Guidelines for Developing Network Configuration Applications

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About This Manual

This manual is the Runtime Library Release 2.4.2 version of the *Guidelines for Developing Network Configuration Applications*.

Changes Since Last Release

- Precautions for redialing when connecting have been added.

- Precautions for connection processing when the hardware settings file and network service provider settings file specify different types have been added.

Related Documentation

Note: the Developer Support Web site posts current developments regarding the Libraries and also provides notice of future documentation releases and upgrades.

Typographic Conventions

Certain Typographic Conventions are used throughout this manual to clarify the meaning of the text:

Convention	Meaning
courier	Indicates literal program code.
italic	Indicates names of arguments and structure members (in structure/function definitions only).
medium bold	Indicates data types and structure/function names (in structure/function definitions only).
blue	Indicates a hyperlink.

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Network Configuration Applications

In the PlayStation 2, a common framework provides network-related settings for applications using network configuration files.

Network-related settings are recorded in four types of files, namely, configuration management files, combination files, hardware settings files, and network service provider settings file. Collectively these files are known as common network configuration files.

Since common network configuration files are shared resources, an application (hereafter referred to as a network configuration application) that adds to, edits, or deletes their contents must create these files in the proper format according to prescribed standards.

First, a network configuration application must use the common network configuration library (netcnf.irx).

Criteria used for creating the application, and an overview of each setting item, are presented in this document. Refer to the common network configuration library document (netcnf) for details about the library and the contents of network configuration files.

Operations Immediately After Bringing Up The Network Configuration Screen

At least one of the following items must be displayed immediately after bringing up the Network Configuration screen. The user performs a setting by making a selection. An application which cannot select or set some item must not use the common network configuration file.

- Combination
- Hardware
- Network Service Provider

"Combination" indicates a combination between the hardware settings and those of the network service provider. Combinations are stored in files with names of the form netXXX.cnf. XXX is in the range 000~999 and is allocated automatically by netcnf.irx such that it is unique.

"Hardware" indicates settings related to devices such as modems that are used for the network connection. Hardware settings are stored in files with names of the form devXXX.dat. As previously mentioned, XXX is in the range 000~999 and is allocated automatically. Furthermore, the contents of a hardware settings file is encoded using the individual ID belonging to each PlayStation 2.

"Network Service Provider" indicates settings related to the provider of the connection destination (ISP) such as the telephone number of the access point. Network service provider settings are stored in files with names of the form ifcXXX.dat. As previously mentioned, XXX is in the range 000~999 and is allocated automatically. Furthermore, as with the hardware settings file, the contents of a network service provider settings file is encoded using the individual ID belonging to each PlayStation 2.

Information related to each of the settings files is stored in a configuration management file. This file is created on a PS2 memory card or on the hard disk drive, with the following names, respectively.

Table 1

Device	Configuration Management File
PS2 memory card	/BWNETCNF/BWNETCNF
Hard disk drive	etc/network/net.db in the __sysconf partition

Information in the configuration management file is the same as that which is obtained from the sceNetCnfList structure using the sceNetCnfGetList function. Specifically, it is the information from the sceNetCnfList structure separated by commas as shown below.

    type,stat,sys_name,usr_name

Note that for type and stat, the data is converted between binary and ASCII.

Combination Processing

If the user is able to add, edit or delete combinations, these functions should be implemented according to the following specifications.

- The combination file should be saved in the correct netXXX.cnf(XXX is from 000~999)

- When the user has selected a combination, the hardware settings and those for the network service provider registered for that combination should be displayed in their respective columns.

        Example 1:   Combination: Combination 1

                  Hardware: vendor/product

Network Service Provider: provider settings

- If a combination does not exist, or if any of the hardware settings or network service provider settings has been deleted, an informative message stating that the setting does not exist should be displayed in the respective column.

    Example 1:   Combination: Combination 2

    Hardware: (not set)

    Network Service Provider: (not set)

    Example 2:   Combination: Combination 3

    Hardware: (not set)

    Network Service Provider: provider settings

- The maximum number of combinations that can be stored on the PS2 memory card is 6 whereas for the hard disk drive, the maximum number is 10. (These are ignored for devices not supported by the application).

- The combination name should not be editable by the user.

- The name of the combination should be from "Combination1" to "Combination6" for the PS2 memory card and from "Combination1" to "Combination10" for the hard disk drive.

- The configuration files (combination names) given by the user that get stored in the configuration management file should be from "Combination1" to "Combination6" for the PS2 memory card and from "Combination1" to "Combination10" for the hard disk drive.

- A combination should be able to be registered (when a combination that has already been registered is re-registered, an editing of the same is performed by replacing the combination file).

- A combination should be able to be registered only when both the hardware settings file and network service provider settings file are present on the same device (either PS2 memory card or hard disk drive).

- It should be possible to delete the registration.

- If the following situations occur, a connection should not be possible even if that combination is selected.

    a. If the device described in the hardware settings has not been physically connected.

    b. If the hardware settings file or network service provider settings file registered in the combination do not exist.

- If the following situations occur, the display should be grayed-out, or a similar method used so that at first glance it is understood that the item cannot be used. (This specification is only a recommendation and is not required, however it should be implemented as best as possible).

    a. If the device described in the hardware settings has not been physically connected (in this case, the relevant hardware setting and the name of the combination that uses this hardware setting should be grayed-out).

    b. If the hardware settings file or network service provider settings file registered in the combination do not exist.

Processing For Hardware Settings

If the user is able to add, edit or delete hardware settings, these functions should be implemented according to the following specifications.

- The hardware settings file should be saved in the correct devXXX.dat(XXX is from 000~999)

- For a newly created hardware settings file, all the character strings of the vendor name and the product name that can be obtained from the hardware device driver must be stored precisely in the following format (this might produce a string of more than 10 characters):

    Vendor name/product name

- When displaying the name of the hardware settings file on-screen, 10 characters or more should be displayed for both the vendor name and the product name.

- It should be possible to add at least one hardware setting that the application will use.

- It should be possible to edit at least one hardware setting that the application will use.

- It should be possible to delete a hardware setting. (This specification is only a recommendation and is not required, however it should be implemented as best as possible).

- At most 4 hardware settings files can be saved on a PS2 memory card (only when the PS2 memory card is supported).

- At most 30 hardware settings files can be saved on the hard disk drive (only when the hard disk drive is supported).

Processing For Network Service Provider Settings

If the user is able to add, edit or delete network service provider settings, these functions should be implemented according to the following specifications.

- The network service provider settings file should be saved in the appropriate ifc000.dat (XXX is from 000~999).

- A display of 40 characters or more should be reserved for the entire settings name set by the user in the network service provider settings.

- It should be possible to add at least one network service provider setting that the application will use.

- It should be possible to edit at least one network service provider setting that the application will use.

- It should be possible to delete a network service provider setting. (This is only a recommended specification and is not required, however it should be implemented as best as possible).

- At most 4 network service provider settings files can be saved on a PS2 memory card (only when the PS2 memory card is supported).

- At most 30 network service provider settings files can be saved on the hard disk drive (only when the hard disk drive is supported).

Saving Settings Files On The PS2 Memory Card

A network configuration application that supports PS2 memory cards should be implemented based on the standards explained below in addition to following general usage stipulations for PS2 memory cards.

- The common configuration file should be stored precisely in the dedicated directory /BWNETCNF.

- When storing combination files on a PS2 memory card, the application should be implemented so that no more than 6 files can be stored.

- The maximum number of hardware settings files that can be stored on a PS2 memory card is 4. However, if an attempt is made to store more than this, a message should be output indicating that the maximum number of hardware settings files has been reached.

- The maximum number of network provider settings files that can be stored on a PS2 memory card is 4. However, if an attempt is made to store more than this, a message should be output indicating that the maximum number of network provider settings files has been reached.

- When the PS2 memory card has less than 94 Kbytes of free space, an error message should be output indicating that there is not enough free space for adding or editing.

- When an sceNETCNF_MAGIC_ERROR is detected, a message should be output indicating that this settings file was created on another PlayStation 2, and the user should be asked if he wants to delete the network configuration file. If the user does not want to delete the file, the settings on the PS2 memory card must be ignored.

- When an sceNETCNF_SYNTAX_ERROR is detected, a message should be output indicating that the PS2 memory card configuration has been corrupted, and the user should be asked if he wants to delete his network configuration file. If the user does not want to delete the file, the settings on the PS2 memory card must be ignored.

- When using netcnf.irx release 2.2.3 or earlier, the following procedure must be used when the configuration file is written for the first time on a PS2 memory card which does not have a common network configuration file. (When using netcnf.irx release 2.2.4 or later, the following tasks are performed automatically by netcnf.irx.)
  1. Check to make sure that the /BWNETCNF directory exists.
  2. If the /BWNETCNF directory exists, then only the configuration file should be added without any action. However, if the /BWNETCNF directory does not exist, then it should be created.
  3. Create icon.sys
  4. Write the icon with the name SYS_NET.ICO

- When using netcnf.irx release 2.2.3 or earlier, the icon file provided by the setapp sample must be used as the icon file. (When netcnf.irx release 2.2.4 or later is used, this task is automatically performed by netcnf.irx.)

- When using netcnf.irx release 2.2.3 or earlier, the contents of icon.sys must be the same as the contents of the icon.sys provided by the setapp sample. (When netcnf.irx release 2.2.4 or later is used, this task is automatically performed by netcnf.irx.)

- In addition, the application should conform to the TRC as it pertains to PS2 memory cards.

Number Of Files Per File Type

When storing the network configuration file on a PS2 memory card, the dedicated (/BWNETCNF) directory should be used.

The maximum number of files that can be stored in a single directory is restricted to 18 as per the specifications of the memory card file system. Also, in addition to icon.sys and the icon file used for the display list, the following two files must be created by the network configuration application.

Table 2

Filename	Contents
/BWNETCNF/BWNETCNF	Configuration management file
/BWNETCNF/BWNETCNF.tmp	Temporary file

Therefore, the maximum number of configuration files that can be stored by the user is 14. These allocated as shown below. If an attempt is made to save files beyond this number, then an error must be generated.

Table 3

File Type	Maximum Number of Files
Combination file	6
Hardware settings file	4
Network service provider settings file	4

Checking For Available Space On The PS2 Memory Card

The maximum size of the common setting files is roughly as follows.

Table 4

File type	Maximum size	Maximum Number of Files
Configuration management file	3 Kbytes	1
Temporary file	3 Kbytes	1
Combination file	3 Kbytes	6
Hardware settings file	3 Kbytes	4
Network service provider settings file	3 Kbytes	4
Icon file	34 Kbytes	1
icon.sys	1 Kbyte	1
File entry	9 Kbyte ((18+1)/2)	
Directory entry	2 Kbytes	

Therefore, the approximate capacity used by all common configuration files together is 94 Kbytes. When there is less vacant space than this on the PS2 memory card, a PS2 memory card capacity error should be generated.

Saving Settings Files On The Hard Disk Drive

A network configuration application that supports the hard disk drive should be implemented based on the standards explained below in addition to following general usage stipulations for the hard disk drive.

- The common configuration file should be stored precisely in the etc/network directory of the __sysconf partition.

- When storing combination files on the hard disk drive, the application should be implemented so that no more than 10 files can be stored.

- At most, 30 hardware settings files can be saved on the hard disk drive. If an attempt is made to save more than 30, a message should be output indicating that the maximum number of hardware settings has been reached.

- At most, 30 network service provider settings files can be saved on the hard disk drive. If an attempt is made to save more than 30, a message should be output indicating that the maximum number of network service provider settings has been reached.

- When performing adds or edits, the amount of free space on the hard disk drive should be checked, and if it is less than 94 Kbytes, an error message should be output indicating that there is not enough free space.

- In addition, the application should conform to the TRC as it pertains to the hard disk drive.

Directory For Common Settings Files

For storing the common settings files on the hard disk drive, a dedicated directory (etc/network) must be set up in the _sysconf partition. Also, the network configuration application must create the following files.

Table 5

Filename	Contents
etc/network/net.db	Configuration management file
etc/network/net.db.tmp	Temporary file

Number Of Files Per File Type

In the network configuration application, the maximum number of settings files that can be stored on the hard disk drive is restricted as shown below.

Table 6

File Type	Maximum Number of Files
Combination file	10
Hardware settings file	30
Network service provider settings file	30

The individual setting items are determined by their respective settings files stored at each location. Presented below are the setting items that should be stored in each of the files.

Contents Of Each Settings File

The classification column in the following tables has the meaning shown below.

Table 7

Classification	Meaning
Required	A required setting item that must be properly stored
Optional	An optional setting item
Automatic	A setting item that must be stored automatically by the network configuration application

Also, the Applicable keyword column in these tables indicates the keyword present in the settings file that corresponds to that setting item.

Items Stored In The Hardware Settings File

The items that should be stored in the hardware settings file differ depending on the type of hardware. These are classified as shown below for each case.

For USB Ethernet Hardware

The following setting items must be stored in the hardware settings file used by the USB Ethernet device.

Table 8

Classification	Setting Item	Applicable Keyword
Required, Automatic	Device layer type	type eth
Required, Automatic	Vendor name	vendor
Required, Automatic	Product name	product

Required	Ethernet hardware operating mode
	  Auto-detect /
	  10Base-T Half-Duplex /
	  10Base-T Full-Duplex /
	  100Base-TX Half-Duplex /
	  100Base-TX Full-Duplex
		phy_config

For a Modem

The following setting items must be stored in the hardware settings file used by the modem.

Table 9

Classification	Setting Item	Applicable Keyword
Required, Automatic	Device layer type	type ppp
Required, Automatic	Vendor name	vendor
Required, Automatic	Product name	product
Required	Dialing type (Tone / Pulse)	dialing_type
Optional	Additional AT command	chat_additional
Optional	Outside number	outside_number and outside_delay
Required	Line timeout (in minutes)	idle_timeout

The value that can be input for the line timeout setting must be in the range from 0 to 90. An error should be generated for values outside this range. Moreover, a value of 0 means unlimited. The default value is 10 minutes.

For HDD Ethernet Hardware

The following setting items must be stored in the hardware settings file used by the HDD Ethernet device.

Table 10

Classification	Setting Item	Applicable Keyword
Required, Automatic	Device layer type	type nic
Required, Automatic	Vendor name	vendor
Required, Automatic	Product name	product

Required	Ethernet hardware operating mode
	  Auto-detect /
	  10Base-T Half-Duplex /
	  10Base-T Full-Duplex /
	  100Base-TX Half-Duplex /
	  100Base-TX Full-Duplex
		phy_config

Items Stored In The Network Service Provider Settings File

The items that must be stored in the network service provider settings file vary depending on whether or not DHCP is used, whether or not PPPoE is used, and whether or not the DNS server address is automatically obtained, in addition to the type of hardware. These are classified as shown below for each case.

For USB Ethernet Hardware, When DHCP Is Not Used

The following items must be stored in the network service provider settings file when a USB Ethernet device is used and DHCP is not used (i.e. fixed IP addresses are used).

Table 11

Classification	Setting Item	Applicable Keyword
Required, Automatic	Device layer type	type eth
Required	DHCP not used	-dhcp
Required	IP address *	address
Required	Net mask *	netmask
Required	Default router address *	route add -net 0.0.0.0 gw ?.?.?.? netmask 0.0.0.0
Optional	Primary DNS server address *	nameserver add
Optional	Secondary DNS server address *	nameserver add

The values that can be entered for items marked with * must be in the range from 0.0.0.0 ~ 255.255.255.255. An error should be generated for values outside this range. Moreover, if a value of 0.0.0.0 is specified for the IP address, Net mask, or Default router address, it should be treated as an error. If a value of 0.0.0.0 is specified for the Primary DNS server address or Secondary DNS server address, it should assumed to be an error, or it should be considered as specifying that the DNS server addresses are automatically obtained.

For USB Ethernet Hardware, When DHCP Is Used

The following items must be stored in the network service provider settings file when a USB Ethernet device is used and DHCP is also used.

Table 12

Classification	Setting Item	Applicable Keyword
Required, Automatic	Device layer type	type eth
Required	DHCP used	dhcp
Optional	Primary DNS server address	nameserver add
Optional	Secondary DNS server address	nameserver add
Optional	Host name used by DHCP	dhcp_host_name

The values of Primary DNS server address and Secondary DNS server address are required when they are manually specified and not automatically obtained using DHCP. The values that can be entered must be in the range from 0.0.0.0 ~ 255.255.255.255. An error should be generated for values outside this range. Moreover, if a value of 0.0.0.0 is specified, it should be assumed to be an error, or it should be considered as specifying that the DNS server addresses are automatically obtained.

For USB Ethernet Hardware, When Pppoe Is Used And DNS Server Addresses Are Automatically Obtained

The following items must be stored in the network service provider settings file when a USB Ethernet device is used, PPPoE is used and DNS server addresses are automatically obtained.

Table 13

Classification	Setting Item	Applicable Keyword
Required, Automatic	Device layer type	type ppp
Required, Automatic	Authentication name of the connection destination	peer_name "*"
Required, Automatic	Authentication method	allow.auth chap/pap
Required, Automatic	DHCP not used	-dhcp
Required	User ID	auth_name
Required	Password	auth_key
Required	Automatically obtain DNS server address	want.dns1_nego on, want.dns2_nego on
Required, Automatic	Default router	route add -net 0.0.0.0 netmask 0.0.0.0
Required, Automatic	Prohibit PFC negotiation	-want.prc_nego
Required, Automatic	Prohibit ACFC negotiation	-want.acc_nego
Required, Automatic	Prohibit ACCM negotiation	-want.accm_nego
Required, Automatic	Setting of MTU and MRU (1454 bytes)	mtu 1454
Required	PPPoE used	pppoe

0.0.0.0 should be specified for the Default router to direct it to the connection destination. Furthermore, the prohibition of negotiations for PFC(Protocol Field Compression), ACFC(Address and Control Field Compression), and ACCM(Asynchronous Control Character Map) is based on RFC2516.

For USB Ethernet Hardware, When Pppoe Is Used And DNS Server Addresses Are Specified

The following items must be stored in the network service provider settings file when a USB Ethernet device is used, PPPoE is used and DNS server addresses are specified as fixed values.

Table 14

Classification	Setting Item	Applicable Keyword
Required, Automatic	Device layer type	type ppp
Required, Automatic	Authentication name of the connection destination	Peer_name "*"
Required, Automatic	Authentication method	allow.auth chap/pap
Required, Automatic	DHCP not used	-dhcp
Required	User ID	auth_name
Required	Password	auth_key
Required	Primary DNS server address	nameserver add
Optional	Secondary DNS server address	nameserver add
Required, Automatic	Default router	route add -net 0.0.0.0 netmask 0.0.0.0
Required, Automatic	Prohibit PFC negotiation	-want.prc_nego
Required, Automatic	Prohibit ACFC negotiation	-want.acc_nego
Required, Automatic	Prohibit ACCM negotiation	-want.accm_nego
Required, Automatic	Setting of MTU and MRU (1454 bytes)	mtu 1454
Required	PPPoE used	pppoe

The values that can be entered for the Primary DNS server address and Secondary DNS server address must be in the range from 0.0.0.0 ~ 255.255.255.255. An error should be generated for values outside this range. Moreover, if a value of 0.0.0.0 is specified, it should be assumed to be an error, or it should be considered as specifying that the DNS server addresses are automatically obtained.

For A Modem, When DNS Server Addresses Are Automatically Obtained

The following items must be stored in the network service provider settings file for a modem or TA, when DNS server addresses are automatically obtained.

Table 15

Classification	Setting Item	Applicable Keyword
Required, Automatic	Device layer type	type ppp
Required, Automatic	Authentication name of the connection destination	peer_name "*"
Required, Automatic	Authentication method	allow.auth chap/pap
Required, Automatic	DHCP not used	-dhcp
Required	User ID	auth_name
Required	Password	auth_key
Required	Telephone number 1	phone_number0
Optional	Telephone number 2	phone_number1
Optional	Telephone number 3	phone_number2
Required	Automatically obtain DNS server address	want.dns1_nego on, want.dns2_nego on
Required, Automatic	Default router	route add -net 0.0.0.0 netmask 0.0.0.0

Telephone number 2 and Telephone number 3 are spare telephone numbers. They do not need to be set, however, they must be displayable at the time the file is read and setting completed. In this case, the display should be grayed out, or a similar method used, so that it is understood that these values cannot be set.

For A Modem, When The DNS Server Addresses Are Specified

The following items must be stored in the network service provider settings file for a modem or TA, when DNS server addresses are specified as fixed values.

Table 16

Classification	Setting Item	Applicable Keyword
Required, Automatic	Device layer type	type ppp
Required, Automatic	Authentication name of the connection destination	peer_name "*"
Required, Automatic	Authentication method	allow.auth chap/pap
Required, Automatic	DHCP not used	-dhcp
Required	User ID	auth_name
Required	Password	auth_key
Required	Telephone number 1	phone_number0
Optional	Telephone number 2	phone_number1
Optional	Telephone number 3	phone_number2
Required	Primary DNS server address	nameserver add
Optional	Secondary DNS server address	nameserver add
Required, Automatic	Default router	route add -net 0.0.0.0 netmask 0.0.0.0

Telephone number 2 and Telephone number 3 are spare telephone numbers. They do not need to be set, however, they must be displayable at the time the file is read and setting completed. In this case, the display should be grayed out, or a similar method used, so that it is understood that these values cannot be set.

The values that can be entered for the Primary DNS server address and Secondary DNS server address must be in the range from 0.0.0.0 ~ 255.255.255.255. An error should be generated for values outside this range. Moreover, if a value of 0.0.0.0 is specified, it should be assumed to be an error, or it should be considered as specifying that the DNS server addresses are automatically obtained.

For HDD Ethernet Hardware, When DHCP Is Not Used

The following items must be stored in the network service provider settings file for HDD Ethernet, when DHCP is not used (a fixed IP address is used).

Table 17

Classification	Setting Item	Applicable Keyword
Required, Automatic	Device layer type	type nic
Required	DHCP not used	-dhcp
Required	IP address *	address
Required	Net mask *	netmask
Required	Default router address *	route add -net 0.0.0.0 gw ?.?.?.? netmask 0.0.0.0
Optional	Primary DNS server address *	nameserver add
Optional	Secondary DNS server address *	nameserver add

The values that can be entered for items marked with * must be in the range from 0.0.0.0 ~ 255.255.255.255. An error should be generated for values outside this range. Moreover, if a value of 0.0.0.0 is specified for the IP address, Net mask, or Default router address, it should be treated as an error. If a value of 0.0.0.0 is specified for the Primary DNS server address or Secondary DNS server address, it should assumed to be an error, or it should be considered as specifying that the DNS server addresses are automatically obtained.

For HDD Ethernet Hardware, When DHCP Is Used

The following items must be stored in the network service provider settings file for HDD Ethernet, when DHCP is used.

Table 18

Classification	Setting Item	Applicable Keyword
Required, Automatic	Device layer type	type nic
Required	DHCP used	dhcp
Optional	Primary DNS server address	nameserver add
Optional	Secondary DNS server address	nameserver add
Optional	Host name used by DHCP	dhcp_host_name

The values of Primary DNS server address and Secondary DNS server address are required when they are manually specified and not automatically obtained using DHCP. The values that can be entered must be in the range from 0.0.0.0 ~ 255.255.255.255. An error should be generated for values outside this range. Moreover, if a value of 0.0.0.0 is specified, it should be assumed to be an error, or it should be considered as specifying that the DNS server addresses are automatically obtained.

For HDD Ethernet Hardware, When Pppoe Is Used And DNS Server Addresses Are Automatically Obtained

The following items must be stored in the network service provider settings file for HDD Ethernet, when PPPoE is used, and when the DNS server address is automatically obtained.

Table 19

Classification	Setting Item	Applicable Keyword
Required, Automatic	Device layer type	type ppp
Required, Automatic	Authentication name of the connection destination	peer_name "*"
Required, Automatic	Authentication method	allow.auth chap/pap
Required, Automatic	DHCP not used	-dhcp
Required	User ID	auth_name
Required	Password	auth_key
Required	Automatically obtain DNS server address	want.dns1_nego on, want.dns2_nego on
Required, Automatic	Default router	route add -net 0.0.0.0 netmask 0.0.0.0
Required, Automatic	Prohibit PFC negotiation	-want.prc_nego
Required, Automatic	Prohibit ACFC negotiation	-want.acc_nego
Required, Automatic	Prohibit ACCM negotiation	-want.accm_nego
Required, Automatic	Setting of MTU and MRU (1454 bytes)	mtu 1454
Required	PPPoE used	pppoe

0.0.0.0 should be specified for the Default router to direct it to the connection destination. Furthermore, the prohibition of negotiations for PFC(Protocol Field Compression), ACFC(Address and Control Field Compression), and ACCM(Asynchronous Control Character Map) is based on RFC2516.

For HDD Ethernet Hardware, When Pppoe Is Used And DNS Server Addresses Are Specified

The following items must be stored in the network service provider settings file for HDD Ethernet, when PPPoE is used, and when the DNS server addresses are specified as fixed values.

Table 20

Classification	Setting Item	Applicable Keyword
Required, Automatic	Device layer type	type ppp
Required, Automatic	Authentication name of the connection destination	peer_name "*"
Required, Automatic	Authentication method	allow.auth chap/pap
Required, Automatic	DHCP not used	-dhcp
Required	User ID	auth_name
Required	Password	auth_key
Required	Primary DNS server address	nameserver add
Optional	Secondary DNS server address	nameserver add
Required, Automatic	Default router	route add -net 0.0.0.0 netmask 0.0.0.0
Required, Automatic	Prohibit PFC negotiation	-want.prc_nego
Required, Automatic	Prohibit ACFC negotiation	-want.acc_nego
Required, Automatic	Prohibit ACCM negotiation	-want.accm_nego
Required, Automatic	Setting of MTU and MRU (1454 bytes)	mtu 1454
Required	PPPoE used	pppoe

The values that can be entered for the Primary DNS server address and Secondary DNS server address must be in the range from 0.0.0.0 ~ 255.255.255.255. An error should be generated for values outside this range. Moreover, if a value of 0.0.0.0 is specified, it should be assumed to be an error, or it should be considered as specifying that the DNS server addresses are automatically obtained.

Items That Can Be Left Unset

For those items above which are classified as optional, add and edit functions do not need to be implemented. However, when a file is read which sets the following items, the items must be displayed. In this case, the display should be grayed out, or a similar method used, so that it is understood that these values cannot be set.

- Telephone number 2 (Spare)
- Telephone number 3 (Spare)

Processing For Unrecognized Items

For setting items that are unrecognized by the configuration application, the contents that have been read from the file should be written out asis without any changes, to maintain future compatibility.

Terms For On-Screen Display

The following terms should be used in on-screen messages etc., unless there is some reason for non-compliance.

Terms Common To All Screens

- Network Connection
- Network Configuration
- Advanced settings
- Restore Defaults
- Set
- Don't set
- Setting name

When a function for actually connecting to the Internet for testing etc. has been implemented, the term "Network Connection" should be used to indicate this function.

When items such as additional AT command, etc. that are not usually required to be set by the user are set by being divided among separate screens, the term "Network Configuration" should be used as a generic term for hardware settings or those for the network service provider, and the term "Advanced Settings" should be used as the term indicating the additional screens.

"Setting name" is the name of the network service provider settings file.

Terms Used On The Network Connection Screen

- Combination
- Hardware
- Network Service provider
- Connect
- Delete Connection
- Connection settings
- Add Combination
- Delete Combination

Terms Used On The Network Configuration Screen

- New Settings
- Hardware Settings
- Network Service Provider Settings
- Add Hardware
- Edit Hardware
- Delete Hardware
- Add Network Service Provider
- Edit Network Service Provider
- Delete Network Service Provider
- DNS Server Address

- Auto-acquire
- Ethernet Hardware Operating Mode
- PPPoE

The term that indicates the IP address of the name server should be unified with "DNS Server Address". Similarly, the term "PPP over Ethernet" should be unified with "PPPoE". When a note is required, this should be specified as "PPPoE(PPP over Ethernet)".

"Auto-acquire" should be used as a term that specifies the receipt of the assignment of the IP address from the DHCP server and the receipt of the assignment of the DNS server address from the PPP server. "Ethernet Hardware Operating Mode" is a term that indicates 10Base-T Half Duplex / 10Base-T Full Duplex / 100Base-TX Half Duplex / 100Base-TX Full Duplex.

Terms Used On The Mail Configuration Screen

- SMTP Server Name
- POP Server Name
- Mail Account
- Mail Password
- Mail Address
- Name
- Signature
- Keep Received Mail on the Server (keep, don't keep)
- Check New Mail (every ?? minutes)

Terms Used In Browser Settings

- Proxy Server (address, port)
- Address not used by the Proxy Server
- Page that becomes Home

Maximum Size Of Setting Items

For the items that set character strings, a 256-byte internal buffer is provided. Therefore, it is possible to precisely load / save a maximum of 255 characters + "\0". At the same time, entering 256 bytes or more characters should not be allowed.

Also, when displaying each of the setting items on screen, it should be possible to display more than the number of characters indicated below. For long items, a scrolling display could be used depending upon the available screen space.

Table 21

Settings File Type	Setting Item	Minimum Number of Displayed Characters
Configuration management file	Setting name	20 characters (UTF-8)
Hardware settings file	Vendor name	10 (ASCII)
Hardware settings file	Product name	10 (ASCII)
Hardware settings file	Additional AT command	32 (ASCII)
Hardware settings file	Outside number	32 (ASCII)
Network service provider settings file	IP address	32 (ASCII)
Network service provider settings file	Net mask	32 (ASCII)
Network service provider settings file	Default router	32 (ASCII)
Network service provider settings file	Primary DNS	32 (ASCII)
Network service provider settings file	Secondary DNS	32 (ASCII)
Network service provider settings file	Telephone number 1	32 (ASCII)
Network service provider settings file	Telephone number 2	32 (ASCII)
Network service provider settings file	Telephone number 3	32 (ASCII)
Network service provider settings file	User ID	32 (ASCII)
Network service provider settings file	Password	32 (ASCII)
Network service provider settings file	Host name used by DHCP	25 (ASCII)

Character Codes

The following specifications must be followed regarding the character type and character code that can be entered for each of the setting items.

- Only ASCII characters / Hiragana / Katakana can be used in a user-specified setting name.
- A user-specified setting name cannot use the character ','.
- Kanji codes should be UTF-8.
- For items other than the setting name, characters other than ASCII cannot be used.

The usable character set is shown below.

Table 22

Hex	Char
20	(SPACE)
21	!
22	"
23	#
24	$
25	%
26	&
27	'
28	(
29	)
2A	*
2B	+
2C	,(cannot be used)
2D	-
2E	.
2F	/
30	0
31	1
32	2
33	3
34	4
35	5
36	6
37	7
38	8
39	9
3A	:
3B	;
3C	<
3D	=
3E	>

Hex	Char
3F	?
40	@
41	A
42	B
43	C
44	D
45	E
46	F
47	G
48	H
49	I
4A	J
4B	K
4C	L
4D	M
4E	N
4F	O
50	P
51	Q
52	R
53	S
54	T
55	U
56	V
57	W
58	X
59	Y
5A	Z
5B	[
5C	＼(Half width)
5D	]
5E	^
5F	_
60	`
61	a
62	b
63	c
64	d
65	e
66	f
67	g
68	h
69	i

Hex	Char
6A	j
6B	k
6C	l
6D	m
6E	n
6F	o
70	p
71	q
72	r
73	s
74	t
75	u
76	v
77	w
78	x
79	y
7A	z
7B	{
7C		
7D	}
7E	~

Table 23

Character	JIS	SJIS	Unicode	UTF-8
ぁ	2421	829f	3041	e3 81 81
あ	2422	82a0	3042	e3 81 82
ぃ	2423	82a1	3043	e3 81 83
い	2424	82a2	3044	e3 81 84
ぅ	2425	82a3	3045	e3 81 85
う	2426	82a4	3046	e3 81 86
ぇ	2427	82a5	3047	e3 81 87
え	2428	82a6	3048	e3 81 88
ぉ	2429	82a7	3049	e3 81 89
お	242a	82a8	304a	e3 81 8a
か	242b	82a9	304b	e3 81 8b
が	242c	82aa	304c	e3 81 8c
き	242d	82ab	304d	e3 81 8d
ぎ	242e	82ac	304e	e3 81 8e
く	242f	82ad	304f	e3 81 8f
ぐ	2430	82ae	3050	e3 81 90
け	2431	82af	3051	e3 81 91
げ	2432	82b0	3052	e3 81 92

Character	JIS	SJIS	Unicode	UTF-8
こ	2433	82b1	3053	e3 81 93
ご	2434	82b2	3054	e3 81 94
さ	2435	82b3	3055	e3 81 95
ざ	2436	82b4	3056	e3 81 96
し	2437	82b5	3057	e3 81 97
じ	2438	82b6	3058	e3 81 98
す	2439	82b7	3059	e3 81 99
ず	243a	82b8	305a	e3 81 9a
せ	243b	82b9	305b	e3 81 9b
ぜ	243c	82ba	305c	e3 81 9c
そ	243d	82bb	305d	e3 81 9d
ぞ	243e	82bc	305e	e3 81 9e
た	243f	82bd	305f	e3 81 9f
だ	2440	82be	3060	e3 81 a0
ち	2441	82bf	3061	e3 81 a1
ぢ	2442	82c0	3062	e3 81 a2
っ	2443	82c1	3063	e3 81 a3
つ	2444	82c2	3064	e3 81 a4
づ	2445	82c3	3065	e3 81 a5
て	2446	82c4	3066	e3 81 a6
で	2447	82c5	3067	e3 81 a7
と	2448	82c6	3068	e3 81 a8
ど	2449	82c7	3069	e3 81 a9
な	244a	82c8	306a	e3 81 aa
に	244b	82c9	306b	e3 81 ab
ぬ	244c	82ca	306c	e3 81 ac
ね	244d	82cb	306d	e3 81 ad
の	244e	82cc	306e	e3 81 ae
は	244f	82cd	306f	e3 81 af
ば	2450	82ce	3070	e3 81 b0
ぱ	2451	82cf	3071	e3 81 b1
ひ	2452	82d0	3072	e3 81 b2
び	2453	82d1	3073	e3 81 b3
ぴ	2454	82d2	3074	e3 81 b4
ふ	2455	82d3	3075	e3 81 b5
ぶ	2456	82d4	3076	e3 81 b6
ぷ	2457	82d5	3077	e3 81 b7
へ	2458	82d6	3078	e3 81 b8
べ	2459	82d7	3079	e3 81 b9
ぺ	245a	82d8	307a	e3 81 ba
ほ	245b	82d9	307b	e3 81 bb
ぼ	245c	82da	307c	e3 81 bc
ぽ	245d	82db	307d	e3 81 bd

Character	JIS	SJIS	Unicode	UTF-8
ま	245e	82dc	307e	e3 81 be
み	245f	82dd	307f	e3 81 bf
む	2460	82de	3080	e3 82 80
め	2461	82df	3081	e3 82 81
も	2462	82e0	3082	e3 82 82
ゃ	2463	82e1	3083	e3 82 83
や	2464	82e2	3084	e3 82 84
ゅ	2465	82e3	3085	e3 82 85
ゆ	2466	82e4	3086	e3 82 86
ょ	2467	82e5	3087	e3 82 87
よ	2468	82e6	3088	e3 82 88
ら	2469	82e7	3089	e3 82 89
り	246a	82e8	308a	e3 82 8a
る	246b	82e9	308b	e3 82 8b
れ	246c	82ea	308c	e3 82 8c
ろ	246d	82eb	308d	e3 82 8d
ゎ	246e	82ec	308e	e3 82 8e
わ	246f	82ed	308f	e3 82 8f
ゐ	2470	82ee	3090	e3 82 90
ゑ	2471	82ef	3091	e3 82 91
を	2472	82f0	3092	e3 82 92
ん	2473	82f1	3093	e3 82 93
ァ	2521	8340	30a1	e3 82 a1
ア	2522	8341	30a2	e3 82 a2
ィ	2523	8342	30a3	e3 82 a3
イ	2524	8343	30a4	e3 82 a4
ゥ	2525	8344	30a5	e3 82 a5
ウ	2526	8345	30a6	e3 82 a6
ェ	2527	8346	30a7	e3 82 a7
エ	2528	8347	30a8	e3 82 a8
ォ	2529	8348	30a9	e3 82 a9
オ	252a	8349	30aa	e3 82 aa
カ	252b	834a	30ab	e3 82 ab
ガ	252c	834b	30ac	e3 82 ac
キ	252d	834c	30ad	e3 82 ad
ギ	252e	834d	30ae	e3 82 ae
ク	252f	834e	30af	e3 82 af
グ	2530	834f	30b0	e3 82 b0
ケ	2531	8350	30b1	e3 82 b1
ゲ	2532	8351	30b2	e3 82 b2
コ	2533	8352	30b3	e3 82 b3
ゴ	2534	8353	30b4	e3 82 b4
サ	2535	8354	30b5	e3 82 b5

Character	JIS	SJIS	Unicode	UTF-8
ザ	2536	8355	30b6	e3 82 b6
シ	2537	8356	30b7	e3 82 b7
ジ	2538	8357	30b8	e3 82 b8
ス	2539	8358	30b9	e3 82 b9
ズ	253a	8359	30ba	e3 82 ba
セ	253b	835a	30bb	e3 82 bb
ゼ	253c	835b	30bc	e3 82 bc
ソ	253d	835c	30bd	e3 82 bd
ゾ	253e	835d	30be	e3 82 be
タ	253f	835e	30bf	e3 82 bf
ダ	2540	835f	30c0	e3 83 80
チ	2541	8360	30c1	e3 83 81
ヂ	2542	8361	30c2	e3 83 82
ッ	2543	8362	30c3	e3 83 83
ツ	2544	8363	30c4	e3 83 84
ヅ	2545	8364	30c5	e3 83 85
テ	2546	8365	30c6	e3 83 86
デ	2547	8366	30c7	e3 83 87
ト	2548	8367	30c8	e3 83 88
ド	2549	8368	30c9	e3 83 89
ナ	254a	8369	30ca	e3 83 8a
ニ	254b	836a	30cb	e3 83 8b
ヌ	254c	836b	30cc	e3 83 8c
ネ	254d	836c	30cd	e3 83 8d
ノ	254e	836d	30ce	e3 83 8e
ハ	254f	836e	30cf	e3 83 8f
バ	2550	836f	30d0	e3 83 90
パ	2551	8370	30d1	e3 83 91
ヒ	2552	8371	30d2	e3 83 92
ビ	2553	8372	30d3	e3 83 93
ピ	2554	8373	30d4	e3 83 94
フ	2555	8374	30d5	e3 83 95
ブ	2556	8375	30d6	e3 83 96
プ	2557	8376	30d7	e3 83 97
ヘ	2558	8377	30d8	e3 83 98
ベ	2559	8378	30d9	e3 83 99
ペ	255a	8379	30da	e3 83 9a
ホ	255b	837a	30db	e3 83 9b
ボ	255c	837b	30dc	e3 83 9c
ポ	255d	837c	30dd	e3 83 9d
マ	255e	837d	30de	e3 83 9e
ミ	255f	837e	30df	e3 83 9f
ム	2560	8380	30e0	e3 83 a0

Character	JIS	SJIS	Unicode	UTF-8
メ	2561	8381	30e1	e3 83 a1
モ	2562	8382	30e2	e3 83 a2
ャ	2563	8383	30e3	e3 83 a3
ヤ	2564	8384	30e4	e3 83 a4
ュ	2565	8385	30e5	e3 83 a5
ユ	2566	8386	30e6	e3 83 a6
ョ	2567	8387	30e7	e3 83 a7
ヨ	2568	8388	30e8	e3 83 a8
ラ	2569	8389	30e9	e3 83 a9
リ	256a	838a	30ea	e3 83 aa
ル	256b	838b	30eb	e3 83 ab
レ	256c	838c	30ec	e3 83 ac
ロ	256d	838d	30ed	e3 83 ad
ヮ	256e	838e	30ee	e3 83 ae
ワ	256f	838f	30ef	e3 83 af
ヰ	2570	8390	30f0	e3 83 b0
ヱ	2571	8391	30f1	e3 83 b1
ヲ	2572	8392	30f2	e3 83 b2
ン	2573	8393	30f3	e3 83 b3
ヴ	2574	8394	30f4	e3 83 b4
ヵ	2575	8395	30f5	e3 83 b5
ヶ	2576	8396	30f6	e3 83 b6

Implementation Notes

Redialing When Connecting

The specification is defined so that when telephone numbers 1-3 are specified in the common network configuration, redialing will be attempted to telephone number 2 when telephone number 1 is busy, and redialing will be attempted to telephone number 3 when telephone number 2 is also busy. (The decision to redial is only made when specified by redial_string, which is defined in the dialing definition file (DIAL_CNF) that is supplied with each modem driver.) However, using sceNetCnfLoadEntry() to load the common network configuration is insufficient for specifying redialing, as the following operation must also be performed.

- If while connecting, telephone numbers 1-3 were specified, then the redial_count member of the sceNetCnfInterface structure should be set to the value obtained by subtracting 1 from the total number of specified telephone numbers.

An implementation example is shown below.

```
        sceNetCnfEnv_t env;
        int i, redial_count;

        // Execute sceNetCnfLoadEntry()
        sceNetCnfLoadEntry("configuration management filename", type,
"configuration name(combination name)", &env);
```

```
                    // Set redial_count
                    for(i = 0, redial_count = 0; i < sceNetCnf_MAX_PHONE_NUMBERS; i++)
                    {
                       if(NULL == (env.root->pair_head->ifc->phone_numbers[i]))
                    continue;
                       switch(i){
                       case 0: redial_count++; break;
                       case 1: redial_count++; break;
                       case 2: redial_count++; break;
                       }
                    }
                    env.root->pair_head->ifc->redial_count = redial_count - 1;
```

Furthermore, the redial_count value that is set by the processing shown above must not be saved in a file as a common network setting. (It should be implemented so that it is performed only when connecting.)

Connection Processing When The Hardware Settings File And Network Service Provider Settings File Specify Different Types

In the following examples, the specification of the common network configuration library (netcnf.irx) will cause the connection to fail because a valid type is specified for the network service provider setting.

- When trying to make a connection using an SCE/Ethernet (Network Adapter) when the network service provider setting is type eth and the hardware setting is type nic.

- When trying to make a connection using a USB Ethernet adapter when the network service provider setting is type nic and the hardware setting is type eth.

To enable the connection to be established even in the cases described above, the following should be implemented.

- When not using PPPoE (PPP over Ethernet) and if the setting for the network service provider type is not ppp, overwrite the network service provider type with the hardware type.

An implementation example is shown below.

```
        sceNetCnfEnv_t env;
                int i, redial_count;

                // Execute sceNetCnfLoadEntry()
                sceNetCnfLoadEntry("configuration management filename", type,
        "configuration name(combination name)", &env);

                // When PPPoE (PPP over Ethernet) is not used and the connection
                // provider configuration type is not ppp, combine the types
                if(env.root->pair_head->ifc->pppoe != 1 &&
                   env.root->pair_head->ifc->type != sceNetCnf_IFC_TYPE_PPP){
                   env.root->pair_head->ifc->type = env.root->pair_head->dev->type;
                }
```

Furthermore, the value that is set by the processing shown above must not be saved in a file as a common network setting. (It should be implemented so that it is performed only when connecting.)