JVC

4ch Network Encoder

VN-E4

API GUIDE

This document provides a description of protocols and API of VN-E4.
Refer Readme file in the CD-ROM for updated information.

LST0288-001A

Custom Application Software Development Guide

VN-E4 can be used from a custom application software by utilizing the API and protocols for VN-E4. The following operations are possible.

- Acquisition of JPEG from VN-E4.
- Acquisition of audio from VN-E4.
- Acquisition of alarm from VN-E4.
- Acquiring or changing VN-E4 settings.
- Multicast sending of JPEG/audio from VN-E4.
- Reception of audio at VN-E4.
- Control of external devices that are connected to the serial port of VN-E4.
- Customization of VN-E4's built-in viewer.

Content

Content

1.1. Basic Procedures

1) The client establishes a TCP connection to port number 8009.

2) The client sends out API.

Example

```
GET /api/video?input=1&framerate=30&framesize=vga HTTP/1.1<CRLF>

Host: 10.0.0.1<CRLF><CRLF>
```

Note <CRLF> denotes the line feed code (0x0A, 0x0D).

3) VN-E4 returns a response.

Example

```
HTTP/1.1 200 OK<CRLF>
Connection: Keep-Alive<CRLF>
Content-Length: 27616<CRLF>
Content-Type: image/jpeg<CRLF>
Date: Fri, 13 MAY 2005 07:33:12 GMT<CRLF>
Server: VN-E4 Jpeg & Audio Server/1.0.0<CRLF>
Keep-Alive: timeout=5, max=5<CRLF>
x-vne4_response:
input=1&framesize=vga&framerate=30&header=0&assured=0&sendbuffer=16<CRLF>
<CRLF>
```

4) VN-E4 sends out JPEG data after returning the response.

JPEG files will be sent out continuously. Responses and JPEG data sent out by VN-E4 are as follows.

Responses
JPEG (No. 1)
JPEG (No. 2)

⋮

A 12-byte header will be added to the beginning of the JPEG file when header=1 is specified in the API parameter.

Responses
header (12-byte)
JPEG (No. 1)
header (12-byte)
JPEG (No. 2)

⋮

Details on the header structure and JPEG file format will be explained later.

5) When the client wants to stop current JPEG transmission, the client disconnects TCP8009.

VN-E4 does not accept further API via current TCP that is used for JPEG transmission. To change parameters, disconnect current TCP to stop the JPEG transmission, connect new TCP, and send API with new parameter.

1.2. API Format

Structure

GET	Space	API Character String	Space	HTTP/1.1	0x0D 0x0A
Host:	Space	IP Address of VN-E4	0x0D 0x0A 0x0D 0x0A		

Unlike parameter acquisition/setting, Accept line is not required. Basic authentication is also not necessary.

Example

```
GET
/api/video?input=1&framesize=vga&framerate=30&header=0&assured=0&send
buffer=128 HTTP/1.1<CRLF>
Host: 10.0.0.1<CRLF><CRLF>
```

Parameter values are indicated using =. Do not insert space before and after =.
Example input=1
Parameters are segmented using &. Do not insert space before and after &.
Example input=1&framesize=vga
There is no need to specify all parameters. Default values will be used for parameters that are not specified.

Parameter Description

input

For specifying the input video channel. For example, specify as input=4 when acquiring CH4. Specify as either 1, 2, 3 or 4.

framesize

For specifying the frame size. Specify as framesize=vga when acquiring VGA and framesize=qvga when acquiring QVGA.

framerate

For specifying the frame rate. For example, specify as framerate=5 when acquiring at 5 fps. Specify as framerate=-5 to acquire at 1/5 fps, or in other words, 1 frame in 5 seconds. Selection range is as follows.

- VN-E4 and VN-E4U (NTSC)
  30, 15, 10, 7.5, 6, 5, 3, 2, 1, 0, -2, -3, -5, -10, -15, -20, -30, -60
- VN-E4E (PAL)
  25, 12.5, 8.3, 6.25, 5, 4.1, 3, 2, 1, 0, -2, -3, -5, -10, -15, -20, -30, -60

Only 1 frame of the JPEG data will be sent when the parameter is specified as framerate=0. In this case, VN-E4 will disconnect TCP after 5 seconds if this is not disconnected by the client.

header

For specifying whether to add a 12-byte header to the JPEG data. Default value is 0.
Header format is as follows. The first 4 bytes (0x00000001) indicate that the payload is a JPEG data.

0x00000001
JPEG size in bytes
Time stamp (Unit: 8 kHz)

assured

VN-E4 temporarily saves up to 2.5 seconds of the compressed data. Specify as assured=0 to request for the latest data that is temporarily saved and assured=1 to request for the oldest data. Specify as assured=0 to shorten the delay time. To acquire as many frames as possible in a network where delay fluctuates, it is recommended that this be specified as assured=1. Default value is 0.

sendbuffer

Use this to increase the send buffer size. Default value is 16. Window scale will be enlarged upon increasing the send buffer size, hence enhancing the transmission volume on networks with considerable delay. The send buffer size may be increased up to 1024. When the send buffer size has already been increased to 1024 by other clients, sendbuffer will remain as the default value even if a larger value is specified Refer to "10. Advanced Topics" on countermeasures against network delays.

1.3. Response

When API is successfully received

VN-E4 will return 200 OK. Content-length indicates file size of first JPEG in bytes. The x-vne4_response line indicates current values of all parameters used for JPEG encoding.

Example

```
HTTP/1.1 200 OK<CRLF>
Connection: Keep-Alive<CRLF>
Content-Length: 27616<CRLF>
Content-Type: image/jpeg<CRLF>
Date: Fri, 13 MAY 2005 07:33:12 GMT<CRLF>
Server: VN-E4 Jpeg & Audio Server/1.0.0<CRLF>
Keep-Alive: timeout=5, max=5<CRLF>
x-vne4_response:
input=1&framesize=vga&framerate=30&header=0&assured=0&sendbuffer=16<CRLF>
<CRLF>
```

When VN-E4 fails to realize the requested frame rate

Depending on the frame rate settings of VN-E4, transmission may not be possible at the frame rate requested by API. For example, when VN-E4 is set to 15 fps, transmission will only be possible at 15 fps even if the client requests for 30 fps. When VN-E4 is set to 15 fps and 10 fps is requested by the client, transmission will be carried out at 7.5 fps to enable transmission at equal time intervals.
The actual transmission frame rate is stated in the x-vne4_response line.

Example

```
HTTP/1.1 206 Partial Content<CRLF>
Connection: Keep-Alive<CRLF>
Content-Length: 27616<CRLF>
Content-Type: image/jpeg<CRLF>
Date: Fri, 13 MAY 2005 07:33:12 GMT<CRLF>
Server: VN-E4 Jpeg & Audio Server/1.0.0<CRLF>
Keep-Alive: timeout=5, max=5<CRLF>
x-vne4_response:
input=1&framesize=vga&framerate=15&header=0&assured=0&sendbuffer=16<CRLF>
<CRLF>
```

Frame rate encoded by VN-E4 can be changed using the web setting page or API for setting. Frame rate of data that are currently being transmitted will remain unchanged even if the frame rate to encode is increased. When the frame rate to encode is reduced, however, this value will become the upper limit of the transmission frame rate.

When the specified input channel and frame size are not available

For example, when QVGA encoding of CH4 is set to off at VN-E4, transmission will fail if the client requests for QVGA of CH4. When this occurs, VN-E4 will return an error response together with a PNG file. "Not Encoded" image is written in the PNG file.

Example

```
HTTP/1.1 456 Header Field Not Valid for Resource<CRLF>
Connection: Keep-Alive<CRLF>
Content-Length: 27616<CRLF>
Content-Type: image/png<CRLF>
Date: Fri, 13 MAY 2005 07:33:12 GMT<CRLF>
Server: VN-E4 Jpeg & Audio Server/1.0.0<CRLF>
Keep-Alive: timeout=5, max=5<CRLF><CRLF>
```

(This is followed by a PNG file which includes the "Not Encoded" message.)

1.4. Restrictions

■ Access restriction

VN-E4 comes with a feature that enables it to deny access from a specific IP address. If access from the IP address of the client is denied, VN-E4 will disconnect the TCP connection immediately after TCP is connected via the port number 8009.

■ Restriction by maximum bitrate of VN-E4

The maximum distribution capacity of VN-E4 is 40 Mbps. VN-E4 will return an error (503 Service Unavailable) when the distribution capacity is exceeded due to the API's request. In this case, VN-E4 will disconnect TCP after 5 seconds if this is not disconnected by the client.

■ Number of clients

The maximum number of clients for which TCP can connect to 8009 is 10. When a connection is made to TCP8009 by an 11th client, this will be disconnected by VN-E4 immediately after the TCP connection is made.

1.5. JPEG File Format Sent Out by VN-E4

JPEG files sent out by VN-E4 are compliant with JFIF and consist of the following.

FFD8	Start Code
FFE0	Application Segment
FFFE	Comment Segment
FFC0	SOF Frame Information
FFDB	DQT Quantization Table
FFC4	DHT Huffman Table
FFDA	Data Start Segment
FFD9	End Code

The following information is stored in the comment segment. Each item has a fixed length.

Item	Size	Example	Description
Version Information	9	JVC V1.0	Indicates the version of information stored in the comment segment
File Size	18	size = 123456	The number of bytes of the JPEG file.
Width	13	width = 640	Width of JPEG.
Height	14	height = 480	Height of JPEG.
Model Name	18	type = VN-E4	Name of model that created the JPEG.
Invert Flag	12	Stores inversion information set at VN-E4.	Specified as reverse=1 in the case of a vertical inversion.
Time Stamp	70	timestamp = 20050214130509123JST	Indicates the time at which JPEG is created. This is made up of the year/month/day, hour/minute/second, millisecond and timezone code.
Alarm Information	13	alarm = 00000001	Indicates the alarm input status when the JPEG is created in a 4-byte binary value. (Not ASCII code.) 4 alarm inputs are assigned to 4 bits from the LSB. For example, value is alarm = 00000001when changes occur with alarm input 1, alarm = 00000008 when changes occur with alarm input 4, and alarm = 00000009 when changes occur with alarm inputs 1 and 4.
Camera ID	50	camera = input01	Stores camera information set at VN-E4. Character code is Shift-JIS when information is stored in Japanese.
Motion Detect Setting	11	motion = 1	Specified as 1 when the motion detect feature is ON.
Motion Detect Result	7	md = 1	Specified as 1 if motion is detected at the time when JPEG is created.
Reserved	17		
Reserved	32		
Synchronization Time Stamp	26	sync_timestamp = 1FDC5A34	Indicates the 8 kHz counter value in a 4-byte binary value. (Not ASCII code.) This can be used when synchronizing with audio.
Video Signal Format	20	format = NTSCU	Indicates the input video signal. Stated as NTSCJ for NTSC in Japan, and NTSCU for other NTSC formats. Stated as PAL for PAL format.
Input Channel	7	ch = 1	Indicates the signal source among the 4 inputs of VN-E4.
Picture Quality	9	intp = 0	Stated as 1 when this is set to field interpolation at VN-E4, and 0 when this is set to frame processing.
Rate Control	16	size_cntl = VFS	Describes the mode of rate control for JPEG. VFS (VariableFileSize), AFS (AverageFileSize) or CFS (ConstantFileSize).
Target Size	19	size = 23456	Target size of rate control.
Quantization Scale	14	q_scale = 45	Indicates the quantization scale. Up to 3 digits.
Firmware Version Information	12	ver = 01.00	Indicates version of the firmware that is used to create JPEG.

Item names and values, excluding the version information that does not include =, are stored in the following format.

Item names	Space	=	Space	values	0x00

Defined fixed length by each item.

Example: When width=640, the 13-byte area will be written as follows.

w	i	d	t	h		=		6	4	0	0x00	0x00

2.1. Basic Procedures

1) The client establishes a TCP connection to port number 8009.

2) The client sends out API.

Example

```
GET /api/audio?assured=1&lowdelay=0 HTTP/1.1<CRLF>

Host: 138.198.34.250<CRLF><CRLF>
```

3) VN-E4 returns a response.

Example

```
HTTP/1.1 200 OK<CRLF>
Connection: Keep-Alive<CRLF>
Content-Type: audio/ulaw<CRLF>
Date: Fri, 13 MAY 2005 07:33:12 GMT<CRLF>
Server: VN-E4 Jpeg & Audio Server/1.0.0<CRLF>
Keep-Alive: timeout=5, max=5<CRLF>
x-vne4_response: assured=0&lowdelay=0<CRLF><CRLF>
```

4) VN-E4 sends out audio data after returning the response.

A 512-byte u-Law data with a 12-byte header will be sent out repeatedly. Responses and u-Law data sent out by VN-E4 are as follows.

Responses
header (12-byte)
u-law (512-byte)
header (12-byte)
u-law (512-byte)

Format of the 12-byte header is as follows. The header is made up of 3 4-byte data. The first 4 bytes (0x00000080) indicate that the payload is an audio data.

0x00000080
No. of bytes of audio data (fixed as 512)
Time stamp (Unit: 8 kHz)

5) The client disconnects TCP8009 to end the audio transmission.

New APIs that are sent without disconnecting TCP will not be valid. To change the parameters, disconnect the current TCP to stop data distribution, followed by sending API upon establishing a new TCP connection.

2.2. API Format

Structure

GET	Space	API Character String	Space	HTTP/1.1	0x0D 0x0A
Host:	Space	IP Address of VN-E4	0x0D 0x0A 0x0D 0x0A		

Unlike parameter acquisition/setting, Accept line is not required. Basic authentication is also not necessary.

Example

```
GET /api/audio?assured=1&lowdelay=0 HTTP/1.1<CRLF>
Host: 138.198.34.250<CRLF><CRLF>
```

Parameter values are indicated using =. Do not insert space before and after =.
Example assured=1
Parameters are segmented using &. Do not insert space before and after &.
Example assured=1&lowdelay=0
There is no need to specify all parameters. Default values will be used for parameters that are not specified.

Parameter Description

assured

VN-E4 temporarily saves up to 2.5 seconds of the compressed data. Specify as assured=0 to request for the latest data that is temporarily saved and assured=1 to request for the oldest data. Specify as assured=0 to shorten the audio delay time. To enable stable playback in a network where jitter occurs, it is recommended that this be specified as assured=1. Default value is 1.

lowdelay

Specifying as lowdelay=1 disables the Nagle algorithm of TCP, and audio delay time will be shortened. When lowdelay=0 is specified, the Nagle algorithm is enabled and audio delay time will be prolonged. However, transmission overhead will be enhanced. Default value is 1.

2.3. Response

Unlike JPEG acquisition, there is no Content-length. The last line indicates the actual parameters set at VN-E4.

Example

```
HTTP/1.1 200 OK<CRLF>
Connection: Keep-Alive<CRLF>
Content-Type: audio/ulaw<CRLF>
Date: Fri, 13 MAY 2005 07:33:12 GMT<CRLF>
Server: VN-E4 Jpeg & Audio Server/1.0.0<CRLF>
Keep-Alive: timeout=5, max=5<CRLF>
x-vne4_response: assured=0&lowdelay=0<CRLF><CRLF>
```

2.4. Restrictions

■ Access restriction

VN-E4 comes with a feature that enables it to deny access from a specific IP address. If access from the IP address of the client is denied, VN-E4 will disconnect the TCP connection immediately after TCP is connected via the port number 8009.

■ Restriction by maximum bitrate of VN-E4

The maximum distribution capacity of VN-E4 is 40 Mbps. VN-E4 will return an error (503 Service Unavailable) when the distribution capacity is exceeded due to the API's request. In this case, VN-E4 will disconnect TCP after 5 seconds if this is not disconnected by the client.

■ Number of clients

The maximum number of clients for which TCP can connect to 8009 is 10. When a connection is made to TCP8009 by an 11th client, this will be disconnected by VN-E4 immediately after the TCP connection is made.

3.1 Procedure

1) The client establishes a TCP connection to port number 32040.

2) When motion is detected from the video image of VN-E4, or when there are changes to the alarm input (make or break), VN-E4 will send out alarm information in the following format. The first 4 lines indicate the current alarm input status (make or break). The following 4 lines indicate whether motion has been detected at each of the video input channel.

```
peripheral.input_pin.pin(1).status=break<CRLF>
peripheral.input_pin.pin(2).status=break<CRLF>
peripheral.input_pin.pin(3).status=make<CRLF>
peripheral.input_pin.pin(4).status=break<CRLF>
video.input(1).detection(motion).status=on<CRLF>
video.input(2).detection(motion).status=off<CRLF>
video.input(3).detection(motion).status=off<CRLF>
video.input(4).detection(motion).status=off<CRLF><CRLF>
```

3) The client can disconnect TCP32040 to end the alarm acquisition.

3.2. Restrictions

■ Access restriction

VN-E4 comes with a feature that enables it to deny access from a specific IP address. If access from the IP address of the client is denied, VN-E4 will disconnect the TCP connection immediately after TCP is connected via the port number 32040.

■ Maximum number of clients

The maximum number of clients that may acquire alarm is 4. When a 5th client sends a SYN for TCP connection to port number 32040, VN-E4 will return an RST.

Additionally, VN-E4 will also check whether the TCP connection is maintained at regular intervals. VN-E4 will disconnect the TCP connection if syn exchange is not performed in 10 minutes.

4. Using API that Requires Basic Authentication _ 4.1. Procedure

Basic authentication is required for APIs which are explained in Section 5. This section provides basic explanation of the uses of APIs that require basic authentication.

4.1. Procedure

1) The client establishes a TCP connection to port number 80.

2) The client sends out API via TCP.

Character strings of the following structure will be sent out.

GET	Space	API Character String	Space	HTTP/1.1	0x0D 0x0A
Accept	Space	text/plain or text/html	0x0D 0x0A		
Host:	Space	IP Address of VN-E4	0x0D 0x0A		
Authorization: Basic	Space	User Name and Password	0x0D 0x0A 0x0D 0x0A		

The following is an example of API for acquiring the subnet mask of VN-E4.

Example

```
GET /api/param?network.interface.subnetmask HTTP/1.1<CRLF>
Accept: text/palin<CRLF>
Host: 10.0.0.1<CRLF>
Authorization: Basic YWRtaW46dm4tZTQ=<CRLF><CRLF>
```

Specify the response format by Accept line. A plain text response is returned when this is specified as text/plain. An HTML response will be returned when text/html is specified. An HTML response will be returned when Accept is not specified.
Restrictions are imposed on clients via basic authentication in the case of API for acquiring/setting parameters of VN-E4. During basic authentication, user name and password shall be provided in the Authorization line. There are 3 types of user names, namely admin, operator and user. The type of user for which use is allowed is predetermined for each API. Join the user name and the password using a colon, Base64 encode this character string and enter this in the Authorization line.
For example, when
User name: admin
Password: vn-e4
then the character string upon joining the user name and the password with a colon will be admin:vn-e4. Base64 encoding this string yields YWRtaW46dm4tZTQ=. Enter this in the Authorization line. Default passwords in the factory settings are as follows:

User Name	Default Password
admin	vn-e4
operator	vn-e4
user	vn-e4

3) VN-E4 returns a response to the client. In the following example, current subnet mask is 255.0.0.0. In addition, 255.0.0.0 is followed by & and 200 OK, indicating that acquisition is successful.

Example

```
HTTP/1.1 200 OK<CRLF>
Connection: Keep-Alive<CRLF>
Content-Length: 80<CRLF>
content-type: text/plain<CRLF>
date: Fri, 13 MAY 2005 07:33:12 GMT<CRLF>
server: VN-E4 API Server/1.0.0<CRLF>
keep-alive: timeout=5, max=5<CRLF><CRLF>
network.interface.subnetmask=255.0.0.0&200 OK<CRLF>
```

Note also that each of the content-type, date, server and keep-alive lines begin with a lower-case character.

4) The client can disconnect TCP80 to end the use of API.

4.2. Restrictions

■ Access restriction

VN-E4 comes with a feature that enables it to deny access from a specific IP address. If access from the IP address of the client is denied, VN-E4 will disconnect the TCP connection immediately after TCP is connected via the port number 80.

This section provides a description of API for acquiring/changing the parameters of VN-E4. Make use of the API explained in this section in the way as mentioned in Section 4.

5.1. Explanatory Notes

(1) Acquiring parameters

- Specify API in GET line according to the format below when acquiring a parameter from VN-E4.
  `/api/param?ParamA.ParamB.ParamC`

  It is possible to acquire multiple parameters at a time. Parameters are segmented using &. Do not insert space before and after &.
  `/api/param?ParamA.ParamB.ParamC&ParamA.ParamD.ParamE`

  The upper limit of this character string is 1024 bytes. The maximum number of parameters that can be acquired at a time is 5.

- When acquisition is successfully completed, values will be shown in the Body of the response, followed by returning a "&200 OK" response.
  Example:
  `ParamA.ParamB.ParamC=Data&200 OK`

  When an error occurs, an error code will be returned instead of indicating a value in the Body of the response.
  Example:
  `ParamA.ParamB.ParamC&401 Unauthorized`

  When multiple acquirings are performed at one time, a response will be returned for each setting.
  `ParamA.ParamB.ParamC&200 OK<CRLF>`
  `ParamA.ParamB.ParamD&200 OK<CRLF>`

(2) Setting parameters

- Specify API in GET according to the format below when setting a parameter for VN-E4.
  `/api/param?ParamA.ParamB.ParamC=Data`
  Parameter values are indicated using =. Do not insert space before and after =.

  It is possible to perform multiple settings at a time. Parameters are segmented using &. Do not insert space before and after &.
  `/api/param?ParamA.ParamB.ParamC=Data&ParamA.ParamB.ParamD=Data`

  The upper limit of this character string is 1024 bytes. The maximum number of parameters that can be set at a time is 5.

- Response will be in the following format.
  `ParamA.ParamB.ParamC&200 OK`

  An error code will be returned when setting is not properly performed. Example:
  `ParamA.ParamB.ParamC&401 Unauthorized`

  When multiple settings are performed at one time, a response will be returned for each setting.
  `ParamA.ParamB.ParamC&200 OK<CRLF>`
  `ParamA.ParamB.ParamD&200 OK<CRLF>`

5.2. Signal Input

This API is related to signal input. This is equivalent to the feature on the Input page of the WEB setting page. Refer to the instruction manual for details on the Input page.

Acquiring Comment in JPEG from VN-E4

Format `/api/param?video.input(Number).comment`

Example When acquiring comment of video input channel 1
`/api/param?video.input(1).comment`

Example of response `video.input(1).comment=input01&200 OK`

Response example when setting field is left blank `video.input(1).comment=&200 OK`

Interpretation Acquire comment of the specified video input channel. This comment is stored in the JPEG header. Specify the video input channel between the range of 1 to 4.

Allowed users admin, operator, user

Setting Comment in JPEG from VN-E4

Format `/api/param?video.input(Number).comment=data`

Example When setting comment of video input channel 1
`/api/param?video.input(1).comment=input01`

Example when setting as blank `/api/param?video.input(1).comment=%00`

Example of response `video.input(1).comment&200 OK`

Interpretation Change the comment in JPEG of the specified video input channel. This comment is stored in the JPEG header. Specify the video input channel between the range of 1 to 4. Maximum size of comments is 40 bytes. To set as blank, specify as %00(0x25, 0x30, 0x30).
To use space, specify as %20(0x25, 0x32, 0x30). If you want to set "Comment In JPEG" for example, specify as follows.
`/api/param?video.input(1).comment=Comment%20In%20JPEG`

Allowed users admin, operator

Acquiring Brightness from VN-E4

Format `/api/param?video.input(Number).brightness`

Example When acquiring Brightness of video input channel 1
`/api/param?video.input(1).brightness`

Example of response `video.input(1).brightness=50&200 OK`

Interpretation Acquire the Brightness set value of the specified video input channel. Specify the video input channel between the range of 1 to 4. Range of Brightness is between 0 to 100. The larger the value, the brighter it will become.

Allowed users admin, operator, user

Setting Brightness for VN-E4

Format `/api/param?video.input(Number).brightness =data`

Example When setting Brightness of video input channel 1
`/api/param?video.input(1).brightness=50`

Example of response `video.input(1).brightness&200 OK`

Interpretation Change the Brightness set value of the specified video input channel. Specify the video input channel between the range of 1 to 4. Range of Brightness is between 0 to 100. The larger the value, the brighter it will become.

Allowed users admin, operator

Acquiring Contrast from VN-E4

Format `/api/param?video.input(Number).contrast`

Example When acquiring Contrast of video input channel 1
`/api/param?video.input(1).contrast`

Example of response `video.input(1).contrast=50&200 OK`

Interpretation Acquire the Contrast set value of the specified video input channel. Specify the video input channel between the range of 1 to 4. Range of Contrast is between 0 to 100. The larger the value, the stronger will be the contrast.

Allowed users admin, operator, user

Setting Contrast for VN-E4

Format `/api/param?video.input(Number).contrast=data`

Example When setting Contrast of video input channel 1
`/api/param?video.input(1).contrast=50`

Example of response `video.input(1).contrast&200 OK`

Interpretation Change the Contrast set value of the specified video input channel. Specify the video input channel between the range of 1 to 4. Range of Contrast is between 0 to 100. The larger the value, the stronger will be the contrast.

Allowed users admin, operator

Acquiring Saturation from VN-E4

Format `/api/param?video.input(Number).saturation`

Example When acquiring Saturation of video input channel 1
`/api/param?video.input(1).saturation`

Example of response `video.input(1).saturation=50&200 OK`

Interpretation Acquire the Saturation set value of the specified video input channel. Specify the video input channel between the range of 1 to 4. Range of Saturation is between 0 to 100. The larger the value, the darker will be the color.

Allowed users admin, operator, user

Setting Saturation for VN-E4

Format `/api/param?video.input(Number).saturation=data`

Example When setting Saturation of video input channel 1
`/api/param?video.input(1).saturation=50`

Example of response `video.input(1).saturation&200 OK`

Interpretation Change the Saturation set value of the specified video input channel. Specify the video input channel between the range of 1 to 4. Range of Saturation is between 0 to 100. The larger the value, the darker will be the color.

Allowed users admin, operator

Acquiring Phase from VN-E4

Format `/api/param?video.input(Number).phase`

Example When acquiring Phase of video input channel 1
`/api/param?video.input(1).phase`

Example of response `video.input(1).phase=50&200 OK`

Interpretation Acquire the Phase set value of the specified video input channel. Specify the video input channel between the range of 1 to 4. Range of Phase is between 0 to 100. -180 degrees when 0 is specified, 0 degree when 50 is specified, and +180 degrees when 100 is specified.

Allowed users admin, operator, user

Setting Phase for VN-E4

Format `/api/param?video.input(Number).phase=data`

Example When setting Phase of video input channel 1
`/api/param?video.input(1).phase=50`

Example of response `video.input(1).phase&200 OK`

Interpretation Change the Phase set value of the specified video input channel. Specify the video input channel between the range of 1 to 4. Range of Phase is between 0 to 100. -180 degrees when 0 is specified, 0 degree when 50 is specified, and +180 degrees when 100 is specified.

Allowed users admin, operator

Acquiring Turnover from VN-E4

Format `/api/param?video.input(Number).turnover`

Example When acquiring Turnover of video input channel 1
`/api/param?video.input(1).turnover`

Example of response `video.input(1).turnover=off&200 OK`

Interpretation Acquire the Turnover set value of the specified video input channel. Turnover refers to flags that are stored in the JPEG header. Specify the video input channel between the range of 1 to 4.

Allowed users admin, operator, user

Setting Turnover for VN-E4

Format `/api/param?video.input(Number).turnover=data`

Example When setting Turnover of video input channel 1
`/api/param?video.input(1).turnover=on`

Example of response `video.input(1).turnover&200 OK`

Interpretation Change the Turnover set value of the specified video input channel. Turnover refers to flags that are stored in the JPEG header. Specify the video input channel between the range of 1 to 4. Values that can be specified for Turnover are on or off.

Allowed users admin, operator, user
(Note: This item can also be set by users.)

Acquiring Echo Suppressor from VN-E4

Format `/api/param?audio.input.echo_suppress`

Example of response `audio.input.echo_suppress=off&200 OK`

Interpretation Acquire the Echo Suppressor setting of the audio input. Specify as high, mid, low or off.

Allowed users admin, operator, user

Setting Echo Suppressor for VN-E4

Format `/api/param?audio.input.echo_suppress=data`

Example `/api/param?audio.input.echo_suppress=low`

Example of response `audio.input.echo_suppress&200 OK`

Interpretation Change the Echo Suppressor setting of the audio input. Specify as high, mid, low or off.

Allowed users admin, operator

Acquiring Noise Suppressor from VN-E4

Format `/api/param?audio.input.noise_suppress`

Example of response `audio.input.noise_suppress=off&200 OK`

Interpretation Acquire the Noise Suppressor setting of the audio input. Specify as high, mid, low or off.

Allowed users admin, operator, user

Setting Noise Suppressor for VN-E4

Format `/api/param?audio.input.noise_suppress=data`

Example `/api/param?audio.input.noise_suppress=low`

Example of response `audio.input.noise_suppress&200 OK`

Interpretation Change the Noise Suppressor setting of the audio input. Specify as high, mid, low or off.

Allowed users admin, operator

5.3. JPEG Encoding

This API is related to JPEG encoding. This is equivalent to the feature on the Encoding page of the WEB setting page. Refer to the instruction manual for details on the Encoding page.
Up to 8 types of JPEG data may be encoded according to the combination of the input channel and frame size. Specify a type from the 8 encoding numbers below when acquiring/changing settings via API.

Encoding No.	Input Channel	Frame Size
1	1	VGA
2	1	QVGA
3	2	VGA
4	2	QVGA
5	3	VGA
6	3	QVGA
7	4	VGA
8	4	QVGA

Acquiring JPEG Encoding On/Off from VN-E4

Format `/api/param?encode(Number).status`

Example When acquiring encoding on/off of Encoding No. 1
`/api/param?encode(1).status`

Example of response `encode(1).status=on&200 OK`

Interpretation Acquire the encoding on/off of the specified encoding number. Note that encoding numbers are different from video input channels.

Allowed users admin, operator, user

Setting JPEG Encoding On/Off for VN-E4

Format `/api/param?encode(Number).status=data`

Example When setting encoding on/off of Encoding No. 1
`/api/param?encode(1).status=off`

Example of response `encode(1).status&200 OK`

Interpretation Change the encoding on/off of the specified encoding number. Specify as on to turn on and off to turn off. Note that encoding numbers are different from video input channels.

Allowed users admin, operator

Acquiring Frame Rate from VN-E4

Format `/api/param?encode(Number).framerate`

Example When acquiring frame rate of Encoding No. 1
`/api/param?encode(1).framerate`

Example of response `encode(1).framerate=15&200 OK`

Interpretation Acquire frame rate of the specified encoding number. Note that encoding numbers are different from video input channels.

Allowed users admin, operator, user

Setting JPEG Frame Rate for VN-E4

Format `/api/param?encode(Number).framerate=data`

Example When setting frame rate of Encoding No. 1
`/api/param?encode(1).framerate=30`

Example of response `encode(1).framerate&200 OK`

Interpretation Change frame rate of the specified encoding number. Note that encoding numbers are different from video input channels.
Frame rate can be set to 30, 15, 10, 7.5, 6, 5, 3, 2 or 1 in the case of VN-E4 and VN-E4U (NTSC).
Frame rate can be set to 25, 12.5, 8, 6, 5, 4, 3, 2 or 1 in the case of VN-E4E (PAL).

Allowed users admin, operator

Acquiring Rate Control Setting from VN-E4

Format `/api/param?encode(Number).cbr_mode`

Example When acquiring rate control setting of Encoding No. 1
`/api/param?encode(1).cbr_mode`

Example of response `encode(1).cbr_mode=afs&200 OK`

Interpretation Acquire the rate control setting of the specified encoding number. Note that encoding numbers are different from video input channels. Quantization table is fixed in the case of vfs (VariableFileSize). In the case of afs (AverageFileSize), bit rates are controlled such that the average size of multiple files remains constant. For cfs (ConstantFileSize), bit rates are controlled such that the size of each file remains constant. Upon setting to afs or vfs, the rate control processing load will increase and the maximum frame rate that can be realized will drop.

Allowed users admin, operator, user

Setting Rate Control for VN-E4

Format `/api/param?encode(Number).cbr_mode=data`

Example When setting rate control of Encoding No. 1
`/api/param?encode(1).cbr_mode=vfs`

Example of response `encode(1).cbr_mode&200 OK`

Interpretation Change rate control of the specified encoding number. Note that encoding numbers are different from video input channels.
Rate control can be set to vfs, afs, or cfs. In vfs (VariableFileSize), quantization table is fixed. In afs (AverageFileSize), average file size of multiple JPEGs is controlled to be constant. In cfs (ConstanFileSize), each file size is controlled to be constant. In cfs mode, maximum frame rate becomes a quater of the maximum frame rate of vfs/afs.

Allowed users admin, operator

Acquiring File Size Setting from VN-E4

Format `/api/param?encode(Number).quality`

Example When acquiring file size setting of Encoding No. 1
`/api/param?encode(1).quality`

Example of response `encode(1).quality=40k&200 OK`

Interpretation Acquire the file size setting of the specified encoding number. Note that encoding numbers are different from video input channels. If the response is 40k for example, the setting is 40KB.

Allowed users admin, operator, user

Setting File Size for VN-E4

Format `/api/param?encode(Number).quality=Data`

Example When setting the file size of Encoding No. 1
`/api/param?encode(1).quality=60k`

Example of response `encode(1).quality&200 OK`

Interpretation Change the file size of the specified encoding number. Note that encoding numbers are different from video input channels. The unit of set values is in KB. VN-E4 will perform rate control with this file size as the target. The frame sizes for ch(1), ch(3), ch(5) and ch(7) are in VGA, and therefore setting between the range of 10 k to 100 k is possible. The frame sizes for ch(2), ch(4), ch(6) and ch(8) are in QVGA, and therefore setting between the range of 3 k to 33 k is possible.
When VFS (VariableFileSize) is specified for rate control at the WEB setting page, 7 levels will be available for selection. Each of these choices corresponds to the file sizes as follows.

Level	File Size Setting for VGA	File Size Setting for QVGA
1	80k	27k
2	60k	20k
3	40k	13k
4	30k	10k
5	25k	8k
6	20k	7k
7	15k	5k

When rate control is set to vfs and a file size that is not stated above is specified, the closest choice will be displayed on the WEB setting page.

Allowed users admin, operator

Acquiring Interpolation Setting from VN-E4

Format `/api/param?encode(Number).interpolate`

Example When acquiring interpolation of Encoding No. 1
`/api/param?encode(1).interpolate`

Example of response `encode(1).interpolate=on&200 OK`

Interpretation Acquire the interpolation setting of the specified encoding number. Note that encoding numbers are different from video input channels. When this is set to on, JPEG-compression will be performed upon creating VGA based on the first field out of the 2 fields that make up the video frame. When this is set to off, the video frame will be directly JPEG-compressed. This item is valid when the frame size is in VGA (Encoding Nos.: 1, 3, 5 and 7). When the frame size is in QVGA (Encoding Nos.: 2, 4, 6 and 8), this will be invalid as only the first field will be used from the beginning.

Allowed users admin, operator, user

Setting Interpolation for VN-E4

Format `/api/param?encode(Number).interpolate=Data`

Example When setting interpolation of Encoding No. 1
`/api/param?encode(1).interpolate=on`

Example of response `encode(1).interpolate&200 OK`

Interpretation Change interpolation of the specified encoding number. Note that encoding numbers are different from video input channels. When this is set to on, JPEG-compression will be performed upon creating VGA based on the first field out of the 2 fields that make up the video frame. When this is set to off, the video frame will be directly JPEG-compressed. Images with intense motion will not appear blurred when this is set to on. For images with little motion, set to off to obtain a high resolution image. This setting is valid when the frame size is in VGA (Encoding Nos.: 1, 3, 5 and 7). When the frame size is in QVGA (Encoding Nos.: 2, 4, 6 and 8), this will be invalid as only the first field will be used from the beginning.

Allowed users admin, operator

5.4. Alarm Setting

The APIs below are related to alarm setting. These are equivalent to the features on the Alarm page of the WEB setting page. Refer to the instruction manual for details on the Alarm page.

Acquiring Alarm On/Off Status from VN-E4

Format `/api/param?application.event(Number).status`

Example When acquiring the on/off status of Encoding No. 1
`/api/param?application.event(1).status`

Example of response `application.event(1).status=on&200 OK`

Interpretation Acquire the on/off status of the alarm action for the specified encoding number. Up to 10 alarm actions can be specified, and therefore the number of event(Number) can also be set between the range of 1 to 10. Note that alarm numbers are different from the alarm input pin numbers.
Either on or off will be returned.

Setting Alarm to Off for VN-E4

Format `/api/param?application.event(Number).status=off`

Example When setting Alarm No. 1 to off
`/api/param?application.event(1).status=off`

Example of response `application.event(1).status&200 OK`

Interpretation Set the alarm action of the specified encoding number to off. When this is set to off, the action that is associated with this event will be deleted. When it is an FTP action, the object (file attribute that is sent via FTP) will also be deleted. Up to 10 alarm actions can be specified, and therefore the number of event(number) can also be set between the range of 1 to 10. Note that alarm numbers are different from the alarm input pin numbers.
This API cannot be used to turn on the alarm action. To turn on the alarm action, specify a specific action using the API for setting the alarm action.

Acquiring JPEG Parameters Added to FTP from VN-E4

As mentioned in the section on acquiring/setting alarm actions, specify between object01 to object08 for JPEG to be added to FTP. Each object is a combination of the input CH and frame size as indicated below.

Object	Input CH	Frame Size
object01	1	VGA
object02	1	QVGA
object03	2	VGA
object04	2	QVGA
object05	3	VGA
object06	3	QVGA
object07	4	VGA
object08	4	QVGA

Frame rate, BeforeTrigger and AfterTrigger for FTP are common among all objects. A same value will be returned during acquisition by any of the objects.

Format

Acquisition of input CH: `/api/param?application.object(Number).source`
Acquisition of frame size: `/api/param?application.object(Number).framesize`
Acquisition of frame rate: `/api/param?application.object(Number).framerate`
Acquisition of BeforeTrigger: `/api/param?application.object(Number).prerec`
Acquisition of AfterTrigger: `/api/param?application.object(Number).postrec`

Example When acquiring setting of Object 1

Acquisition of input CH:	**/api/param?application.object(1).source**
Acquisition of frame size:	**/api/param?application.object(1).framesize**
Acquisition of frame rate:	**/api/param?application.object(1).framerate**
Acquisition of BeforeTrigger:	**/api/param?application.object(1).prerec**
Acquisition of AfterTrigger:	**/api/param?application.object(1).postrec**

Example of Response

Acquisition of input CH:	**application.object(1).source=video.input(01)&200 OK**
Acquisition of frame size:	**application.object(1).framesize=vga&200 OK**
Acquisition of frame rate:	**application.object(1).framerate=10&200 OK**
Acquisition of BeforeTrigger:	**application.object(1).prerec=2&200 OK**
Acquisition of AfterTrigger:	**application.object(1).postrec=2&200 OK**

Interpretation Acquire the parameter of the specified object. This object is used by the API for setting FTP. Specify the number of object(number) between the range of 1 to 8.

Setting JPEG Parameters Added to FTP from VN-E4

Format

Setting of frame rate:	**/api/param?application.object(Number).framerate=data**
Setting of BeforeTrigger:	**/api/param?application.object(Number).prerec=data**
Setting of AfterTrigger:	**/api/param?application.object(Number).postrec=data**

Example

Set frame rate to 5 fps:	**/api/param?application.object(1).framerate=5**
Set BeforeTrigger to 3 seconds:	**/api/param?application.object(1).prerec=3**
Set AfterTrigger to 3 seconds:	**/api/param?application.object(1).postrec=3**

Example of Response

Setting of frame rate:	**application.object(1).framerate&200 OK**
Setting of BeforeTrigger:	**application.object(1).prerec&200 OK**
Setting of AfterTrigger:	**application.object(1).postrec&200 OK**

Interpretation Perform setting for the specified object. This object is used by the API for setting FTP. Specify the number of object(number) between the range of 1 to 8. The maximum value for prerec/postrec is 60. In addition, input CH and frame size for each object are fixed and cannot be changed.

Acquiring Alarm Action from VN-E4

Format **/api/param?application.event(Number).action**

Example When acquiring action of Alarm No. 1
/api/param?application.event(1).action

Example of Response **application.event(1).action=mailto/somebody@somecompany.com/none/Message&200 OK**

Interpretation Acquire the alarm action of the specified alarm number. Up to 10 alarm actions can be specified, and therefore the number of alarm(number) can also be set between the range of 1 to 10. Note that alarm numbers are different from the alarm input pin numbers. A separate API (/api/param?application.event(Number).status) is used to acquire the on/off status of the alarm action.
When sending via mail is specified, mailto, mail address, none and the character string to be sent will be returned. When spaces are included in the character string, the character string with spaces will be returned. Segments are indicated by /. none is an auxiliary item intended for future extensions.

Example of Response **`application.event(1).action=mailto/somebody@somecompany.com/none/Message&200 OK`**
When sending via FTP is specified, ftpto, FTP number, and the attached object number will be returned. The FTP number is fixed as ftp01 at all times. An object number may be specified between object01 to object04.

Example of Response **`application.event(1).action=ftpto/ftp01/object01&200 OK`**
When sending via TCP is specified, tcpto, IP address, port number and the character string to be sent will be returned. Segments are indicated by /.

Example of Response **`application.event(1).action=tcpto/10.0.0.100/20000/Message&200 OK`**
When sending via UDP is specified, udpto, IP address, port number and the character string to be sent will be returned. Segments are indicated by /.

Example of Response **`application.event(1).action=udpto/10.0.0.100/20000/Message&200 OK`**
When alarm output is specified, pinout, distinction between make/break (m1 or b1) and the time (millisecond) will be returned. Segments are indicated by /.

Example of Response **`application.event(1).action=pinout/m1/1500&200 OK`**

Allowed users admin, operator

Setting Alarm Action for VN-E4

Format **`/api/param?application.event(Number).action=Data`**

Example When setting action of Alarm No. 1
`/api/param?application.event(1).action=mailto/somebody@somecompany.com/none/Message`

Example of Response **`application.event(1).action&200 OK`**

Interpretation Set the alarm action of the specified alarm number. Up to 10 alarm actions can be specified, and therefore the number of alarm(number) can also be set between the range of 1 to 10. Note that alarm numbers are different from the alarm input pin numbers. A separate API (/api/param?application.event(Number).status=off) is used to set the alarm action to off.
The action will be activated by setting the alarm trigger. The API for setting the alarm trigger is /api/param?application.event(Number).trigger.
Specify mailto, mail address, none and the character string to be sent when sending via mail. Segments are indicated by /. The maximum number of characters for the mail address is 60. none is reserved for future extensions. The upper limit of the character string to be sent is 40 bytes. Specify using the 3 characters %20 when inserting a space in the character string. For example, to send the character string "This is alarm.", specify as "This%20is%20alarm.".

Setting Example **`/api/param?application.event(1).action=mailto/somebody@somecompany.com/none/Alarm%20ON`**
The character string "Alarm from VN-E4: No. 1" will be stored in the title field of the mail. The last number denotes the event number.
Specify ftpto, FTP number and the object when sending via FTP. The FTP number is fixed as ftp01 at all times. An object can be specified between object01 to object08, which denotes the type of JPEG to be sent. Details of object are described in another page, "Acquiring JPEG Parameters Added to FTP from VN-E4". Ensure to set the FTP server (/api/param?application.ftp.host, etc.) before setting to FTP transmission. Only one alarm action can be set to FTP. After one alarm aciotn is set to FTP, no other actions can be set to FTP.

Setting Example **`/api/param?application.event(1).action=ftpto/ftp01/object01`**
Specify tcpto, IP address, port number and the character string to be sent when sending via TCP. Segments are indicated by /. The upper limit of the character string to be sent is 40 bytes. Specify using the 3 characters %20 when inserting a space in the character string. For example, to send the character string "This is alarm.", specify as "This%20is%20alarm.".

Setting Example **/api/param?application.event(1).action=tcpto/10.0.0.100/20000/Message**
Specify udpto, IP address, port number and the character string to be sent when sending via UDP. Segments are indicated by /. The upper limit of the character string to be sent is 40 bytes. Specify using the 3 characters %20 when inserting a space in the character string. For example, to send the character string "This is alarm.", specify as "This%20is%20alarm.".

Setting Example **/api/param?application.event(1).action=udpto/10.0.0.100/20000/Message**
Specify pinout, distinction between make/break (m1 or b1) and the time (millisecond) when alarm output is specified. Segments are indicated by /. Different values cannot be specified for the alarm output time of each alarm action. When the alarm output time is changed for an alarm action, the alarm output time for other alarm actions will also be altered.

Setting Example **/api/param?application.event(1).action=pinout/m1/1500**

Allowed users admin, operator

Acquiring Alarm Trigger from VN-E4

Format **/api/param?application.event(Number).trigger**

Example When acquiring Trigger of Alarm No. 1
/api/param?application.event(1).trigger

Example of Response **application.event(1).trigger=0&200 OK**

Interpretation Acquire Trigger of the alarm action for the specified alarm number. Up to 10 alarm actions can be specified, and therefore the number of alarm(number) can also be set between the range of 1 to 10. Note that alarm numbers are different from the alarm input pin numbers.
When only 1 Trigger is set, m1 will be returned in the case of make for alarm input 1, b2 will be returned in the case of break for alarm input 2, and v3 will be returned for motion detection of video input 3.

Example of Response **application.event(1).trigger=v4&200 OK**
When a combination of 2 Triggers are set, responses such as m1(10)b2 will be returned. The example above indicates that trigger will be activated when break is invoked at alarm input 2 within 10 seconds after make is invoked at alarm input 1.

Example of Response **application.event(1).trigger=m3(100)b4&200 OK**

Allowed users admin, operator

Setting Alarm Trigger for VN-E4

Format **/api/param?application.event(Number).trigger=data**

Example When setting Trigger of Alarm No. 1
/api/param?application.event(1).trigger=m1

Example of Response **application.event(1).trigger&200 OK**

Interpretation Set Trigger of the alarm action for the specified alarm number. Up to 10 alarm actions can be specified, and therefore the number of alarm(number) can also be set between the range of 1 to 10. Note that alarm numbers are different from the alarm input pin numbers.
When setting only 1 Trigger, specify as m1 in the case of make for alarm input 1, b2 in the case of break for alarm input 2, and v3 for motion detection of video input 3.

Setting Example **/api/param?application.event(1).trigger=v4**
When setting Trigger upon combining 2 alarm inputs, specify as m1(50)b2. The example above indicates that trigger will be activated when break is invoked at alarm input 2 within 100 seconds after make is invoked at alarm input 1. Additionally, combination is only allowed for alarm inputs and not motion detect. And same alarm can not be combined. For example, m1(50)m1 is not available.

Setting Example **/api/param?application.event(1).trigger=m3(100)b4**

Allowed users admin, operator

5.5. Alarm Environment Setting

The APIs below are related to alarm environment setting. These are equivalent to the features on the Alarm Environment page of the WEB setting page. Refer to the instruction manual for details on the Alarm Environment page.

Acquiring SMTP Server Address Setting from VN-E4

Format `/api/param?application.smtp.host`

Example of Response `application.smtp.host=10.0.0.200&200 OK`

Response example when setting field is left blank `application.smtp.host=&200 OK`

Interpretation Acquire the address setting of the SMTP server.

Allowed users admin, operator, user

Setting SMTP Server Address for VN-E4

Format `/api/param?application.smtp.host=data`

Example `/api/param?application.smtp.host=10.0.0.200`

Example of Response `application.smtp.host&200 OK`

Interpretation Change the address setting of the SMTP server. Specify the IP address or FQDN. The maximum FQDN size is 60 bytes. Specify as 0.0.0.0 when the SMTP server is not set. It is also possible to leave the setting field blank as follows.
`/api/param?application.smtp.host=%00`

Allowed users admin, operator

Acquiring SMTP Server Port Number Setting from VN-E4

Format `/api/param?application.smtp.port`

Example of Response `application.smtp.port=25&200 OK`

Interpretation Acquire the port number setting of the SMTP server.

Allowed users admin, operator, user

Setting SMTP Server Port Number for VN-E4

Format `/api/param?application.smtp.port=data`

Example `/api/param?application.smtp.port=25`

Example of Response `application.smtp.port&200 OK`

Interpretation Change the port number setting of the SMTP server.

Allowed users admin, operator

Acquiring "POP before SMTP" Setting from VN-E4

Format `/api/param?application.smtp.type`

Example of Response `application.smtp.type=pbs&200 OK`

Interpretation Acquire the "POP before SMTP" setting. simple is returned when this is set to off. pbs is returned when this is set to on.

Allowed users admin, operator, user

Setting "POP before SMTP" for VN-E4

Format `/api/param?application.smtp.type=data`

Example `/api/param?application.smtp.type=pbs`

Example of Response `application.event.smtp.type&200 OK`

Interpretation Change the "POP before SMTP" setting. Specify as simple when setting to off and pbs when setting to on.

Allowed users admin, operator

Acquiring POP Server Address Setting from VN-E4

Format `/api/param?application.pop.host`

Example of Response `application.pop.host=10.0.0.200&200 OK`

Response example when setting field is left blank `application.pop.host=&200 OK`

Interpretation Acquire the address setting of the POP server.

Allowed users admin, operator, user

Setting POP Server Address for VN-E4

Format `/api/param?application.pop.host=data`

Example `/api/param?application.pop.host=10.0.0.200`

Example of Response `application.pop.host&200 OK`

Interpretation Change the address setting of the POP server. Specify the IP address or FQDN. The maximum FQDN size is 60 bytes. Specify as 0.0.0.0 when the POP server is not set. It is also possible to leave the setting field blank as follows.
`/api/param?application.pop.host=%00`

Allowed users admin, operator

Acquiring POP Server Port Number Setting from VN-E4

Format `/api/param?application.pop.port`

Example of Response `application.pop.port=110&200 OK`

Interpretation Acquire the port number setting of the POP server.

Allowed users admin, operator, user

Setting POP Server Port Number for VN-E4

Format	**/api/param?application.pop.port=data**
Example	**/api/param?application.pop.port=110**
Example of Response	**application.pop.port&200 OK**
Interpretation	Change the port number setting of the POP server.
Allowed users	admin, operator

Acquiring POP Server User Name Setting from VN-E4

Format	**/api/param?application.pop.user**
Example of Response	**application.pop.user=somename&200 OK**
Response example when setting field is left blank	**application.pop.user=&200 OK**
Interpretation	Acquire the user name setting of the POP server.
Allowed users	admin, operator, user

Setting POP Server User Name for VN-E4

Format	**/api/param?application.pop.user=data**
Example	**/api/param?application.pop.user=somename**
Example of Response	**application.pop.user&200 OK**
Interpretation	Change the user name setting of the POP server. The maximum user name size is 60 bytes. Set as follows when this is to be left blank. **/api/param?application.pop.user=%00**
Allowed users	admin, operator

Setting POP Server Password for VN-E4

Format	**/api/param?application.pop.password=data**
Example	**/api/param?application.pop.password=someword**
Example of Response	**application.pop.password&200 OK**
Interpretation	Change the password setting of the POP server. The maximum password size is 60 bytes. Set as follows when this is to be left blank. **/api/param?application.pop.password=%00**
Allowed users	admin, operator (Note: There is no API for reading passwords.)

Acquiring FTP Server Address Setting from VN-E4

Format `/api/param?application.ftp.host`

Example of Response `application.ftp.host=10.0.0.200&200 OK`

Response example when setting field is left blank `application.ftp.host=&200 OK`

Interpretation Acquire the FTP server address setting used for FTP transmission via alarm.

Allowed users admin, operator, user

Setting FTP Server Address for VN-E4

Format `/api/param?application.ftp.host=data`

Example `/api/param?application.ftp.host=10.0.0.200`

Example of Response `application.ftp.host&200 OK`

Interpretation Change the FTP server address setting used for FTP transmission via alarm. Specify the IP address or FQDN. The maximum FQDN size is 60 bytes. Specify as 0.0.0.0 when the FTP server is not set. It is also possible to leave the setting field blank as follows.
`/api/param?application.ftp.path=%00`

Allowed users admin, operator

Acquiring FTP Server Directory Setting from VN-E4

Format `/api/param?application.ftp.path`

Example of Response `application.ftp.path=subdir1&200 OK`

Response example when setting field is left blank `application.ftp.path=&200 OK`

Interpretation Acquire the FTP server directory setting used for FTP transmission via alarm.

Allowed users admin, operator, user

Setting FTP Server Directory for VN-E4

Format `/api/param?application.ftp.path=data`

Example `/api/param?application.ftp.path=subdir1`

Example of Response `application.ftp.path&200 OK`

Interpretation Change the FTP server directory setting used for FTP transmission via alarm. It is possible to set FTP transmission to a directory under the FTP server home directory by specifying that directory name. Use / to segment the directory. The maximum directory name size is 60 bytes.

Example `/api/param?application.ftp.path=subdir1/subdir2`
By leaving the setting blank as follows, FTP transmission will be set to the FTP server home directory.
`/api/param?application.ftp.path=%00`

Allowed users admin, operator

Acquiring FTP Server User Name Setting from VN-E4

Format `/api/param?application.ftp.user`

Example of Response `application.ftp.user=somename&200 OK`

Response example when setting field is left blank `application.ftp.user=&200 OK`

Interpretation Acquire the FTP server user name setting used for FTP transmission via alarm.

Allowed users admin, operator

Setting FTP Server User Name for VN-E4

Format `/api/param?application.ftp.user=data`

Example `/api/param?application.ftp.user=somename`

Example of Response `application.ftp.user&200 OK`

Interpretation Change the FTP server user name setting used for FTP transmission via alarm. The maximum user name size is 60 bytes.
Set as follows when this setting is to be left blank.
`/api/param?application.ftp.user=%00`

Allowed users admin, operator

Setting FTP Server Password for VN-E4

Format `/api/param?application.ftp.password=data`

Example `/api/param?application.ftp.password=someword`

Example of Response `application.ftp.password&200 OK`

Interpretation Change the FTP server password setting used for FTP transmission via alarm. The maximum password size is 60 bytes. Set as follows when this setting is to be left blank.
`/api/param?application.ftp.password=%00`

Allowed users admin, operator
(There is no API for acquiring passwords.)

Note Refer to Section 5.4 for details on transmission of JPEG input channel, frame size, prerec and postrec via FTP.

Acquiring Chattering Guard Time Setting of Alarm Input from VN-E4

Format `/api/param?peripheral.input_pin.pin(Number).chatter`

Example When acquiring chattering guard time of alarm input 1
`/api/param?peripheral.input_pin.pin(1).chatter`

Example of response `peripheral.input_pin.pin(1).chatter=100&200 OK`

Interpretation Acquire the time setting to prevent chattering in the alarm input. Specify a number between 1 to 4 as VN-E4 has 4 alarm inputs. Unit of the response value is in msec.

Allowed users admin, operator, user

Setting Chattering Guard Time of Alarm Input for VN-E4

Format `/api/param?peripheral.input_pin.pin(Number).chatter=data`

Example When setting the chattering guard time for alarm input 1
`/api/param?peripheral.input_pin.pin(1).chatter=150`

Example of response `peripheral.input_pin.pin(1).chatter&200 OK`

Interpretation Change the time setting to prevent chattering in the alarm input. Specify a number between 1 to 4 as VN-E4 has 4 alarm inputs. Unit of the response value is in msec.

Allowed users admin, operator

Acquiring Alarm Output Time Setting from VN-E4

Format `/api/param?peripheral.output_pin.pin.duration`

Example of Response `peripheral.output_pin.pin.duration=1000&200 OK`

Interpretation Acquire the current alarm output duration in millisecond. If alarm output is set in alarm action, this parameter can be acqurired by following API.
`/api/param?application.event(Number).action`

Allowed users admin, operator, user

Setting Alarm Output Time for VN-E4

Format `/api/param?peripheral.input_pin.pin.duration=data`

Example `/api/param?peripheral.input_pin.pin.duration=50`

Example of response `peripheral.input_pin.pin.duration&200 OK`

Interpretation Change the alarm output duration in millisecond. Specify 0, or 50 to 5000. Following API is also available to set the parameter.
`/api/param?application.event(Number).action`

Allowed users admin, operator

Acquiring Alarm Output Status from VN-E4

Format `/api/param?peripheral.output_pin.pin.status`

Example of Response `peripheral.output_pin.pin.status=make&200 OK`

Interpretation Acquire the current alarm output status. Either make or break will be returned.

Allowed users admin, operator, user

Changing Alarm Output of VN-E4

Format `/api/param?peripheral.output_pin.pin.status=data`

Example `/api/param?peripheral.output_pin.pin.status=break`

Example of Response `peripheral.output_pin.pin.status&200 OK`

Interpretation Change the alarm output. Specify as make or break.
When the alarm output time is zero, alarm output is changed as this API specifies. When the alarm output time is not zero, alarm output is changed as this API specifies, then alarm output is changed again after the alarm output time.

Allowed users admin, operator

5.6. Motion Detect

The APIs below are related to motion detection. These are equivalent to the features on the Motion Detection page of the WEB setting page. Refer to the instruction manual for details on the Motion Detection page.

Acquiring Motion Detect On/Off Status from VN-E4

Format `/api/param?video.input(Number).detection.status`

Example When acquiring the motion detect on/off status of video input channel 1
`/api/param?video.input(1).detection.status`

Example of response `video.input(1).detection.status=on&200 OK`

Interpretation Acquire the on/off status of motion detect. VN-E4 enables motion detect to be set to on or off for each of the 4 video inputs. Specify a value between 1 to 4 for the number. Either on or off will be returned.

Allowed users admin, operator, user

Setting Motion Detect to On/Off for VN-E4

Format `/api/param?video.input(Number).detection.status=data`

Example When setting motion detect for video input channel 1 to on/off
`/api/param?video.input(1).detection.status=on`

Example of Response `video.input(1).detection.status&200 OK`

Interpretation Change the on/off status of motion detect. VN-E4 enables motion detect to be set to on or off for each of the 4 video inputs. Specify a value between 1 to 4 for the number. Specify as on or off.

Allowed users admin, operator

Acquiring Motion Detect Sensitivity from VN-E4

Format `/api/param?video.input(Number).detection.level`

Example When acquiring the motion detect sensitivity of video input channel 1
`/api/param?video.input(1).detection.level`

Example of response `video.input(1).detection.level=20&200 OK`

Interpretation Acquire the motion detect sensitivity. VN-E4 enables motion detect to be adjusted for each of the 4 video inputs. Specify a value between 1 to 4 for the number. A value between 0 to 100 will be returned. The larger the value, the higher will be the sensitivity.

Allowed users admin, operator, user

Setting Motion Detect Sensitivity for VN-E4

Format `/api/param?video.input(Number).detection.level=data`

Example When setting the motion detect sensitivity of video input channel 1
`/api/param?video.input(1).detection.level=20`

Example of response `video.input(1).detection.level&200 OK`

Interpretation Change the motion detect sensitivity. VN-E4 enables motion detect to be adjusted for each of the 4 video inputs. Specify a value between 1 to 4 for the number. Specify a value between 0 to 100. The larger the value, the higher will be the sensitivity.

Allowed users admin, operator

Acquiring Motion Parameters of Motion Detect from VN-E4

Format `/api/param?video.input(Number).detection.velocity`

Example When acquiring motion parameters of motion detect for video input channel 1
`/api/param?video.input(1).detection.velocity`

Example of response `video.input(1).detection.velocity=10&200 OK`

Interpretation Acquire the motion parameters of motion detect. VN-E4 enables motion detect to be adjusted for each of the 4 video inputs. Specify a value between 1 to 4 for the number. A value between 0 to 100 will be returned. The larger the value, the easier it will be to detect objects moving at high speed. The smaller the value, the easier it will be to detect slow-moving objects.

Allowed users admin, operator, user

Setting Motion Parameters of Motion Detect for VN-E4

Format `/api/param?video.input(Number).detection.velocity=data`

Example When setting motion parameters of motion detect for video input channel 1
`/api/param?video.input(1).detection.velocity=10`

Example of response `video.input(1).detection.velocity&200 OK`

Interpretation Change the motion parameters of motion detect. VN-E4 enables motion detect to be adjusted for each of the 4 video inputs. Specify a value between 1 to 4 for the number. Specify a value between 0 to 100. The larger the value, the easier it will be to detect objects moving at high speed. The smaller the value, the easier it will be to detect slow-moving objects.

Allowed users admin, operator

Acquiring Motion Detect Mask from VN-E4

Format `/api/param?video.input(Number).detection.area`

Example When acquiring the motion detect mask of video input channel 1
`/api/param?video.input(1).detection.area`

Example of response `video.input(1).detection.area=000102030405060708091011121314151617&200 OK`

Interpretation Acquire the mask of motion detect. VN-E4 enables motion detect to be adjusted for each of the 4 video inputs. Specify a value between 1 to 4 for the number. 36 ASCII characters will be returned.
The screen of VN-E4 is made up of 12 x 12 = 144 blocks, and mask can be set to on/off for each block. This information can be represented in 188 bits = 18-byte hexadecimal. (Response is returned in ASCII character strings.Therefore, 36 characters will be returned.) The bit string will appear as follows when mask is set to off for the top left block only.
10000000 00000000 00000000 ,,,
Storage in bytes will begin from the LSB and represented in a hexadecimal value as shown below.
01 00 00 ,,,
The hexadecimal value denotes the 18 ASCII characters acquired via this API that are expressed in ASCII codes. For example, the following character string will be returned when only the top left and bottom right blocks are masked.
video.input(1).detection.area=010000000000000000000000000000000080

Allowed users admin, operator, user

Setting Motion Detect Mask for VN-E4

Format `/api/param?video.input(Number).detection.area=data`

Example When setting the motion detect mask of video input channel 1
`/api/param?video.input(1).detection.area=000102030405060708091011121314151617`

Example of response `(1).detection.area&200 OK`

Interpretation Change the motion detect mask. VN-E4 enables motion detect to be adjusted for each of the 4 video inputs. Specify a value between 1 to 4 for the number. Specify using an 18 ASCII character string. Refer to the item on "Acquiring Motion Mask from VN-E4" on the interpretation of this character string. To mask all blocks, specify all zeros in the ASCII character string.

Allowed users admin, operator

5.7. Serial Port

The APIs below are related to the serial port. These are equivalent to the features on the Serial Port page of the WEB setting page. However, specification of control device and camera address are not supported by API. Refer to the instruction manual for details on the Serial Port page.

Acquiring Serial Port Baud Rate Setting from VN-E4

Format `/api/param?peripheral.serial(Number).baud`

Example When acquiring baud rate of Serial Port 1
`/api/param?peripheral.serial(1).baud`

Example of response `peripheral.serial(1).baud=9600&200 OK`

Interpretation Acquire the serial port's baud rate. Specify a value between 1 to 2 since VN-E4 comes with 2 serial ports. Value returned will be 1200, 1800, 2400, 4800, 9600, 19200 or 38400.

Allowed users admin, operator, user

Setting Serial Port Baud Rate for VN-E4

Format `/api/param?peripheral.serial(Number).baud=data`

Example When setting the baud rate of Serial Port 1
`/api/param?peripheral.serial(1).baud=19200`

Example of response `peripheral.serial(1).baud&200 OK`

Interpretation Change the serial port's baud rate. Specify a value between 1 to 2 since VN-E4 comes with 2 serial ports. Specify baud rate as 1200, 1800, 2400, 4800, 9600, 19200 or 38400.

Allowed users admin, operator

Acquiring Serial Port Data Length Setting from VN-E4

Format `/api/param?peripheral.serial(Number).bit`

Example When acquiring data length of Serial Port 1
`/api/param?peripheral.serial(1).bit`

Example of response `peripheral.serial(1).bit=8&200 OK`

Interpretation Acquire the serial port's data length. Specify a value between 1 to 2 since VN-E4 comes with 2 serial ports. Value returned will be 7 or 8.

Allowed users admin, operator, user

Setting Serial Port Data Length for VN-E4

Format `/api/param?peripheral.serial(Number).bit=data`

Example When setting the data length of Serial Port 1
`/api/param?peripheral.serial(1).bit=8`

Example of response `peripheral.serial(1).bit&200 OK`

Interpretation Change the serial port's data length. Specify a value between 1 to 2 since VN-E4 comes with 2 serial ports. Specify data length as 7 or 8.

Allowed users admin, operator

Acquiring Serial Port Parity Setting from VN-E4

Format `/api/param?peripheral.serial(Number).parity`

Example When acquiring parity of Serial Port 1
`/api/param?peripheral.serial(1).parity`

Example of response `peripheral.serial(1).parity=none&200 OK`

Interpretation Acquire the parity of the serial port. Specify a value between 1 to 2 since VN-E4 comes with 2 serial ports. Value returned will be none, odd or even.

Allowed users admin, operator, user

Setting Serial Port Parity for VN-E4

Format `/api/param?peripheral.serial(Number).parity=data`

Example When setting the parity of Serial Port 1
`/api/param?peripheral.serial(1).parity=odd`

Example of response `peripheral.serial(1).parity&200 OK`

Interpretation Change the parity of the serial port. Specify a value between 1 to 2 since VN-E4 comes with 2 serial ports. Specify parity as none, odd or even.

Allowed users admin, operator

Acquiring Serial Port Stop Bit Setting from VN-E4

Format `/api/param?peripheral.serial(Number).stopbit`

Example When acquiring stop bit of Serial Port 1
`/api/param?peripheral.serial(1).stopbit`

Example of response `peripheral.serial(1).stopbit=1&200 OK`

Interpretation Acquire the stop bit of the serial port. Specify a value between 1 to 2 since VN-E4 comes with 2 serial ports. Value returned will be 1 or 2.

Allowed users admin, operator, user

Setting Serial Port Stop Bit for VN-E4

Format `/api/param?peripheral.serial(Number).stopbit=data`

Example When setting the stop bit of Serial Port 1
`/api/param?peripheral.serial(1).stopbit=2`

Example of response `peripheral.serial(1).stopbit&200 OK`

Interpretation Change the stop bit of the serial port. Specify a value between 1 to 2 since VN-E4 comes with 2 serial ports. Specify stop bit as 1 or 2.

Allowed users admin, operator

Acquiring Serial Port Comment from VN-E4

Format `/api/param?peripheral.serial(Number).comment`

Example When acquiring comment of Serial Port 1
`/api/param?peripheral.serial(1).comment`

Example of response `peripheral.serial(1).comment=serial1&200 OK`

Interpretation Acquire comment of the serial port. Specify a value between 1 to 2 since VN-E4 comes with 2 serial ports. The value returned will be a character string of 40 bytes or less. This comment setting is optional and does not affect the functions of the serial port.

Allowed users admin, operator, user

Setting Serial Port Comment for VN-E4

Format `/api/param?peripheral.serial(Number).comment=data`

Example When setting comment of Serial Port 1
`/api/param?peripheral.serial(1).comment=Memo1`

Example of response `peripheral.serial(1).comment&200 OK`

Interpretation Change the serial port comment. Specify a value between 1 to 2 since VN-E4 comes with 2 serial ports. Specify comment using a character string of 40 bytes or less. Specify as follows when the comment setting is to be left blank.

Example when comment is left blank `/api/param?peripheral.serial(1).comment=%00`
This comment setting is optional and does not affect the functions of the serial port.

Allowed users admin, operator

5.8. Network Basics

The APIs below are related to the basics of networks. These are equivalent to the features on the Basic page of the WEB setting page. Refer to the instruction manual for details on the Basic page.

Enabling Network Setting Changes

Format `/api/param?network.interface.status=restart`

Example of Response `network.interface.status&200 OK`

Interpretation When network parameters are changed, this API can be used to enable the new settings. Changes will be not be reflected in the actions until this API is used. VN-E4 will cut off the TCP connection when this API is used. When this API is used upon changing IPv6, MTU, Negotiation, Timezone or SNMP, VN-E4 will reboot in about 1 minute.

Allowed user admin

Acquiring DHCP Setting from VN-E4

Format `/api/param?network.interface.dhcp.status`

Example of Response `network.interface.dhcp.status=off&200 OK`

Interpretation Acquire the current DHCP setting.

Allowed users admin, operator, user

Setting DHCP for VN-E4

Format `/api/param?network.interface.dhcp.status=data`

Example `/api/param?network.interface.dhcp.status=on`

Example of Response
```
network.interface.dhcp.status&202
Required(network.interface.status=restart)
```

Interpretation Change the DHCP setting. Upon setting this API, execute the "network.interface.status=restart" API for enabling network setting changes to enable the new settings. PPPoE will be turned off automatically when the DHCP setting is set to on.

Allowed user admin

Acquiring IP Address from VN-E4

Format `/api/param?network.interface.ip`

Example of Response `network.interface.ip=10.0.0.1&200 OK`

Interpretation Acquire the current IP address.

Allowed users admin, operator, user

Setting IP Address for VN-E4

Format	**/api/param?network.interface.ip=data**
Example	**/api/param?network.interface.ip=10.0.0.1**
Example of Response	**network.interface.ip&202 Required(network.interface.status=restart)**
Interpretation	Change the IP address. Upon setting this API, execute the "network.interface.status=restart" API for enabling network setting changes to enable the new settings. Ensure to execute "network.interface.status=restart" upon setting the IP address, subnet mask and default gateway combination appropriately.
Allowed user	admin

Acquiring Subnet Mask from VN-E4

Format	**/api/param?network.interface.subnetmask**
Example of Response	**network.interface.subnetmask=255.0.0.0&200 OK**
Interpretation	Acquire the current subnet mask.
Allowed users	admin, operator, user

Setting Subnet Mask for VN-E4

Format	**/api/param?network.interface.subnetmask=data**
Example	**/api/param?network.interface.subnetmask=255.0.0.0**
Example of Response	**network.interface.subnetmask&202 Required(network.interface.status=restart)**
Interpretation	Change the subnet mask. Upon setting this API, execute the "network.interface.status=restart" API for enabling network setting changes to enable the new settings. Ensure to execute "network.interface.status=restart" upon setting the IP address, subnet mask and default gateway combination appropriately.
Allowed user	admin

Acquiring Default Gateway from VN-E4

Format	**/api/param?network.gateway(version)**
Example	**/api/param?network.gateway(ipv4)**
Example of Response	**network.gateway(ipv4)=10.0.0.254&200 OK**
Interpretation	Acquire the current default gateway. Specify the version as ipv4 or ipv6.
Allowed users	admin, operator, user

Setting Default Gateway for VN-E4

Format	**/api/param?network.gateway(ipv4)=data**
Example	**/api/param?network.gateway(ipv4)=10.0.0.254**
Example of Response	**network.gateway&200 OK**
Interpretation	Change the default gateway of IPv4. Default gateway of IPv6 can not be changed. Upon setting this API, execute the "network.interface.status=restart" API for enabling network setting changes to enable the new settings. Specify as 0.0.0.0 to cancel the default gateway setting. However, multicast transmission will be disabled if the default gateway is not set.
Allowed user	admin

Acquiring Host Name from VN-E4

Format	**/api/param?network.hostname**
Example of Response	**network.hostname=localhost&200 OK**
Interpretation	Acquire the current host name.
Allowed users	admin, operator, user

Setting Host Name for VN-E4

Format	**/api/param?network.hostname=data**
Example	**/api/param?network.hostname=somename**
Example of Response	**network.hostname&202 Required(network.interface.status=restart)**
Interpretation	Change the host name. Characters that may be used for the host name are alphanumerics, underscores (_), hyphens (-) and percents (%). Upon setting this API, execute the "network.interface.status=restart" API for enabling network setting changes to enable the new settings. Specify as %00 when the host name setting is to be left blank.
Example when leaving field blank	**/api/param?network.hostname=%00**
Allowed user	admin

Acquiring Domain Name from VN-E4

Format	**/api/param?network.domainname**
Example of Response	**network.domainname=somename&200 OK**
Interpretation	Acquire the current domain name.
Allowed users	admin, operator, user

Setting Domain Name for VN-E4

Format	**/api/param?network.domainname=data**
Example	**/api/param?network.domainname=somename**
Example of Response	**network.domainname&202 Required(network.interface.status=restart)**
Interpretation	Change the domain name. Characters that may be used for the domain name are alphanumerics, underscores (_) and hyphens (-). Upon setting this API, execute the "network.interface.status=restart" API for enabling network setting changes to enable the new settings. Specify as %00 when the domain name setting is to be left blank.
Example when leaving field blank	**/api/param?network.domainname=%00**
Allowed user	admin

Acquiring DNS Server On/Off Status from VN-E4

Format	**/api/param?network.dns.status**
Example of Response	**network.dns.status=off&200 OK**
Interpretation	Acquire the on/off status of the DNS server. Either on or off will be returned.
Allowed users	admin, operator, user

Setting DNS Server Status to On/Off for VN-E4

Format	**/api/param?network.dns.status=data**
Example	**/api/param?network.dns.status=on**
Example of Response	**network.dns.status&202 Required(network.interface.status=restart)**
Interpretation	Change the on/off status of the DNS server. Specify as on or off. Upon setting this API, execute the "network.interface.status=restart" API for enabling network setting changes to enable the new settings.
Allowed users	admin, operator

Acquiring DNS Server Type from VN-E4

Format	**/api/param?network.dns.type**
Example of Response	**network.dns.type=dns&200 OK**
Interpretation	Acquire the DNS server type. Either dns or ddns will be returned.
Allowed users	admin, operator, user

Setting DNS Server Type for VN-E4

Format	**/api/param?network.dns.type=data**
Example	**/api/param?network.dns.type=ddns**
Example of Response	**network.dns.type&202 Required(network.interface.status=restart)**
Interpretation	Change the DNS server type. Specify as dns or ddns. Upon setting this API, execute the "network.interface.status=restart" API for enabling network setting changes to enable the new settings.
Allowed users	admin, operator

Acquiring DNS Server IP Address from VN-E4

Format	**/api/param?network.dns.ip**
Example of Response	**network.dns.ip=10.0.0.150&200 OK**
Interpretation	Acquire the IP address of the DNS server.
Allowed users	admin, operator, user

Setting DNS Server IP Address for VN-E4

Format	**/api/param?network.dns.ip=data**
Example	**/api/param?network.dns.ip=10.0.0.150**
Example of Response	**network.dns.ip&202 Required(network.interface.status=restart)**
Interpretation	Change the IP address of the DNS server. Upon setting this API, execute the "network.interface.status=restart" API for enabling network setting changes to enable the new settings.
Allowed users	admin, operator

Acquiring MAC Address from VN-E4

Format	**/api/param?network.interface.mac**
Example of Response	**network.interface.mac=008088001AEF&200 OK**
Interpretation	Acquire the MAC address. A 12-byte ASCII character string will be returned. There is no API for setting the MAC address.
Allowed users	admin, operator, user

Acquiring IPv6 On/Off Status from VN-E4

Format	**/api/param?network.interface.ipv6.status**
Example of Response	**network.interface.ipv6.status=off&200 OK**
Interpretation	Acquire the on/off status of IPv6. Either on or off will be returned.
Allowed users	admin, operator, user

Setting IPv6 Status to On/Off for VN-E4

Format	**/api/param?network.dns.ipv6.status=data**
Example	**/api/param?network.dns.ipv6.status=on**
Example of Response	**network.dns.ipv6.status&202 Required(network.interface.status=restart)**
Interpretation	Change the on/off status of IPv6. Specify as on or off. Upon setting this API, execute the "network.interface.status=restart" API for enabling network setting changes to enable the new settings. Upon changing the on/off status of IPv6, VN-E4 will be rebooted using the "network.interface.status=restart" API for enabling settings. As such, access will not be possible for about 1 minute.
Allowed user	admin STATUS

Acquiring Link-local IPv6 Address from VN-E4

Format `/api/param?network.interface.ipv6.link_local(Number)`

Example Acquire the first link-local address
`/api/param?network.interface.ipv6.link_local(1)`

Example of Response `network.interface.ipv6.link_local(1)=fe80::280:88ff:fe41:400c&200 OK`

Interpretation Acquire the link-local IPv6 address. A number between 1 to 8 may be specified, and the link-local IPv6 addresses will be stored in sequence beginning from 1. To acquire all addresses, do so in sequence from 1 until an empty value is returned. There is no API for setting the IPv6 address.

Allowed users admin, operator, user

Acquiring Site-local IPv6 Address from VN-E4

Format `/api/param?network.interface.ipv6.site_local(Number)`

Example Acquire the first site-local address
`/api/param?network.interface.ipv6.site_local(1)`

Example of Response `network.interface.ipv6.site_local(1)=fec0::1:280:88ff:fe41:114&200 OK`

Interpretation Acquire the site-local IPv6 address. A number between 1 to 8 may be specified, and the site-local IPv6 addresses will be stored in sequence beginning from 1. To acquire all addresses, do so in sequence from 1 until an empty value is returned. There is no API for setting the IPv6 address.

Allowed users admin, operator, user

Acquiring Global IPv6 Address from VN-E4

Format `/api/param?network.interface.ipv6.global(Number)`

Example Acquire the first global address
`/api/param?network.interface.ipv6.global(1)`

Example of Response (When a global address is not set) `network.interface.ipv6.global=&200 OK`

Interpretation Acquire the global IPv6 address. A number between 1 to 8 may be specified, and the global IPv6 addresses will be stored in sequence beginning from 1. To acquire all addresses, do so in sequence from 1 until an empty value is returned. There is no API for setting the IPv6 address.

Allowed users admin, operator, user

5.9. Network Details

The APIs below are related to network details. These are equivalent to the features on the Details page of the WEB setting page. Refer to the instruction manual for details on the Details page.

Acquiring DSCP Value of Images from VN-E4

Format `/api/param?network.interface.dscp.video`

Example of Response `network.interface.dscp.video=56&200 OK`

Interpretation Acquire the DSCP value of the image.

Allowed users admin, operator, user

Setting DSCP Value of Images for VN-E4

Format `/api/param?network.interface.dscp.video=data`

Example `/api/param?network.interface.dscp.video=56`

Example of Response
```
network.interface.dscp.video&202
Required(network.interface.status=restart)
```

Interpretation Change the DSCP value of the image. The range of set value is between 0 to 255. Upon setting this API, execute the "network.interface.status=restart" API for enabling network setting changes to enable the new settings.

Allowed user admin

Acquiring DSCP Value of Audio Data from VN-E4

Format `/api/param?network.interface.dscp.audio`

Example of Response `network.interface.dscp.audio=56&200 OK`

Interpretation Acquire the DSCP value of the audio data.

Allowed users admin, operator, user

Setting DSCP Value of Audio Data for VN-E4

Format `/api/param?network.interface.dscp.audio=data`

Example `/api/param?network.interface.dscp.audio=56`

Example of Response
```
network.interface.dscp.audio&202
Required(network.interface.status=restart)
```

Interpretation Change the DSCP value of the audio data. The range of set value is between 0 to 255. Upon setting this API, execute the "network.interface.status=restart" API for enabling network setting changes to enable the new settings.

Allowed user admin

Acquiring MTU Value VN-E4

Format `/api/param?network.interface.mtu`

Example of Response `network.interface.mtu=1420&200 OK`

Interpretation Acquire the MTU value.

Allowed users admin, operator, user

Setting MTU Value for VN-E4

Format `/api/param?network.interface.mtu=data`

Example `/api/param?network.interface.mtu=1000`

Example of Response `network.interface.mtu&202 Required(network.interface.status=restart)`

Interpretation Change the MTU value. The range of set value is between 512 to 1500 for IPv4 and between 1280 to 1500 for IPv6. Upon setting this API, execute the "network.interface.status=restart" API for enabling network setting changes to enable the new settings. Upon changing the MTU value, VN-E4 will be rebooted using the "network.interface.status=restart" API for enabling settings. As such, access will not be possible for about 1 minute.

Allowed user admin

Acquiring Network Negotiation Setting from VN-E4

Format `/api/param?network.interface.negotiation`

Example of Response `network.interface.negotiation=auto&200 OK`

Interpretation Acquire the network Negotiation setting. Either auto, 100full, 100half, 10full or 10half will be returned.

Allowed users admin, operator, user

Setting Network Negotiation for VN-E4

Format `/api/param?network.interface.negotiation=data`

Example `/api/param?network.interface.negotiation=auto`

Example of Response
```
network.interface.negotiation&202
Required(network.interface.status=restart)
```

Interpretation Change the network Negotiation setting. Set to auto, 100full, 100half, 10full or 10half. Upon setting this API, execute the "network.interface.status=restart" API for enabling network setting changes to enable the new settings. Upon changing the network Negotiation, VN-E4 will be rebooted using the "network.interface.status=restart" API for enabling settings. As such, access will not be possible for about 1 minute.

Allowed user admin

Acquiring PPPoE On/Off Status from VN-E4

Format `/api/param?network.interface.pppoe.status`

Example of Response `network.interface.pppoe.status=off&200 OK`

Interpretation Acquire the on/off status of PPPoE. Either on or off will be returned.

Allowed users admin, operator, user

Setting PPPoE Status to On/Off for VN-E4

Format `/api/param?network.interface.pppoe.status=data`

Example `/api/param?network.interface.pppoe.status=on`

Example of Response
```
network.interface.pppoe.status&202
Required(network.interface.status=restart)
```

Interpretation Change the on/off status of PPPoE. Set to on or off. Upon changing PPPoE, VN-E4 will be rebooted using the "network.interface.status=restart" API for enabling settings. As such, access will not be possible for about 1 minute. Additionally, the DHCP client feature will be turned off automatically when PPPoE is set to on.

Allowed user admin

Acquiring PPPoE User Name from VN-E4

Format `/api/param?network.interface.pppoe.user`

Example of Response `network.interface.pppoe.user=somename&200 OK`

Interpretation Acquire the PPPoE user name.

Allowed users admin, operator

Setting PPPoE User Name for VN-E4

Format `/api/param?network.interface.pppoe.user=data`

Example `/api/param?network.interface.pppoe.user=somename`

Example of Response
```
network.interface.pppoe.user&202
Required(network.interface.status=restart)
```

Interpretation Change the PPPoE user name. Set a user name that is within 60 bytes. Upon changing PPPoE, VN-E4 will be rebooted using the "network.interface.status=restart" API for enabling settings. As such, access will not be possible for about 1 minute.

Allowed user admin

Setting PPPoE Password for VN-E4

Format `/api/param?network.interface.pppoe.password=data`

Example `/api/param?network.interface.pppoe.password=someword`

Example of Response
```
network.interface.pppoe.password&202
Required(network.interface.status=restart)
```

Interpretation Change the password of PPPoE. Set a password that is within 60 bytes. Upon changing PPPoE, VN-E4 will be rebooted using the "network.interface.status=restart" API for enabling settings. As such, access will not be possible for about 1 minute. There is no API for acquiring passwords.

Allowed user admin

5.10. Manual Transmission

Details on API for manual transmission will be described in Section 6. These are equivalent to the features on the Streaming page of the WEB setting page. Settings on the Streaming page will not change when APIs described in Section 6 are used. Refer to the instruction manual for details on the Streaming page.

5.11. Access Restrictions

The APIs below are related to access restrictions. These are equivalent to the features on the Access Restrictions page of the WEB setting page. Refer to the instruction manual for details on the Access Restrictions page.

Acquiring Deny/Allow Setting of Client Restrictions from VN-E4

Format `/api/param?network.access_control(api).logic`

Example of Response `network.access_control(api).logic=deny&200 OK`

Interpretation Acquire the deny/allow setting of client restrictions. Either deny or allow will be returned. This API acquires the same details as the "Access Restriction" item of "Client Address" at the top of the Access Restrictions page.

Allowed users admin, operator

Setting Client Restriction to Deny/Allow for VN-E4

Format `/api/param?network.access_control(api).logic=data`

Example `/api/param?network.access_control(api).logic=deny`

Example of Response `network.access_control(api).logic&200 OK`

Interpretation Change the deny/allow setting of client restrictions. Specify as deny or allow. Details set by this API are the same as those set by the "Access Restriction" item of "Client Address" at the top of the Access Restrictions page.

Allowed user admin

Acquiring IP Address Setting of Restricted Client from VN-E4

Format `/api/param?network.access_control(api).host(Number)`

Example When acquiring the first IP address
`/api/param?network.access_control(api).host(1)`

Example of Response `network.access_control(api).host(1)=10.0.0.100&200 OK`

Interpretation Acquire the IP address setting of the restricted client. Setting is possible up to 10 items. Specify a value between 1 to 10 for the number. The following will be returned if subnet mask is specified at the same time.

Example of Response 2 `network.access_control(api).host(1)=10.0.0.0/24&200 OK`
The above example indicates that the range is set as between 10.0.0.0 to 10.0.0.255. There are also cases when FQDN instead of IP address is set.

Example of Response 2 `network.access_control(api).host(1)=somedivision.somecompany.com&200 OK`
This API acquires the same details as the "IP Address" item of "Client Address" at the top of the Access Restrictions page.

Allowed users admin, operator

Setting IP Address of Restricted Client for VN-E4

Format `/api/param?network.access_control(api).host(Number)=data`

Example When setting the first IP address
`/api/param?network.access_control(api).host(1)=10.0.0.100`

Example of Response `network.access_control(api).host(1)&200 OK`

Interpretation Change the IP address setting of client restriction. Setting is possible up to 10 items. Specify a value between 1 to 10 for the number. A range of IP address may be specified if the subnet mask is also specified. For example, set as follows to specify a range between 10.0.0.0 to 10.0.0.255.

Example **/api/param?network.access_control(api).host(1)=10.0.0.0/24**
It is also possible to set using FQDN instead of IP address. Set as follows if the setting is to be left blank.

Example **/api/param?network.access_control(api).host(1)=%00**
Details set by this API are the same as those set by the "Access Restriction" item of "Client Address" at the bottom of the Access Restrictions page.

Allowed user admin

Acquiring Deny/Allow Setting of Audio Sender Restrictions from VN-E4

Format **/api/param?network.access_control(stream_in).logic**

Example of Response **network.access_control(stream_in).logic=deny&200 OK**

Interpretation Acquire the deny/allow setting of audio sender restrictions. Either deny or allow will be returned. This API acquires the same details as the "Access Restriction" item of "Source Address of Audio Sender" at the bottom of the Access Restrictions page.

Allowed users admin, operator

Setting Audio Sender Restriction to Deny/Allow for VN-E4

Format **/api/param?network.access_control(stream_in).logic=data**

Example **/api/param?network.access_control(stream_in).logic=deny**

Example of Response **network.access_control(stream_in).logic&200 OK**

Interpretation Change the deny/allow setting of audio sender restrictions. Specify as deny or allow. This API acquires the same details as the "Access Restriction" item of "Source Address of Audio Sender" at the bottom of the Access Restrictions page.

Allowed user admin

Acquiring IP Address Setting of Restricted Audio Sender from VN-E4

Format **/api/param?network.access_control(stream_in).host(Number)**

Example When acquiring the first IP address
/api/param?network.access_control(stream_in).host(1)

Example of Response **network.access_control(stream_in).host(1)=10.0.0.100&200 OK**

Interpretation Acquire the IP address setting of the restricted audio sender. Setting is possible up to 10 items. Specify a value between 1 to 10 for the number. The following will be returned if subnet mask is specified at the same time.

Example of Response 2 **network.access_control(stream_in).host(1)=10.0.0.0/24&200 OK**
The above example indicates that the range is set as between 10.0.0.0 to 10.0.0.255.
This API acquires the same details as the "Access Restriction" item of "Source Address of Audio Sender" at the bottom of the Access Restrictions page.

Allowed users admin, operator

Setting IP Address of Audio Sender Restrictions for VN-E4

Format **/api/param?network.access_control(stream_in).host(Number)=data**

Example When setting the first IP address
/api/param?network.access_control(stream_in).host(1)=10.0.0.100

Example of Response **network.access_control(stream_in).host(1)&200 OK**

Interpretation Change the IP address setting of audio sender restrictions. Setting is possible up to 10 items. Specify a value between 1 to 10 for the number. A range of IP address may be specified if the subnet mask is also specified. For example, set as follows to specify a range between 10.0.0.0 to 10.0.0.255.

Example **`/api/param?network.access_control(stream_in).host(1)=10.0.0.0/24`**
Set as follows if the setting is to be left blank.

Example **`/api/param?network.access_control(stream_in).host(1)=%00`**
This API acquires the same details as the "Access Restriction" item of "Source Address of Audio Sender" at the top of the Access Restrictions page.

Allowed user admin

5.12. Time

The APIs below are related to time. These are equivalent to the features on the Time page of the WEB setting page. Refer to the instruction manual for details on the Time page.

Acquiring NTP Client Feature On/Off Status from VN-E4

Format `/api/param?network.ntp.status`

Example of Response `network.ntp.status=off&200 OK`

Interpretation Acquire the on/off status of NTP client. Either on or off will be returned.

Allowed users admin, operator, user

Setting NTP Client Feature Status to On/Off for VN-E4

Format `/api/param?network.ntp.status=data`

Example `/api/param?network.ntp.status=on`

Example of Response `network.ntp.status&200 OK`

Interpretation Change the on/off status of NTP client. Specify as on or off. Upon setting this API, execute the "network.interface.status=restart" API for enabling network setting changes to enable the new settings.

Allowed users admin, operator

Acquiring NTP Server Address from VN-E4

Format `/api/param?network.ntp.host`

Example of Response `network.ntp.host=10.0.0.100&200 OK`

Interpretation Acquire the address of the NTP server. Either the IP address or FQDN will be returned.

Allowed users admin, operator, user

Setting NTP Server Address for VN-E4

Format `/api/param?network.ntp.host=data`

Example `/api/param?network.ntp.host=10.0.0.100`

Example of Response `network.ntp.host&200 OK`

Interpretation Change the address of the NTP server. Specify the IP address or FQDN. Upon setting this API, execute the "network.interface.status=restart" API for enabling network setting changes to enable the new settings.

Allowed users admin, operator

Acquiring Access Interval to NTP Server from VN-E4

Format `/api/param?network.ntp.interval`

Example of Response `network.ntp.interval=100&200 OK`

Interpretation Acquire the interval for accessing the NTP server. Unit is in minutes.

Allowed users admin, operator, user

Setting Access Interval to NTP Server for VN-E4

Format `/api/param?network.ntp.interval=data`

Example `/api/param?network.ntp.interval=60`

Example of Response `network.ntp.interval&200 OK`

Interpretation Change the interval for accessing the NTP server. Unit is in minutes. Upon setting this API, execute the "network.interface.status=restart" API for enabling network setting changes to enable the new settings.

Allowed users admin, operator

Acquiring Time from VN-E4

Format `/api/param?system.date`

Example of Response `system.date=20050614171537&200 OK`

Interpretation Acquire the time from the built-in clock of VN-E4. Time is arranged in the order of year, month, day, hour, minute and second. Year is denoted in a 4-digit decimal number, and month, day, hour, minute and second are denoted in 2-digit decimal numbers.

Allowed users admin, operator, user

Setting Time for VN-E4

Format `/api/param?system.date=data`

Example `/api/param?system.date=20050614171537`

Example of Response `system.date&200 OK`

Interpretation Change the time of the built-in clock in VN-E4. Specify in the order of year, month, day, hour, minute and second. Specify year in a 4-digit decimal number, and month, day, hour, minute and second in 2-digit decimal numbers.

Allowed user admin

Acquiring Timezone from VN-E4

Format `/api/param?system.timezone`

Example of Response `system.timezone=Pacific&200 OK`

Interpretation Acquire the timezone from VN-E4. Character strings in the following table will be returned.

Timezone Character String	Description
GMT-12	Timezone that is 12 hours earlier than the Greenwich Mean Time.
GMT-11	Timezone that is 11 hours earlier than the Greenwich Mean Time.
GMT-10	Timezone that is 10 hours earlier than the Greenwich Mean Time.
Hawaii	Same timezone as GMT-10
GMT-9	Timezone that is 9 hours earlier than the Greenwich Mean Time.
Alaska	Same timezone as GMT-9
GMT-8	Timezone that is 8 hours earlier than the Greenwich Mean Time.
Pacific	(GMT-8:00) US/Pacific Time
GMT-7	Timezone that is 7 hours earlier than the Greenwich Mean Time.
Arizona	Same timezone as GMT-7
Mountain	Same timezone as GMT-7

GMT-6	Timezone that is 6 hour earlier than the Greenwich Mean Time.
Central	Same timezone as GMT-6
GMT-5	Timezone that is 5 hour earlier than the Greenwich Mean Time.
East-Indiana	Same timezone as GMT-5.
Eastern	Same timezone as GMT-5.
GMT+4	Timezone that is 4 hour earlier than the Greenwich Mean Time.
Atlantic	Same timezone as GMT-4.
GMT+3	Timezone that is 3 hour earlier than the Greenwich Mean Time.
GMT+2	Timezone that is 2 hour earlier than the Greenwich Mean Time.
GMT+1	Timezone that is 1 hour earlier than the Greenwich Mean Time.
UTC	Greenwich Mean Time
London	Same timezone as UTC.
GMT+1	Timezone that is 1 hour later than the Greenwich Mean Time.
Berlin	Same timezone as GMT+1.
Rome	Same timezone as GMT+1.
Madrid	Same timezone as GMT+1.
Paris	Same timezone as GMT+1.
CET	Same timezone as GMT+1.
GMT+2	Timezone that is 2 hours later than the Greenwich Mean Time.
EET	Same timezone as GMT+2
GMT+3	Timezone that is 3 hours later than the Greenwich Mean Time.
GMT+4	Timezone that is 4 hours later than the Greenwich Mean Time.
GMT+5	Timezone that is 5 hours later than the Greenwich Mean Time.
GMT+6	Timezone that is 6 hours later than the Greenwich Mean Time.
GMT+7	Timezone that is 7 hours later than the Greenwich Mean Time.
GMT+8	Timezone that is 8 hours later than the Greenwich Mean Time.
GMT+9	Timezone that is 9 hours later than the Greenwich Mean Time.
Japan	Same timezone as GMT+9.
GMT+10	Timezone that is 10 hours later than the Greenwich Mean Time.
GMT+11	Timezone that is 11 hours later than the Greenwich Mean Time.
GMT+12	Timezone that is 12 hours later than the Greenwich Mean Time.

Allowed users admin, operator, user

Setting Timezone for VN-E4

Format `/api/param?system.timezone=data`

Example `/api/param?system.timezone=Pacific`

Example of Response `system.timezone&200 OK`

Interpretation Change the timezone of VN-E4. Refer to "Acquiring Timezone from VN-E4" on the character string to specify. Upon setting this API, execute the "system.status=restart" API for enabling setting changes to enable the new settings. Upon changing the timezone, VN-E4 will be rebooted using the "system.status=restart" API for enabling settings. As such, access will not be possible for about 1 minute.

Allowed user admin

5.13. Password

The APIs below are related to passwords. These are equivalent to the features on the Password page of the WEB setting page. Refer to the instruction manual for details on the Password page.

Setting Password for VN-E4

Format `/api/param?system.password.data1=data2`

Example /api/param?system.password.admin=someword

Example of Response system.password.admin&200 OK

Interpretation Change the VN-E4 password. Different passwords may be set for the 3 user name types, namely admin, operator and user. Set a password between 4 to 8 characters.

Example when setting admin password: **`/api/param?system.password.admin=word1`**
Example when setting operator password: **`/api/param?system.password.operator=word2`**
Example when setting user password: **`/api/param?system.password.user=word3`**

There is no API for acquiring passwords.

Allowed user admin

5.14. Maintenance

The APIs below are related to maintenance. These are equivalent to the features on the Maintenance page of the WEB setting page. Refer to the instruction manual for details on the Maintenance page.
(Caution: There are 2 types of initialization features on the WEB setting page, but only 1 is available for API.)

Initialization

Format `/api/param?system.status=initialize`

Example of Response `system.status&200 OK`

Interpretation Restore all VN-E4 settings to factory defaults. Upon doing so, all transmission services that are in progress will be terminated.

Allowed user admin

Version Upgrade

Version upgrading is not possible using API. To do so, use the Version Upgrade feature on the Maintenance page of the WEB setting page.

5.15. Acquiring Status

The APIs below are related to status acquisition. These are equivalent to the features on the Operation page of the WEB setting page. Refer to the instruction manual for details on the Operation page.

Acquiring Sending Status

Format `/api/param?system.session`

Response Return the total transmission bit rate, status of each sending operation, and receiving status. Transmission is not carried out in the following examples.

```
system.session=&200 OK
system.session.total_bitrate=0k&200 OK
system.session.sending_count=0&200 OK
system.session.sending_max=20&200 OK
system.session.receiving_count=0&200 OK
system.session.receiving_max=1&200 OK
```

In the examples below, 2 streams of TCP are being sent and 1 stream of TCP is being received.

```
system.session=&200 OK
system.session.total_bitrate=388k&200 OK
system.session.sending_count=2&200 OK
system.session.sending_max=20&200 OK
system.session.sending(01).bitrate=326k&200 OK
system.session.sending(01).to.ip=10.0.0.100&200 OK
system.session.sending(01).to.port=1536&200 OK
system.session.sending(01).to.protocol=tcp_passive&200 OK
system.session.sending(01).to.session=http&200 OK
system.session.sending(01).from.input=1&200 OK
system.session.sending(01).from.encode=jpeg&200 OK
system.session.sending(01).from.framerate=1&200 OK
system.session.sending(01).from.framesize=vga&200 OK
system.session.sending(02).bitrate=64k&200 OK
system.session.sending(02).to.ip=10.0.0.100&200 OK
system.session.sending(02).to.port=1538&200 OK
system.session.sending(02).to.protocol=tcp_passive&200 OK
system.session.sending(02).to.session=http&200 OK
system.session.sending(02).from.input=1&200 OK
system.session.sending(02).from.encode=ulaw&200 OK
system.session.receiving_count=1&200 OK
system.session.receiving_max=1&200 OK
system.session.receiving(01).bitrate=64k&200 OK
system.session.receiving(01).from.ip=10.0.0.100&200 OK
system.session.receiving(01).from.port=49298&200 OK
system.session.receiving(01).from.protocol=tcp_passive&200 OK
system.session.receiving(01).from.session=proprietary&200 OK
system.session.receiving(01).to.output=1&200 OK
system.session.receiving(01).to.decode=ulaw&200 OK
```

Interpretation Acquire the sending/receiving status of VN-E4.

Allowed users admin, operator, user

Acquiring Log

Format `/api/param?system.log`

Response Return the following information. These information will be initialized upon turning off the power of VN-E4. Response examples on the number of seconds after startup, alarm log information, motion detect log, list of clients currently acquiring alarm, clients currently sending audio data, and clients currently using pass-through.

```
system.log=&200 OK
system alive time: 2142sec                  <----- No. of seconds after startup
Alarm Detect 1 ( total 2 times )            <----- Alarm input 1ch
                                                   (Blank in the case of 0 times)
2005/07/01 11:26:30 ( make )                <----- Up to the latest 10 line
2005/07/01 11:26:29 ( break )               <----- Up to the latest 10 line
Alarm Detect 2 ( total 2 times )
2005/07/01 11:26:30 ( make )
2005/07/01 11:26:29 ( break )
Alarm Detect 3 ( total 2 times )
2005/07/01 11:26:30 ( make )
2005/07/01 11:26:29 ( break )
Alarm Detect 4 ( total 2 times )
2005/07/01 11:26:30 ( make )
2005/07/01 11:26:29 ( break )
Motion Detect 1 ( total 2 times )           <----- Motion detect 1ch
                                                   (Blank in the case of 0 times)
2005/07/01 11:26:30                         <----- Up to the latest 10 lines
2005/07/01 11:26:29                         <----- Up to the latest 10 lines
Motion Detect 2 ( total 2 times)
2005/07/01 11:26:30
2005/07/01 11:26:29
Motion Detect 3 ( total 2 times )
2005/07/01 11:26:30
2005/07/01 11:26:29
Motion Detect 4 ( total 2 times )
2005/07/01 11:26:30
2005/07/01 11:26:29
Alarm Monitor ( total 2 clients )           <----- Clients currently acquiring alarm
                                                   (Blank in the case of 0 clients)
2005/07/01 11:26:30 ( 136.198.34.14 )       <----- Up to 4
2005/07/01 11:26:29 ( 10.0.0.1 )
Serial Passthrough ( total 2 clients )      <----- Clients currently using pass-through
                                                   (Blank in the case of 0 clients)
2005/07/01 11:26:30 ( 1 136.198.34.14 )     <----- Serial port no. and client's IP address
2005/07/01 11:26:29 ( 2 10.0.0.1 )          <----- Up to 2
Audio Client ( total 1 clients )            <----- Clients currently sending audio data to E4
                                                   (Blank in the case of 0 clients)
2005/07/01 11:26:30 ( 136.198.34.14 )       <----- Up to 1
```

Interpretation Acquire the VN-E4 log.

Allowed user admin

5.16. Acquiring Settings

The APIs below are related to the acquisition of settings. These are equivalent to the features on the Settings page of the WEB setting page. Refer to the instruction manual for details on the Settings page.

Acquiring Model Name

Format `/api/param?system.model`

Example of Response `system.model=VN-E4(U)&200 OK`

Interpretation Acquire the model name.

Allowed users admin, operator, user

Acquiring Firmware Revisions

Format `/api/param?system.software.revision`

Example of Response `system.software.revision=1.0 U&200 OK`

Interpretation Acquire revisions of the firmware.

Allowed users admin, operator, user

Acquiring DSP Firmware Revisions

Format `/api/param?system.software.revision(DSP)`

Example of Response `system.software.revision(DSP)=1.0&200 OK`

Interpretation Acquire revisions of the DSP firmware.

Allowed users admin, operator, user

5.17. Others

These are APIs of features not found on the WEB setting page.

Restart VN-E4

Format `/api/param?system.status=restart`

Example of Response `system.status&200 OK`

Interpretation Restarts VN-E4.

Allowed users admin

Acquiring SNMP Agent Feature On/Off Status from VN-E4

Format `/api/param?network.snmp_client.status`

Example of Response `network.snmp_client.status=off&200 OK`

Interpretation Acquire the on/off status of the SNMP agent feature. Either on or off will be returned.

Allowed users admin, operator, user

Setting SNMP Agent Feature Status to On/Off for VN-E4

Format `/api/param?network.snmp_client.status=data`

Example `/api/param?network.snmp_client.status=on`

Example of Response `network.snmp_client.status&202 Required(network.interface.status=restart)`

Interpretation Change the on/off status of the SNMP agent feature. Set to on or off. Upon setting this API, execute the "network.interface.status=restart" API for enabling network setting changes to enable the new settings. When SNMP is changed and restarted, VN-E4 takes about 1 minute for restarting.

To acquire information of VN-E4 via the SNMP manager, a community name will be required when accessing via SNMPv1 and SNMPv2c.

Community name: vn-e4

When access via SNMPv3, a user name, passphrase and private passphrase will be required.

User name:	vn-e4
Passphrase:	vn-e4-snmp
Private passphrase:	vn-e4-snmp
Authentication method:	MD5
Encryption system:	DES

Memory may be consumed within the VN-E4 when the SNMP agent feature is turned on, and the maximum sending bit rate may be constrained.

Allowed users admin, operator

6. API for Sending JPEG/Audio from VN-E4 via UDP _ 6.1. Procedure

This section describes the API for sending JPEG or audio data via UDP. Make use of the APIs explained in this section in the way as mentioned in Section 4.
VN-E4 allows sending of up to 10 streams of JPEG/audio data. This includes HTTP sending based on client request, manual sending from the WEB setting page as well as UDP sending via API. An error will be returned for the API if 10 streams of data are currently being sent.

6.1. Procedure

1) The client establishes a TCP connection to port number 80.

2) The client sends out API via TCP.

Character strings of the following structure will be sent out.

GET	Space	API Character String	Space	HTTP/1.1	0x0D 0x0A
Accept	Space	text/plain or text/html	0x0D 0x0A		
Host:	Space	IP Address of VN-E4	0x0D 0x0A		
Authorization: Basic	Space	User Name and Password	0x0D 0x0A 0x0D 0x0A		

The API format when specifying using GET is as follows.
`/api/cmd?ParamA=Data&ParamB=Data&ParamC=Data`
Refer to Section 4 on details of the Accept and Authorization lines.

3) VN-E4 returns a response to the client.

4) Perform the action as instructed by VN-E4 (start or stop JPEG/audio sending).

5) The client can disconnect TCP80 to end the use of API.

6.2. List of APIs

(1) Sending JPEG from VN-E4 via RTP/UDP

Format

```
/api/send?from=video&from.input=data1&from.framesize=data2&from.framerate
=data3&to=network&to.ip=data4&to.port=data5&to.session_id=data6
```

Example

```
/api/send?from=video&from.input=1&from.framesize=qvga&from.framerate=15&
to=network&to.ip=225.0.1.1&to.port=20000&to.session_id=12345678
```

from.input

Specify the video input channel.(1~4)

from.framesize

Specify the frame size. (qvga / vga)

from.framerate

Specify the JPEG frame rate. Selection range is as follows. For a frame rate lower than 1fps, use -. For example, select -2 for 1/2fps.

VN-E4 and VN-E4U (NTSC)
30, 15, 10, 7.5, 6, 5, 3, 2, 1, 0, -2, -3, -5, -10, -15, -20, -30, -60
VN-E4E (PAL)
25, 12.5, 8.3, 6.25, 5, 4.1, 3, 2, 1, 0, -2, -3, -5, -10, -15, -20, -30, -60

Only 1 frame of the JPEG data will be sent when this is specified as 0.

to.ip

Specify the destination IP address.

to.port

Specify the destination port number.

to.session_id

Specify the client IP number. VN-E4 will register this number and accept the client with the same API (stop). session_id=* that the stop command supports will not be accepted.

Interpretation

Send JPEG from VN-E4 via RTP/UDP. JPEG data with a 12-byte RTP header will be sent out repeatedly.

Allowed users

admin, operator

Example of Response

```
HTTP/1.1 200 OK<CRLF>
Date: Fri, 13 MAY 2005 07:33:12 GMT<CRLF>
Server: VN-E4 API Server/1.0.0<CRLF>
Connection: Keep-Alive<CRLF>
content-type: text/plain<CRLF>
Connection: Keep-Alive<CRLF>
Keep-Alive: timeout=5, max=5<CRLF>
x-vne4_response:
from=video&from.input=1&from.framesize=qvga&from.framerate=15&to=network&
to.ip=225.0.1.1&to.port=20000&to.session_id=12345678<CRLF><CRLF>
200 OK<CRLF>
```

Restrictions

The total number of RTP/UDP that may be sent by VN-E4 is 10 streams (including both JPEG and audio). A "503 Service Unavailable" message will be returned in the body of the response when an 11th RTP/UDP sending request is received.

Example of response when an 11th sending request is received:

```
HTTP/1.1 200 OK<CRLF>
Date: Fri, 13 MAY 2005 07:33:12 GMT<CRLF>
Server VN-E4 API Server/1.0.0<CRLF>
Connection: Keep-Alive<CRLF>
content-type: text/plain<CRLF>
Connection: Keep-Alive<CRLF>
Keep-Alive: timeout=5, max=5<CRLF>
x-vne4_response:
from=video&from.input=1&from.framesize=qvga&from.framerate=15&to=network&
to.ip=225.0.1.1&to.port=20000&to.session_id=12345678<CRLF><CRLF>
503 Service Unavailable<CRLF>
```

(2) Stopping JPEG/RTP/UDP Sending from VN-E4

Format `/api/stop?to.session_id=data`

Example `/api/stop?to.session_id=12345678`
Specify session_id with the same value as when send is used. All JPEG sending will be terminated when session_id=* is specified.

Interpretation Stop JPEG/RTP/UDP sending from VN-E4.

Allowed users admin, operator

Example of Response:

```
HTTP/1.1 200 OK<CRLF>
Date: Fri, 13 MAY 2005 07:33:12 GMT<CRLF>
Server: VN-E4 API Server/1.0.0<CRLF>
Connection: Keep-Alive<CRLF>
content-type: text/plain<CRLF>
Connection: Keep-Alive<CRLF>
Keep-Alive: timeout=5, max=5<CRLF>
x-vne4_response: to.session_id=12345678<CRLF><CRLF>
200 OK<CRLF>
```

(3) Sending Audio (u-Law) from VN-E4 via RTP/UDP

Format `/api/send?from=audio&to=network&to.ip=data1&to.port=data2&to.session_id=datda3`

Example `/api/send?from=audio&to=network&to.ip=225.0.1.1&to.port=20002&to.session_id=12345679`

to.ip Specify the destination IP address.

to.port Specify the destination port number.

to.session_id Specify the client IP number. VN-E4 will register this number and accept the client with the same API (stop). session_id=* that the stop command supports will not be accepted.

Interpretation Send u-Law from VN-E4 via RTP/UDP. u-law data with a 12-byte RTP header will be sent out repeatedly.

Allowed users admin, operator

Example of Response

```
HTTP/1.1 200 OK<CRLF>
Date: Fri, 13 MAY 2005 07:33:12 GMT<CRLF>
Server: VN-E4 API Server/1.0.0<CRLF>
Connection: Keep-Alive<CRLF>
content-type: text/plain<CRLF>
Connection: Keep-Alive<CRLF>
Keep-Alive: timeout=5, max=5<CRLF>
x-vne4_response:
from=audio&to=network&to.ip=225.0.1.1&to.port=20002&to.session_id=12345679<CRLF><CRLF>
200 OK<CRLF>
```

Restrictions The total number of RTP/UDP that may be sent by VN-E4 is 10 streams (including both JPEG and audio). A "503 Service Unavailable" message will be returned in the body of the response when an 11th RTP/UDP sending request is received.

Example of response when an 11th sending request is received:

```
HTTP/1.1 200 OK<CRLF>
Date: Fri, 13 MAY 2005 07:33:12 GMT<CRLF>
Server: VN-E4 API Server/1.0.0<CRLF>
Connection: Keep-Alive<CRLF>
content-type: text/plain<CRLF>
Connection: Keep-Alive<CRLF>
Keep-Alive: timeout=5, max=5<CRLF>
```

```
x-vne4_response:
from=audio&to=network&to.ip=225.0.1.1&to.port=20002&to.session_id=1234567
9<CRLF><CRLF>
503 Service Unavailable<CRLF>
```

(4) Stopping Audio (u-Law) Sending from VN-E4

Format

```
/api/stop?to.session_id=data
```

Example

```
/api/stop?to.session_id=12345679
```

Specify session_id with the same value as when send is used. All audio sending will be terminated when session_id=* is specified.

Interpretation

Stop u-Law/RTP/UDP sending from VN-E4.

Allowed users

admin, operator

Example of Response

```
HTTP/1.1 200 OK<CRLF>
Date: Fri, 13 MAY 2005 07:33:12 GMT<CRLF>
Server: VN-E4 API Server/1.0.0<CRLF>
Connection: Keep-Alive<CRLF>
content-type: text/plain<CRLF>
Connection: Keep-Alive<CRLF>
Keep-Alive: timeout=5, max=5<CRLF>
x-vne4_response: to.session_id=12345679<CRLF><CRLF>
200 OK<CRLF>
```

This section describes APIs for audio receiving by VN-E4. Make use of the APIs explained in this section in the way as mentioned in Section 4.

7.1. Audio Receiving via HTTP

1) The client establishes a TCP connection to port number 80 and sends out API.

GET	Space	API Character String	Space	HTTP/1.1	0x0D 0x0A
Accept	Space	text/plain or text/html	0x0D 0x0A		
Host:	Space	IP Address of VN-E4	0x0D 0x0A		
Authorization: Basic	Space	User Name and Password	0x0D 0x0A 0x0D 0x0A		

Refer to Section 4 on details of the Accept and Authorization lines.

The API format when specifying using GET is as follows.

/api/receive?from=network&from.ip=data1&from.protocol=tcp_passive&from.session_id=data2&from.ip_translate=on&to=audio

Example **/api/receive?from=network&from.ip=10.0.0.100&from.protocol=tcp_passive&frmo.session_id=12345678&from.ip_translate=on&to=audio**

Specify the source IP address for ip=. Specify the client IP number for session_id=. VN-E4 will register this number and accept the client with the same API (stop). VN-E4 will accept the API at all times when it is specified as session_id=*.
When from.ip_translate is set to off, VN-E4 will standby to receive audio data from the IP address specified at from.ip. When from.ip_translate is set to on, VN-E4 will ignore from.ip and standby to receive audio data from the source IP address of this API.

2) VN-E4 returns a response.

```
HTTP/1.1 200 OK<CRLF>
Date: Fri, 13 MAY 2005 07:33:12 GMT<CRLF>
Server: VN-E4 API Server/1.0.0<CRLF>
Connection: Keep-Alive<CRLF>
content-type: text/plain<CRLF>
Connection: Keep-Alive<CRLF>
Keep-Alive: timeout=5, max=5<CRLF>
x-vne4_response:
from=network&from.ip=10.0.0.100&from.protocol=tcp_passive&frmo.session_id
=12345678&from.ip_translate=on&to=audio<CRLF><CRLF>
200 OK<CRLF>
```

The client may disconnect TCP80 at this point of time.

3) The client establishes a TCP connection to port number 49298.

4) The client continues to send 512 bytes of u-Law data with a 12-byte header.

The data's header format is as follows. The 12-byte header is made up of 3 4-byte data.

0x00000080
No. of bytes of audio data (fixed as 512)
Time stamp (Unit: 8 kHz)
512 bytes of u-Law data

5) To end, disconnect TCP49298.

■ Restrictions on Number of Clients

Only 1 client is allowed to send audio data to VN-E4. VN-E4 will return an error for this API and TCP will be disconnected when this function is currently in use by another client. In addition, VN-E4 will also return an error for this API and disconnect TCP when there exists a client that makes use of the audio reception feature at VN-E4 via RTP/UDP.

■ Timing of Data Sending

512 bytes, or in other words, 64 msec of audio data may be sent during each transmission. Send audio data at intervals as evenly as possible. A part of the data may be lost if audio data exceeding 2 seconds are sent to VN-E4 at one time.

7.2. Audio Receiving via RTP

1) The client establishes a TCP connection to port number 80 and sends out API.

GET	Space	API Character String	Space	HTTP/1.1	0x0D 0x0A
Accept	Space	text/plain or text/html	0x0D 0x0A		
Host:	Space	IP Address of VN-E4	0x0D 0x0A		
Authorization: Basic	Space	User Name and Password	0x0D 0x0A 0x0D 0x0A		

Refer to Section 4 on details of the Accept and Authorization lines.

The API format when specifying using GET is as follows.

/api/receive?from=network&from.ip=data1&from.protocol=udp&from.session_id=data2&from.ip_translate=on&to=audio

Example **/api/receive?from=network&from.ip=10.0.0.100&from.protocol=udp&from.session_id=12345678&from.ip_translate=on&to=audio**

Specify the source IP address for ip=. Specify the client IP number for session_id=. VN-E4 will register this number and accept the client with the same API (stop). VN-E4 will accept the API at all times when it is specified as session_id=*.
When from.ip_translate is set to off, VN-E4 will standby to receive audio data from the IP address specified at from.ip. When from.ip_translate is set to on, VN-E4 will ignore from.ip and standby to receive audio data from the source IP address of this API.

2) VN-E4 returns a response.

```
HTTP/1.1 200 OK<CRLF>
Date: Fri, 13 MAY 2005 07:33:12 GMT<CRLF>
Server: VN-E4 API Server/1.0.0<CRLF>
Connection: Keep-Alive<CRLF>
content-type: text/plain<CRLF>
Connection: Keep-Alive<CRLF>
Keep-Alive: timeout=5, max=5<CRLF>
x-vne4_response:
from=network&from.ip=10.0.0.100&from.protocol=udp&from.session_id=12345678&from.ip_translate=on&to=audio<CRLF><CRLF>
200 OK<CRLF>
```

The client may disconnect TCP80 at this point of time.

3) The client continues to send 512 bytes of u-Law data with a 12-byte header to port number 49200.

The data's header format is as follows. The 12-byte RTP header is made up of 3 4-byte data. Refer to RFC1889 for details on the RTP header.

0x8000	Sequence No.
Time stamp (Unit: 8 kHz)	
SSRC	
512 bytes of u-Law data	

4) To end, send an API for stopping transmissions.

API Format **/api/stop?from.session_id=data**

Example **/api/stop?from.session_id=***

Specify session_id= using the number that is specified via the send command. Ensure to stop audio reception when session_id=* is specified.

■ Restrictions on Number of Clients

Only 1 client is allowed to send audio data to VN-E4. VN-E4 will return an error for this API and TCP will be disconnected when this function is currently in use by another client. In addition, VN-E4 will also return an error for this API and disconnect TCP when there exists a client that makes use of the audio reception feature at VN-E4 via RTP/UDP.

■ Timing of Data Sending

512 bytes, or in other words, 64 msec of audio data may be sent during each transmission. Send audio data at intervals as evenly as possible. A part of the data may be lost if audio data exceeding 2 seconds are sent to VN-E4 at one time.

This section describes APIs for controlling external devices that are connected to the serial port of VN-E4. Make use of the APIs explained in this section in the way as mentioned in Section 4.

8.1. Control of Pelco-D Camera

This is an API for controlling cameras that support Pelco-D protocols.

(1) Pan Control

API Character String

`/api/param?peripheral.serial(Number).device(Address).camera.motion.pan.mode=Data1&peripheral.serial(Number).device(Address).camera.motion.pan.speed=Data2&peripheral.serial(Number).device(Address).camera.motion.pan.status=Data3`

The format above specifies the pan direction (mode), pan speed (speed) and start/stop (status) at one time. It is also possible to set them separately over 3 times.

Example

Below is an example that indicates panning towards the left at speed 50 of a camera with an address of 123 that is connected to serial port number 2.

`/api/param?peripheral.serial(2).device(123).camera.motion.pan.mode=left&peripheral.serial(2).device(123).camera.motion.pan.speed=50&peripheral.serial(2).device(123).camera.motion.pan.status=start`

Example of Response

`peripheral.serial(2).device(123).camera.motion.pan.mode&200 OK&peripheral.serial(2).device(123).camera.motion.pan.speed&200 OK&peripheral.serial(2).device(123).camera.motion.pan.status&200 OK`

Interpretation

Send the pan command to the specified serial port and camera address. Specify the serial port as 1 or 2. Specify the camera address between the range of 0 to 255. Specify the mode as left or right. Specify the speed between the range of 0 to 100. Specify status as start or stop. To specify stop only, make use of the API as shown in the following example.

`/api/param?peripheral.serial(2).device(123).camera.motion.pan.status=stop`

Allowed users

admin, operator, user

(2) Tilt Control

API Character String

`/api/param?peripheral.serial(Number).device(Address).camera.motion.tilt.mode=Data1&peripheral.serial(Number).device(Address).camera.motion.tilt.speed=Data2&peripheral.serial(Number).device(Address).camera.motion.tilt.status=Data3`

The format above specifies the tilt direction (mode), tilt speed (speed) and start/stop (status) at one time. It is also possible to set them separately over 3 times.

Example

Below is an example that indicates upward tilting at speed 50 of a camera with an address of 123 that is connected to serial port number 2.

`/api/param?peripheral.serial(2).device(123).camera.motion.tilt.mode=up&peripheral.serial(2).device(123).camera.motion.tilt.speed=50&peripheral.serial(2).device(123).camera.motion.tilt.status=start`

Example of Response

`peripheral.serial(2).device(123).camera.motion.tilt.mode&200 OK&peripheral.serial(2).device(123).camera.motion.tilt.speed&200 OK&peripheral.serial(2).device(123).camera.motion.tilt.status&200 OK`

Interpretation

Send the tilt command to the specified serial port and camera address. Specify the serial port as 1 or 2. Specify the camera address between the range of 0 to 255. Specify the mode as up or down. Specify the speed between the range of 0 to 100. Specify status as start or stop. To specify stop only, make use of the API as shown in the following example.

`/api/param?peripheral.serial(2).device(123).camera.motion.tilt.status=stop`

Allowed users

admin, operator, user

(3) Iris Control

API Character String

```
/api/param?peripheral.serial(Number).device(Address).camera.iris=Data1
```

Example

Below is an example that opens the iris of a camera with an address of 123 that is connected to serial port number 2.

```
/api/param?peripheral.serial(2).device(123).camera.iris=+
```

Example of Response

```
peripheral.serial(2).device(123).camera.iris&200 OK
```

Interpretation

Send the iris command to the specified serial port and camera address. Specify the serial port as 1 or 2. Specify the camera address between the range of 0 to 255. Specify iris as + or -. Use + to open and - to close the iris. Operation will be executed stepwise upon using the command once and there is no need to stop the operation.

Allowed users

admin, operator, user

(4) Focus Control

API Character String

```
/api/param?peripheral.serial(Number).device(Address).camera.focus=Data1
```

Example

Below is an example that sets the focus to a distant point for the camera with an address of 123 that is connected to serial port number 2.

```
/api/param?peripheral.serial(2).device(123).camera.focus=+
```

Example of Response

```
peripheral.serial(2).device(123).camera.focus&200 OK
```

Interpretation

Send the focus command to the specified serial port and camera address. Specify the serial port as 1 or 2. Specify the camera address between the range of 0 to 255. Specify focus as +, -, manual or auto. Use + to focus to a distant point, - to a near point, manual to cancel auto focus, and auto to turn on auto focus. Operation will be executed stepwise upon using the command once and there is no need to stop the operation.

Allowed users

admin, operator, user

(5) Zoom Control

API Character String

```
/api/param?peripheral.serial(Number).device(Address).camera.motion.zoom.mode=Data1&peripheral.serial(Number).device(Address).camera.motion.zoom.status=Data2
```

Example

Below is an example that sets the zoom to the tele end for the camera with an address of 123 that is connected to serial port number 2.

```
/api/param?peripheral.serial(2).device(123).camera.motion.zoom.mode=in&
peripheral.serial(2).device(123).camera.motion.zoom.status=start
```

Example of Response

```
peripheral.serial(2).device(123).camera.motion.zoom.mode&200
OK&peripheral.serial(2).device(123).camera.motion.zoom.status&200 OK
```

Interpretation

Send the zoom command to the specified serial port and camera address. Specify the serial port as 1 or 2. Specify the camera address between the range of 0 to 255. Specify the mode as in or out. Use in to set to the tele end and out to the wide end. Specify status as start or stop. To specify stop only, make use of the API as shown in the following example.

```
/api/param?peripheral.serial(2).device(123).camera.motion.zoom.status=stop
```

Allowed users

admin, operator, user

8.2. Control of External Devices via Pass-through

By using the pass-through feature, data sent to VN-E4 via the network will be output from the serial port of VN-E4. In addition, Ack received by the serial port of VN-E4 will be returned to the client via the network.
Reserve the pass-through feature via API, connect the TCP for transmission of pass-through data (49152 for serial port 1 and 49153 for serial port 2), followed by sending the data.

(1) Reservation of Pass-through Feature via API

API Character String

```
/api/receive?from=network&from.ip=Data1&from.protocol=Data2&to=serial(Number)
```

Example

```
/api/receive?from=network&from.ip=10.0.0.100&from.protocol=tcp_passive&
from.ip_translate=on&to=serial(2)
```

from.ip

Specify the IP address of the client.

from.protocol

Specify as tcp_passive. This indicates establishment of TCP connection to TCP49152 from the client.

to.serial(Number)

Specify the serial port used in Number. Specify as 1 or 2.

from.ip_translate

When from.ip_translate is set to off, VN-E4 will standby to receive the pass-through data from the IP address specified at from.ip. When from.ip_translate is set to on, VN-E4 will ignore from.ip and standby to receive the pass-through data from the source IP address of this API.

Example of Response

```
HTTP/1.1 200 OK<CRLF>
Connection: Keep-Alive<CRLF>
Content-Length: 104<CRLF>
content-type: text/plain<CRLF>
date: Fri, 13 MAY 2005 07:33:12 GMT<CRLF>
server: VN-E4 API Server/1.0.0<CRLF>
keep-alive: timeout=5, max=5<CRLF>
x-vne4_response:
from=network&from.ip=10.0.0.100&from.protocol=tcp_passive&from.session=ra
w&from.ip_translate=on&to.serial(2)&to.baud=9600&to.bit=8&to.stopbit=1&to
.parity=none<CRLF><CRLF>
200 OK<CRLF>
```

Interpretation

Reserve the pass-through feature of VN-E4 . The following error will be returned when the specified serial port in currently being used by another client.

Example of Error Response

```
HTTP/1.1 200 OK<CRLF>
Connection: Keep-Alive<CRLF>
Content-Length: 104<CRLF>
content-type: text/plain<CRLF>
date: Fri, 13 MAY 2005 07:33:12 GMT<CRLF>
server: VN-E4 API Server/1.0.0<CRLF>
keep-alive: timeout=5, max=5<CRLF>
x-vne4_response:
from=network&from.ip=10.0.0.100&from.protocol=tcp_passive&from.session=ra
w&from.ip_translate=on&to.serial(2)&to.baud=9600&to.bit=8&to.stopbit=1(to
.parity=none<CRLF><CRLF>
403 Forbidden<CRLF>
```

Allowed users

admin, operator

Reservation of serial port 1 will be disabled when Service at the rear panel of VN-E4 is selected. When an API is sent in this case, an error will be returned.

(2) TCP Connection for Pass-through

The client will establish a TCP connection to TCP49152 when serial port 1 is used. In the case of serial port 2, the client will establish a TCP connection to 49153.
The client may also disconnect TCP80 used by the API.

(3) Sending Pass-through Data

Send the data to output from the serial port of VN-E4 via TCP (49152 for serial port 1 and 49153 for serial port 2).
Ack received by the serial of VN-E4 will be returned to the client by the same TCP port number.

(4) Ending Pass-through

End pass-through by disconnecting TCP (49152 for serial port 1 and 49153 for serial port 2).
It is also possible to end pass-through using the following API.

API Character String	**`/api/stop?to=serial(Number)`**
Example when ending serial port 2	**`/api/stop?to=serial(2)`**

9. List of Protocols and Port Numbers Used with VN-E4

VN-E4 uses the following protocols and port numbers.

Protocol / Port Number	**Use**
TCP 80	WEB setting page, API for acquiring status and changing settings
TCP 8009	TCP acquisition of JPEG/audio from VN-E4 by client
TCP 32040	Alarm acquisition from VN-E4 by client
TCP 49152	Pass-through of serial port 1
TCP 49153	Pass-through of serial port 2
TCP 49200	UDP transmission of audio from client to VN-E4
TCP 49298	TCP transmission of audio from client to VN-E4

10. Advanced Topics

(1) When frame rate drops deteriorates due to long network delay time

■ Causes of Frame Rate Deterioration

During transmission via TCP, VN-E4 sends out the following data by receiving the Ack of TCP. When network delay is long, reception of Ack will be delayed and sending rate will drop. This therefore leads to a drop in the frame rate.

■ Countermeasure 1

One of the countermeasures to improve this situation is to increase the TCP window size. Use sendbuffer (API argument for sending data to VN-E4) to increase the outgoing buffer size of VN-E4. In addition, increase the window scale and incoming buffer size at the client's end as well. If the OS used by the client is Windows, window scale can be altered by changing the registry. Refer to the Windows manual for details on operation of Windows registry.

Additionally, the total size that can be increased by the sendbuffer argument of API is up to 1MB. Subsequent client requests to increase the buffer size will be rejected if the 1 MB size has already been used up by other clients.

■ Countermeasure 2

This problem can be avoided by receiving via multicast. Multicast uses UDP and Ack does not exist. As such, the sender will be able to continue sending without being affected by network delays.

11. Customizing VN-E4's Built-in Viewer

The built-in viewer of VN-E4 consists of an ActiveX control, and customization is possible using HTML description.

(1) HTML Sample

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML4.0 Transitional//EN">
<HTML><HEAD>
<META http-equiv="Content-Type" content="text/html;charset=ISO-8859-1">
<TITLE></TITLE>
</HEAD>
<SCRIPT LANGUAGE=JAVASCRIPT>
function stop_click() {
    Viewer.Stop();
}
function play_click() {
    Viewer.Play();
}
function ch_click(obj,num){
    Viewer.SelectCh = num;
    if(num==5){
        Viewer.DispFore();
    }else{
        Viewer.DispOne();
    }
}
function still_click(obj,num)
{
    if(obj.value==" Play "){
        obj.value="Pause";
        Viewer.SetStill(num,0);
    }else{
        obj.value=" Play ";
        Viewer.SetStill(num,1);
    }
}
</SCRIPT>
<BODY STYLE="font-family:sans-serif;" onBeforeUnload="stop_click()" onload="play_click()">
<font size="6"> SAMPLE TEXT </font><br>
<OBJECT ID="Viewer"
    WIDTH = 641
    HEIGHT= 481
    CLASSID="CLSID:E6BE5699-64A1-4024-BB79-27C00553ECD6"
    STYLE="border-style:solid;border:1px;border-color:#ffffff;">
    <PARAM NAME="ApiIP"   VALUE="192.168.0.2">
    <PARAM NAME="ApiPort"   VALUE="8009">
    <PARAM NAME="AudioSnd"   VALUE="1">
    <PARAM NAME="AudioRcv"   VALUE="1">
    <PARAM NAME="StartMode"   VALUE="2">
    <PARAM NAME="SelectCh"   VALUE="1">
</OBJECT>
<form name="myForm">
<table><tr><td>
<INPUT TYPE="BUTTON" NAME="ch_btn" VALUE="  CH1  " onclick="ch_click(this,1)"></td><td>
<INPUT TYPE="BUTTON" NAME="ch_btn" VALUE="  CH2  " onclick="ch_click(this,2)"></td><td>
<INPUT TYPE="BUTTON" NAME="ch_btn" VALUE="  CH3  " onclick="ch_click(this,3)"></td><td>
<INPUT TYPE="BUTTON" NAME="ch_btn" VALUE="  CH4  " onclick="ch_click(this,4)"></td><td>
<INPUT TYPE="BUTTON" NAME="allch_btn" VALUE="  All  " onclick="ch_click(this,5)"></td></
tr><tr><td>
<INPUT TYPE="BUTTON" NAME="still_btn" VALUE="Pause"  onclick="still_click(this,1)"></td><td>
<INPUT TYPE="BUTTON" NAME="still_btn" VALUE="Pause"  onclick="still_click(this,2)"></td><td>
<INPUT TYPE="BUTTON" NAME="still_btn" VALUE="Pause"  onclick="still_click(this,3)"></td><td>
<INPUT TYPE="BUTTON" NAME="still_btn" VALUE="Pause"  onclick="still_click(this,4)"></td><td>
</tr></table>
</form></BODY></HTML>
```

(2) Public Interface of ActiveX Control

Type / Name	Details and HTML/SCRIPT Description Example
Method SetJpegSize (ch , size)	For specifying JPEG frame size. Ch 1: ch1 2: ch2 3: ch3 4: ch4 size 0: VGA 1: QVGA Example: SetJpegSize(1,1); Set JPEG frame size of 1ch to QVGA
Method SetDispRotate (ch , onoff)	For selecting 180@ rotation during display of JPEG. Ch 1: ch1 2: ch2 3: ch3 4: ch4 onoff 0: Do not rotate 1: Rotate Example: SetDispRotate(1,1); Rotate JPEG display of 1ch by 180@
Method SetDispTitle (ch , onoff)	For selecting title display (internal file information) during display of JPEG. Ch 1: ch1 2: ch2 3: ch3 4: ch4 onoff 0: Do not display 1: Display Example: SetDispTitle(1,1); Display title on JPEG display of 1ch
Method SetEnableCH (ch , onoff)	For selecting JPEG display of each CH. Ch 1: ch1 2: ch2 3: ch3 4: ch4 onoff 0: Do not display 1: Display Example: SetEnableCH(1,0); Do not display JPEG of 1ch
Method SetFrameRate (ch , rate, flag)	JPEG display frame rate. Ch 1: ch1 2: ch2 3: ch3 4: ch4 rate (NTSC) 30, 15, 10, 7.5, 6, 5, 3, 2, 1, 1/2, 1/3, 1/5, 1/10, 1/15, 1/20, 1/30 (PAL) 25, 12.5, 8.3, 6.25, 5, 4.1, 3, 2, 1, 1/2, 1/3, 1/5, 1/10, 1/15, 1/20, 1/30 flag 0: 1 fps or higher 1: Less than1 fps Example: SetFrameRate(1,10,0); Set JPEG rate of 1 ch to 10 fps
Method OpePassword (password)	For setting operator password (Required when sending audio data). Example: OpePassword("vn-e4");
Method SetStill (ch , onoff)	For switching JPEG display between still and animated display. Ch 1: ch1 2: ch2 3: ch3 4: ch4 onoff 0: Animated display 1: Still display Example: SetStill(1,1); Display JPEG of 1ch as still image
Method Capture( )	For saving the JPEG file (of the CH in display). Example: Capture( ); Save JPEG file
Method DispOne( )	For switching JPEG display from 4-screen to 1-screen display. Example: DispOne( ); Switch to 1-screen display
Method DispFour( )	For switching JPEG display from 1-screen to 4-screen display. Example: DispFour( ); Switch to 4-screen display

Method Play( )	For starting ActiveX control. Start upon changing to new settings. Example: Play( ); Start
Method Stop( )	For ending ActiveX control. Close and reboot ActiveX control upon changing settings. Example: Stop( ); End
Property AudioSnd	For turning on/off audio sending from the viewer to the VN-E4 unit. Audio sending can be turned on/off when ActiveX control is running. 0: Off 1: On Example: AudioSnd=1; When turning on audio sending
Property AudioRcv	For turning on/off audio receiving at the viewer. Reboot ActiveX control upon setting. 0: Off 1: On Example: AudioRcv=1; When turning on audio receiving
Property SelectCh	For selecting Ch for JPEG display (valid only during 1-screen display). 1: ch1 2: ch2 3: ch3 4: ch4 Example: SelectCh=1; When displaying 1ch
Property ApiIP	IP Address of VN-E4 unit. Example: ApiIP=192.168.0.2; Specify IP address
Property ApiPort	Port number to access to (JPEG/Audio acquisition). Example: ApiPort=8009; Port number
Property StartMode	For determining the operation mode during startup. 1: 1-screen display 2: 4-screen display Example: StartMode=1; Start up in 1-screen display mode
Property BufferSize	For specifying the video and audio buffering time. Set the time in msec between 300 to 1000. Example: BufferSize=300; Set buffering time to 300 ms

VN-E4 API GUIDE

JVC

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