

IAD100T GATEWAY

User Guide

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★ Welcome ★

Thank you for choosing the IAD100T Gateway.

IAD100T is fully compatible with the VOIP introduced by the ISO (International Organization for Standardization). It embeds the SIP and IAX2 protocols and can communicate with most of the standard IP phone, voice software that base on the SIP device, SIP compliant devices, SIP register server and SIP multi-gateways in the market.

To ensure you can get the professional service with the product, you should read and understand this manual before you attempt to install or operate the IAD100T. Please keep it for your future reference.

This manual is for the IAD100T gateway and includes the installation, basic functions and special features. Hope it can help you to understand and operate in short time.

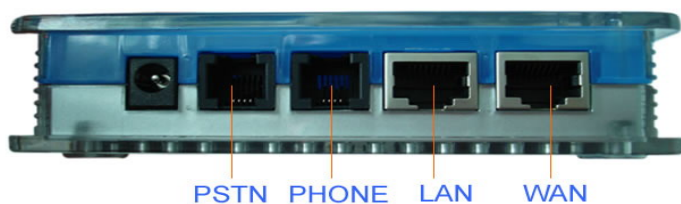
Note: The user manual will change as the product upgrades, we shall not be warranty to inform user for the changes, please find the further information and details on our company website.

1. Product introduction

1.1 IAD100T appearance and interfaces



The appearance of IAD100T



Interfaces

IAD100T gateway has 4 ports: two RJ45 ports and two RJ11 ports. The following table provides the hardware specifications for the IAD100T:

Items		Specification
Power Specification	Adaptor	Input Voltage
		Output Voltage
Interfaces	WAN	1 10/100Base T RJ-45
	LAN	1 10/100Base T RJ-45
	Phone	1 RJ11 for phone
	Lifeline	1 RJ11 for Lifeline (PSTN)
Device Power		3.5W/1.8W
Ambient Temperature		0~40℃
Ambient Humidity		5~95%
Size		180mmx120mmx60mm
Weight		520g

1.2 IAD100T Supported protocol:

- ◆ Support SIP (RFC3261, RFC2543)
- ◆ Support IAX2
- ◆ Support VPN
- ◆ Support Reverse polarity
- ◆ Support voice code: G711A/u, G729, G726, iLBC
- ◆ Support G.168 echo cancellation standard, compliant 96ms echo cancellation with speaker
- ◆ Support Jitter Buffer, VAD, CNG, SIP/IAX2, domain name register, point to point communication.
- ◆ Support the voice communication through RTP and RTCP.
- ◆ Support the DTMF Inbound/Outbound transmission; SIP info, DTMF Relay, RFC2833
- ◆ Support standards of the ring in different countries and regions.
- ◆ NAT penetration, support STUN client, CITRON, AVS etc..
- ◆ Support SIP domain, SIP Authentication (none, basic, MD5), Domain name explain
- ◆ Support SIP domain, SIP Authentication (none basic, MD5), domain name parse.
- ◆ Support two SIP servers (Public Server / Private Server) synchronously, make a call by either proxy.

- ◆ Support SIP application, including SIP Call forward/transfer/holding/waiting.
- ◆ Support L2TP protocol

1.3 IAD100T Network Features:

- ◆ Support two models: Bridge and Router, and integrates the router functions of these two ports.
- ◆ Support basic NAT and NAPT
- ◆ Support PPPoE for xDSL, and support redial automatically when its offline
- ◆ Support DHCP client for WAN port
- ◆ Support DHCP server for LAN port
- ◆ Support DNS relay for LAN port, and provide DNS service for LAN network devices.
- ◆ Use the advanced technology DSP to ensure high quality voice
- ◆ Use the advanced buffer technology to avoid the information package delay too long or lost.
- ◆ Support Network Tools that includes ping, trace route and telnet client
- ◆ Support 3 methods to configure the WAN IP: Static (static configuration for LAN), DHCP (Dynamic query through LAN) and PPPoE (Dynamic query through ADSL)
- ◆ Provide firewall control for small size of LAN port
- ◆ Provide the communication PRI available for the small LAN of LAN port
- ◆ Support Qos (802.1p) for the second Layer

1.4 IAD100T Advanced Functions:

◆ It can register on the two SIP systems, one IAX2 systems and one normal PSTN phone number, and can get 2 VOIP numbers and a normal phone number, that means you can get 4 phone numbers for the same phone.

- ◆ Call waiting, hold, call transfer, 3-way conference call, call forward in many modes
- ◆ The 3 phone numbers can be switched freely between VOIP and PSTN
- ◆ Incoming call display, forbid dialing out, Do-Not-disturb, and automatically call while picking up the handset

- ◆ Set blacklist number and limited number
- ◆ Support point to point call
- ◆ Set the mode accepting numbers for the gateway
- ◆ Set the fixed dialing mode for the phone numbers.
- ◆ Support silence suppression, VAD (Voice Activity Detection)
- ◆ Support CNG (Comfort Noise Generation)
- ◆ Support Line Echo Cancellation and AGC (Automatic Gain Control)
- ◆ Support line detection, busy tone when no line available

1.5 Configuration, manage and maintain mode

- ◆ Safe mode provide reliability, can upgrade via safety mode

- ◆ Configure by Web, telnet and keypad management. Can manage and configure the gateway by HTTP, and can filter limit the IP client
- ◆ Upgrade firmware through HTTP, FTP or TFTP.
- ◆ Adjustable user password and super password and set multiple administrators; User can manage the IP phone by Telnet, going through NAT/FIREWALL

2. Installation

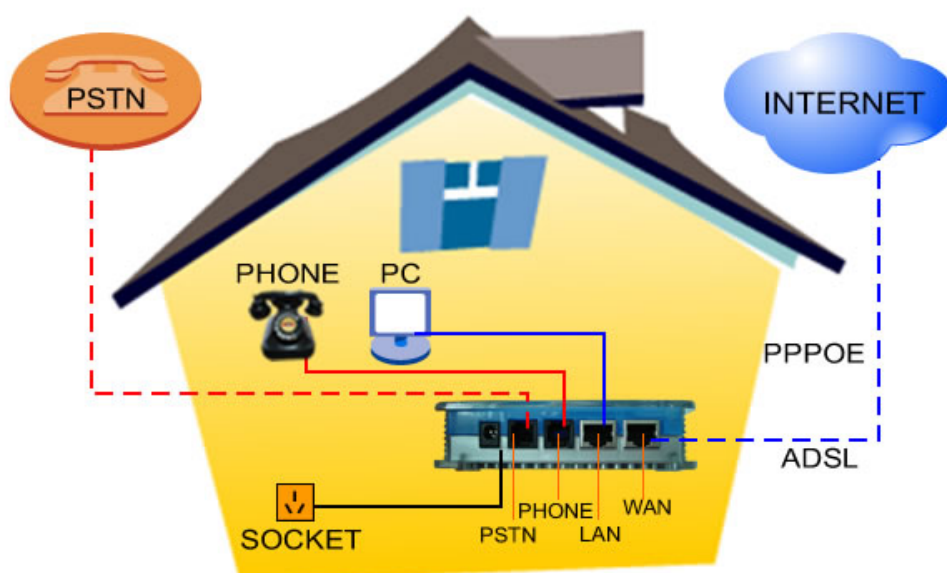
2.1 Standard Package

- ◆ One IAD100T gateway;
- ◆ One universal power adapter (different model per area); One user manual and one Lifeline accessory

Warning: The IAD100T series gateway, the power follows UL standard. This product can only use the power adapter that shipped with the packaging. Damage to the gateway cause by using unsupported power adapter would not be covered by manufacture's warranty.

Warning: The power for the IAD100T series gateway complies with UL Standard. Please use the power adaptor that ships with the package. We are not warranty for any damaged that caused by using any unsupported power adaptors. Please install and operate follow the user manual. We are not warranty for any damaged caused by the changes or disassembling the products that haven't been confirmed by the factory.

2.2 Installation



- ◆ Insert the RJ-45 Ethernet Cable to WAN port on the gateway, ensure the gateway connects into the internet

- ◆ For the LAN port, you can connect it to the PC
- ◆ Connect a phone cable between the PSTN and the PSTN port on the gateway as the lifeline.
- ◆ Use a RJ11 phone cable to connect between the phone and the PHONE port on the gateway.
- ◆ Insert the 12V/1A power adapter

2.3 Display and status indicators

WAN: WAN port indicator LED. When lit this LED indicates that the connection between the Gateway and WAN has been satisfied.

LAN: LAN port indicator LED. When lit this LED indicates that the connection between the Gateway and LAN has been satisfied.

PHONE: Phone status LED. The LED lit when the handset has been picked up or it turns off when the handset has been hanged up.

REG: Register indicator LED. A continuously lit LED indicates the register has been success. A flashing LED warns the register has been failed.

POWER: Power supply indicator LED. This LED indicates that the Power for the gateway is available.

3. Configuration with Web

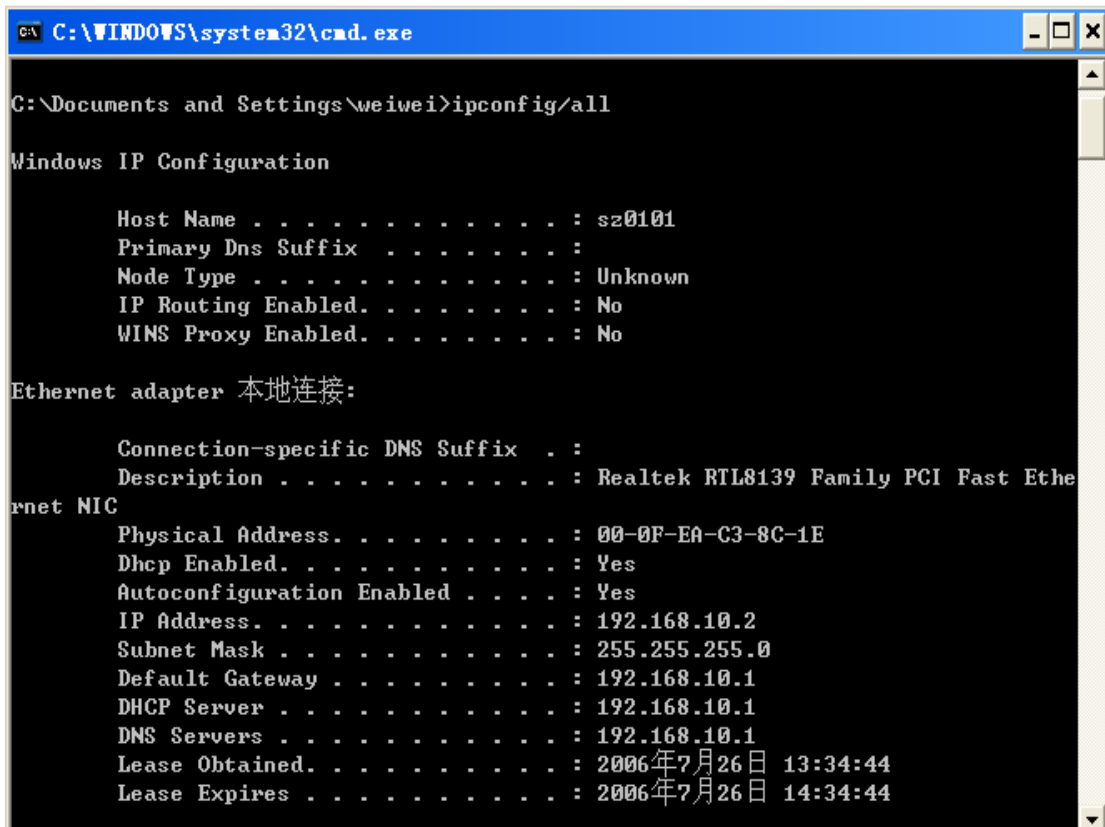
3.1 Get the gateway IP address

The gateway has two ports: WAN and LAN, both of them has been set to the default DHCP mode. User can configure the gateway through the WAN IP and LAN IP according the network they using.

◆ If your network supports the DHCP to distribute IP address automatically, after connecting the gateway, you will see the indicator light of the WAN port is on and stop glittering, it means you get the IP address already, you can be set up quickly according to the following operation: after connecting Ethernet cable to WAN port, connect PSTN phone to FXS port, press **#*111#**, you could hear IP address of gateway WAN port, input the WAN IP address on the browser, you can configure the gateway.(To know more details , please see the advanced manual)

- ◆ If your network doesn't support the DHCP to distribute IP address automatically, you should configure the static IP in WAN port, the default IP address of gateway is 192.168.10.1, if it is not default IP address, you can connect PC to LAN port, and set the IP mode to dynamic, then input "ipconfig/all" in command line and see that the default IP address of gateway is the IP for LAN port. The steps are the following:

Open PC to local internet --Choose Internet agreement (open TCP/IP ---choose to get IP address with DNS server address automatically, after confirmed. The computer will get IP address automatically. Then input "cmd" and press "enter", under the window line input "ipconfig/all" can look over default gateway, LAN IP for network.



```

C:\WINDOWS\system32\cmd.exe

C:\Documents and Settings\weiwei>ipconfig/all

Windows IP Configuration

    Host Name . . . . . : sz0101
    Primary Dns Suffix . . . . . :
    Node Type . . . . . : Unknown
    IP Routing Enabled. . . . . : No
    WINS Proxy Enabled. . . . . : No

Ethernet adapter 本地连接:

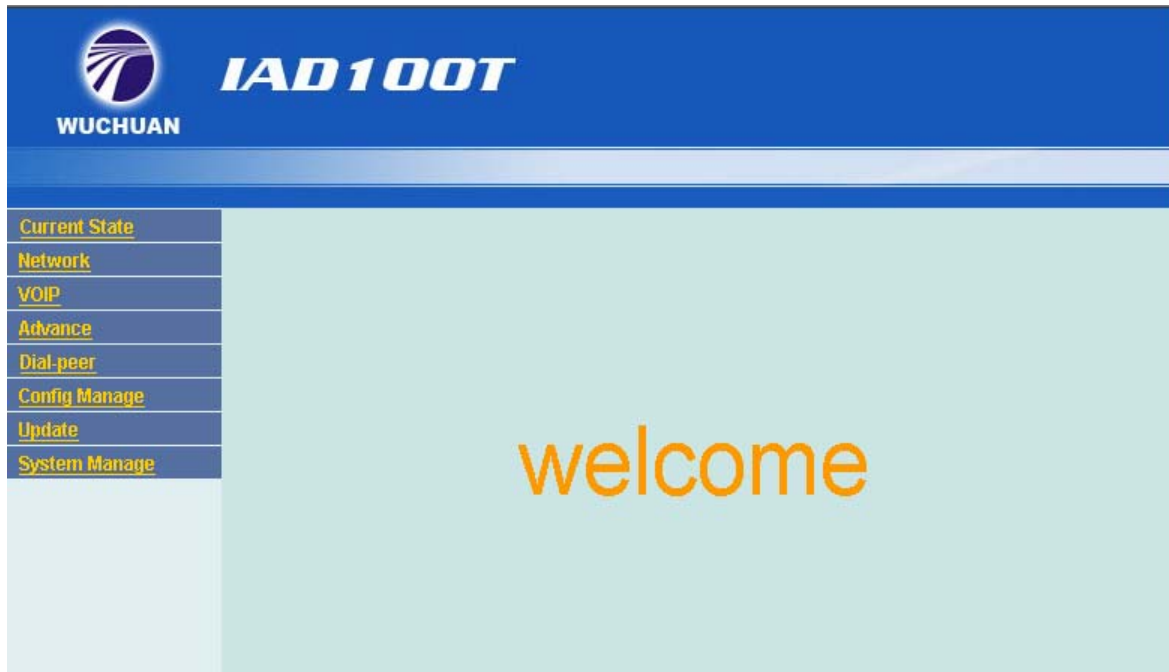
    Connection-specific DNS Suffix . :
    Description . . . . . : Realtek RTL8139 Family PCI Fast Ethernet NIC
    Physical Address. . . . . : 00-0F-EA-C3-8C-1E
    Dhcp Enabled. . . . . : Yes
    Autoconfiguration Enabled . . . . : Yes
    IP Address. . . . . : 192.168.10.2
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.10.1
    DHCP Server . . . . . : 192.168.10.1
    DNS Servers . . . . . : 192.168.10.1
    Lease Obtained. . . . . : 2006年7月26日 13:34:44
    Lease Expires . . . . . : 2006年7月26日 14:34:44
  
```

In the picture we can the default IP address is 192.168.10.1, so the default LAN IP address is 192.168.10.1, then we can access by the following URL: <http://192.168.10.1> to set.

Note: If LAN haven't DHCP server, we get LAN mouth purpose of IP hope PC can imprison through network LAN mouth IP enter network imprison WEB interface just, imprison to network WAN mouth go on, dispose, because network imprison WAN mouth dispose well only with after internet interflows, gateway can succeed in registration and phone.

3.2 Configuration with Web

The web configuration interface mainly consists of the configuration menu on the left and configuration interface on the right, enter the corresponding configuration interface to configure by selecting the menu, please see as below:



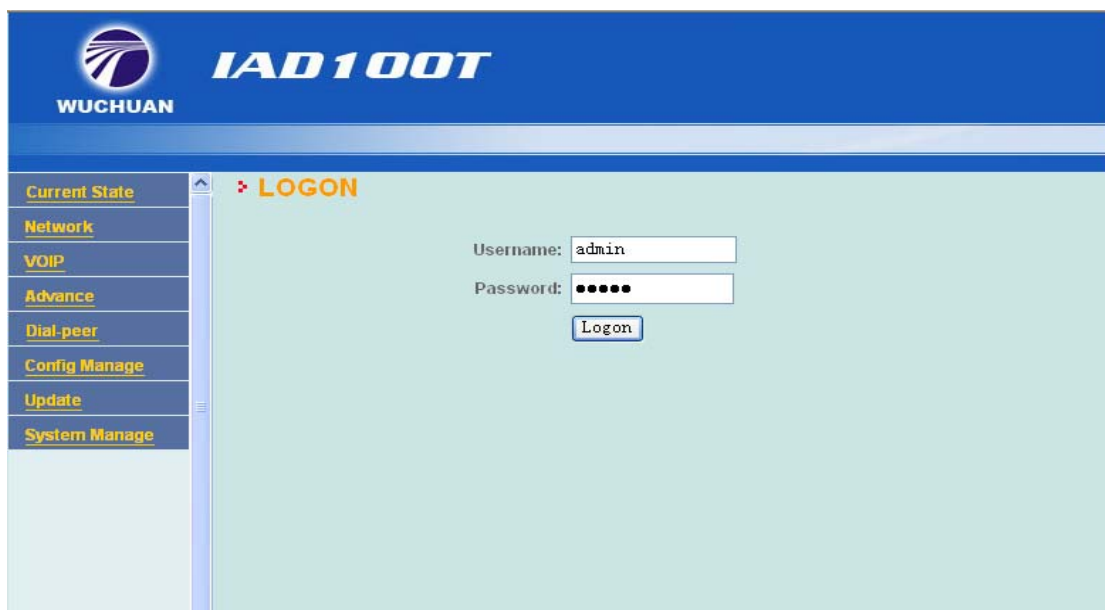
Before using, the main menu consists Network part (configure IP address, default route, DNS, etc.), VoIP part (SIP server and Phone Number).

If the menu has submenu, press it to see all the parts. Press once to open the menu, and press twice to close the menu.

3.2.1 Login and user Verification

Users inputs the IP address of WAN port (dial #*111# to get the IP by dialogue machine) or the LAN port (default IP is 192.168.10.1) in the IE browser to login the system by WEB, user can select the login mode according to the real situation.

Administrator account: the default user name and password both are “admin”; this user can configure the system.



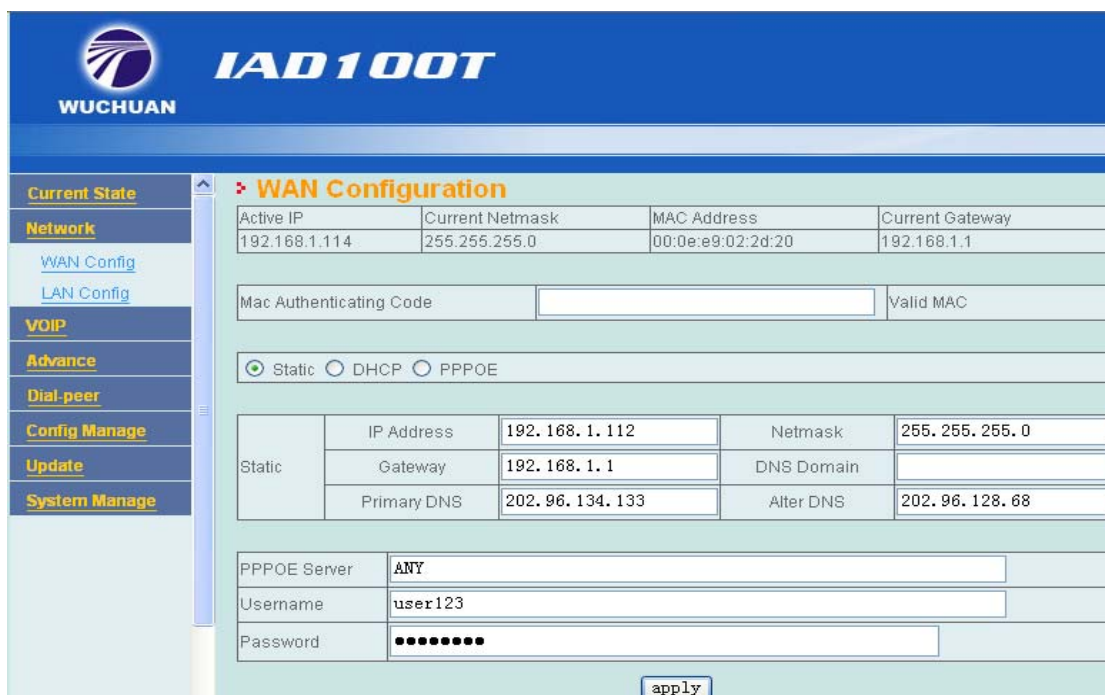
The screenshot shows the login interface of the IAD100T device. On the left is a sidebar menu with options: Current State, Network, VOIP, Advance, Dial-peer, Config Manage, Update, and System Manage. The main area is titled 'LOGON' and contains a form with 'Username: admin' and 'Password: [masked]' fields, followed by a 'Logon' button.

Note: after inputting username and password, user press “Enter” directly to enter the page.

3.2.2 Network Configuration

Note: after configuring the IP of WAN correctly, gateway can connect Internet

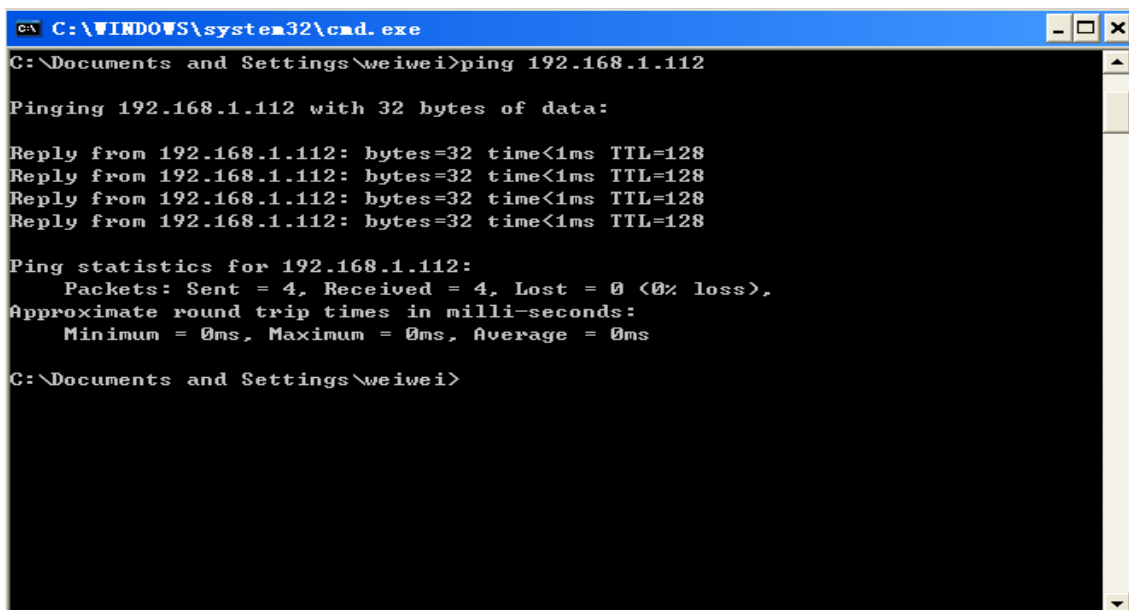
If your LAN router opens DHCP server function, WAN IP of gateway can get IP address without needing make network configuration (the default configuration for WAN is DHCP client mode, the default LAN IP is 192.168.10.1); If your LAN router does not have open DHCP server function. You need configure the WAN port to the static IP address.



The screenshot shows the 'WAN Configuration' page. It includes a table for current settings: Active IP (192.168.1.114), Current Netmask (255.255.255.0), MAC Address (00:0e:e9:02:2d:20), and Current Gateway (192.168.1.1). Below this is a section for 'Mac Authenticating Code' and 'Valid MAC'. The configuration mode is set to 'Static' (selected), with options for DHCP and PPPOE. A table for static configuration shows IP Address (192.168.1.112), Netmask (255.255.255.0), Gateway (192.168.1.1), Primary DNS (202.96.134.133), and Alter DNS (202.96.128.68). At the bottom, there are fields for PPPOE Server (ANY), Username (user123), and Password ([masked]), followed by an 'apply' button.

When configuring static IP, the static IP must be in the same IP segment with the IP of LAN router.

After configuring, you should check if the network is working: open the running mode, and input “cmd”, press “Enter” button, and then input the IP of gateway, press “enter”:



```

C:\WINDOWS\system32\cmd.exe
C:\Documents and Settings\weiwei>ping 192.168.1.112

Pinging 192.168.1.112 with 32 bytes of data:

Reply from 192.168.1.112: bytes=32 time<1ms TTL=128
Reply from 192.168.1.112: bytes=32 time<1ms TTL=128
Reply from 192.168.1.112: bytes=32 time<1ms TTL=128
Reply from 192.168.1.112: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.112:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\Documents and Settings\weiwei>
  
```

If ping succeed, that means the network is connected. Then only need to configure SIP account.

3.2.3 SIP Server configuration

User can configure Gateway and set the specific parameter of SIP protocol on this page;

SIP[Registered] Configuration			
Register Server Addr	0101hk.com	Proxy Server Addr	
Register Server Port	6058	Proxy Server Port	
Register Username	90601748	Proxy Username	
Register Password	*****	Proxy Password	
Domain Realm		Local SIP Port	5060
Phone Number	90601748	Register Expire Time	60 seconds
Detect Interval Time	60 seconds	RFC Protocol Edition	RFC3261
DTMF Mode	DTMF_RFC2833	Server Type	common
Encrypt Key		User Agent	Voip Phone 1.0
☒ Enable PRACK		☐ Signal Encrypt	
☐ Auto Detct Server		☐ RTP Encrypt	
☒ Enable Keep Authentication		☐ Enable Session Timer	
☒ Enable Register		☒ SIP(Default Protocol)	

Configuration Explanation:

SIP[Registered] Configuration Gateway SIP registers status indictor. The character ‘Registered’ will show after you register successful, otherwise the character “Unregistered” will show.

Register Server Addr: 0101hk.com Set the SIP register server address, it can be the IP address or the domain name.

Register Server Port: 6058 Set the SIP register server port.

Register Username	90601748
-------------------	----------

Set the register username. Usually it's the same as the configured Phone Number. Some special SIP servers will set the configuration that has the different name with the phone number.

Register Password	****
-------------------	------

Set the Register Password for the register account.

Proxy Server Addr	192.168.1.1
-------------------	-------------

Configured IP address (usually SIP service provider provides user with service of proxy server and register server with have the same configuration, so the configuration of proxy server usually is the same with that of register server, but if the configurations of them are different, then each server's configuration should be modified)

Proxy Server Port	5060
-------------------	------

The configured signal port for SIP proxy server.

Proxy Username	
----------------	--

The configured account name for proxy server.

Proxy Password	
----------------	--

The configured password for proxy server.

Phone Number	90601748
--------------	----------

Set SIP phone number for register.

Domain Realm	
--------------	--

The configured SIP register domain realm. It

must be accordant with the register server address. If the SIP terminal port is not default 5060, the back should be need add the detail port number e.g.:0101hk.com:6058.

Local SIP Port	5060
----------------	------

The configured local SIP signal port, the default is 5060(this port will go into effect immediately; the SIP call will use the modified port for communication after modification).

Register Expire Time	60	seconds
----------------------	----	---------

The configured expire time is 60 seconds. If the expire time that server requires is more or less than the configured by the gateway, the gateway can automatically modify it to the limit time and register.

Detect Interval Time	60	seconds
----------------------	----	---------

The configured detection interval time of the server, if the gateway enables SIP detection server function, the gateway will detect once for whether the server has response every detection internal time.

RFC Protocol Edition	RFC3261
----------------------	---------

The configured using protocol version. When the gateway needs to communicate with the gateway using SIP1.0 such as CISCO5300, the RFC2543 configuration is necessary, and then the communication will be normal. The default is using RFC3261.

DTMF Mode	DTMF_RELAY
-----------	------------

DTMF sending mode configuration, three kinds: the different service provider may provide the different mode.

☐ Auto Detct Server
--

Configured automatic detection server of the gateway.

☒ Enable Register

Configured enable/disable register. Successfully register when you select "Enable".

☒ Enable PRACK
--

Support SIP prack function or not. Advise to use default configuration, the configure should guide by the professional technician.

☐ Signal Encrypt

Support Signal Encrypt function or not

- ☐ RTP Encrypt Support RTP Encrypt function or not
- ☒ Enable Keep Authentication Whether let the gateway support and register to take authentication to send directly, in this way the devices does not need to do the authentication with the server each time any more, server receives register request with Authentication then will directly send back the confirmative message;
- ☐ Enable Session Timer Support RFC4028 or not
- ☒ SIP(Default Protocol) Configure SIP protocol as default or not

Note: After the aforesaid Network and VoIP configuration, if the register is successfully, the REG light will be on(if the light is fluttering continuously, it means the registration unsuccessfully), the user can be able to make VoIP calls through the register and proxy, with # after finish dialing number. If you need to advanced configuration, please see the details in advanced configuration manual for you reference.

3.24 IAX2 Configuration

IAX2[Unregistered] Configuration	
IAX2 Server Addr	
IAX2 Server Port	4569
Account Name	
Account Password	
Phone Number	
Local Port	4569
voice Mail Number	0
Voice mail text	mail
Echo Test number	1
Echo Test text	echo
Refresh Time	60
☐ Enable Register	☐ Enable G.729
☐ IAX2(Default Protocol)	

- IAX2 Server Addr IAX2 server address can be domain name
- IAX2 Server Port IAX2 server port (register port of public server)
- Account Name Account name (user name of your SIP account)
- Account Password Account password (password for your IAX2account)
- Phone Number Register phone number (phone number of your IAX account)
- Local Port Local IAX monitor port (signal port of local)
- voice Mail Number If the IAX supports the voice mail number, but your username of the voice mail is letters which you can not input with gateway, then use the number to replace your username.

Voice mail text	If IAX support voice mail text, configure the domain name of your voice mail here.
Echo Test number	If Echo test number and number is test form, configure the test number to replace the next format. This function can be tested by platform or terminal to see if the call is normal or not from
Echo Test text	Echo test number in text format
Refresh Time	IAX register refresh time
☐ Enable Register	Enable or disable register to the server
☐ IAX2(Default Protocol)	Set IAX2 as the default protocol. That means if choose this option, user picks up and dial number, it will be communicated through IAX2 protocol. The default of gateway is SIP protocol; this configuration it means when you make a phone call, the receiver wouldn't be affected. If user configures this item, it won't be used SIP, but IAX, if user wants to give a call by SIP simultaneously, then can configure the function of prefix substitution in the item of Dial peer and achieve the SIP call.
☐ Enable G.729	Enable / disable to G729 (using G729 speech coding mandatory consultations)

3.3 Save and clear the configuration

Enter into WEB page, "Config Manage->Save Confi to save the configuration

Enter into WEB page, Config Manage->Clear Confi to clear the configuration, come back to default configuration

4. How to use

After gateway register successfully we can make phone call

4.1 Dial number

Dial VOIP number according to dial peer, for example: code + telephone, 0 + mobile number, end up with "#"

Use lifeline to dial the PSTN number, press "*" first and transfer to the lifeline, after hear the dialing tone, then dial the PSTN number.

Dial IP address, for example, you can press #192*168*1*179# to dial IP address 192.168.1.179.

4.2 Call transfer: blind transfer, attend transfer

4.2.1 blind transfer

Press "Flash+*+B's number" to transfer the call from A directly.

4.2.2 attend transfer

Press "Flash" or "forked spring" to lock the call with temporarily, then call me to attend and ask whether to answer A's incoming call. Middleman can hang up directly to finish the call transfer. So B now can talk with A. If B say no, just press "Flash" or "forked spring" to switch the call back and talk with A again.

4.3 Three way call

When calling A, press "Flash" to lock the calling with A, then call B, after putting through with B, press "Flash" again and turn back the calling with A, at last press "*" to complete the three way call.

Note: The SIP server must be support when using the call transfer and three way call, and make

sure to enable the options “Enable call transfer, Enable call waiting, Enable three way calls.

5. Config via Phone Keyboard

5.1 Basic Config

Input #****#	Reboot the gateway
Input #*000#	Clear configuration
Input #*100#	Gateway works at static IP mode
Input #*101#	Gateway works at DHCP mode
Input #*102#	Gateway works at PPPOE mode
Input #*103#	Gateway works at Bridge mode
Input #*104#	Gateway works at Router mode
Input #*111#	Get the WAN IP address from the voice message
Input #*222#	Get the gateway's IP phone number from the voice message

5.2 Call forward config

#*91800#	Config call forwarded to 800 when busy tone.
#*92800#	Config call forwarded to 800 when no answer.
#*93800#	Config call forwarded to 800 always.
#*90#	Disable call forward function.

5.3 IP address config

Firstly dial “#*100#”, switch into statistic IP address mode and config IP address by following steps:

#*50192*168*1*77#	Config wan statistic IP as 192.168.1.77
#*51192*168*1*1#	Config wan statistic's gateway default as 192.168.1.1
#*52192*168*1*1#	Config wan statistic DNS as 192.168.1.1
#*53255*255*255*0#	Config wan statistic subnet mask as 255.255.255.0

[After finishing IP config, reboot the gateway to activate the config.](#)

6. Default Factory Setting

- ◆ WAN defaults to get IP address through the DHCP mode, if it's switched to Static mode, the IP address is 192.168.1.179, and the LAN IP address is 192.168.10.1, the DHCP service and NAT service for LAN

has been defaulted to turn on.

- ◆ Default protocol is SIP, default SIP port is 5060
- ◆ Default HTTP port is 80, default TENLET port is 23
- ◆ Default to end the dialing number with “#”
- ◆ Default user is admin and guest

7. FAQ

7.1 The gateway can't assign WAN or LAN IP -----

When the gateway is in the NAT mode (no bridge mode), please don't assign the WAN and LAN IP with the same net segment e.g., if the LAN IP address is 192.168.1.X, don't set the WAN address in the same segment of 192.168.1.X

7.2 After configure the WAN static IP, why it return to the primary IP when confirm the modified local IP -----

The cause may be that the WAN and LAN are in the same net segment. Try to change the LAN IP address to the other segment.

7.3 Why can't log in gateway by Telnet -----

Maybe because of the private address in the gateway and PC, but the two IP address aren't in the same net segment, e.g. the gateway uses the address 192.168.1.179, the PC uses the address 192.168.10.180, try to add a IP 192.168.1.xx for PC

7.4 After configuring as the manual, but still can't dial normally? ---

Check the network, Telnet the gateway, then use Ping or tracert command to access the exterior network to try. After the gateway connected well, the fault operation and pause the upgrade maybe caused the gateway dead, or can not log in the WEB page, or can not hear the dialing tone when picking up the receiver, firstly should check the network and the gateway connection. If the network is connected correctly, but the problem still exist, we can diagnose the gateway is dead because the error software, try to reboot the gateway.

If the problem is exist, restart the gateway to enter the Safety mode at last, telnet 192.168.10.1 to enter the safety model in 5 seconds, and then enter TFTP to upgrade and recovery according to the message. To know more details, please see the advanced configuration manual.

7.5 Why does it encounter busy tone when pick up phone?

Our new edition IAD100T gateway add line detection function, when not any account is registered or without connecting with PSTN line, gateway will suggest a busy tone prompt to warn that users cannot make calls normally.

If you meet any problem when you using our product, please visit our website www.5111soft.com the technological FAQ page to find out the answer which you need, if not, please send your request by mail or telephone to our technical support department for help, thanks.