

util-vserver (libvserver)  
0.30.215

Generated by Doxygen 1.5.6

Tue Aug 19 06:19:30 2008

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## 1 Module Index

### 1.1 Modules

Here is a list of all modules:

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## 2 Data Structure Index

### 2.1 Data Structures

Here are the data structures with brief descriptions:

<a href="#">vc_ctx_caps</a> (Capabilities of process-contexts )	10
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## 3 File Index

### 3.1 File List

Here is a list of all documented files with brief descriptions:

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## 4 Module Documentation

### 4.1 Syscall wrappers

#### Functions

- `int vc_syscall (uint32_t cmd, xid_t xid, void *data)`  
*The generic vserver syscall*  
*This function executes the generic vserver syscall. It uses the correct syscallnumber (which may differ between the different architectures).*
- `int vc_get_version ()`  
*Returns the version of the current kernel API.*
- `vc_vci_t vc_get_vci ()`  
*Returns the kernel configuration bits.*
- `xid_t vc_new_s_context (xid_t ctx, unsigned int remove_cap, unsigned int flags)`  
*Moves current process into a context*  
*Puts current process into context ctx, removes the capabilities given in remove\_cap and sets flags.*
- `int vc_set_ipv4root (uint32_t bcast, size_t nb, struct vc_ip_mask_pair const *ips)`  
*Sets the ipv4root information.*
- `xid_t vc_ctx_create (xid_t xid, struct vc_ctx_flags *flags)`  
*Creates a context without starting it.*  
*This functions initializes a new context. When already in a freshly created context, this old context will be discarded.*
- `int vc_ctx_migrate (xid_t xid, uint_least64_t flags)`  
*Moves the current process into the specified context.*
- `int vc_ctx_stat (xid_t xid, struct vc_ctx_stat *stat)`  
*Get some statistics about a context.*
- `int vc_virt_stat (xid_t xid, struct vc_virt_stat *stat)`  
*Get more statistics about a context.*
- `int vc_ctx_kill (xid_t ctx, pid_t pid, int sig)`  
*Sends a signal to a context/pid*  
*Special values for pid are:*
  - *-1 which means every process in ctx except the init-process*
  - *0 which means every process in ctx inclusive the init-process.*
- `xid_t vc_get_task_xid (pid_t pid)`  
*Returns the context of the given process.*
- `int vc_wait_exit (xid_t xid)`  
*Waits for the end of a context.*
- `int vc_get_rlimit (xid_t xid, int resource, struct vc_rlimit *lim)`

*Returns the limits of resource.*

- `int vc_set_rlimit (xid_t xid, int resource, struct vc_rlimit const *lim)`

*Sets the limits of resource.*

- `int vc_rlimit_stat (xid_t xid, int resource, struct vc_rlimit_stat *stat)`

*Returns the current stats of resource.*

- `int vc_reset_minmax (xid_t xid)`

*Resets the minimum and maximum observed values of all resources.*

- `int vc_get_iattr (char const *filename, xid_t *xid, uint_least32_t *flags, uint_least32_t *mask)`

*Returns information about attributes and assigned context of a file.*

*This function returns the VC\_IATTR\_XXX flags and about the assigned context of a file. To request an information, the appropriate bit in mask must be set and the corresponding parameter (xid or flags) must not be NULL.*

- `xid_t vc_getfilecontext (char const *filename)`

*Returns the context of filename*

*This function calls `vc_get_iattr()` with appropriate arguments to determine the context of filename. In error-case or when no context is assigned, VC\_NOCTX will be returned. To differ between both cases, `errno` must be examined.*

### 4.1.1 Detailed Description

Functions which are calling the vserver syscall directly.

### 4.1.2 Function Documentation

#### 4.1.2.1 `xid_t vc_ctx_create (xid_t xid, struct vc_ctx_flags *flags)`

Creates a context without starting it.

This functions initializes a new context. When already in a freshly created context, this old context will be discarded.

#### Parameters:

*xid* The new context; special values are:

- VC\_DYNAMIC\_XID which means to create a dynamic context

#### Returns:

the xid of the created context, or VC\_NOCTX on errors. `errno` will be set appropriately.

#### 4.1.2.2 `int vc_ctx_migrate (xid_t xid, uint_least64_t flags)`

Moves the current process into the specified context.

#### Parameters:

*xid* The new context

*flags* The flags, see VC\_VXM\_\*

**Returns:**

0 on success, -1 on errors

#### 4.1.2.3 int vc\_ctx\_stat (xid\_t xid, struct vc\_ctx\_stat \* stat)

Get some statistics about a context.

**Parameters:**

*xid* The context to get stats about

*stat* Where to store the result

**Returns:**

0 on success, -1 on errors.

#### 4.1.2.4 int vc\_get\_iattr (char const \* filename, xid\_t \* xid, uint\_least32\_t \* flags, uint\_least32\_t \* mask)

Returns information about attributes and assigned context of a file.

This function returns the VC\_IATTR\_XXX flags and about the assigned context of a file. To request an information, the appropriate bit in *mask* must be set and the corresponding parameter (*xid* or *flags*) must not be NULL.

E.g. to receive the assigned context, the VC\_IATTR\_XID bit must be set in *mask*, and *xid* must point to valid memory.

Possible flags are VC\_IATTR\_ADMIN, VC\_IATTR\_WATCH , VC\_IATTR\_HIDE, VC\_IATTR\_BARRIER, VC\_IATTR\_IUNLINK and VC\_IATTR\_IMMUTABLE.

**Parameters:**

*filename* The name of the file whose attributes shall be determined.

*xid* When non-zero and the VC\_IATTR\_XID bit is set in *mask*, the assigned context of *filename* will be stored there.

*flags* When non-zero, a bitmask of current attributes will be stored there. These attributes must be requested explicitly by setting the appropriate bit in *mask*

*mask* Points to a bitmask which tells which attributes shall be determined. On return, it will masquerade the attributes which were determined.

**Precondition:**

mask!=0 && !((\*mask&VC\_IATTR\_XID) && xid==0) && !((\*mask&~VC\_IATTR\_XID) && flags==0)

#### 4.1.2.5 int vc\_get\_rlimit (xid\_t xid, int resource, struct vc\_rlimit \* lim)

Returns the limits of *resource*.

**Parameters:**

*xid* The id of the context

*resource* The resource which will be queried

*lim* The result which will be filled with the limits

**Returns:**

0 on success, and -1 on errors.

**4.1.2.6 `xid_t vc_get_task_xid (pid_t pid)`**

Returns the context of the given process.

**Parameters:**

*pid* the process-id whose xid shall be determined; pid==0 means the current process.

**Returns:**

the xid of process *pid* or -1 on errors

**4.1.2.7 `vc_vci_t vc_get_vci ()`**

Returns the kernel configuration bits.

**Returns:**

The kernel configuration bits

**4.1.2.8 `int vc_get_version ()`**

Returns the version of the current kernel API.

**Returns:**

The versionnumber of the kernel API

**4.1.2.9 `xid_t vc_getfilecontext (char const *filename)`**

Returns the context of *filename*

This function calls [vc\\_get\\_iattr\(\)](#) with appropriate arguments to determine the context of *filename*. In error-case or when no context is assigned, VC\_NOCTX will be returned. To differ between both cases, *errno* must be examined.

**WARNING:** this function can modify *errno* although no error happened.

**Parameters:**

*filename* The file to check

**Returns:**

The assigned context, or VC\_NOCTX when an error occurred or no such assignment exists. *errno* will be 0 in the latter case

**4.1.2.10** `xid_t vc_new_s_context (xid_t ctx, unsigned int remove_cap, unsigned int flags)`

Moves current process into a context

Puts current process into context *ctx*, removes the capabilities given in *remove\_cap* and sets *flags*.

**Parameters:**

*ctx* The new context; special values for are

- VC\_SAMECTX which means the current context (just for changing caps and flags)
- VC\_DYNAMIC\_XID which means the next free context; this value can be used by ordinary users also

*remove\_cap* The linux capabilities which will be **removed**.

*flags* Special flags which will be set.

**Returns:**

The new context-id, or VC\_NOCTX on errors; `errno` will be set appropriately

See <http://vserver.13thfloor.at/Stuff/Logic.txt> for details

**4.1.2.11** `int vc_reset_minmax (xid_t xid)`

Resets the minimum and maximum observed values of all resources.

**Parameters:**

*xid* The id of the context

**Returns:**

0 on success, and -1 on errors.

**4.1.2.12** `int vc_rlimit_stat (xid_t xid, int resource, struct vc_rlimit_stat * stat)`

Returns the current stats of *resource*.

**Parameters:**

*xid* The id of the context

*resource* The resource which will be queried

*stat* The result which will be filled with the stats

**Returns:**

0 on success, and -1 on errors.

**4.1.2.13** `int vc_set_ipv4root (uint32_t bcast, size_t nb, struct vc_ip_mask_pair const * ips)`

Sets the ipv4root information.

**Precondition:**

`nb < NB_IPV4ROOT && ips != 0`



**4.1.2.14 int vc\_set\_rlimit (xid\_t xid, int resource, struct vc\_rlimit const \* lim)**

Sets the limits of *resource*.

**Parameters:**

*xid* The id of the context  
*resource* The resource which will be queried  
*lim* The new limits

**Returns:**

0 on success, and -1 on errors.

**4.1.2.15 int vc\_syscall (uint32\_t cmd, xid\_t xid, void \* data)**

The generic vserver syscall

This function executes the generic vserver syscall. It uses the correct syscallnumber (which may differ between the different architectures).

**Parameters:**

*cmd* the command to be executed  
*xid* the xid on which the cmd shall be applied  
*data* additional arguments; depends on *cmd*

**Returns:**

depends on *cmd*; usually, -1 stands for an error

**4.1.2.16 int vc\_virt\_stat (xid\_t xid, struct vc\_virt\_stat \* stat)**

Get more statistics about a context.

**Parameters:**

*xid* The context to get stats about  
*stat* Where to store the result

**Returns:**

0 on success, -1 on errors.

## 4.2 Helper functions

**Data Structures**

- struct [vc\\_err\\_listparser](#)  
*Information about parsing errors.*

## Functions

- `size_t vc_get_nb_ipv4root () VC_ATTR_CONST`  
*Returns the value of NB\_IPV4ROOT.*  
*This function returns the value of NB\_IPV4ROOT which was used when the library was built, but **not** the value which is used by the currently running kernel.*
- `bool vc_parseLimit (char const *str, vc_limit_t *res)`  
*Parses a string describing a limit*  
*This function parses str and interprets special words like "inf" or suffixes. Valid suffixes are*
  - k ... 1000
  - m ... 1000000
  - K ... 1024
  - M ... 1048576.
- `uint_least64_t vc_text2bcap (char const *str, size_t len)`  
*Converts a single string into bcapability.*
- `char const * vc_lobcap2text (uint_least64_t *val)`  
*Converts the lowest bit of a bcapability or the entire value (when possible) to a textual representation.*
- `int vc_list2bcap (char const *str, size_t len, struct vc_err_listparser *err, struct vc_ctx_caps *cap)`  
*Converts a string into a bcapability-bitmask*  
*Syntax of str:.*

### 4.2.1 Detailed Description

Functions which are doing general helper tasks like parameter parsing.

### 4.2.2 Function Documentation

#### 4.2.2.1 `int vc_list2bcap (char const * str, size_t len, struct vc_err_listparser * err, struct vc_ctx_caps * cap)`

Converts a string into a bcapability-bitmask

Syntax of *str*:

```
LIST    <- ELEM | ELEM ' , ' LIST
ELEM    <- '~' ELEM | MASK | NAME
MASK    <- NUMBER | '^' NUMBER
NUMBER  <- 0[0-7]* | [1-9][0-9]* | 0x[0-9,a-f]+
NAME    <- <literal name> | "all" | "any" | "none"
```

When the '~' prefix is used, the bits will be unset and a '~' after another '~' will cancel both ones. The '^' prefix specifies a bitnumber instead of a bitmask.

"literal name" is everything which will be accepted by the `vc_text2bcap()` function. The special values for NAME will be recognized case insensitively

#### Parameters:

*str* The string to be parsed

*len* The length of the string, or 0 for automatic detection

*err* Pointer to a structure for error-information, or NULL.

*cap* Pointer to a `vc_ctx_caps` structure holding the results; only the *bcaps* and *bmask* fields will be changed and already set values will not be honored. When an error occurred, *cap* will have the value of all processed valid BCAP parts.

**Returns:**

0 on success, -1 on error. In error case, *err* will hold position and length of the first not understood BCAP part

**Precondition:**

*str* != 0 && *cap* != 0; *cap*->*bcaps* and *cap*->*bmask* must be initialized

#### 4.2.2.2 char const\* vc\_lobcap2text (uint\_least64\_t \* val)

Converts the lowest bit of a bcapability or the entire value (when possible) to a textual representation.

**Parameters:**

*val* The string to be converted; on success, the detected bit(s) will be unset, in errorcase only the lowest set bit

**Returns:**

A textual representation of *val* resp. of its lowest set bit; or NULL in errorcase.

**Precondition:**

*val* != 0

**Postcondition:**

$*val_{old} \neq 0 \leftrightarrow *val_{old} > *val_{new}$   
 $*val_{old} == 0 \rightarrow result == 0$

#### 4.2.2.3 bool vc\_parseLimit (char const \* str, vc\_limit\_t \* res)

Parses a string describing a limit

This function parses *str* and interprets special words like "inf" or suffixes. Valid suffixes are

- k ... 1000
- m ... 1000000
- K ... 1024
- M ... 1048576.

**Parameters:**

*str* The string which shall be parsed

*res* Will be filled with the interpreted value; in errorcase, this value is undefined.

**Returns:**

*true*, iff the string *str* could be parsed. *res* will be filled with the interpreted value in this case.

**Precondition:**

*str*!=0 && *res*!=0

**4.2.2.4 uint\_least64\_t vc\_text2bcap (char const \* *str*, size\_t *len*)**

Converts a single string into bcability.

**Parameters:**

*str* The string to be parsed; both "CAP\_XXX" and "XXX" will be accepted

*len* The length of the string, or 0 for automatic detection

**Returns:**

0 on error; a bitmask on success

**Precondition:**

*str* != 0

## 5 Data Structure Documentation

### 5.1 vc\_ctx\_caps Struct Reference

Capabilities of process-contexts.

```
#include <vserver.h>
```

**Data Fields**

- uint\_least64\_t [bcaps](#)  
*Mask of set common system capabilities.*
- uint\_least64\_t [bmask](#)  
*Mask of set and unset common system capabilities when used by set operations, or the modifiable capabilities when used by get operations.*
- uint\_least64\_t [ccaps](#)  
*Mask of set process context capabilities.*
- uint\_least64\_t [cmask](#)  
*Mask of set and unset process context capabilities when used by set operations, or the modifiable capabilities when used by get operations.*

### 5.1.1 Detailed Description

Capabilities of process-contexts.

Definition at line 493 of file vserver.h.

The documentation for this struct was generated from the following file:

- [vserver.h](#)

## 5.2 vc\_ctx\_flags Struct Reference

Flags of process-contexts.

```
#include <vserver.h>
```

### Data Fields

- `uint_least64_t` [flagword](#)  
*Mask of set context flags.*
- `uint_least64_t` [mask](#)  
*Mask of set and unset context flags when used by set operations, or modifiable flags when used by get operations.*

### 5.2.1 Detailed Description

Flags of process-contexts.

Definition at line 415 of file vserver.h.

The documentation for this struct was generated from the following file:

- [vserver.h](#)

## 5.3 vc\_ctx\_stat Struct Reference

Statistics about a context.

```
#include <vserver.h>
```

### Data Fields

- `uint_least32_t` [usecnt](#)  
*number of uses*
- `uint_least32_t` [tasks](#)  
*number of tasks*

### 5.3.1 Detailed Description

Statistics about a context.

Definition at line 446 of file `vserver.h`.

The documentation for this struct was generated from the following file:

- [vserver.h](#)

## 5.4 `vc_err_listparser` Struct Reference

Information about parsing errors.

```
#include <vserver.h>
```

### Data Fields

- `char const * ptr`  
*Pointer to the first character of an erroneous string.*
- `size_t len`  
*Length of the erroneous string.*

### 5.4.1 Detailed Description

Information about parsing errors.

Definition at line 844 of file `vserver.h`.

The documentation for this struct was generated from the following file:

- [vserver.h](#)

## 5.5 `vc_rlimit` Struct Reference

The limits of a resources.

```
#include <vserver.h>
```

### Data Fields

- `vc_limit_t min`  
*the guaranteed minimum of a resources*
- `vc_limit_t soft`  
*the softlimit of a resource*
- `vc_limit_t hard`  
*the absolute hardlimit of a resource*

### 5.5.1 Detailed Description

The limits of a resources.

This is a triple consisting of a minimum, soft and hardlimit.

Definition at line 559 of file `vserver.h`.

The documentation for this struct was generated from the following file:

- [vserver.h](#)

## 5.6 `vc_rlimit_mask` Struct Reference

Masks describing the supported limits.

```
#include <vserver.h>
```

### Data Fields

- `uint_least32_t` [min](#)  
*masks the resources supporting a minimum limit*
- `uint_least32_t` [soft](#)  
*masks the resources supporting a soft limit*
- `uint_least32_t` [hard](#)  
*masks the resources supporting a hard limit*

### 5.6.1 Detailed Description

Masks describing the supported limits.

Definition at line 546 of file `vserver.h`.

The documentation for this struct was generated from the following file:

- [vserver.h](#)

## 5.7 `vc_rlimit_stat` Struct Reference

Statistics for a resource limit.

```
#include <vserver.h>
```

### Data Fields

- `uint_least32_t` [hits](#)  
*number of hits on the limit*
- [vc\\_limit\\_t](#) `value`

*current value*

- [vc\\_limit\\_t minimum](#)

*minimum value observed*

- [vc\\_limit\\_t maximum](#)

*maximum value observed*

### 5.7.1 Detailed Description

Statistics for a resource limit.

Definition at line 587 of file `vserver.h`.

The documentation for this struct was generated from the following file:

- [vserver.h](#)

## 5.8 `vc_virt_stat` Struct Reference

Contains further statistics about a context.

```
#include <vserver.h>
```

### Data Fields

- `uint_least64_t offset`
- `uint_least64_t uptime`
- `uint_least32_t nr_threads`
- `uint_least32_t nr_running`
- `uint_least32_t nr_uninterruptible`
- `uint_least32_t nr_onhold`
- `uint_least32_t nr_forks`
- `uint_least32_t load [3]`

### 5.8.1 Detailed Description

Contains further statistics about a context.

Definition at line 461 of file `vserver.h`.

The documentation for this struct was generated from the following file:

- [vserver.h](#)

## 6 File Documentation

### 6.1 `internal.h` File Reference

Declarations which are used by `util-vserver` internally.



```
#include "fmt.h"
#include "vserver.h"
#include <stdlib.h>
#include <stdbool.h>
```

Include dependency graph for internal.h:

### Data Structures

- struct **Mapping\_uint32**
- struct **Mapping\_uint64**

### Functions

- char \* **vc\_getVserverByCtx\_Internal** ([xid\\_t](#) ctx, vcCfgStyle \*style, char const \*revdir, bool validate\_result)
- int **utilvserver\_checkCompatVersion** ()
- [uint\\_least32\\_t](#) **utilvserver\_checkCompatConfig** ()
- bool **utilvserver\_isDirectory** (char const \*path, bool follow\_link)
- bool **utilvserver\_isFile** (char const \*path, bool follow\_link)
- bool **utilvserver\_isLink** (char const \*path)
- int **utilvserver\_listparser\_uint32** (char const \*str, [size\\_t](#) len, char const \*\*err\_ptr, [size\\_t](#) \*err\_len, [uint\\_least32\\_t](#) \*flag, [uint\\_least32\\_t](#) \*mask, [uint\\_least32\\_t](#)(\*func)(char const \*, [size\\_t](#), bool \*)) NONNULL((1))
- int **utilvserver\_listparser\_uint64** (char const \*str, [size\\_t](#) len, char const \*\*err\_ptr, [size\\_t](#) \*err\_len, [uint\\_least64\\_t](#) \*flag, [uint\\_least64\\_t](#) \*mask, [uint\\_least64\\_t](#)(\*func)(char const \*, [size\\_t](#), bool \*)) NONNULL((1))
- [ssize\\_t](#) **utilvserver\_value2text\_uint32** (char const \*str, [size\\_t](#) len, struct Mapping\_uint32 const \*map, [size\\_t](#) map\_len) NONNULL((1))
- [ssize\\_t](#) **utilvserver\_value2text\_uint64** (char const \*str, [size\\_t](#) len, struct Mapping\_uint64 const \*map, [size\\_t](#) map\_len) NONNULL((1))
- [ssize\\_t](#) **utilvserver\_text2value\_uint32** ([uint\\_least32\\_t](#) \*val, struct Mapping\_uint32 const \*map, [size\\_t](#) map\_len) NONNULL((1))
- [ssize\\_t](#) **utilvserver\_text2value\_uint64** ([uint\\_least64\\_t](#) \*val, struct Mapping\_uint64 const \*map, [size\\_t](#) map\_len) NONNULL((1))

#### 6.1.1 Detailed Description

Declarations which are used by util-vserver internally.

Definition in file [internal.h](#).

## 6.2 vserver.h File Reference

The public interface of the the libvserver library.

```
#include <stdint.h>
#include <stdlib.h>
#include <stdbool.h>
```

```
#include <sys/types.h>
#include <sched.h>
#include <netinet/in.h>
```

Include dependency graph for vserver.h:

This graph shows which files directly or indirectly include this file:

### Data Structures

- struct **vc\_ip\_mask\_pair**
- struct **vc\_ctx\_flags**  
*Flags of process-contexts.*
- struct **vc\_ctx\_stat**  
*Statistics about a context.*
- struct **vc\_virt\_stat**  
*Contains further statistics about a context.*
- struct **vc\_ctx\_caps**  
*Capabilities of process-contexts.*
- struct **vc\_vx\_info**
- struct **vc\_rlimit\_mask**  
*Masks describing the supported limits.*
- struct **vc\_rlimit**  
*The limits of a resources.*
- struct **vc\_rlimit\_stat**  
*Statistics for a resource limit.*
- struct **vc\_nx\_info**
- struct **vc\_net\_addr**
- struct **vc\_net\_flags**
- struct **vc\_net\_caps**
- struct **vc\_ctx\_dlimit**
- struct **vc\_set\_sched**
- struct **vc\_sched\_info**
- struct **vc\_err\_listparser**  
*Information about parsing errors.*

### Defines

- #define **VC\_NOCTX** ((xid\_t)(-1))
- #define **VC\_NOXID** ((xid\_t)(-1))
- #define **VC\_DYNAMIC\_XID** ((xid\_t)(-1))
- #define **VC\_SAMECTX** ((xid\_t)(-2))

- `#define VC_NONID ((nid_t)(-1))`
- `#define VC_DYNAMIC_NID ((nid_t)(-1))`
- `#define VC_LIM_INFINITY (~0ULL)`
- `#define VC_LIM_KEEP (~1ULL)`
- `#define VC_CDLIM_UNSET (0U)`
- `#define VC_CDLIM_INFINITY (~0U)`
- `#define VC_CDLIM_KEEP (~1U)`
- `#define S_CTX_INFO_LOCK 1`
- `#define S_CTX_INFO_SCHED 2`
- `#define S_CTX_INFO_NPROC 4`
- `#define S_CTX_INFO_PRIVATE 8`
- `#define S_CTX_INFO_INIT 16`
- `#define S_CTX_INFO_HIDEINFO 32`
- `#define S_CTX_INFO_ULIMIT 64`
- `#define S_CTX_INFO_NAMESPACE 128`
- `#define VC_CAP_CHOWN 0`
- `#define VC_CAP_DAC_OVERRIDE 1`
- `#define VC_CAP_DAC_READ_SEARCH 2`
- `#define VC_CAP_FOWNER 3`
- `#define VC_CAP_FSETID 4`
- `#define VC_CAP_KILL 5`
- `#define VC_CAP_SETGID 6`
- `#define VC_CAP_SETUID 7`
- `#define VC_CAP_SETPCAP 8`
- `#define VC_CAP_LINUX_IMMUTABLE 9`
- `#define VC_CAP_NET_BIND_SERVICE 10`
- `#define VC_CAP_NET_BROADCAST 11`
- `#define VC_CAP_NET_ADMIN 12`
- `#define VC_CAP_NET_RAW 13`
- `#define VC_CAP_IPC_LOCK 14`
- `#define VC_CAP_IPC_OWNER 15`
- `#define VC_CAP_SYS_MODULE 16`
- `#define VC_CAP_SYS_RAWIO 17`
- `#define VC_CAP_SYS_CHROOT 18`
- `#define VC_CAP_SYS_PTRACE 19`
- `#define VC_CAP_SYS_PACCT 20`
- `#define VC_CAP_SYS_ADMIN 21`
- `#define VC_CAP_SYS_BOOT 22`
- `#define VC_CAP_SYS_NICE 23`
- `#define VC_CAP_SYS_RESOURCE 24`
- `#define VC_CAP_SYS_TIME 25`
- `#define VC_CAP_SYS_TTY_CONFIG 26`
- `#define VC_CAP_MKNOD 27`
- `#define VC_CAP_LEASE 28`
- `#define VC_CAP_AUDIT_WRITE 29`
- `#define VC_CAP_AUDIT_CONTROL 30`
- `#define VC_IMMUTABLE_FILE_FL 0x0000010lu`
- `#define VC_IMMUTABLE_LINK_FL 0x0008000lu`
- `#define VC_IMMUTABLE_ALL (VC_IMMUTABLE_LINK_FL|VC_IMMUTABLE_FILE_FL)`
- `#define VC_IATTR_XID 0x01000000u`

- #define **VC\_IATTR\_ADMIN** 0x00000001u
- #define **VC\_IATTR\_WATCH** 0x00000002u
- #define **VC\_IATTR\_HIDE** 0x00000004u
- #define **VC\_IATTR\_FLAGS** 0x00000007u
- #define **VC\_IATTR\_BARRIER** 0x00010000u
- #define **VC\_IATTR\_IUNLINK** 0x00020000u
- #define **VC\_IATTR\_IMMUTABLE** 0x00040000u
- #define **VC\_VXF\_INFO\_LOCK** 0x00000001ull
- #define **VC\_VXF\_INFO\_NPROC** 0x00000004ull
- #define **VC\_VXF\_INFO\_PRIVATE** 0x00000008ull
- #define **VC\_VXF\_INFO\_INIT** 0x00000010ull
- #define **VC\_VXF\_INFO\_HIDEINFO** 0x00000020ull
- #define **VC\_VXF\_INFO\_ULIMIT** 0x00000040ull
- #define **VC\_VXF\_INFO\_NAMESPACE** 0x00000080ull
- #define **VC\_VXF\_SCHED\_HARD** 0x00000100ull
- #define **VC\_VXF\_SCHED\_PRIO** 0x00000200ull
- #define **VC\_VXF\_SCHED\_PAUSE** 0x00000400ull
- #define **VC\_VXF\_VIRT\_MEM** 0x00010000ull
- #define **VC\_VXF\_VIRT\_UPTIME** 0x00020000ull
- #define **VC\_VXF\_VIRT\_CPU** 0x00040000ull
- #define **VC\_VXF\_VIRT\_LOAD** 0x00080000ull
- #define **VC\_VXF\_VIRT\_TIME** 0x00100000ull
- #define **VC\_VXF\_HIDE\_MOUNT** 0x01000000ull
- #define **VC\_VXF\_HIDE\_NETIF** 0x02000000ull
- #define **VC\_VXF\_HIDE\_VINFO** 0x04000000ull
- #define **VC\_VXF\_STATE\_SETUP** (1ULL<<32)
- #define **VC\_VXF\_STATE\_INIT** (1ULL<<33)
- #define **VC\_VXF\_STATE\_ADMIN** (1ULL<<34)
- #define **VC\_VXF\_SC\_HELPER** (1ULL<<36)
- #define **VC\_VXF\_REBOOT\_KILL** (1ULL<<37)
- #define **VC\_VXF\_PERSISTENT** (1ULL<<38)
- #define **VC\_VXF\_FORK\_RSS** (1ULL<<48)
- #define **VC\_VXF\_PROLIFIC** (1ULL<<49)
- #define **VC\_VXF\_IGNEG\_NICE** (1ULL<<52)
- #define **VC\_VXC\_SET\_UTSNAME** 0x00000001ull
- #define **VC\_VXC\_SET\_RLIMIT** 0x00000002ull
- #define **VC\_VXC\_RAW\_ICMP** 0x00000100ull
- #define **VC\_VXC\_SYSLOG** 0x00001000ull
- #define **VC\_VXC\_SECURE\_MOUNT** 0x00010000ull
- #define **VC\_VXC\_SECURE\_REMOUNT** 0x00020000ull
- #define **VC\_VXC\_BINARY\_MOUNT** 0x00040000ull
- #define **VC\_VXC\_QUOTA\_CTL** 0x00100000ull
- #define **VC\_VXC\_ADMIN\_MAPPER** 0x00200000ull
- #define **VC\_VXC\_ADMIN\_CLOOP** 0x00400000ull
- #define **VC\_VXC\_KTHREAD** 0x01000000ull
- #define **VC\_VXSM\_FILL\_RATE** 0x0001
- #define **VC\_VXSM\_INTERVAL** 0x0002
- #define **VC\_VXSM\_FILL\_RATE2** 0x0004
- #define **VC\_VXSM\_INTERVAL2** 0x0008
- #define **VC\_VXSM\_TOKENS** 0x0010

- `#define VC_VXSM_TOKENS_MIN 0x0020`
- `#define VC_VXSM_TOKENS_MAX 0x0040`
- `#define VC_VXSM_PRIO_BIAS 0x0100`
- `#define VC_VXSM_CPU_ID 0x1000`
- `#define VC_VXSM_BUCKET_ID 0x2000`
- `#define VC_VXSM_IDLE_TIME 0x0200`
- `#define VC_VXSM_FORCE 0x0400`
- `#define VC_VXSM_MSEC 0x4000`
- `#define VC_VXSM_V3_MASK 0x0173`
- `#define VC_NXF_INFO_LOCK 0x00000001ull`
- `#define VC_NXF_INFO_PRIVATE 0x00000008ull`
- `#define VC_NXF_SINGLE_IP 0x00000100ull`
- `#define VC_NXF_LBACK_REMAP 0x00000200ull`
- `#define VC_NXF_LBACK_ALLOW 0x00000400ull`
- `#define VC_NXF_HIDE_NETIF 0x02000000ull`
- `#define VC_NXF_HIDE_LBACK 0x04000000ull`
- `#define VC_NXF_STATE_SETUP (1ULL<<32)`
- `#define VC_NXF_STATE_ADMIN (1ULL<<34)`
- `#define VC_NXF_SC_HELPER (1ULL<<36)`
- `#define VC_NXF_PERSISTENT (1ULL<<38)`
- `#define VC_NXC_TUN_CREATE 0x00000001ull`
- `#define VC_NXC_RAW_ICMP 0x00000100ull`
- `#define VC_VLIMIT_NSOCK 16`
- `#define VC_VLIMIT_OPENFD 17`
- `#define VC_VLIMIT_ANON 18`
- `#define VC_VLIMIT_SHMEM 19`
- `#define VC_VLIMIT_SEMARY 20`
- `#define VC_VLIMIT_NSEMS 21`
- `#define VC_VLIMIT_DENTRY 22`
- `#define VC_VLIMIT_MAPPED 23`
- `#define VC_VCI_NO_DYNAMIC (1 << 0)`
- `#define VC_VCI_SPACES (1 << 10)`
- `#define VC_VCI_NETV2 (1 << 11)`
- `#define VC_VCI_PPTAG (1 << 28)`
- `#define VC_DATTR_CREATE 0x00000001`
- `#define VC_DATTR_OPEN 0x00000002`
- `#define VC_DATTR_REMAP 0x00000010`
- `#define VC_VXM_SET_INIT 0x00000001`
- `#define VC_VXM_SET_REAPER 0x00000002`
- `#define VC_NXA_TYPE_IPV4 0x0001`
- `#define VC_NXA_TYPE_IPV6 0x0002`
- `#define VC_NXA_TYPE_NONE 0x0000`
- `#define VC_NXA_TYPE_ANY 0x00FF`
- `#define VC_NXA_TYPE_ADDR 0x0010`
- `#define VC_NXA_TYPE_MASK 0x0020`
- `#define VC_NXA_TYPE_RANGE 0x0040`
- `#define VC_NXA_MOD_BCAST 0x0100`
- `#define VC_NXA_MOD_LBACK 0x0200`
- `#define CLONE_NEWNS 0x00020000`
- `#define CLONE_NEWUTS 0x04000000`

- `#define CLONE_NEWIPC 0x08000000`
- `#define CLONE_NEWUSER 0x10000000`
- `#define CLONE_NEWPID 0x20000000`
- `#define CLONE_NEWNET 0x40000000`
- `#define VC_BAD_PERSONALITY ((uint_least32_t)(-1))`
- `#define vna_v4_ip s.ip.v4`
- `#define vna_v4_ip2 s.ip2.v4`
- `#define vna_v4_mask s.mask.v4`
- `#define vna_v6_ip s.ip.v6`
- `#define vna_v6_ip2 s.ip2.v6`
- `#define vna_v6_mask s.mask.v6`
- `#define VC_LIMIT_VSERVER_NAME_LEN 1024`
- `#define vcSKEL_INTERFACES 1u`
- `#define vcSKEL_PKGMGMT 2u`
- `#define vcSKEL_FILESYSTEM 4u`

### Typedefs

- `typedef an_unsigned_integer_type xid\_t`
- `typedef an_unsigned_integer_type nid\_t`
- `typedef an_unsigned_integer_type tag\_t`
- `typedef uint64_t vc\_vci\_t`
- `typedef uint_least64_t vc\_limit\_t`

*The type which is used for a single limit value.*

### Enumerations

- `enum vc_uts_type {`  
`vcVHI_CONTEXT, vcVHI_SYSNAME, vcVHI_NODENAME, vcVHI_RELEASE,`  
`vcVHI_VERSION, vcVHI_MACHINE, vcVHI_DOMAINNAME }`
- `enum vcFeatureSet {`  
`vcFEATURE_VKILL, vcFEATURE_IATTR, vcFEATURE_RLIMIT, vcFEATURE_-`  
`COMPAT,`  
`vcFEATURE_MIGRATE, vcFEATURE_NAMESPACE, vcFEATURE_SCHED,`  
`vcFEATURE_VINFO,`  
`vcFEATURE_VHI, vcFEATURE_VSHELPER0, vcFEATURE_VSHELPER, vcFEATURE_-`  
`VWAIT,`  
`vcFEATURE_VNET, vcFEATURE_VSTAT, vcFEATURE_PPTAG }`
- `enum vcXidType {`  
`vcTYPE_INVALID, vcTYPE_MAIN, vcTYPE_WATCH, vcTYPE_STATIC,`  
`vcTYPE_DYNAMIC }`
- `enum vcCfgStyle {`  
`vcCFG_NONE, vcCFG_AUTO, vcCFG_LEGACY, vcCFG_RECENT_SHORT,`  
`vcCFG_RECENT_FULL }`
- `enum vcCtxType { vcCTX_XID = 1, vcCTX_NID, vcCTX_TAG }`

## Functions

- `int vc_syscall (uint32_t cmd, xid_t xid, void *data)`  
*The generic vserver syscall*  
*This function executes the generic vserver syscall. It uses the correct syscallnumber (which may differ between the different architectures).*
- `int vc_get_version ()`  
*Returns the version of the current kernel API.*
- `vc_vci_t vc_get_vci ()`  
*Returns the kernel configuration bits.*
- `xid_t vc_new_s_context (xid_t ctx, unsigned int remove_cap, unsigned int flags)`  
*Moves current process into a context*  
*Puts current process into context ctx, removes the capabilities given in remove\_cap and sets flags.*
- `int vc_set_ipv4root (uint32_t bcast, size_t nb, struct vc_ip_mask_pair const *ips)`  
*Sets the ipv4root information.*
- `size_t vc_get_nb_ipv4root () VC_ATTR_CONST`  
*Returns the value of NB\_IPV4ROOT.*  
*This function returns the value of NB\_IPV4ROOT which was used when the library was built, but **not** the value which is used by the currently running kernel.*
- `xid_t vc_ctx_create (xid_t xid, struct vc_ctx_flags *flags)`  
*Creates a context without starting it.*  
*This functions initializes a new context. When already in a freshly created context, this old context will be discarded.*
- `int vc_ctx_migrate (xid_t xid, uint_least64_t flags)`  
*Moves the current process into the specified context.*
- `int vc_ctx_stat (xid_t xid, struct vc_ctx_stat *stat)`  
*Get some statistics about a context.*
- `int vc_virt_stat (xid_t xid, struct vc_virt_stat *stat)`  
*Get more statistics about a context.*
- `int vc_ctx_kill (xid_t ctx, pid_t pid, int sig)`  
*Sends a signal to a context/pid*  
*Special values for pid are:*
  - -1 which means every process in ctx except the init-process
  - 0 which means every process in ctx inclusive the init-process.
- `int vc_get_cflags (xid_t xid, struct vc_ctx_flags *)`
- `int vc_set_cflags (xid_t xid, struct vc_ctx_flags const *)`
- `int vc_get_ccaps (xid_t xid, struct vc_ctx_caps *)`
- `int vc_set_ccaps (xid_t xid, struct vc_ctx_caps const *)`
- `int vc_get_vx_info (xid_t xid, struct vc_vx_info *info)`
- `xid_t vc_get_task_xid (pid_t pid)`

*Returns the context of the given process.*

- `int vc_wait_exit (xid_t xid)`  
*Waits for the end of a context.*
- `int vc_get_rlimit_mask (xid_t xid, struct vc_rlimit_mask *lim)`  
*Returns the limits supported by the kernel.*
- `int vc_get_rlimit (xid_t xid, int resource, struct vc_rlimit *lim)`  
*Returns the limits of resource.*
- `int vc_set_rlimit (xid_t xid, int resource, struct vc_rlimit const *lim)`  
*Sets the limits of resource.*
- `int vc_rlimit_stat (xid_t xid, int resource, struct vc_rlimit_stat *stat)`  
*Returns the current stats of resource.*
- `int vc_reset_minmax (xid_t xid)`  
*Resets the minimum and maximum observed values of all resources.*
- `bool vc_parseLimit (char const *str, vc_limit_t *res)`  
*Parses a string describing a limit*  
*This function parses str and interprets special words like "inf" or suffixes. Valid suffixes are*
  - k ... 1000
  - m ... 1000000
  - K ... 1024
  - M ... 1048576.
- `nid_t vc_get_task_nid (pid_t pid)`
- `int vc_get_nx_info (nid_t nid, struct vc_nx_info *)`
- `nid_t vc_net_create (nid_t nid)`
- `int vc_net_migrate (nid_t nid)`
- `int vc_net_add (nid_t nid, struct vc_net_addr const *info)`
- `int vc_net_remove (nid_t nid, struct vc_net_addr const *info)`
- `int vc_get_nflags (nid_t, struct vc_net_flags *)`
- `int vc_set_nflags (nid_t, struct vc_net_flags const *)`
- `int vc_get_ncaps (nid_t, struct vc_net_caps *)`
- `int vc_set_ncaps (nid_t, struct vc_net_caps const *)`
- `int vc_set_iattr (char const *filename, xid_t xid, uint_least32_t flags, uint_least32_t mask)`
- `int vc_fset_iattr (int fd, xid_t xid, uint_least32_t flags, uint_least32_t mask)`
- `int vc_get_iattr (char const *filename, xid_t *xid, uint_least32_t *flags, uint_least32_t *mask)`  
*Returns information about attributes and assigned context of a file.*  
*This function returns the VC\_IATTR\_XXX flags and about the assigned context of a file. To request an information, the appropriate bit in mask must be set and the corresponding parameter (xid or flags) must not be NULL.*
- `int vc_fget_iattr (int fd, xid_t *xid, uint_least32_t *flags, uint_least32_t *mask)`
- `xid_t vc_getfilecontext (char const *filename)`  
*Returns the context of filename*  
*This function calls vc\_get\_iattr() with appropriate arguments to determine the context of filename. In error-case or when no context is assigned, VC\_NOCTX will be returned. To differ between both cases, errno must be examined.*



- `int vc_set_vhi_name(xid_t xid, vc_uts_type type, char const *val, size_t len)`
- `int vc_get_vhi_name(xid_t xid, vc_uts_type type, char *val, size_t len)`
- `int vc_enter_namespace(xid_t xid, uint_least64_t mask)`
- `int vc_set_namespace(xid_t xid, uint_least64_t mask)`
- `int vc_cleanup_namespace()`
- `uint_least64_t vc_get_space_mask()`
- `int vc_add_dlimit(char const *filename, xid_t xid, uint_least32_t flags)`
- `int vc_rem_dlimit(char const *filename, xid_t xid, uint_least32_t flags)`
- `int vc_set_dlimit(char const *filename, xid_t xid, uint_least32_t flags, struct vc_ctx_dlimit const *limits)`
- `int vc_get_dlimit(char const *filename, xid_t xid, uint_least32_t flags, struct vc_ctx_dlimit *limits)`
- `tag_t vc_get_task_tag(pid_t pid)`
- `int vc_tag_create(tag_t tag)`
- `int vc_tag_migrate(tag_t tag)`
- `int vc_set_sched(xid_t xid, struct vc_set_sched const *)`
- `int vc_get_sched(xid_t xid, struct vc_set_sched *)`
- `int vc_sched_info(xid_t xid, struct vc_sched_info *info)`
- `int vc_set_mapping(xid_t xid, const char *device, const char *target, uint32_t flags)`
- `int vc_unset_mapping(xid_t xid, const char *device, const char *target, uint32_t flags)`
- `int vc_get_badness(xid_t xid, int64_t *badness)`
- `int vc_set_badness(xid_t xid, int64_t badness)`
- `uint_least64_t vc_text2bcap(char const *str, size_t len)`  
*Converts a single string into bcapability.*
- `char const * vc_lobcap2text(uint_least64_t *val)`  
*Converts the lowest bit of a bcapability or the entire value (when possible) to a textual representation.*
- `int vc_list2bcap(char const *str, size_t len, struct vc_err_listparser *err, struct vc_ctx_caps *cap)`  
*Converts a string into a bcapability-bitmask*  
*Syntax of str:.*
- `uint_least64_t vc_text2ccap(char const *, size_t len)`
- `char const * vc_loccap2text(uint_least64_t *)`
- `int vc_list2ccap(char const *, size_t len, struct vc_err_listparser *err, struct vc_ctx_caps *)`
- `int vc_list2cflag(char const *, size_t len, struct vc_err_listparser *err, struct vc_ctx_flags *flags)`
- `uint_least64_t vc_text2cflag(char const *, size_t len)`
- `char const * vc_locflag2text(uint_least64_t *)`
- `uint_least32_t vc_list2cflag_compat(char const *, size_t len, struct vc_err_listparser *err)`
- `uint_least32_t vc_text2cflag_compat(char const *, size_t len)`
- `char const * vc_hicflag2text_compat(uint_least32_t)`
- `int vc_text2cap(char const *)`
- `char const * vc_cap2text(unsigned int)`
- `int vc_list2nflag(char const *, size_t len, struct vc_err_listparser *err, struct vc_net_flags *flags)`
- `uint_least64_t vc_text2nflag(char const *, size_t len)`
- `char const * vc_lonflag2text(uint_least64_t *)`
- `uint_least64_t vc_text2ncap(char const *, size_t len)`
- `char const * vc_loncap2text(uint_least64_t *)`
- `int vc_list2ncap(char const *, size_t len, struct vc_err_listparser *err, struct vc_net_caps *)`
- `uint_least64_t vc_get_insecurebcaps()` VC\_ATTR\_CONST

- `uint_least32_t vc_text2personalityflag` (char const \*str, size\_t len)
- char const \* `vc_lopersonality2text` (uint\_least32\_t \*)
- int `vc_list2personalityflag` (char const \*, size\_t len, uint\_least32\_t \*personality, struct [vc\\_err\\_listparser](#) \*err)
- `uint_least32_t vc_str2personalitytype` (char const \*, size\_t len)
- bool `vc_isSupported` (vcFeatureSet) VC\_ATTR\_CONST
- bool `vc_isSupportedString` (char const \*)
- vcXidType `vc_getXIDType` (xid\_t xid) VC\_ATTR\_CONST
- bool `vc_is_dynamic_xid` (xid\_t xid)
- `xid_t vc_xidopt2xid` (char const \*, bool honor\_static, char const \*\*err\_info)
- `nid_t vc_nidopt2nid` (char const \*, bool honor\_static, char const \*\*err\_info)
- `tag_t vc_tagopt2tag` (char const \*, bool honor\_static, char const \*\*err\_info)
- vcCfgStyle `vc_getVserverCfgStyle` (char const \*id)
- char \* `vc_getVserverName` (char const \*id, vcCfgStyle style)
- char \* `vc_getVserverCfgDir` (char const \*id, vcCfgStyle style)
- char \* `vc_getVserverAppDir` (char const \*id, vcCfgStyle style, char const \*app)
- char \* `vc_getVserverVdir` (char const \*id, vcCfgStyle style, bool physical)
- `xid_t vc_getVserverCtx` (char const \*id, vcCfgStyle style, bool honor\_static, bool \*is\_running, vcCtxType type)
- char \* `vc_getVserverByCtx` (xid\_t ctx, vcCfgStyle \*style, char const \*revdir)
- int `vc_compareVserverById` (char const \*lhs, vcCfgStyle lhs\_style, char const \*rhs, vcCfgStyle rhs\_style)
- int `vc_createSkeleton` (char const \*id, vcCfgStyle style, int flags)

### 6.2.1 Detailed Description

The public interface of the the libvserver library.

Definition in file [vserver.h](#).

### 6.2.2 Define Documentation

#### 6.2.2.1 #define VC\_DYNAMIC\_XID ((xid\_t)(-1))

the value which means a random (the next free) ctx

Definition at line 67 of file [vserver.h](#).

#### 6.2.2.2 #define VC\_NOCTX ((xid\_t)(-1))

the value which is returned in error-case (no ctx found)

Definition at line 64 of file [vserver.h](#).

#### 6.2.2.3 #define VC\_SAMECTX ((xid\_t)(-2))

the value which means the current ctx

Definition at line 69 of file [vserver.h](#).

### 6.2.3 Typedef Documentation

#### 6.2.3.1 typedef uint\_least64\_t vc\_limit\_t

The type which is used for a single limit value.

Special values are

- VC\_LIM\_INFINITY ... which is the infinite value
- VC\_LIM\_KEEP ... which is used to mark values which shall not be modified by the [vc\\_set\\_rlimit\(\)](#) operation.

Else, the interpretation of the value depends on the corresponding resource; it might be bytes, pages, seconds or litres of beer.

Definition at line 543 of file vserver.h.

#### 6.2.3.2 an\_unsigned\_integer\_type xid\_t

The identifier of a context.

Definition at line 338 of file vserver.h.

### 6.2.4 Function Documentation

#### 6.2.4.1 int vc\_add\_dlimit (char const \* *filename*, xid\_t *xid*, uint\_least32\_t *flags*)

Add a disk limit to a file system.

#### 6.2.4.2 int vc\_createSkeleton (char const \* *id*, vcCfgStyle *style*, int *flags*)

Create a basic configuration skeleton for a vserver plus toplevel directories for pkgmanagemt and filesystem (when requested).

#### 6.2.4.3 int vc\_get\_dlimit (char const \* *filename*, xid\_t *xid*, uint\_least32\_t *flags*, struct vc\_ctx\_dlimit \* *limits*)

Get a disk limit.

#### 6.2.4.4 tag\_t vc\_get\_task\_tag (pid\_t *pid*)

Get the filesystem tag for a process.

#### 6.2.4.5 char\* vc\_getVserverAppDir (char const \* *id*, vcCfgStyle *style*, char const \* *app*)

Returns the path of the configuration directory for the given application. The result will be allocated and must be freed by the caller.

#### 6.2.4.6 char\* vc\_getVserverByCtx (xid\_t *ctx*, vcCfgStyle \* *style*, char const \* *revdir*)

Resolves the cfg-path of the vserver owning the given ctx. 'revdir' will be used as the directory holding the mapping-links; when NULL, the default value will be assumed. The result will be allocated and must be freed by the caller.

**6.2.4.7 char\* vc\_getVserverCfgDir (char const \* *id*, vcCfgStyle *style*)**

Returns the path of the vserver configuration directory. When the given vserver does not exist, or when it does not have such a directory, NULL will be returned. Else, the result will be allocated and must be freed by the caller.

**6.2.4.8 xid\_t vc\_getVserverCtx (char const \* *id*, vcCfgStyle *style*, bool *honor\_static*, bool \* *is\_running*, vcCtxType *type*)**

Returns the ctx of the given vserver. When vserver is not running and 'honor\_static' is false, VC\_NOCTX will be returned. Else, when 'honor\_static' is true and a static assignment exists, those value will be returned. Else, the result will be VC\_NOCTX.

When 'is\_running' is not null, the status of the vserver will be assigned to this variable.

**6.2.4.9 char\* vc\_getVserverName (char const \* *id*, vcCfgStyle *style*)**

Resolves the name of the vserver. The result will be allocated and must be freed by the caller.

**6.2.4.10 char\* vc\_getVserverVdir (char const \* *id*, vcCfgStyle *style*, bool *physical*)**

Returns the path to the vserver root-directory. The result will be allocated and must be freed by the caller.

**6.2.4.11 bool vc\_is\_dynamic\_xid (xid\_t *xid*)**

Returns true iff *xid* is a dynamic xid

**6.2.4.12 nid\_t vc\_nidopt2nid (char const \*, bool *honor\_static*, char const \*\* *err\_info*)**

Maps a nid given at '-nid' options to a nid\_t

**6.2.4.13 int vc\_rem\_dlimit (char const \* *filename*, xid\_t *xid*, uint\_least32\_t *flags*)**

Remove a disk limit from a file system.

**6.2.4.14 int vc\_set\_dlimit (char const \* *filename*, xid\_t *xid*, uint\_least32\_t *flags*, struct vc\_ctx\_dlimit const \* *limits*)**

Set a disk limit.

**6.2.4.15 int vc\_tag\_create (tag\_t *tag*)**

Create a new filesystem tag space.

**6.2.4.16 int vc\_tag\_migrate (tag\_t *tag*)**

Migrate to an existing filesystem tag space.

**6.2.4.17 tag\_t vc\_tagopt2tag (char const \*, bool *honor\_static*, char const \*\* *err\_info*)**

Maps a tag given at '-tag' options to a tag\_t

**6.2.4.18** `xid_t vc_xidopt2xid (char const *, bool honor_static, char const ** err_info)`

Maps an xid given at '-xid' options to an xid\_t

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