulerd[67063] (remap_operation) info: Probe found db2_pcmk-121-2_db2inst1_0 active on pcmk-121-2 at May 5 15:31:57 2026
May 09 08:44:59.558 pcmk-121-2.fyre.ibm.com pacemaker-schedulerd[67063] (remap_operation) info: Probe found db2_pcmk-121-2_db2inst1_0 active on pcmk-121-2 at May 5 15:31:57 2026
May 09 08:44:59.558 pcmk-121-2.fyre.ibm.com pacemaker-schedulerd[67063] (remap_operation) info: Probe found db2_db2inst1_db2inst1_SAMPLE:1 active on pcmk-121-2 at May 5 15:32:14 2026
May 09 08:44:59.559 pcmk-121-2.fyre.ibm.com pacemaker-schedulerd[67063] (pcmk_unassign_resource) info: Unassigning db2_ethmonitor_pcmk-121-1_eth0
May 09 08:44:59.559 pcmk-121-2.fyre.ibm.com pacemaker-schedulerd[67063] (pcmk_unassign_resource) info: Unassigning db2_ethmonitor_pcmk-121-2_eth0
May 09 08:44:59.559 pcmk-121-2.fyre.ibm.com pacemaker-schedulerd[67063] (pcmk_unassign_resource) info: Unassigning db2_pcmk-121-1_db2inst1_0
May 09 08:44:59.559 pcmk-121-2.fyre.ibm.com pacemaker-schedulerd[67063] (pcmk_unassign_resource) info: Unassigning db2_pcmk-121-2_db2inst1_0
May 09 08:44:59.559 pcmk-121-2.fyre.ibm.com pacemaker-schedulerd[67063] (pcmk_unassign_resource) info: Unassigning db2_db2inst1_db2inst1_SAMPLE:1
May 09 08:44:59.559 pcmk-121-2.fyre.ibm.com pacemaker-schedulerd[67063] (pcmk_unassign_resource) info: Unassigning db2_db2inst1_db2inst1_SAMPLE:0
May 09 08:44:59.559 pcmk-121-2.fyre.ibm.com pacemaker-schedulerd[67063] (set_instance_role) info: Choosing db2_db2inst1_db2inst1_SAMPLE:1 (Promoted) on pcmk-121-2 for promotion
May 09 08:44:59.559 pcmk-121-2.fyre.ibm.com pacemaker-schedulerd[67063] (pcmk_set_instance_roles) info: db2_db2inst1_db2inst1_SAMPLE-clone: Promoted 1 instances of a possible 1
May 09 08:44:59.559 pcmk-121-2.fyre.ibm.com pacemaker-schedulerd[67063] (rsc_action_default) info: Leave db2_ethmonitor_pcmk-121-1_eth0 (Started pcmk-121-1)
May 09 08:44:59.559 pcmk-121-2.fyre.ibm.com pacemaker-schedulerd[67063] (rsc_action_default) info: Leave db2_ethmonitor_pcmk-121-2_eth0 (Started pcmk-121-2)
May 09 08:44:59.559 pcmk-121-2.fyre.ibm.com pacemaker-schedulerd[67063] (rsc_action_default) info: Leave db2_pcmk-121-1_db2inst1_0 (Started pcmk-121-1)
May 09 08:44:59.559 pcmk-121-2.fyre.ibm.com pacemaker-schedulerd[67063] (rsc_action_default) info: Leave db2_pcmk-121-2_db2inst1_0 (Started pcmk-121-2)
May 09 08:44:59.559 pcmk-121-2.fyre.ibm.com pacemaker-schedulerd[67063] (rsc_action_default) info: Leave db2_db2inst1_db2inst1_SAMPLE:0 (Unpromoted pcmk-121-1)
May 09 08:44:59.559 pcmk-121-2.fyre.ibm.com pacemaker-schedulerd[67063] (rsc_action_default) info: Leave db2_db2inst1_db2inst1_SAMPLE:1 (Promoted pcmk-121-2)

// db2inst reports that db2sysc is missing and instance is gone
May 09 08:45:26 db2inst(db2_pcmk-121-2_db2inst1_0) [1984139]: WARNING: monitor: 694: ps did not list any process for db2sysc on node 0 after 5 retries. db2inst_monitor() exit with rc=7.
May 09 08:45:26.797 pcmk-121-2.fyre.ibm.com pacemaker-controld [67064] (log_executor_event) notice: Result of probe operation for db2_pcmk-121-2_db2inst1_0 on pcmk-121-2: not running | graph action confirmed; call=48 key=db2_pcmk-121-2_db2inst1_0_monitor_0 rc=7
```


Primary Down – Old Primary / Host 2

```
// schedulerd decides course of action
May 09 08:45:26.818 pcmk-121-2.fyre.ibm.com pacemaker-schedulerd[67063] (assign_instance_early) info: Not assigning db2_db2inst1_db2inst1_SAMPLE:1 to
current node pcmk-121-2: unavailable
May 09 08:45:26.818 pcmk-121-2.fyre.ibm.com pacemaker-schedulerd[67063] (pcmk_primitive_assign) info: Resource db2_db2inst1_db2inst1_SAMPLE:1 cannot r
un anywhere
May 09 08:45:26.818 pcmk-121-2.fyre.ibm.com pacemaker-schedulerd[67063] (set_instance_role) info: Choosing db2_db2inst1_db2inst1_SAMPLE:0 (Unpromoted) on
pcmk-121-1 for promotion
May 09 08:45:26.818 pcmk-121-2.fyre.ibm.com pacemaker-schedulerd[67063] (log_list_item) notice: Actions: Start db2_pcmk-121-2_db2inst1_0
( pcmk-121-2 )
May 09 08:45:26.818 pcmk-121-2.fyre.ibm.com pacemaker-schedulerd[67063] (log_list_item) notice: Actions: Promote db2_db2inst1_db2inst1_SAMPLE:0
( Unpromoted -> Promoted pcmk-121-1 )
May 09 08:45:26.818 pcmk-121-2.fyre.ibm.com pacemaker-schedulerd[67063] (log_list_item) notice: Actions: Stop db2_db2inst1_db2inst1_SAMPLE:1
( Promoted pcmk-121-2 ) due to node availability

// demote the standby on current host
May 09 08:45:26 db2inst(db2_pcmk-121-2_db2inst1_0)[1984190]: INFO: start: 457: db2inst1: db2inst_start() entry.
May 09 08:45:27 db2inst(db2_pcmk-121-2_db2inst1_0)[1984190]: WARNING: start: 694: ps did not list any process for db2sysc on node 0 after 5 retries. db2in
st_monitor() exit with rc=7.
May 09 08:45:27 db2hadr(db2_db2inst1_db2inst1_SAMPLE)[1984182]: INFO: demote: 1180: db2inst1: 0: SAMPLE: db2hadr_demote() entry. db="SAMPLE".
May 09 08:45:27 db2inst(db2_pcmk-121-2_db2inst1_0)[1984190]: INFO: start: 496: db2inst1 is not up, perform cleanup before starting up Db2. Killing PIDs "6
5778".
May 09 08:45:27 db2hadr(db2_db2inst1_db2inst1_SAMPLE)[1984182]: ERROR: demote: 550: No db2sysc process detected in ps output
May 09 08:45:27 db2hadr(db2_db2inst1_db2inst1_SAMPLE)[1984182]: ERROR: demote: 818: db2inst1: 0: SAMPLE: Instance is not up. db2hadr_instance_monitor() fa
iled with rc=7, db2hadr_monitor() exit with rc=7.

// standby demotion completed
May 09 08:45:27 db2hadr(db2_db2inst1_db2inst1_SAMPLE)[1984182]: INFO: demote: 1188: db2inst1: 0: SAMPLE: db2hadr_demote() exit with rc=0.
May 09 08:45:27.244 pcmk-121-2.fyre.ibm.com pacemaker-execd [67061] (log_finished) info: db2_db2inst1_db2inst1_SAMPLE demote (call 50, PID 1984182) exite
d with status 0 (execution time 411ms)

//instance is brought online
May 09 08:45:27 db2inst(db2_pcmk-121-2_db2inst1_0)[1984190]: INFO: start: 220: db2inst1: Attempting to start partition(0) via db2gcf...
May 09 08:45:34 db2inst(db2_pcmk-121-2_db2inst1_0)[1984190]: INFO: start: 235: db2inst1: Start via db2gcf returned rc=0.
May 09 08:45:42 db2inst(db2_pcmk-121-2_db2inst1_0)[1984190]: INFO: start: 549: db2inst1: db2inst_start() exit with rc=0.

//database reintegrated as new standby
May 09 08:45:55 db2hadr(db2_db2inst1_db2inst1_SAMPLE)[1985673]: INFO: monitor: 1029: db2inst1: 0: SAMPLE: Database is deactivated with Primary role and th
e reintegration flag is set. Role: PRIMARY, Reintegration flag: db2hadr-db2inst1_db2inst1_SAMPLE_reint = 1
May 09 08:45:55 db2hadr(db2_db2inst1_db2inst1_SAMPLE)[1985673]: INFO: monitor: 442: reintegrateAsStandby called by db2hadr_monitor at 1032. Attempting to
reintegrate SAMPLE as standby.
May 09 08:45:57 db2hadr(db2_db2inst1_db2inst1_SAMPLE)[1985673]: INFO: monitor: 1033: db2inst1: 0: SAMPLE: The database reintegration succeeded.
```

Primary Down – New Primary / Host 1

host 1

//execd executes the local promotion

May 09 08:45:42.300 pcmk-121-1.fyre.ibm.com pacemaker-controld [1194] (do_lrm_rsc_op) notice: Requesting local execution of promote operation for db2_db2inst1_db2inst1_SAMPLE on pcmk-121-1 | transition_key=15:319:0:7a2bee8d-21d1-4d6c-ac1c-f41e258b18f4 op_key=db2_db2inst1_db2inst1_SAMPLE_promote_0

May 09 08:45:42.301 pcmk-121-1.fyre.ibm.com pacemaker-execd [1189] (log_execute) info: executing - rsc:db2_db2inst1_db2inst1_SAMPLE action:promote call_id:22

//db2hadr starts the promotion

May 09 08:45:42 db2hadr(db2_db2inst1_db2inst1_SAMPLE) [599087]: INFO: promote: 1094: db2inst1: 0: SAMPLE: db2hadr_promote() entry. db="SAMPLE", Master score="8000".

May 09 08:45:43 db2hadr(db2_db2inst1_db2inst1_SAMPLE) [599087]: INFO: promote: 1109: db2inst1: 0: SAMPLE: 1: The database has HADR status STANDBY/PEER/CONNECTED and is being considered for promotion.

May 09 08:45:43 db2hadr(db2_db2inst1_db2inst1_SAMPLE) [599087]: INFO: promote: 320: set_cib_value called by 'db2hadr_promote' at 1139: Setting cib attribute db2hadr-db2inst1_db2inst1_SAMPLE_takeover to 1 on host 'pcmk-121-1'

//hadr takeover is complete

May 09 08:45:46 db2hadr(db2_db2inst1_db2inst1_SAMPLE) [599087]: INFO: promote: 1147: db2inst1: 0: SAMPLE: Debug data: "DB20000I The TAKEOVER HADR ON DATABASE command completed successfully.". db2hadr_promote() exit with rc=0.

[root@pcmk-121-2 ~]# db2cm -status

2026-05-09-08.45.59

Cluster Summary:

- * Stack: corosync (Pacemaker is running)
- * Current DC: pcmk-121-2 (version 2.1.10-2.db2pcmk.el9-7b38efb) - partition with quorum
- * Last updated: Sat May 9 08:45:59 2026 on pcmk-121-2
- * Last change: Sat May 9 08:45:58 2026 by root via root on pcmk-121-1
- * 2 nodes configured
- * 6 resource instances configured

Node List:

- * Online: [pcmk-121-1 pcmk-121-2]

Full List of Resources:

- * db2_ethmonitor_pcmk-121-1_eth0 (ocf:heartbeat:db2ethmon): Started pcmk-121-1
- * db2_ethmonitor_pcmk-121-2_eth0 (ocf:heartbeat:db2ethmon): Started pcmk-121-2
- * db2_pcmk-121-1_db2inst1_0 (ocf:heartbeat:db2inst): Started pcmk-121-1
- * db2_pcmk-121-2_db2inst1_0 (ocf:heartbeat:db2inst): Started pcmk-121-2
- * Clone Set: db2_db2inst1_db2inst1_SAMPLE-clone [db2_db2inst1_db2inst1_SAMPLE] (promotable):
 - * Promoted: [pcmk-121-1]
 - * Unpromoted: [pcmk-121-2]

QDevice Information:

- * Connected: [gold1:5403]

Scenario 3: Database Monitor Timeout

```
[root@pcmk-1159-db21 ~]# crm status
```

```
Cluster Summary:
```

```
* Stack: corosync (Pacemaker is running)
* Current DC: pcmk-1159-db22 (version 2.1.6-6.db2pcmk.el9-6fdc9deea29) - partition with quorum
* Last updated: Sat May 9 12:13:01 2026 on pcmk-1159-db21
* Last change: Sat May 9 12:11:22 2026 by root via cibadmin on pcmk-1159-db21
* 2 nodes configured
* 6 resource instances configured
```

```
Node List:
```

```
* Online: [ pcmk-1159-db21 pcmk-1159-db22 ]
```

```
Full List of Resources:
```

```
* db2_pcmk-1159-db21_eth0      (ocf:heartbeat:db2ethmon):      Started pcmk-1159-db21
* db2_pcmk-1159-db22_eth0      (ocf:heartbeat:db2ethmon):      Started pcmk-1159-db22
* db2_pcmk-1159-db21_db2inst1_0 (ocf:heartbeat:db2inst):      Started pcmk-1159-db21
* db2_pcmk-1159-db22_db2inst1_0 (ocf:heartbeat:db2inst):      Started pcmk-1159-db22
* Clone Set: db2_db2inst1_db2inst1_SAMPLE-clone [db2_db2inst1_db2inst1_SAMPLE] (promotable):
  * Promoted: [ pcmk-1159-db22 ]
  * Stopped: [ pcmk-1159-db21 ]
```

```
Failed Resource Actions:
```

```
* db2_db2inst1_db2inst1_SAMPLE 10s-interval monitor on pcmk-1159-db21 could not be executed (Timed Out: Resource agent did not complete within 60s) at Sat May 9 12:12:59 2026
```

```
May 09 12:12:59.820 pcmk-1159-db21.fyre.ibm.com pacemaker-execd [1271] (async_action_complete) info: Resource agent db2_db2inst1_db2inst1_SAMPLE_monitor_10000[479261] timed out after 60s
May 09 12:12:59.823 pcmk-1159-db21.fyre.ibm.com pacemaker-controld [1274] (log_executor_event) error: Result of monitor operation for db2_db2inst1_db2inst1_SAMPLE on pcmk-1159-db21: Timed Out after 60s (Resource agent did not complete within 60s) | graph action unconfirmed; call=22 key=db2_db2inst1_db2inst1_SAMPLE_monitor_10000
```

Database Monitor Timeout

```
crm resource <trace|untrace> <resource name> monitor
```

```
crm resource trace db2_db2inst1_db2inst1_SAMPLE monitor
```

```
crm resource untrace db2_db2inst1_db2inst1_SAMPLE monitor
```

```
[root@pcmk-1159-db21 ~]# crm resource trace db2_db2inst1_db2inst1_SAMPLE monitor
INFO: Trace for db2_db2inst1_db2inst1_SAMPLE:monitor is written to /var/lib/heartbeat/trace_ra/db2hadr
INFO: Trace set, restart db2_db2inst1_db2inst1_SAMPLE to trace non-monitor operations
```

```
[root@pcmk-1159-db21 ~]# crm resource untrace db2_db2inst1_db2inst1_SAMPLE monitor
INFO: Stop tracing db2_db2inst1_db2inst1_SAMPLE for operation monitor
```

```
-rw-r----- 1 root root 22977 May  9 12:11 db2_db2inst1_db2inst1_SAMPLE.monitor.2026-05-09.12:11:22
-rw-r----- 1 root root 22977 May  9 12:11 db2_db2inst1_db2inst1_SAMPLE.monitor.2026-05-09.12:11:35
-rw-r----- 1 root root 22977 May  9 12:11 db2_db2inst1_db2inst1_SAMPLE.monitor.2026-05-09.12:11:47
-rw-r----- 1 root root 12723 May  9 12:12 db2_db2inst1_db2inst1_SAMPLE.monitor.2026-05-09.12:11:59
```

```
//good example
```

```
+ 12:11:49: ocf_log:343: ha_debug 'DEBUG: monitor: 1045: db2inst1: 0: SAMPLE: db2hadr_monitor() exit with rc=0, masterRC=1.'
+ 12:11:49: ha_debug:262: '[' x0 = x0 ']'
+ 12:11:49: ha_debug:263: return 0
+ 12:11:49: db2hadr_monitor:1046: return 0
+ 12:11:49: 1204: exit 0
```

```
//timeout in db2pd -hadr
```

```
++++ 07:57:04: runasdb2:265: id -u db2inst1
```

```
+++ 07:57:04: runasdb2:265: user_id=1004
```

```
+++ 07:57:04: runasdb2:267: setpriv --reuid=1004 --regid=900 --init-groups --inh-caps=-all /bin/ksh -c '. '\''/home/db2inst1/sqllib/db2profile'\''; export LC_
ALL='\''C.UTF-8'\''; export LANG='\''C.UTF-8'\''; /home/db2inst1/sqllib/adm/db2pd -hadr -db SAMPLE'
```


Monitor Timeout Causes

- Slow su –
 - Apply latest Db2 version and CSB
- Not enough system resources for Pacemaker actions
 - CPU Slices
<https://www.ibm.com/support/pages/how-isolate-db2s-pacemaker-cpu-load-caused-db2-or-other-software>

```
[root@pcmk-1159-db21 ~]# systemctl show --property IOSchedulingPriority corosync
IOSchedulingPriority=2
[root@pcmk-1159-db21 ~]# systemctl show --property IOSchedulingPriority pacemaker
IOSchedulingPriority=2

[root@pcmk-1159-db21 ~]# systemctl show --property StopWhenUnneeded,IOWeight,CPUWeight,MemoryLow db2cm.slice
CPUWeight=10000
IOWeight=10000
MemoryLow=524288000
StopWhenUnneeded=yes

[root@pcmk-1159-db21 ~]# ll /etc/systemd/system
-rw-rw---- 1 root root 160 Feb  3 21:32 db2cm.slice
drwxr-xr-x 2 root root  24 Feb  3 21:32 pacemaker.service.d
drwxr-xr-x 2 root root  24 Feb  3 21:32 sbd.service.d
drwxr-xr-x 2 root root  24 Feb  3 21:32 corosync.service.d
drwxr-xr-x 2 root root  24 Feb  3 21:32 corosync-qdevice.service.d
drwxr-xr-x 2 root root  24 Feb  3 21:32 corosync-notifyd.service.d
```

Scenario 4: Network Issues Between Hosts

```
[root@pcmk-1159-db21 ~]# crm status
Cluster Summary:
* Stack: corosync (Pacemaker is running)
* Current DC: pcmk-1159-db22 (version 2.1.6-6.db2pcmk.el9-6fdc9deea29) - partition with quorum
* Last updated: Sat May  9 17:00:11 2026 on pcmk-1159-db21
* Last change:  Sat May  9 12:14:00 2026 by root via cibadmin on pcmk-1159-db21
* 2 nodes configured
* 6 resource instances configured

Node List:
* Online: [ pcmk-1159-db21 pcmk-1159-db22 ]

Full List of Resources:
* db2_pcmk-1159-db21_eth0      (ocf:heartbeat:db2ethmon):      Started pcmk-1159-db21
* db2_pcmk-1159-db22_eth0      (ocf:heartbeat:db2ethmon):      Started pcmk-1159-db22
* db2_pcmk-1159-db21_db2inst1_0 (ocf:heartbeat:db2inst):        Started pcmk-1159-db21
* db2_pcmk-1159-db22_db2inst1_0 (ocf:heartbeat:db2inst):        Started pcmk-1159-db22
* Clone Set: db2_db2inst1_db2inst1_SAMPLE-clone [db2_db2inst1_db2inst1_SAMPLE] (promotable):
  * Promoted: [ pcmk-1159-db22 ]
  * Unpromoted: [ pcmk-1159-db21 ]
```


Network Issues Between Hosts

```
[root@pcmk-1159-db21 ~]# crm status
```

Cluster Summary:

- * Stack: corosync (Pacemaker is running)
- * Current DC: pcmk-1159-db21 (version 2.1.6-6.db2pcmk.el9-6fdc9deea29) - partition with quorum
- * Last updated: Sat May 9 17:01:41 2026 on pcmk-1159-db21
- * Last change: Sat May 9 17:01:33 2026 by root via crm_attribute on pcmk-1159-db21
- * 2 nodes configured
- * 6 resource instances configured

Node List:

- * Online: [pcmk-1159-db21]
- * OFFLINE: [pcmk-1159-db22]

Full List of Resources:

- * db2_pcmk-1159-db21_eth0 (ocf:heartbeat:db2ethmon): Started pcmk-1159-db21
- * db2_pcmk-1159-db22_eth0 (ocf:heartbeat:db2ethmon): Stopped
- * db2_pcmk-1159-db21_db2inst1_0 (ocf:heartbeat:db2inst): Started pcmk-1159-db21
- * db2_pcmk-1159-db22_db2inst1_0 (ocf:heartbeat:db2inst): Stopped
- * Clone Set: db2_db2inst1_db2inst1_SAMPLE-clone [db2_db2inst1_db2inst1_SAMPLE] (promotable):
 - * Promoted: [pcmk-1159-db21]
 - * Stopped: [pcmk-1159-db22]

Network Issues – Host 1

```
// Corosync reports that link 0 is down
May 09 17:01:07.989 [938] pcmk-1159-db21.fyre.ibm.com corosync info [KNET ] libknet.h:log_deliver_fn:763 link: host: 2 link: 0 is down
May 09 17:01:07.989 [938] pcmk-1159-db21.fyre.ibm.com corosync info [KNET ] libknet.h:log_deliver_fn:763 host: host: 2 (passive) best link: 0 (pri: 1)
May 09 17:01:07.989 [938] pcmk-1159-db21.fyre.ibm.com corosync warning [KNET ] libknet.h:log_deliver_fn:758 host: host: 2 has no active links
May 09 17:01:09.113 [938] pcmk-1159-db21.fyre.ibm.com corosync notice [TOTEM ] totemsrp.c:timer_function_orf_token_warning:1753 Token has not been received i
n 7500 ms
May 09 17:01:11.613 [938] pcmk-1159-db21.fyre.ibm.com corosync notice [TOTEM ] totemsrp.c:timer_function_orf_token_timeout:1769 A processor failed, forming n
ew configuration: token timed out (10000ms), waiting 12000ms for consensus.
May 09 17:01:23.618 [938] pcmk-1159-db21.fyre.ibm.com corosync notice [QUORUM] vsf_quorum.c:log_view_list:159 Sync members[1]: 1
May 09 17:01:23.618 [938] pcmk-1159-db21.fyre.ibm.com corosync notice [QUORUM] vsf_quorum.c:log_view_list:159 Sync left[1]: 2

// Corosync reports when link is back online
May 09 17:02:10.427 [938] pcmk-1159-db21.fyre.ibm.com corosync info [KNET ] libknet.h:log_deliver_fn:763 rx: host: 2 link: 0 is up
May 09 17:02:10.427 [938] pcmk-1159-db21.fyre.ibm.com corosync info [KNET ] libknet.h:log_deliver_fn:763 link: Resetting MTU for link 0 because host 2 joi
ned
May 09 17:02:10.427 [938] pcmk-1159-db21.fyre.ibm.com corosync info [KNET ] libknet.h:log_deliver_fn:763 host: host: 2 (passive) best link: 0 (pri: 1)
May 09 17:02:10.498 [938] pcmk-1159-db21.fyre.ibm.com corosync info [KNET ] libknet.h:log_deliver_fn:763 pmtud: Global data MTU changed to: 1397
May 09 17:02:11.288 [938] pcmk-1159-db21.fyre.ibm.com corosync notice [QUORUM] vsf_quorum.c:log_view_list:159 Sync members[2]: 1 2
May 09 17:02:11.289 [938] pcmk-1159-db21.fyre.ibm.com corosync notice [QUORUM] vsf_quorum.c:log_view_list:159 Sync joined[1]: 2
May 09 17:02:11.289 [938] pcmk-1159-db21.fyre.ibm.com corosync info [VOTEQ ] votequorum.c:votequorum_sync_init:2440 waiting for quorum device Qdevice poll
(but maximum for 30000 ms)
May 09 17:02:11.289 [938] pcmk-1159-db21.fyre.ibm.com corosync notice [TOTEM ] totemsrp.c:memb_state_operational_enter:2133 A new membership (1.268) was form
ed. Members joined: 2
May 09 17:02:11.359 [938] pcmk-1159-db21.fyre.ibm.com corosync notice [QUORUM] vsf_quorum.c:log_view_list:159 Members[2]: 1 2
May 09 17:02:11.359 [938] pcmk-1159-db21.fyre.ibm.com corosync notice [MAIN ] main.c:corosync_sync_completed:303 Completed service synchronization, ready to
provide service.
// Pacemaker reports Node 2 is lost, takes over DC. Quorum retained.
May 09 17:01:23.623 pcmk-1159-db21.fyre.ibm.com pacemaker-controld [1274] (node_left) info: Group crmd event 2: pcmk-1159-db22 (node 2 pid 1236) left via cl
uster exit
May 09 17:01:23.623 pcmk-1159-db21.fyre.ibm.com pacemaker-controld [1274] (crm_update_peer_proc) info: node_left: Node pcmk-1159-db22[2] - corosync-cpg
is now offline
May 09 17:01:23.623 pcmk-1159-db21.fyre.ibm.com pacemaker-controld [1274] (peer_update_callback) info: Node pcmk-1159-db22 is no longer a peer | DC=pcmk
k-1159-db22 old=0x40000000 new=00000000
May 09 17:01:27.414 pcmk-1159-db21.fyre.ibm.com pacemaker-controld [1274] (quorum_notification_cb) info: Quorum retained | membership=612 members=1
May 09 17:01:27.698 pcmk-1159-db21.fyre.ibm.com pacemaker-controld [1274] (do_dc_takeover) info: Taking over DC status for this partition

// Perform takeover
May 09 17:01:27.812 pcmk-1159-db21.fyre.ibm.com pacemaker-schedulerd[1273] (log_list_item) notice: Actions: Promote db2_db2inst1_db2inst1_SAMPLE:0
May 09 17:01:27.812 pcmk-1159-db21.fyre.ibm.com pacemaker-schedulerd[1273] (rsc_action_default) info: Leave db2_pcmk-1159-db22_eth0 (Stopped)
May 09 17:01:27.812 pcmk-1159-db21.fyre.ibm.com pacemaker-schedulerd[1273] (rsc_action_default) info: Leave db2_pcmk-1159-db22_db2inst1_0 (Stopp
May 09 17:01:28 db2hadr(db2_db2inst1_db2inst1_SAMPLE) [992580]: INFO: promote: 1058: db2inst1: 0: SAMPLE: db2hadr_promote() entry. db="SAMPLE", Master scor
e="8000".
May 09 17:01:33 db2hadr(db2_db2inst1_db2inst1_SAMPLE) [992580]: INFO: promote: 1111: db2inst1: 0: SAMPLE: Debug data: "DB20000I The TAKEOVER HADR ON DATAB
ASE command completed successfully.". db2hadr_promote() exit with rc=0.
```


Network Issues – Host 1

```
[root@pcmk-1159-db21 ~]# cat /etc/corosync/corosync.conf
totem {
  version: 2
  cluster_name: pcmkhadr
  transport: knet
  token: 10000
  crypto_cipher: aes256
  crypto_hash: sha256
}
nodelist {
  node {
    ring0_addr: pcmk-1159-db21
    name: pcmk-1159-db21
    nodeid: 1
  }
  node {
    ring0_addr: pcmk-1159-db22
    name: pcmk-1159-db22
    nodeid: 2
  }
}
logging {
  to_logfile: yes
  logfile: /var/log/cluster/corosync.log
  to_syslog: yes
  timestamp: hires
  function_name: on
  fileline: on
}
quorum {
  provider: corosync_votequorum
  device {
    model: net
    net {
      algorithm: lms
      host: gold1
    }
  }
}
```

- <https://www.ibm.com/docs/en/db2/11.5.x?topic=component-quorum-devices-support-pacemaker>

Network Issues – Host 2

```
// host 2 lost communication with host 1
May 09 17:01:23.614 pcmk-1159-db22.fyre.ibm.com pacemaker-fenced [1232] (node_left) info: Group stonith-ng event 10: pcmk-1159-db21 (node 1 pid 1270) left via cluster exit
May 09 17:01:23.614 pcmk-1159-db22.fyre.ibm.com pacemaker-fenced [1232] (crm_update_peer_proc) info: node_left: Node pcmk-1159-db21[1] - corosync-cpg is now offline
May 09 17:01:23.614 pcmk-1159-db22.fyre.ibm.com pacemaker-fenced [1232] (update_peer_state_iter) notice: Node pcmk-1159-db21 state is now lost | nodeid=1 previous=member source=crm_update_peer_proc
May 09 17:01:23.614 pcmk-1159-db22.fyre.ibm.com pacemaker-fenced [1232] (crm_reap_dead_member) info: Removing node with name pcmk-1159-db21 and id 1 from membership cache

// Quorum is lost, Db2 is brought down
May 09 17:01:25.640 pcmk-1159-db22.fyre.ibm.com pacemaker-controld [1236] (quorum_notification_cb) warning: Quorum lost | membership=612 members=1
May 09 17:01:25.640 pcmk-1159-db22.fyre.ibm.com pacemaker-controld [1236] (update_peer_state_iter) notice: Node pcmk-1159-db21 state is now lost | nodeid=1 previous=member source=pcmk_reap_unseen_nodes
May 09 17:01:25.640 pcmk-1159-db22.fyre.ibm.com pacemaker-controld [1236] (peer_update_callback) info: Cluster node pcmk-1159-db21 is now lost (was member)
May 09 17:01:25.640 pcmk-1159-db22.fyre.ibm.com pacemaker-controld [1236] (peer_update_callback) warning: Stonith/shutdown of node pcmk-1159-db21 was not expected
May 09 17:01:25.640 pcmk-1159-db22.fyre.ibm.com pacemaker-controld [1236] (abort_transition_graph) info: Transition 27604 aborted: Node failure | source=peer update callback:322 complete=true
May 09 17:01:25.640 pcmk-1159-db22.fyre.ibm.com pacemaker-controld [1236] (abort_transition_graph) info: Transition 27604 aborted: Quorum lost | source=crm update quorum:447 complete=true

// Corosync reports the same
May 09 17:01:07.076 [915] pcmk-1159-db22.fyre.ibm.com corosync info [KNET ] libknet.h:log_deliver_fn:763 link: host: 1 link: 0 is down
May 09 17:01:07.076 [915] pcmk-1159-db22.fyre.ibm.com corosync info [KNET ] libknet.h:log_deliver_fn:763 host: host: 1 (passive) best link: 0 (pri: 1)
May 09 17:01:07.076 [915] pcmk-1159-db22.fyre.ibm.com corosync warning [KNET ] libknet.h:log_deliver_fn:758 host: host: 1 has no active links
May 09 17:01:09.111 [915] pcmk-1159-db22.fyre.ibm.com corosync notice [TOTEM ] totemsrp.c:timer_function_orf_token_warning:1753 Token has not been received in 7501 ms
May 09 17:01:11.611 [915] pcmk-1159-db22.fyre.ibm.com corosync notice [TOTEM ] totemsrp.c:timer_function_orf_token_timeout:1769 A processor failed, forming new configuration: token timed out (10000ms), waiting 12000ms for consensus.
May 09 17:01:23.612 [915] pcmk-1159-db22.fyre.ibm.com corosync notice [QUORUM] vsf_quorum.c:log_view_list:159 Sync members[1]: 2
May 09 17:01:23.612 [915] pcmk-1159-db22.fyre.ibm.com corosync notice [QUORUM] vsf_quorum.c:log_view_list:159 Sync left[1]: 1
May 09 17:01:23.612 [915] pcmk-1159-db22.fyre.ibm.com corosync info [VOTEQ ] votequorum.c:votequorum_sync_init:2440 waiting for quorum device Qdevice poll (but maximum for 30000 ms)
May 09 17:01:23.612 [915] pcmk-1159-db22.fyre.ibm.com corosync notice [TOTEM ] totemsrp.c:memb_state_operational_enter:2133 A new membership (2.264) was formed. Members left: 1
May 09 17:01:23.612 [915] pcmk-1159-db22.fyre.ibm.com corosync notice [TOTEM ] totemsrp.c:memb_state_operational_enter:2141 Failed to receive the leave message. failed: 1
May 09 17:01:25.619 [915] pcmk-1159-db22.fyre.ibm.com corosync notice [QUORUM] vsf_quorum.c:quorum_api_set_quorum:178 This node is within the non-primary component and will NOT provide any services.

// Link 0 is back online
May 09 17:02:09.716 [915] pcmk-1159-db22.fyre.ibm.com corosync info [KNET ] libknet.h:log_deliver_fn:763 rx: host: 1 link: 0 is up
```

Questions?

Book of Pacemaker Blog Posts

- <https://www.idug.org/news/idug-technical-content?SearchText=pacemaker>