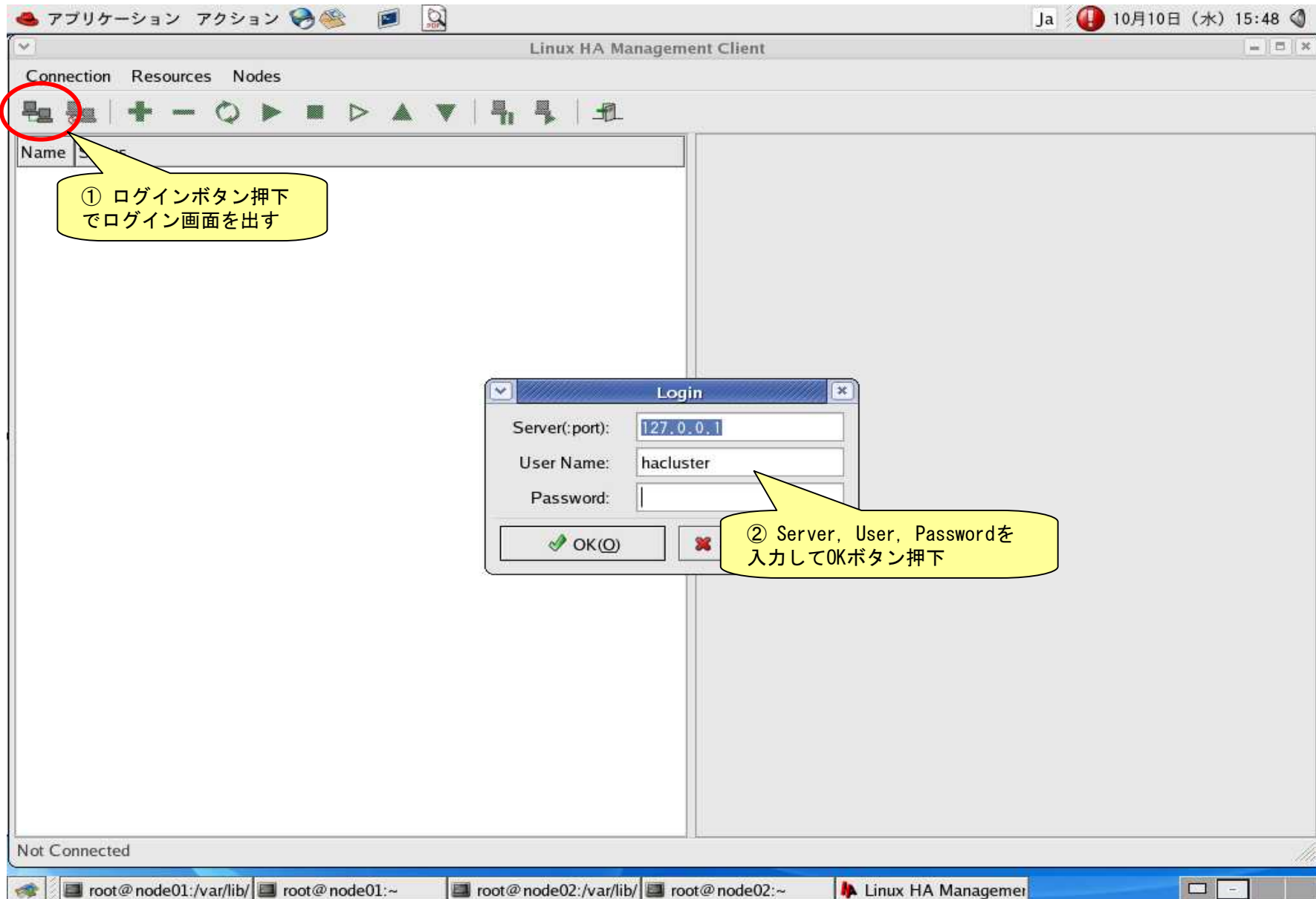


# GUI ログイン



# ログイン後の画面

The screenshot displays the Linux HA Management Client interface. The window title is "Linux HA Management Client" and the system tray shows the date "10月10日 (水) 15:49". The interface is divided into a left sidebar and a main content area.

**Left Sidebar (Tree View):**

Name	Status
linux-ha	with quorum
Nodes	
node02	running(dc)
node01	running
Resources	
Constraints	
Places	
Orders	
Colocations	

**Main Content Area (Configuration):**

- Version:** 2.1.2
- Debug Level:** 0
- UDP Port:** 694
- Keep Alive:** 2
- Warning Alive:** 20
- Dead Time:** 30
- Initial Dead Time:** 60
- Symmetric Cluster**     **Stonith Enabled**
- Transition Timeout:** 20s
- Resource Stickiness:** 0
- No Quorum Policy:** stop
- Resource Failure Stickiness:** 0

Buttons: Apply, Reset

Bottom status bar: Connected to 127.0.0.1

Taskbar: root@node01:/var/lib/ root@node01:~ root@node02:/var/lib/ root@node02:~ Linux HA Manager

# クラスタの設定

The screenshot displays the Linux HA Management Client interface. The left pane shows a tree view of the cluster configuration for 'linux-ha', including nodes (node01, node02), resources, and constraints. The right pane shows various configuration parameters for the cluster, such as Version (2.1.2), Debug Level (0), UDP Port (694), Keep Alive (2), Warning Alive (20), Dead Time (30), Initial Dead Time (60), Symmetric Cluster (checked), Stonith Enabled (unchecked), Transition Timeout (20s), Resource Stickiness (1000000), No Quorum Policy (ignore), and Resource Failure Stickiness (-1000000). The 'Apply' button is circled in red, and a yellow callout bubble points to it with the text '① クラスタの設定を行い Applyボタン押下'. The status bar at the bottom indicates 'Connected to 127.0.0.1'.

Parameter	Value
Version	2.1.2
Debug Level	0
UDP Port	694
Keep Alive	2
Warning Alive	20
Dead Time	30
Initial Dead Time	60
Symmetric Cluster	<input checked="" type="checkbox"/>
Stonith Enabled	<input type="checkbox"/>
Transition Timeout	20s
Resource Stickiness	1000000
No Quorum Policy	ignore
Resource Failure Stickiness	-1000000

# リソースグループの追加

Linux HA Management Client

Connection Resources Nodes

① 追加ボタンを押下し、ポップアップ画面で"Group"を選択。

② Group I Dを設定し、OKボタンを押下

Add Resource Group

ID: group01

Ordered: true

Collocated: true

OK(O) キャンセル(C)

No Data Available

Connected to 127.0.0.1

root@node01:/var/lib/ root@node01:~ root@node02:/var/lib/ root@node02:~ Linux HA Manager

# 仮想アドレスの追加

The screenshot shows the 'Linux HA Management Client' interface. A dialog box titled 'Add Resource' is open, showing the configuration for a new resource. The 'Resource ID' is set to 'ip01' and it belongs to the 'group01' group. The 'Type' list shows 'IPaddr' selected. The 'Parameters' table shows the 'ip' parameter with the value '192.168.201.10'. The 'Add Parameter' button is highlighted with a red circle.

① リソースIDを指定

② IPaddrを選択

③ パラメータを指定

④ 追加ボタンを押下

Name	Value	Description
target_role	stopped	press "Default" or "Start" button in toolbar/menu to start the resource
ip	192.168.201.10	IPv4 address

Name	Class/Provider	Description
TCP	ocf/heartbeat	ICP resource agent
IPaddr	ocf/heartbeat	Manages virtual IPv4 addresses
IPaddr2	ocf/heartbeat	Manages virtual IPv4 addresses
IPscaddr	ocf/heartbeat	IPscaddr resource agent

# 仮想アドレス Operationの追加

The screenshot shows the Linux HA Management Client interface. The main window displays a tree view of resources and nodes. The 'Add Operation' dialog box is open, showing fields for Name, Description, Interval, Timeout, Start Delay, Disabled, Role, Prereq, and On Fail. The 'On Fail' field is set to 'restart'. The dialog has 'OK(O)' and 'キャンセル(C)' buttons. The 'Add Operation' button in the main window is circled in red, and the 'Apply' button is also circled in red. The status bar at the bottom shows 'Connected to 127.0.0.1' and a terminal window with 'root@node01:/var/lib/...'.

① Add Operationボタン押下でポップアップ画面表示

② 操作を選択 (start/monitor/stopなど)

③ 値を設定

④ On Fail時の動作を指定

⑤ OKボタン押下で Operationを追加

⑥ start/stop/monitorなど、必要 Operationを追加後、Applyボタンを押下

# PostgreSQLの追加

The screenshot shows the Linux HA Management Client interface. The main window displays the 'Add Native Resource' dialog box. The dialog is titled 'Add Native Resource' and has the following fields and options:

- Resource ID:** pg01
- Belong to group:** group01
- Type (double click for detail):** A table with the following data:

Name	Class/Provider	Description
pand	lsb	pand
pcmcia	lsb	pcmcia
pgsql	ocf/heartbeat	pgsql resource agent
- Parameters:** A table with the following data:

Name	Value	Description
target_role	stopped	press "Default" or "Start" button in toolbar/menu to start the resource
- If belong to a clone or master/slave:** Checkboxes for 'Clone' and 'Master/Slave' are unchecked. There are also input fields for 'Clone or Master/Slave ID', 'clone\_max', 'clone\_node\_max', 'master\_max', and 'master\_node\_max'.
- Buttons:** '追加(A)' (Add) and 'キャンセル(C)' (Cancel).

Four yellow callout boxes with Japanese text point to specific elements in the dialog:

- ① リソースIDを指定 (Specify Resource ID) - points to the 'Resource ID' field.
- ② pgsqlを選択 (Select pgsql) - points to the 'pgsql' row in the resource type list.
- ③ パラメータを指定 (Specify Parameter) - points to the 'target\_role' parameter.
- ④ 追加ボタンを押下 (Click Add button) - points to the '追加(A)' button, which is also circled in red.

# PostgreSQL Operationの追加

The screenshot shows the Linux HA Management Client interface. On the left, a tree view shows the configuration for 'linux-ha', including nodes (node01, node02), resources (group01, ip01, pg01), and constraints. The 'pg01' resource is selected. On the right, the 'Current Running on []' table shows the configuration for the 'pg01' resource. The table has columns for Name, Description, Interval, Timeout, Start Delay, Disabled, Role, Prereq, and On Fa. The operations listed are 'start', 'stop', and 'monitor'.

Name	Description	Interval	Timeout	Start Delay	Disabled	Role	Prereq	On Fa
start			120s					restart
stop			120s					block
monitor		30s	30s	0				restart

At the bottom of the interface, there are buttons for 'Add Operation', 'Delete Operation', 'Apply', and 'Reset'. The 'Add Operation' and 'Apply' buttons are circled in red. Two callout boxes provide instructions:

- ① Add Operationボタン押下でポップアップ画面表示
- ② start/stop/monitorなど、必要Operationを追加後、Applyボタンを押下



# 制約 Placesの追加

The screenshot shows the Linux HA Management Client interface. The 'Constraints' section is expanded, and a dialog box titled 'The type of new item' is open. The 'Item Type' dropdown is set to 'place', and the 'OK(O)' button is highlighted. A yellow callout bubble points to the '+' button in the toolbar, and another points to the 'OK(O)' button.

① 追加ボタン押下でポップアップ画面を出す。

② Placeを選択し、OKボタンを押下

# 制約 Placesの追加

The screenshot shows the Linux HA Management Client interface. The main window displays a tree view of the system configuration. Under 'Constraints', the 'Places' sub-item is selected. An 'Add Place Constraint' dialog box is open, with the following fields:

Field	Value
ID:	place01
Resource:	group01
Score:	100

The 'Resource' field is circled in red, and a yellow callout bubble points to it with the text: ① Resource ID, Resource, Scoreを指定して OK ボタンを押下

# 制約 Places -Expressionの追加

The screenshot shows the Linux HA Management Client interface. The left pane shows a tree view with 'linux-ha' expanded to 'Places', where 'place01' is selected. The right pane shows details for 'place01', including 'ID: place01', 'Score: 100', and 'Resource: group01'. An 'Expressions' table is visible but empty. A dialog box titled 'Add Expression' is open, with 'Attribute' set to 'hostname', 'Operation' to 'eq', and 'Value' to 'node01'. The 'OK(O)' button is highlighted with a red circle. Below the dialog, a yellow callout box contains the text: '② Attribute, Operation, Valueを指定し、OKボタンを押下'. In the main panel, the 'Add Expression' button is circled in red, with a yellow callout box containing: '① Add Expressionボタン押下によりポップアップウィンドウを出す'. The 'Apply' button is also circled in red, with a yellow callout box containing: '③ 最後にApplyボタン押下で処理を反映させる。'. The status bar at the bottom shows 'Connected to 127.0.0.1' and several terminal windows.

# 制約 Placesの追加

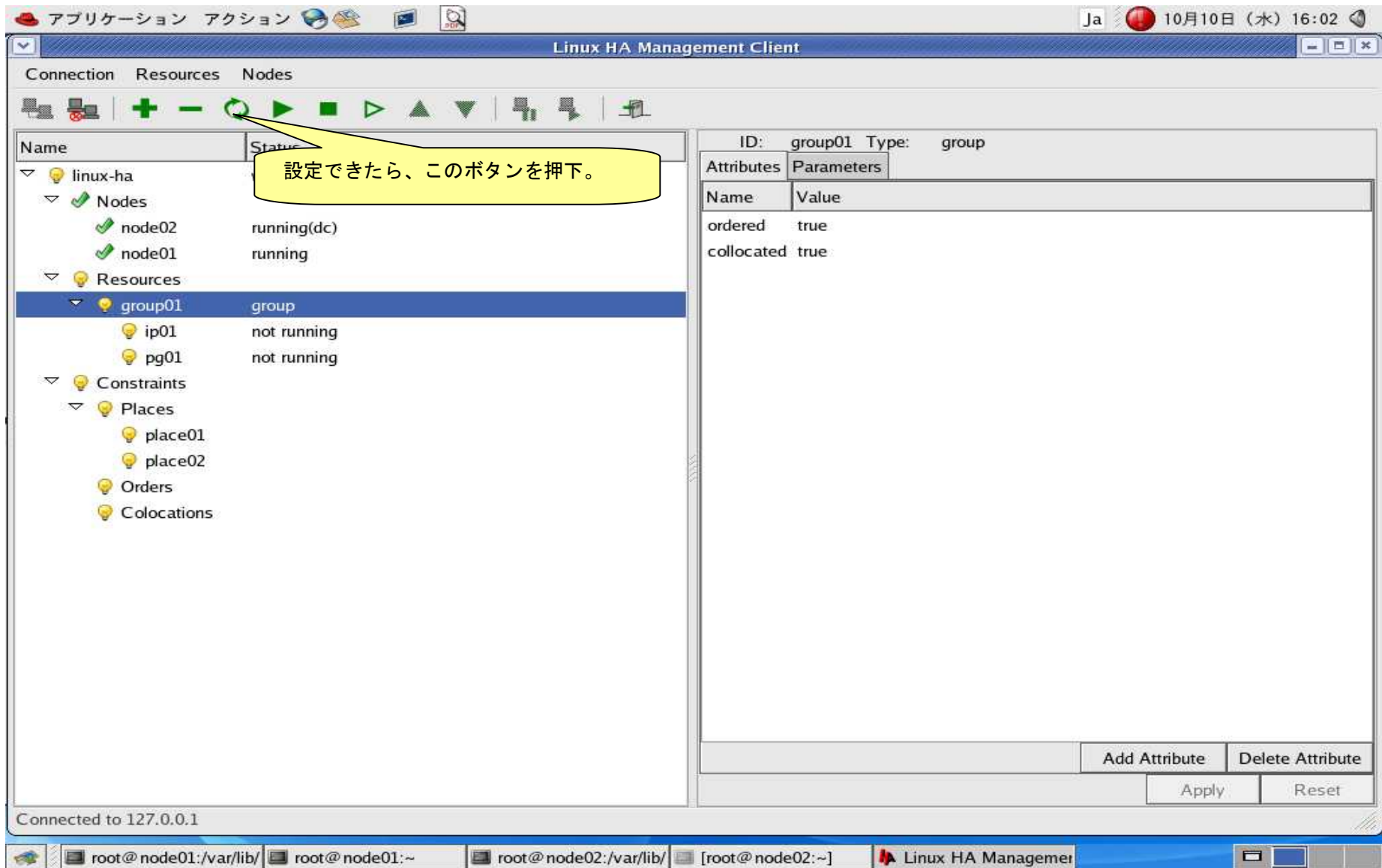
The screenshot shows the Linux HA Management Client interface. The left pane displays a tree view of the configuration hierarchy: linux-ha > Nodes > node02, Resources > group01 > ip01, pg01, Constraints > Places > place02. The right pane shows the configuration for the selected 'place02' constraint, including its ID, Score (50), Resource (group01), and a table of expressions.

node02に対するPlaces制約もnode01と同様に設定。Scoreの値は優先的に上げたい方を大きく。

Attribute	Operation	Value
#uname	eq	node02

Buttons: Add Expression, Delete Expression, Apply, Reset

# 設定完了



The screenshot shows the Linux HA Management Client interface. The left pane displays a tree view of the configuration for 'linux-ha', including 'Nodes' (node02: running(dc), node01: running), 'Resources' (group01: group, ip01: not running, pg01: not running), 'Constraints', 'Places' (place01, place02), 'Orders', and 'Colocations'. The right pane shows the details for the selected 'group01' resource, including its ID and Type, and a table of parameters.

Name	Value
ordered	true
collocated	true

Buttons at the bottom right include 'Add Attribute', 'Delete Attribute', 'Apply', and 'Reset'. The status bar at the bottom indicates 'Connected to 127.0.0.1' and shows terminal windows for 'root@node01' and 'root@node02'.

# リソース開始

The screenshot shows the Linux HA Management Client interface. The main window is titled "Linux HA Management Client" and has a menu bar with "Connection", "Resources", and "Nodes". Below the menu bar is a toolbar with various icons, including a green play button (start) and a green square (stop). The main area is divided into a tree view on the left and a details panel on the right. The tree view shows a hierarchy: "linux-ha" (with quorum) -> "Nodes" (node02: running(dc), node01: running) -> "Resources" (group01: group) -> "ip01" (running on [node01]), "pg01" (running on [node01]), "Constraints" (Places: place01, place02; Orders; Colocations). The "group01" resource is selected. The details panel shows "ID: group01 Type: group" and "Parameters" with "ordered true" and "collocated true". Two yellow callout boxes provide instructions: "① グループのところにカーソルをあわせる" (pointing to group01) and "② startボタンを押下でリソースが起動される。" (pointing to the start button). The bottom status bar shows "Connected to 127.0.0.1".

② startボタンを押下でリソースが起動される。

① グループのところにカーソルをあわせる

Name	Status
linux-ha	with quorum
Nodes	
node02	running(dc)
node01	running
Resources	
group01	group
ip01	running on [node01]
pg01	running on [node01]
Constraints	
Places	
place01	
place02	
Orders	
Colocations	

ID: group01 Type: group	
Attributes	Parameters
Name	Value
ordered	true
collocated	true

# 疑似故障発生

The screenshot shows the Linux HA Management Client interface. On the left, a tree view shows the configuration for 'linux-ha' with nodes 'node01' and 'node02', and resources 'group01', 'ip01', and 'pg01'. The 'group01' resource is highlighted. On the right, a detailed view of 'group01' shows its parameters: 'ordered true' and 'collocated true'. In the foreground, a terminal window on 'node01' displays network configuration for 'eth0:0' and 'lo'. A yellow callout bubble points to the terminal with the text: '仮想アドレスを落とすことで擬似的に故障を発生させる。' (Simulate a failure by dropping the virtual address). The terminal shows the command 'ifconfig eth0:0 down' being entered.

Name	Status
linux-ha	with quorum
Nodes	
node02	running(dc)
node01	running
Resources	
group01	group
ip01	running on ['node01']
pg01	running on ['node01']
Constraints	
Places	
place01	
place02	
Orders	
Colocations	

```
root@node01:~# ifconfig eth0:0 down
```

# 故障検知

The screenshot shows the Linux HA Management Client interface. The main window displays a tree view of resources and nodes. The 'Resources' section is expanded to show 'group01', which is in a failed state. A yellow callout bubble points to the 'ip01' resource, which is 'failed on [node01]'. A terminal window is open on node01, showing the output of the 'ifconfig' command for the 'eth0:0' interface, which is currently down. The terminal output shows the following details for 'eth0:0':

```
inet6 addr: fe80::20a:e4ff:fe22:553a/64 Scope:Link
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
RX packets:1422 errors:0 dropped:0 overruns:0 frame:0
TX packets:1314 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:100
RX bytes:346165 (338.0 KiB) TX bytes:313622 (306.2 KiB)
Base address:0x7000 Memory:d0200000-d0220000

eth0:0 Link encap:Ethernet HWaddr 00:0A:E4:22:55:3A
inet addr:192.168.201.10 Bcast:192.168.201.138 Mask:255.255.255.0
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
Base address:0x7000 Memory:d0200000-d0220000

lo Link encap:Local Loopback
inet addr:127.0.0.1 Mask:255.0.0.0
inet6 addr: ::1/128 Scope:Host
UP LOOPBACK RUNNING MTU:16436 Metric:1
RX packets:1697 errors:0 dropped:0 overruns:0 frame:0
TX packets:1697 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:0
RX bytes:1858139 (1.7 MiB) TX bytes:1858139 (1.7 MiB)

[root@node01 ~]# ifconfig eth0:0 down
[root@node01 ~]#
```

The terminal window also shows the command '[root@node01 ~]# ifconfig eth0:0 down' and the prompt '[root@node01 ~]#'. The status bar at the bottom of the terminal window shows 'te'.



# フェイルオーバー

The screenshot shows the Linux HA Management Client interface. The main window displays a tree view of resources and nodes. The 'Resources' section is expanded to show 'group01', which contains 'ip01' and 'pg01'. Both are shown as 'running on [node02]'. A yellow callout bubble points to this state with the text: 'リソースがnode01からnode02へフェイルオーバー' (Resource failover from node01 to node02). The 'Nodes' section shows 'node01' as 'running' and 'node02' as 'running(dc)'. The 'Constraints' section shows 'Places' with 'place01' and 'place02'.

On the right side, the 'Attributes' and 'Parameters' for 'group01' are displayed:

Attributes	Parameters
Name	Value
ordered	true
collocated	true

At the bottom, a terminal window shows the command 'ifconfig eth0:0 down' being executed on node01, which is part of the failover process.

```
root@node01:~  
ファイル(E) 編集(E) 表示(V) 端末(T) タブ(T) ヘルプ(H)  
inet6 addr: fe80::20a:e4ff:fe22:553a/64 Scope:Link  
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1  
RX packets:1422 errors:0 dropped:0 overruns:0 frame:0  
TX packets:1314 errors:0 dropped:0 overruns:0 carrier:0  
collisions:0 txqueuelen:100  
RX bytes:346165 (338.0 KiB) TX bytes:313622 (306.2 KiB)  
Base address:0x7000 Memory:d0200000-d0220000  
  
eth0:0 Link encap:Ethernet HWaddr 00:0A:E4:22:55:3A  
inet addr:192.168.201.10 Bcast:192.168.201.138 Mask:255.255.255.0  
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1  
Base address:0x7000 Memory:d0200000-d0220000  
  
lo Link encap:Local Loopback  
inet addr:127.0.0.1 Mask:255.0.0.0  
inet6 addr: ::1/128 Scope:Host  
UP LOOPBACK RUNNING MTU:16436 Metric:1  
RX packets:1697 errors:0 dropped:0 overruns:0 frame:0  
TX packets:1697 errors:0 dropped:0 overruns:0 carrier:0  
collisions:0 txqueuelen:0  
RX bytes:1858139 (1.7 MiB) TX bytes:1858139 (1.7 MiB)  
  
[root@node01 ~]# ifconfig eth0:0 down  
[root@node01 ~]# █
```