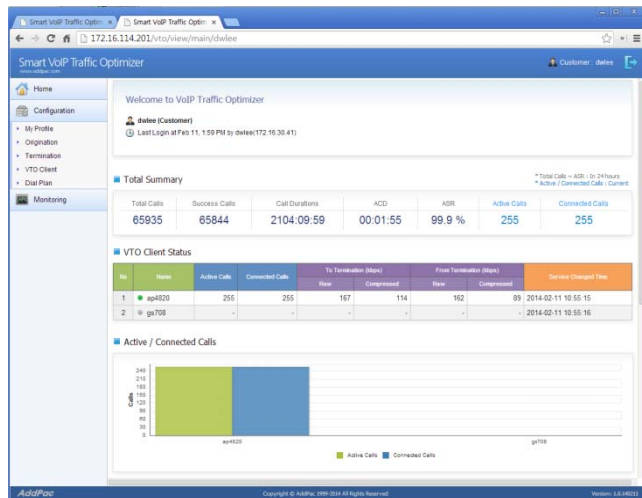


# Multi-SIM GSM Gateway Human Behavior Service for Anti-SIM Block



## **AddPac**

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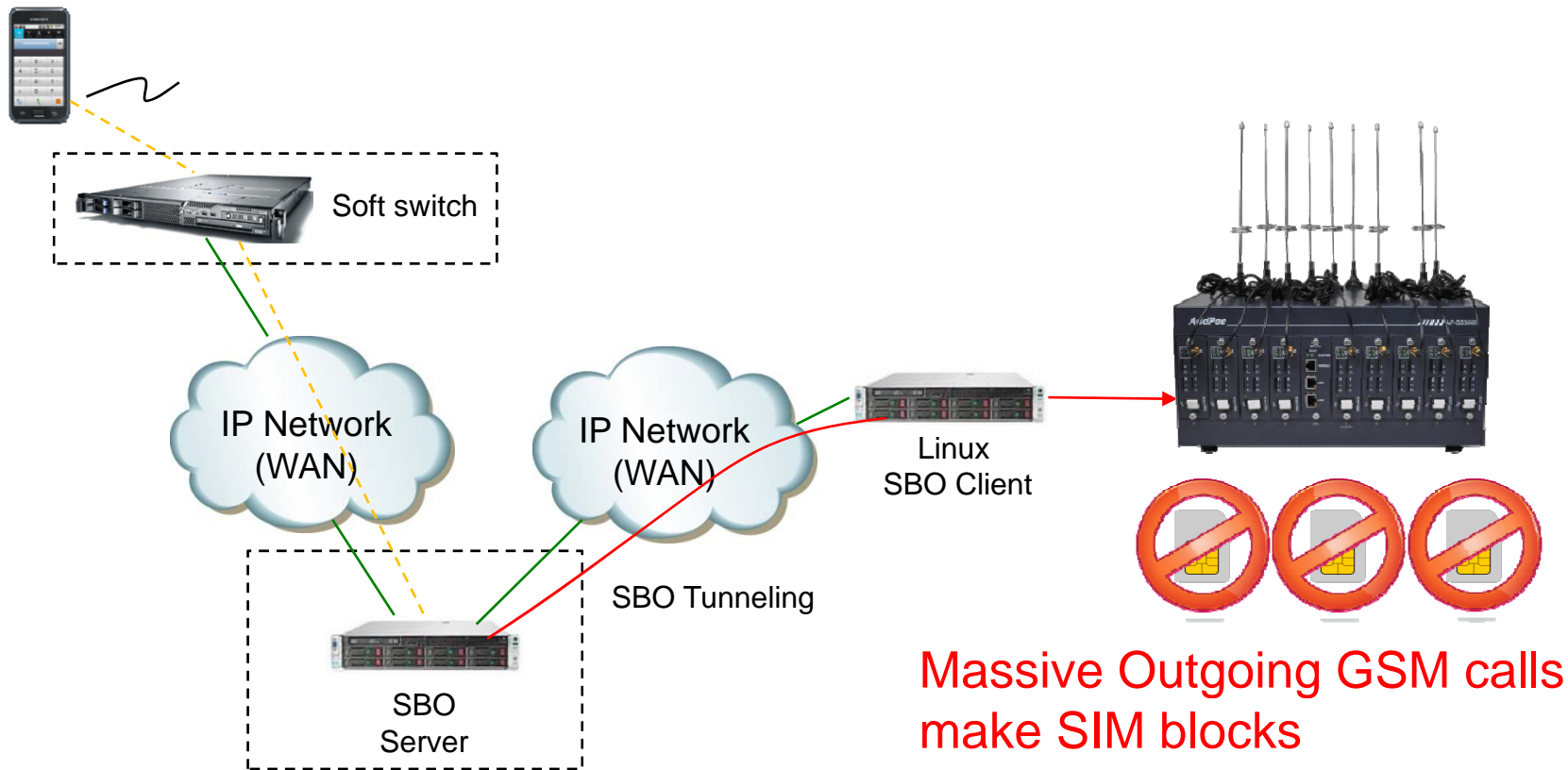
# Contents

- Current SIM Block Problems
- Do you want Anti-SIM block?
  - Human Cellular Phone Call Pattern Modeling
- Human Cellular Phone Call Pattern Modeling Solution needs Large SIM Pool
- Multi-SIM GSM Gateway with Human Behavior Features
- Who provides Smart Call Routing for GSM Gateways?
- Anti-SIM Block Function Roles
- Network Diagram
- Smart Web Manager for Human Cellular Phone Call Pattern Modeling

# Current SIM Block Problems

Other Vendor SBO + normal GSM gateway

Site A (Call Origination)



# Do you want Anti-SIM Block?

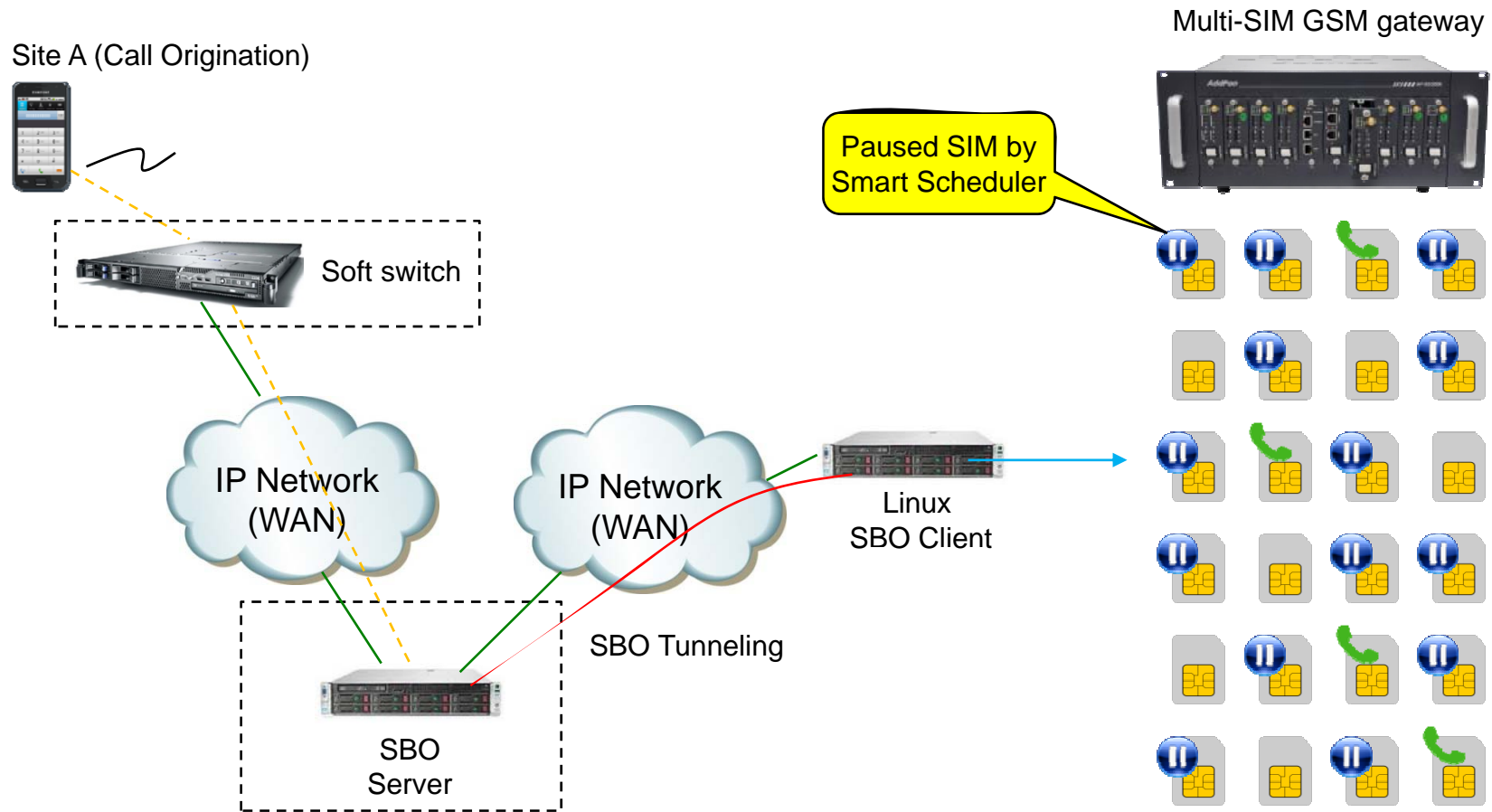
## → Human Cellular Phone Call Pattern Modeling

- Human Cellular Phone Call Pattern at GSM Gateway
  - Make Outgoing and incoming call
  - Real Call Connect for Incoming Call
  - Real Call Answer and Different Call Connected Time
  - Set Max Call Connection Time in day (Ex : 1 or 2 hour per SIM during 1 day)
  - Select the Most Idle(least usage) SIM Card for Termination Call
  - IMEI Auto Change (Using Registered IMEI not Fake)
  - Random Outbound Call Idle Interval
  - etc

# Human Cellular Phone Call Pattern Modeling Solution needs Large SIM Pool

- By limited GSM call quota on gateway, we need lots of GSM ports and SIMs for handling massive calls.
- If you start new GSM call termination business,
  - (Solution) Choose Multi-SIM GSM gateway which has human behavior function.
- If you already have single SIM GSM gateways,
  - (Solution) Upgrade it to support human behavior function and operate more GSM gateways for massive calls.
  - (Problem) It is necessary to support smart call routing from softswitch to gateways.

# Multi-SIM GSM Gateway with Human Behavior Feature



Smart Human Cellular Phone Call Pattern Feature in Multi-SIM gateway provides Anti-SIM Block.

# Who provides Smart Call Routing for GSM Gateways?

- **AddPac VTO Service** provides the **Smart Call Routing** from Softswitch to GSM gateways.
- Without VTO service, terminating call to unavailable gateway by exhausted call quota will be failed and decrease ASR (Answer Seizure Ratio).
- VTO Server gathering port status from gateways for load balancing and routing to available gateways.
- Also, the VTO server controls incoming call traffic from Softswitch to increase ASR.

# Anti-SIM Block Function Roles

## VTO (VoIP Traffic Optimizer) Service

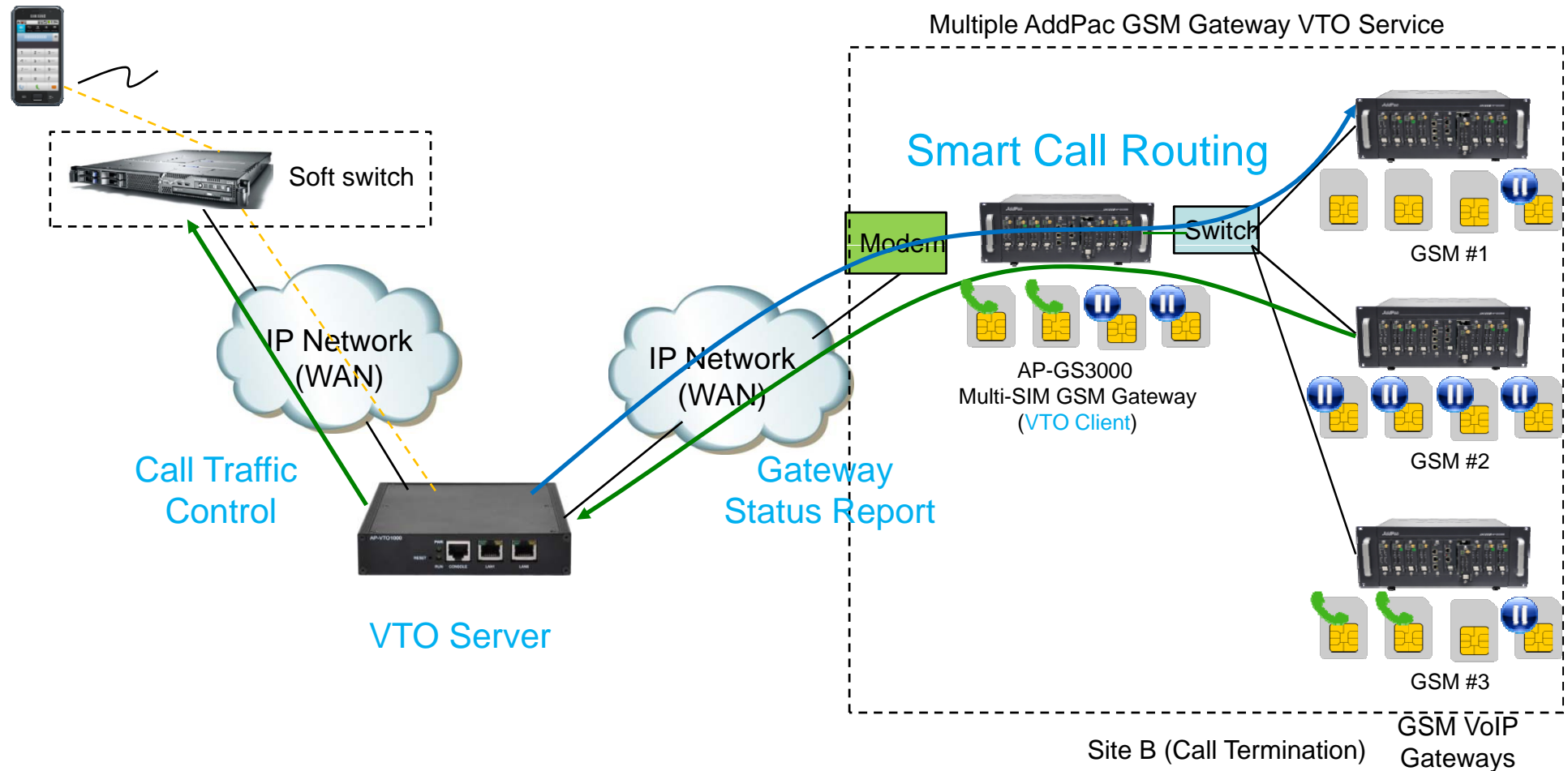
- GSM Gateway
  - Use Human Cellular Phone Call Pattern Model
  - Report Service State to VTO Client
- VTO Client
  - Relay GSM Gateway Service State Information to VTO Server
- VTO Server
  - Act as SIP Proxy Role + VTO Server Role
  - Maintain GSM gateway Service State
  - Call Routing using dial-plan and GSM Service State




# Anti-SIM Block Operation Network Diagram

VTO (VoIP Traffic Optimizer) Service

Site A (Call Origination)





# Smart Web Manager for Human Cellular Phone Call Pattern Modeling (Voice Call + SMS Call)

# Human Behavior Call Pattern Modeling Features

- **Auto Mobile Management Call Generation**
  - Support inter call idle interval timer.
  - Support management quota for intentional inbound call generation
  - After disconnection of a general call, a intentional inbound call is created (the least hunted port is selected).
  - If a management quota is exhausted, no more intentional call is created.
- **Intentional Call Inbound Option**
  - Support automatic random ring timer.
  - Support random call connection time.
- **Auto Mobile Management SMS Generation**
  - Support SMS management quota for intentional inbound SMS.
  - Support SMS transmission period.
  - Support management SMS content.
  - *For using this features, my phone number should be gathered by USSD code.*

# Inter Call Idle Interval

Smart Web Manager  
www.addpac.com

**System** +

**Basic** +

**Advanced** -

- Port Control
- Mobile PINs
- Mobile USSD
- multi-SIM Manager
- multi-SIM Balance
- multi-SIM USSD
- Fax
- Service**
- Filtering
- Security
- Radius
- SNMP
- WEB Callback
- Mobile Callback

**Miscellaneous** -

- Mobile Summary
- System Status
- Mobile Status
- Mobile Port Statistics
- Call Log

**Service**

**Application Services**

- Enable Telnet Server Port  (default 23, 1-65535)
- Enable HTTP Server Port  (default 80, 1-65535)
- Enable FTP Control Port  (default 21, 1-65535)  
Data Port  (default 20, 1-65535)
- Enable Syslog Primary Server  Port  (default 514)  
Secondary Server  Port  (default 514)  
Log Level   
Log Command

**Timer**

- Inter Digit Time  sec (default 3, 1-600)
- Mobile Error Delay Disconnect  sec(disable 0, 0-600)
- Mobile Inter Call Idle Interval**  sec(disable 0, 0-600)

**Call Service**

- Transfer  Hook-Flash  Not-assigned
- Hold  Hook-Flash  Not-assigned

**SIP Transfer**

- Mode  blind  Attended

**Skype Server**

- Use  Enable  Disable

**Hunt**

- Algorithm

**Mobile Inter Call Idle Interval**  
- Inter Call Idle Interval timer(sec)

# Mobile Call Generator

Smart Web Manager  
www.addpac.com

**Mobile Call Generator**

**Inbound Call Receive Option**  
- Max Connection time(sec)  
- random number generation(10 ~ MAX)

**Inbound Call Max Connection Time**  (sec, default=10, 10~60) random number (10 ~ max-connection-time)

**Management SMS Content**

**Management SMS Content**  
- for intentional inbound SMS

**USSD Code for getting my phone number (max carrier = 5)**

Carrier ID	USSD String	Control
<input type="text"/>	<input type="text"/>	<input type="button" value="Add"/>

**USSD Code**  
- for gathering my phone number  
- my phone number is used for automatic inbound call generation

**Miscellaneous**

- Mobile Summary
- System Status
- Mobile Status
- Mobile Port Statistics
- Call Log
- System Log
- Ping
- Mobile Band
- BTS Selection
- GSM BTS Info
- [CDMA]Mobile BS Info
- multi-SIM Switch Log
- SIM Traffic Monitor
- Mobile Call Generator**
- SIM Diagnosis

# Management Quota(1/3)

Smart Web Manager  
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**Mobile LCR / Tariff Policy**

**Management voice Quota**  
- quota for Intentional inbound call generation

**Management SMS Quota**  
- quota for Intentional inbound SMS generation  
- transmit period (min)

**Usage of Management Quota**  
- usage of voice management quota  
- usage of SMS management quota

**Tariff Policy**

ID	Time Interval	Block	Restore Policy	Billing Unit(voice)	Free Quota	Management Quota (min)	Control					
	Condition	Mode(mSIM)	Type	RestoreDay	First(sec)	Others(sec)	Voice(min/count)	SMS(E.A.)	voice(min)	SMS (E.A./TX period)		
0	n.a	quota based	non-blocking	daily	n.a.	60	30	100	100	10	10 / 2	<input type="checkbox"/> Delete Add
0	n.a.	quota based	non-blocking	none	0							<input type="checkbox"/> Delete Add

**SMS Notify**

Over Voice Quota: PhoneNumber, Subject

Over SMS Quota: PhoneNumber, Subject

**TariffPort & Usage**

Port	Tariff Policy	Voice(sec/count : %)	SMS(count : %)	Voice Management(sec : %)	SMS Management(count : %)	Reset
P1:0	N.A.	0/n.a (0%)	0/n.a (0%)	0/n.a (0%)	0/n.a (0%)	<input type="checkbox"/> All

# Management Quota(2/3)

**Smart Web Manager**  
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**Mutli SIM Port Management**

**Rotation Policy**

- Rotation policy should be configured to tariff-based.
- Tariff policy should be configured to quota-based (previous page).

**multi-SIM Rotation Policy**

ID	Policy	Tariff Policy	Time Interval	Period (10~3600 mins)	Auto Switch Threshold		Control
					CCF (count)	CSCD (count / sec)	
0	tariff-based	0	n.a.	n.a.	15	10 / 10	<input type="checkbox"/>

\* CCF(Consecutive Call Fails) \* CSCD(Consecutive Short Call Duration)  
 \* operational status : idle(Idle) active(Act) Blocked (BLK) over period(OP) SIM detached(SD) over quota(OQ/OQ) over CCF (OCF) over CSCD (OSD) SIM operation fail (SOF)  
 \* Oper.: operational status

- Apply rotation policy and tariff policy to the port.  
- Confirm the configured rotation policy and remains.

**multi-SIM status**

Port	Oper.	SIM Bank(0-7)								Rotation ID	Rotation Policy	Remains.	CCF	CSCD
		Act	Idle	Idle	Idle	Idle	Idle	Idle	Idle					
P0:0	Act													
	Ctrl.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
	Group1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0	quota-based (60 mins)	(3600 secs)	0	0
	Group2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	none	no policy	--		

P0:0

# Management Quota(3/3)

Smart Web Manager  
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System +  
Basic +  
**Advanced +**  
Miscellaneous -

- Mobile Summary
- System Status
- Mobile Status
- Mobile Port Statistics
- Call Log
- System Log
- Ping
- Mobile Band
- BTS Selection
- GSM BTS Info
- [CDMA] Mobile BS Info
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- SIM Diagnosis

## Mobile Summary

Usage of Management Quota (voice & SMS)

Port	Mobile Status			Voice Quota		Statistics			Call Info			SMS Info			Management Quota								
	Carrier ID	Register	Signal Strength	SIM	no Carrier	Quota (sec)	Remains (sec)	ASR(%)	ACD(sec)	Status	Totals	Success	Con. Fails	Con. Short Dur	Status	Tx	Success	TxTotal	RxTotal	V.Quota(sec)	V.Remains(sec)	V.In(sec/count)	SMS(count/quota)
P4:0/0				O		6000	6000													600	600	0/0	10/10
P4:0/1				X		6000	6000													600	600	-/-	0/10
P4:0/2				X		6000	6000													600	600	-/-	0/10
P4:0/3		UNREG(No Searching)	0dB	X	0	6000	6000	0%	0	Idle	0	0	0	0	idle	0	10	0		600	600	-/-	0/10
P4:0/4				X		6000	6000													600	600	-/-	0/10
P4:0/5				X		6000	6000													600	600	-/-	0/10
P4:0/6				X		6000	6000													600	600	-/-	0/10
P4:0/7				X		6000	6000													600	600	-/-	0/10
P4:1/0				O		-1	-1													-1	-1	0/0	0/-1
P4:1/1				X		-1	-1													-1	-1	-/-	0/-1
P4:1/2				X		-1	-1													-1	-1	-/-	0/-1





# Thank you!

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