

ctys-**PM**(1)  
Physical Machine Interface

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## 1 NAME

ctys-PM - Physical Machine Interface

## 2 SYNTAX

```
ctys -t PM -a action[=<suboptions>] ...
ctys -T PM -a action[=<suboptions>] ...
ctys -T ALL -a action[=<suboptions>] ...
```

## 3 DESCRIPTION

The **PM** plugin adds support for sessions to **PhysicalMachines** with plugins of type **HOSTs** for console access.

The management of the physical machines include particularly the support of boot and shutdown for local and remote machines. The supported interfaces comprise the local system interfaces, "Wake-on-LAN/**WoL**" and "Intelligent Platform Management Interface/**IPMI**". The remote check of the Health-Status of the physical machines is based on the "**lm\_sensors**" package.

The PM plugin is "**VM-STACK safe**" as it handles running virtual machines by propagating state change events(e.g. SHUTDOWN) of the physical platform to contained hypervisors and emulators.

Additional information containing use-cases with application examples is available from **ctys-uc-PM** , **ctys-uc-IPMI** , and **ctys-uc-WoL** .

## 4 OPTIONS

-a action[=<suboptions>]

CANCEL

```
CANCEL=(<machine-address>){1}
(
  [FORCE|STACK]
  [SELF]
  [
    RESET|REBOOT
    |(INIT:<init-state>)
    |(PAUSE|S3)|(SUSPEND|S4)
    |(POWEROFF|S5)[:<timeoutBeforeKillVM>]
  ]
  [TIMEOUT:<timeout-value>]
  [WOL]
  [IF:<if-for-wol>]
)
```

SELF

Self cancels the hosting machine for the call after cancel operations on the stack, if not provided

the stack is canceled only. This is due to conformity with the CANCEL operations of VMs, where the hosting system for the hypervisor is addressed. This suboption basically should be applied as default and only behaviour for a PM. But it seems to be somewhat smart, just to target anything within a PM, e.g. when bringing the PM into maintenance mode, without changing the operational state of the PM itself. Due to the main targeted user as a systems administrator, the simplicity of the UI was in this case below the advantage. So sadly accepting some irritation with this suboption here, making it "not default". When SELF is required, it has to be provided.

#### WOL

WOL flag is supported for NIC drivers supporting the ethtool interface, which are e.g. e1000, tg3 or 8139too, e100. For cards with configuration by modprobe-interface this flag is not applicable. WOL enables the later call of "CREATE=WOL,..." by setting the volatile registers of the NIC via the call of "ethtool -s <ifX> wol g" thus WoL via MagicPacket(tm) is enabled after "halt -p" call.

For successful execution root permissions for operations on the interface by "ethtool" is required and should be configured via sudoers or .k5users.

This state change request is not propagated to the VM-stack, the PM plugin itself is the only one evaluating it.

When the WoL feature is set persistently by means of the OS, the WOL flag is not required.

#### IF:<if-for-wol>

The interface to be prepared for WoL. Access permission for "ethtool" is required. If this suboption is not provided, then the first detected valid interface is used. Therefore each plugin is called by the ctys specific init-mechanism in order to prepare the shutdown, though the prepare the interfaces too.

This is particularly for bridged networks required, where the bridged interfaces not propagate the "wol g" flag properly in each case. Thus the detection of the valid interfaces is performed after the completed plugin shutdown actions.

#### CREATE

```
CREATE=<machine-address>
[, (REUSE | CONNECT | RECONNECT | RESUME)]
[, WOL[:<wol-delay>]
[
(
, BROADCAST:<broadcast-dest-address>
[, PORT:<broadcast-dest-port>]
[, BMAC:<broadcast-MAC-address>]
)
|
(IF:<broadcast-interface>)
]
[, CONSOLE: (CLI | GTERM | XTERM | EMACS | VNC)]
[, USER:<user>]
[, PING: (OFF | <#repetition>%<sleep>)]
[, SSHPING: (OFF | <#repetition>%<sleep>)]
```

For information on USER , PING , and SSHPING refer to common options.

#### <machine-address>

The address of the machine to be activated. The usage of <machine-address> implies an exact target to be addressed explicitly.

For multihomed machines a minor limit occurs, when the NIC to be used for WoL is different from the NIC for usage of CONSOLE access. Currently CONSOLE suboption is applied to the target <machine-address>, which is also used as target for the WoL activation. This can cause difficulties, e.g. when a board is used, where - due to BIOS limits - a low rate NIC has to be used for WoL activation, whereas the normal traffic is performed by the remaining NICs with channel bonding. The same principle could be applied due to security reasons when multiple NICs are available. Anyhow, the workaround is to use two calls, one for the WOL packet without a CONSOLE, and a second one for the CONSOLE only, addressing the access port.

**BMAC:**<broadcast-MAC-address>

The MAC address to be inserted into the broadcast packet, which is defined to be the MAC address of the receiving NIC. In difference to the <machine-address>, which is strongly checked for consistency, the broadcast target is not checked for consistency. This is due to various remote application cases, where the actual data might not be locally available, or a relay with port-forwarding and/or protocol-forwarding might be involved.

**BROADCAST:**<broadcast-address>

For machines not within the callers subnet, an arbitrary broadcast address could be set. A UDP package containing a **MagicPacket(TM)** is sent to the given address with port "DISCARD=9" set by default. This parameter forces the usage of native script for generating and sending of the WoL packet and cannot be combined with the "IF" suboption. An example is provided within the following chapter containing additional examples.

The Address has to be of one of the following types:

An arbitrary defined address with an optional port:<ip-address>

This will require the final router for the target subnet to redirect the packet from the destined address to a local broadcast message on the subnet. Thus some additional configuration on the router is required.

A directed broadcast address, where all subnet bits are set. The user has to be aware of the netmask for the target subnet.

**CONNECT**

Opens just a new CONSOLE, requires therefore the PM in operational state.

**CONSOLE:**(CLI|XTERM|GTERM|EMACS|VNC)

If given a console will be opened on the site of caller. This will be performed in addition to the standard console, which may be attached to the KVM-connectors.

Default is CLI, which is based on a complete subcall with type CLI.

The "-b" option will be set for the types of consoles as:

```
CLI    => "-b 0"
XTERM => "-b 1"
GTERM => "-b 1"
EMACS => "-b 1"
VNC   => "-b 1"
```

**IF:**<broadcast-interface>

This defines the local interface where an ethernet broadcast is to be sent. Therefore the tool "ether-wake" is utilized.

This is the default behaviour when neither the BROADCAST nor the IF parameter is supported. For the default case the first interface will be evaluated from a "ifconfig" call, which depends on the current OS and possible custom configuration.

This parameter cannot be combined with BROADCAST.

**PORT:**<broadcast-dest-port>

A port to be used on the remote site. A UDP package containing a **MagicPacket(TM)** is sent to the given BROADCAST address with port "DISCARD=9" set by default.

**RECONNECT**

All current CONSOLES of the user are CANCELED, and a new one is started. The CANCEL just ignores any child process of the enumerated CONSOLES, thus the user is responsible for proper shutdown of running subtasks. Specific exchange of a single client is not supported.

When PM is yet running, it will be rebooted, else just booted and connected with the chosen CONSOLE.

**RESUME**

In this version the same as create only.

**REUSE**

When a machine is already active just a connect is performed. In case of a required new session, first the machine is booted, if an appropriate activation method is defined, which is WoL only in this version. When the machine is available, a CONSOLE is opened is requested.

**WOL:**<wol-delay>

The addressed PM will be activated by Wake-On-LAN, which is in current version the only supported method. Therefore the default "ether-wakeup" tool is utilized by default. This could

be changed by setting the environment variable `CONSOLE_WOL`, to which the MAC-address of the target will be appended. The current implementation expects all PMs within one subnet. The timer `<wol-delay>` is the time period to be delayed the execution after sending the WoL packet. This timer is waited for once before starting the periodical poll with shorter timeout.

#### ENUMERATE

This is specific for PM, just the local configuration information is displayed.

#### LIST

This is specific for PM, just the local configuration information is listed.

## 5 SEE ALSO

### ctys use-cases

*ctys-uc-IPMI(7)* , *ctys-uc-WoL(7)*

### ctys plugins PMs

*ctys-PM(1)*

#### VMs

*KVM(1)* , *ctys-QEMU(1)* , *ctys-VBOX(1)* , *ctys-VMW(1)* , *ctys-XEN(1)*

#### HOSTS

*ctys-CLI(1)* , *ctys-RDP(1)* , *ctys-VNC(1)* , *ctys-X11(1)*

### ctys executables

*ctys(1)* , *ctys-distribute(1)* , *ctys-extractARPlst(1)* , *ctys-extractMAClst(1)* , *ctys-genmconf(1)* , *ctys-plugins(1)* , *ctys(1)* , *ctys-vhost(1)* , *ctys-vhost(1)* , *ctys-wakeup(1)*

**system executables** *dmidecode(8)*, *ether-tool(8)*, *ether-wake(8)*, *nc(1)*<a.k.a. *netcat*>

## 6 AUTHOR

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## 7 COPYRIGHT

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