Push Proxy Gateway (PPG)

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유원재

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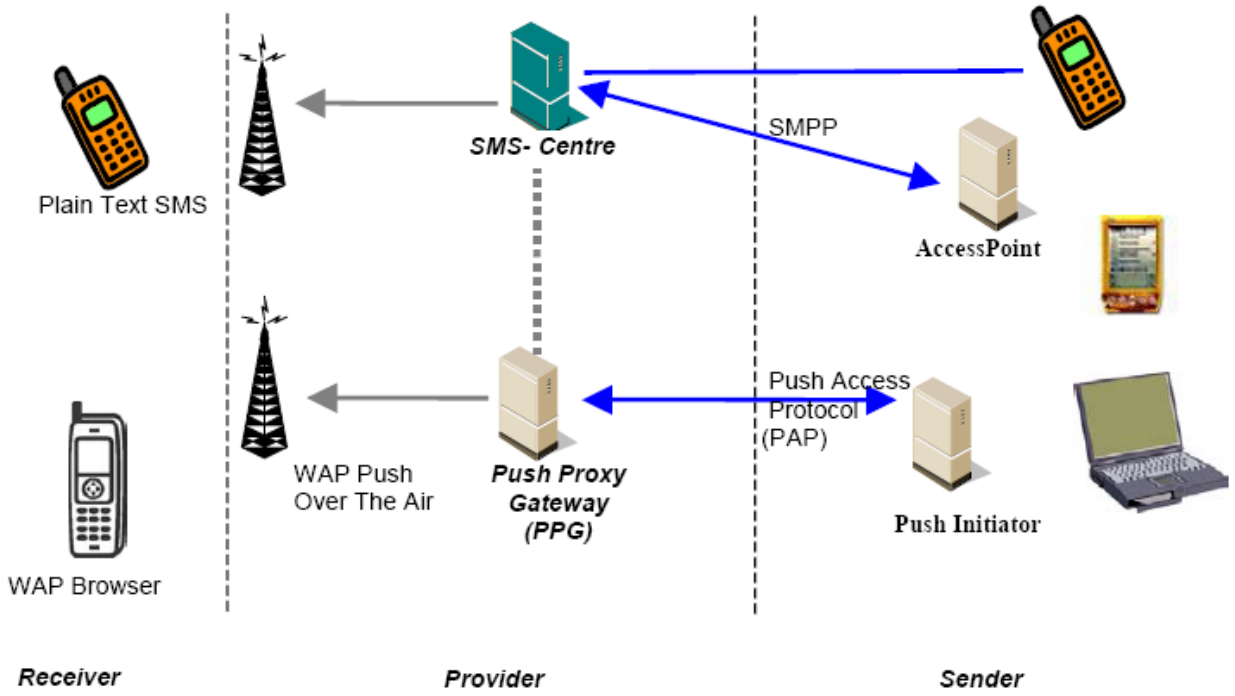
1. Term & Definition for PPG

CPI	Capabilities and Preference Information
OTA	Over The Air
OTA-HTTP	(Push) OTA over HTTP
OTA-WSP	(Push) OTA over WSP
IWF	Inter Working Function
PAP	Push Access Protocol
PI	Push Initiator
PO-TCP	PPG Originated TCP connection establishment method
SIA	Session Initiation Application
SIR	Session Initiation Request
TO-TCP	Terminal Originated TCP connection establishment method
WAP	Wireless Application Protocol
WSP	Wireless Session Protocol

Push Proxy Gateway (PPG)

2. PPG & SMS



- Multi-recipient addressing: the ability to address multiple intended recipients with the same message.
- Alternate addressing: the ability to address a recipient using a phone number or a user defined identifier.
- The ability to target specific applications on the Push enabled handset
- Message delivery confirmation
- The ability to query the terminal capabilities of the intended recipient (if available) and tailor the push message accordingly.
- The ability to push MIME content type (including plain text)
- Developer control of priority of delivery
- Cache control – control the cache storage area in the push capable terminal.

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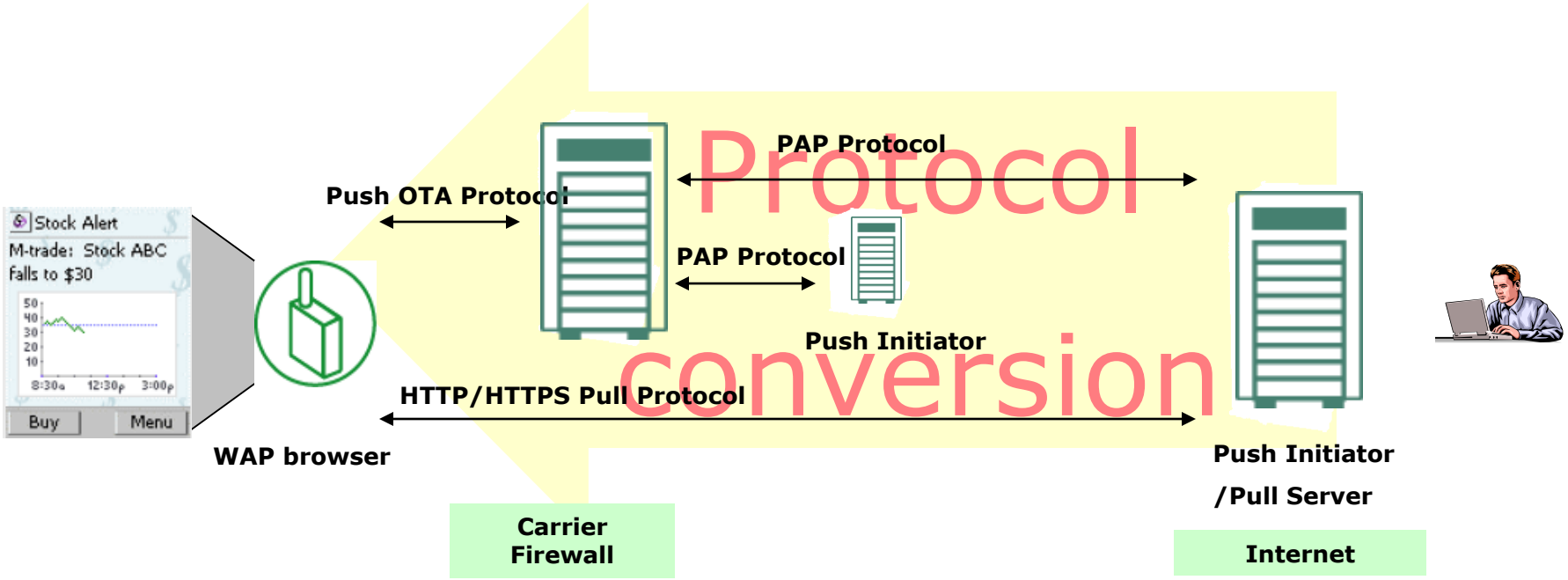
3. HTTP Push vs HTTP Pull Technology & OTA-HTTP overview



1) Push architecture - On client/Server model, transmit information to a device without a user request.

2) Pull architecture - A user enters a URL, and the server answers.

3) The Push Framework

A push operation accomplished by Push Initiator to transmit push content and delivery instructions to PPG, which then delivers the push content to client. The PPG users the Push Over-the-Air Protocol for delivery.

4) PI can be separated or co-located.

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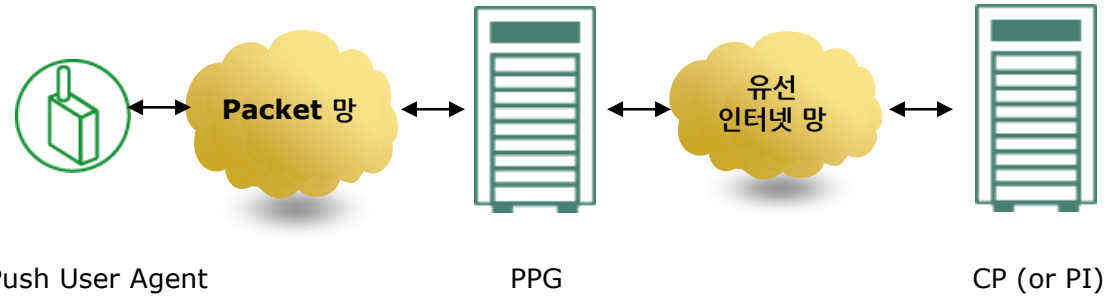
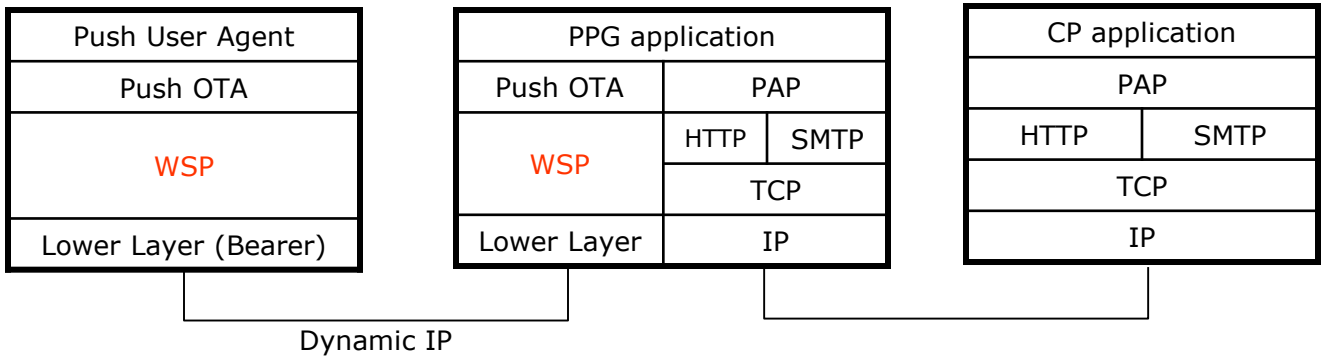
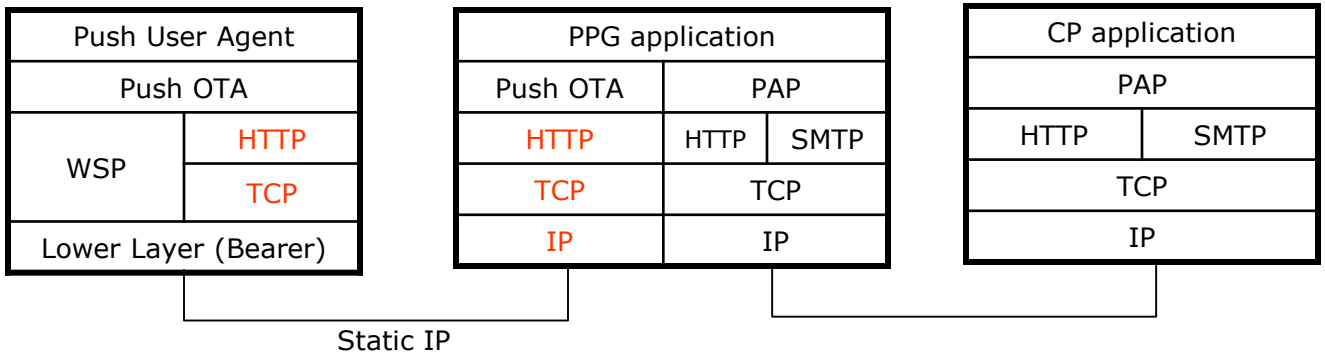
4. Protocol Stack between mobile & CP



1) OTA-WSP



2) OTA-HTTP



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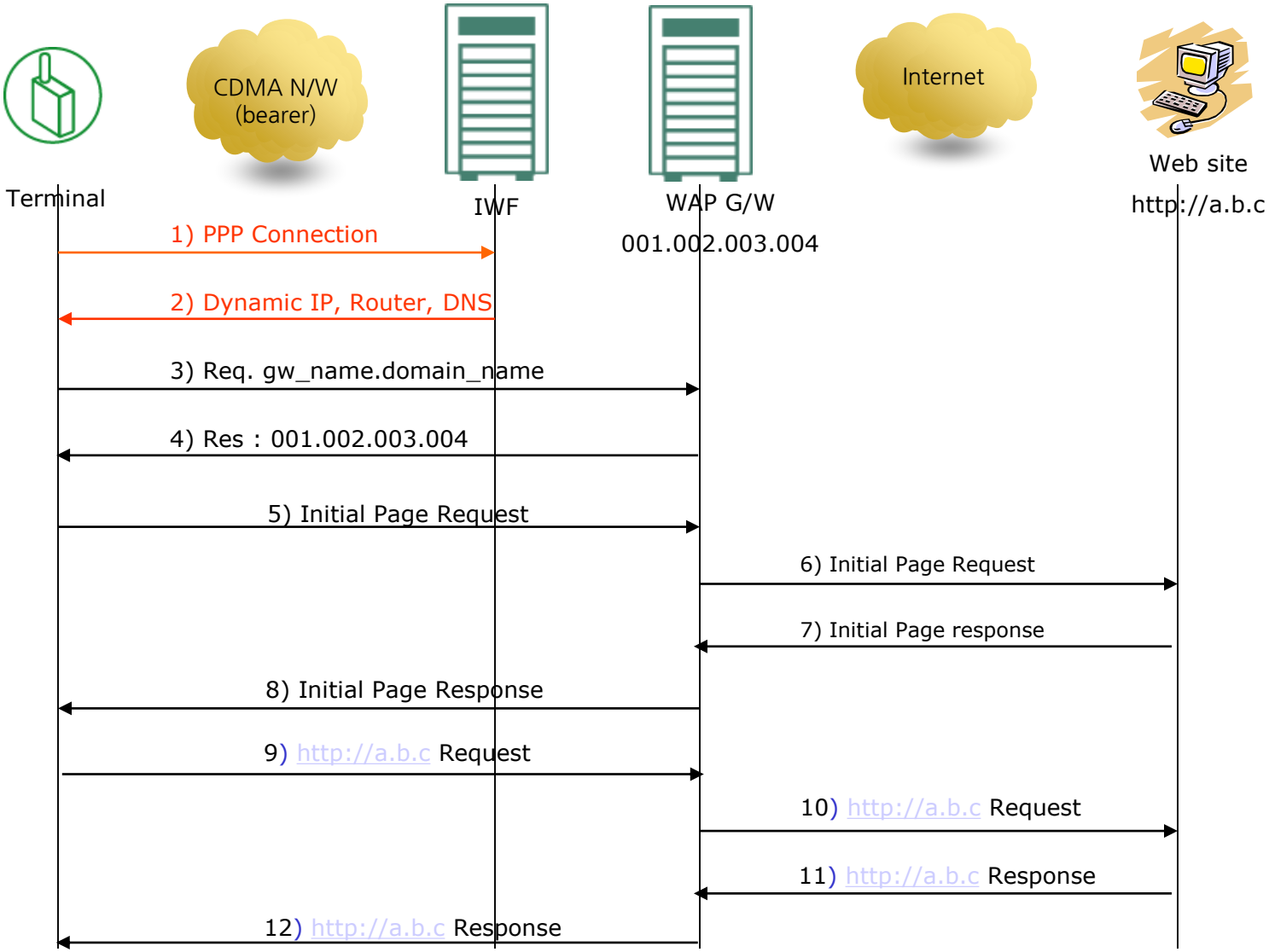
5. WAP scenario



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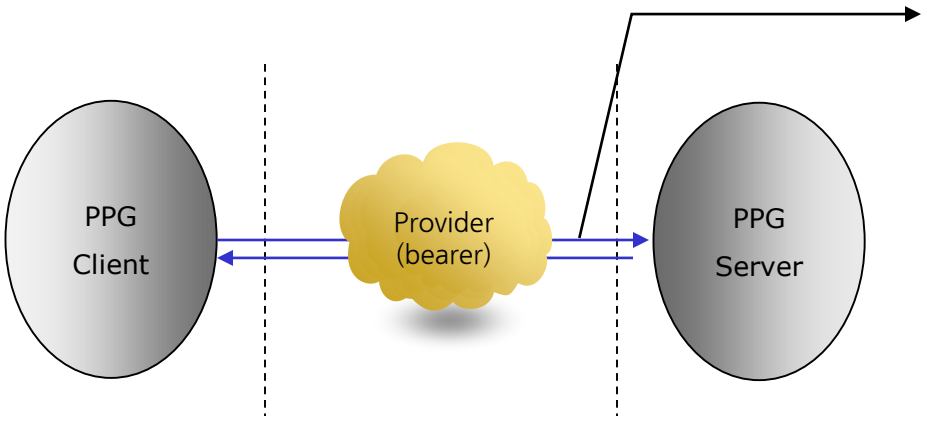
6. OTA-WSP Transportation flow (General)

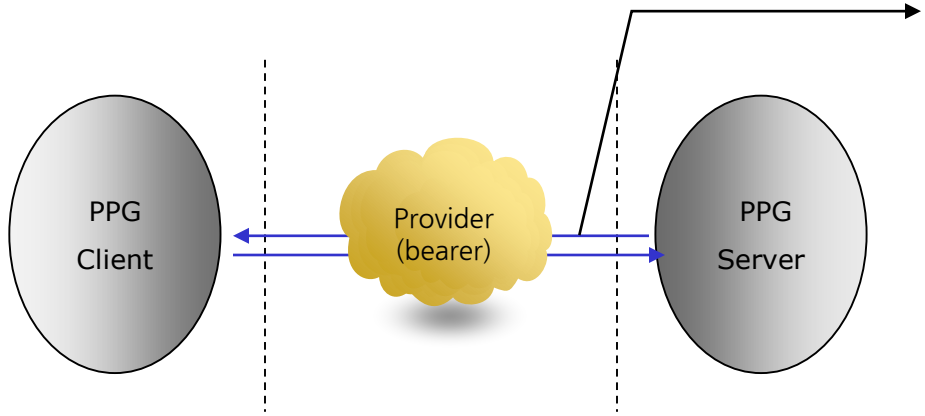
i) Connection



Connect primitive

1. Server Address
2. Client Address
3. Client Header, Capabilities
4. Application ID
5. Bearer indication

ii) Push



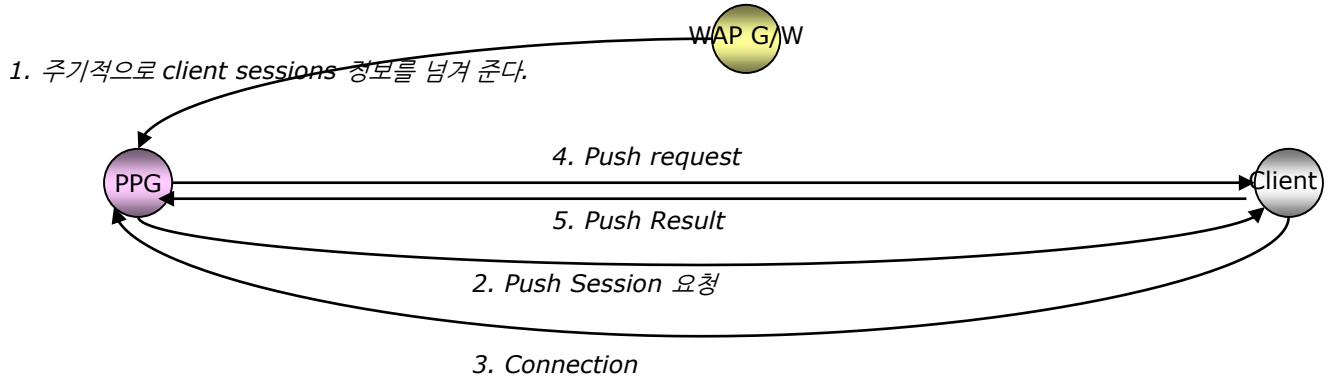
Push primitive

1. Server Push ID
2. Client Push ID
3. Authenticated, Trusted, Last
4. Push Headers (Application ID)
5. Push Body (Content)

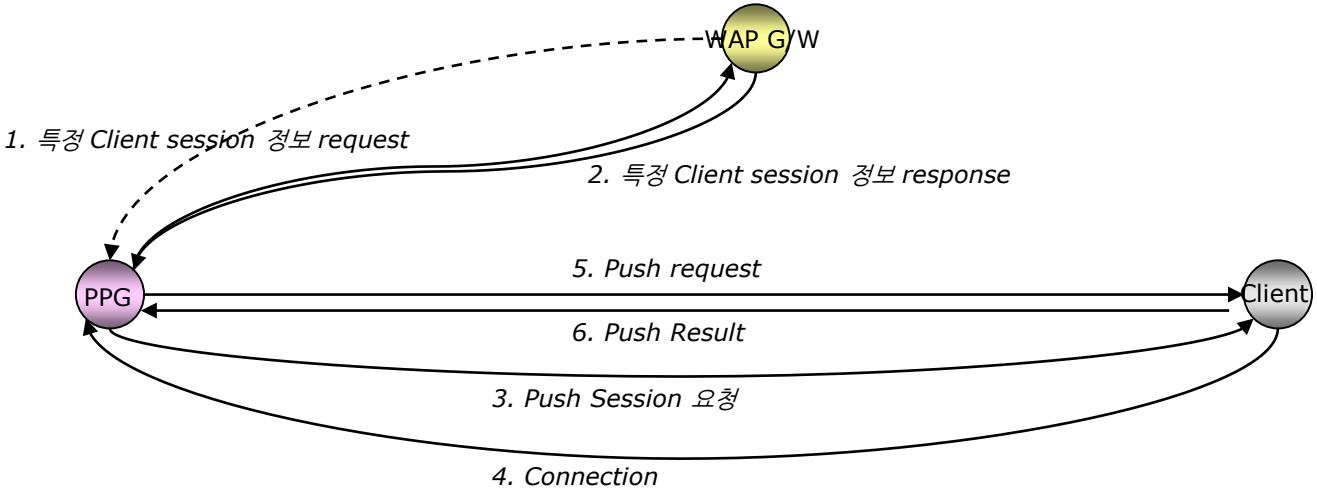
1) CONNECTION --> 2) PUSH

6. OTA-WSP Transportation flow (S사 사례, OTA-WSP 만을 적용)

i) Push Session 이 존재하는 경우 **–> 바로 push session를 통해 IP, Port를 얻어 connection을 맺는다.**

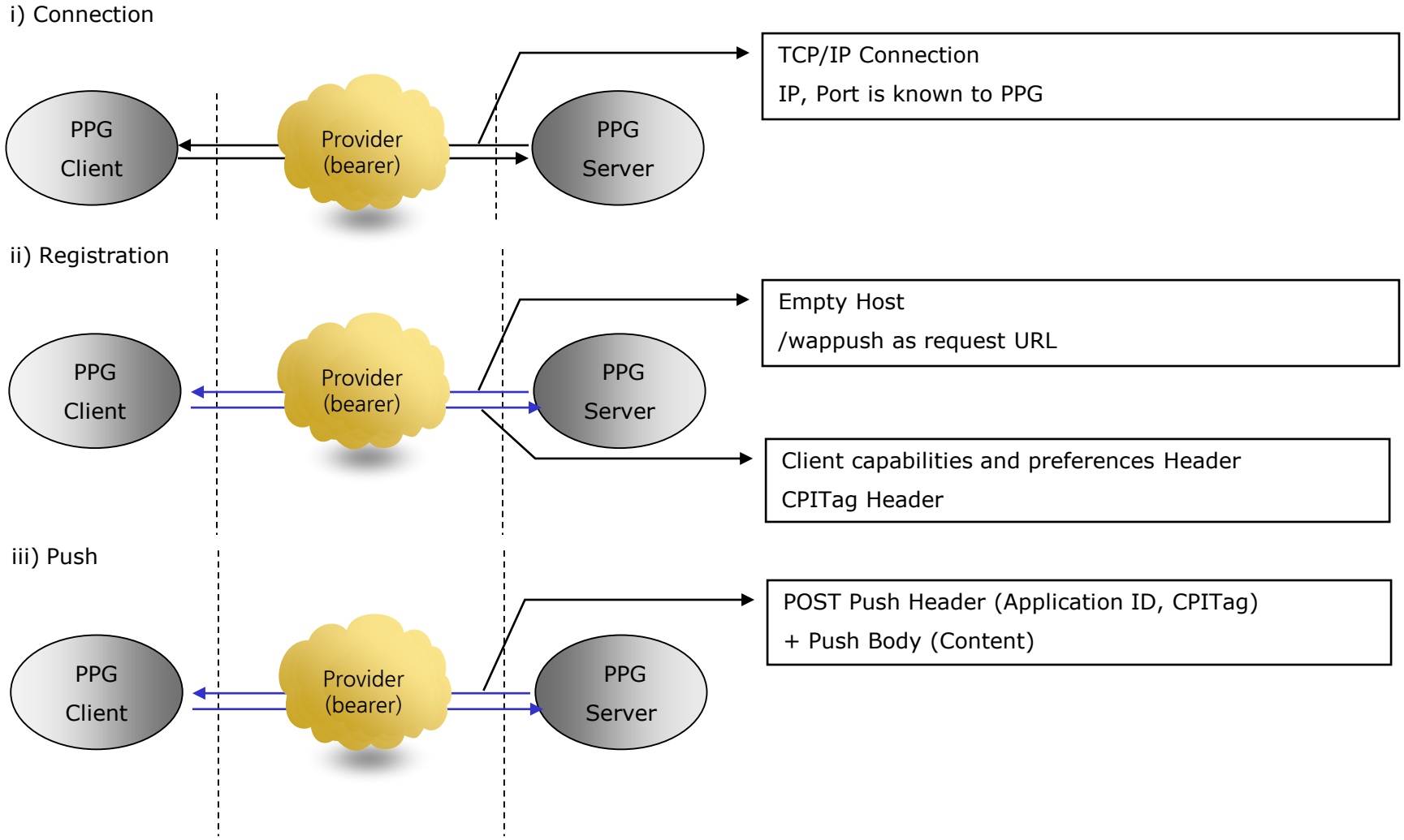


ii) Push Session 이 존재하지 않고 **WAP Session**이 존재하는 경우 **–> WAP session 를 통해 IP, Port를 얻어 connection을 맺는다.**



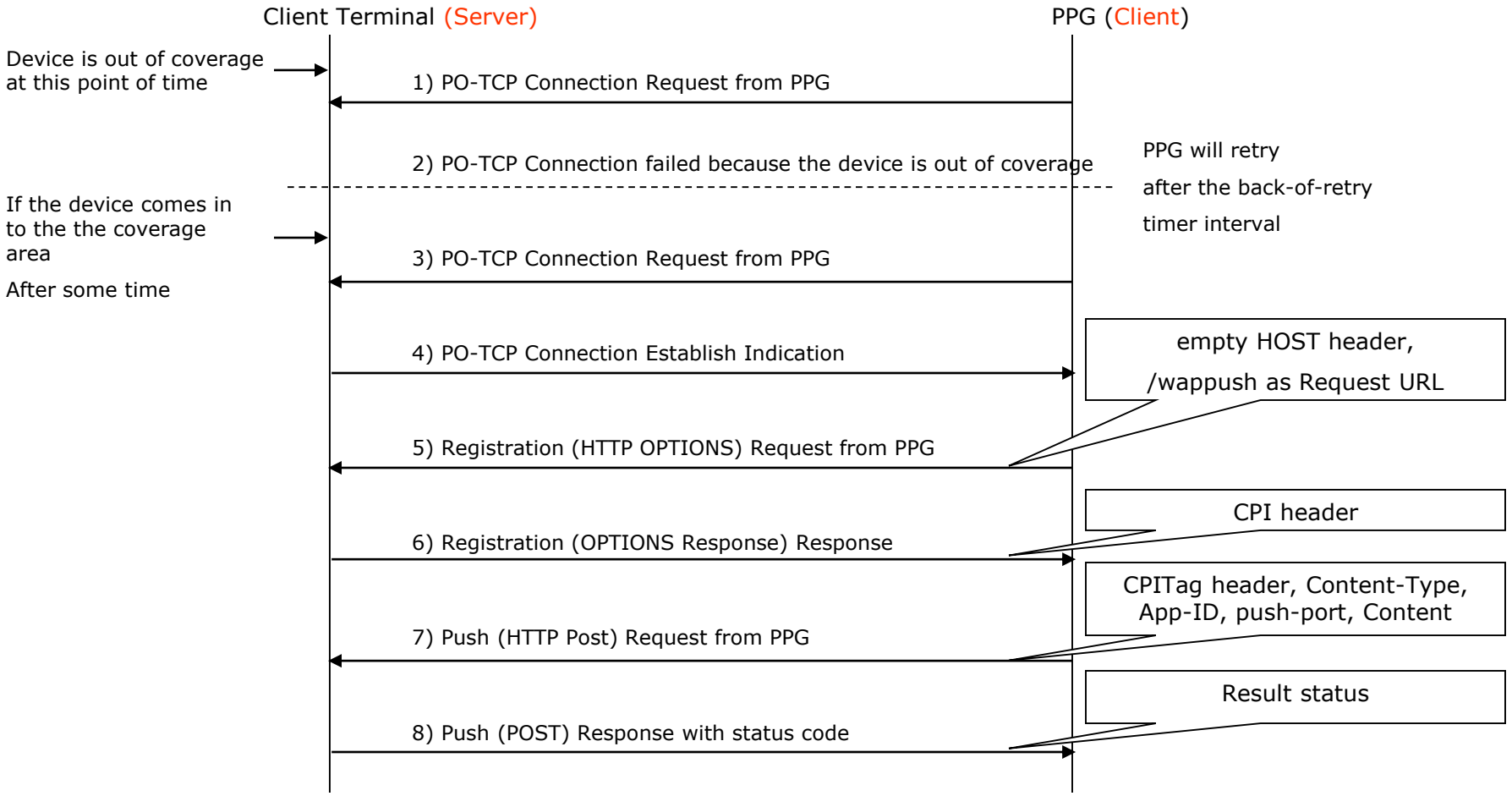
iii) SMS 를 통해서 **session**을 맺는 경우 **–> SMS에 SIR을 short message하여 보내고 connect을 맺는다.**

7. OTA-HTTP Transportation flow (General)



1) CONNECTION --> 2) REGISTRATION --> 3) PUSH

7. OTA-HTTP Transportation flow (K사 사례, OTA-HTTP 만을 적용)



8. PPG Service List

1) PI identification an authentication; access control
2) Parsing of and error detection in push content and control information
3) Client discovery services (including client capabilities)
4) Address resolution of push recipient
5) Binary encoding and compilation of certain content types, or general compression, to improve efficiency
6) OTA Protocol conversion
7) The PPG may maintain the Black List and White List of PI (Push Initiators), and will set the Trusted flag in the Push Message

9. PPG inter-working List

- Terminal inter-working
- WAP G/W inter-working
- SMSS inter-working
- CSBS inter-working
- Subscriber inter-working

10. PAP submission/result notify Format - example

PUSH submission		
	push-message	push-id
		replace-push-id
		ppg-notify-requested-to
	address	address-value

PUSH result notification		
	resultnotification-response	push-id
		code
		desc

```
POST  /cgi-bin/wap_push.cgi HTTP/1.1
Host: www.ppg.carrier.com
Date: Tue, 11 April 2000 18:00:00 GMT
Content-Type: multipart/related; boundary=NEXT_PART; type="application/xml"
Content-Length: 353

--NEXT_PART
Content-Type: application/xml;

 <?xml version="1.0"?>
 <!DOCTYPE pap PUBLIC "-//WAPFORUM//DTD PAP 2.0//EN"
                "http://www.wapforum.org/DTD/pap_2.0.dtd"
                     [<?wap-pap-ver supported-version="2.0.1.*"?>]>
 <pap>
  <push-message push-id="210861030999"
      <address address-value="wappush=+01030322947/TYPE=PLMN"/>
  </push-message>
 </pap>
```

Control entity

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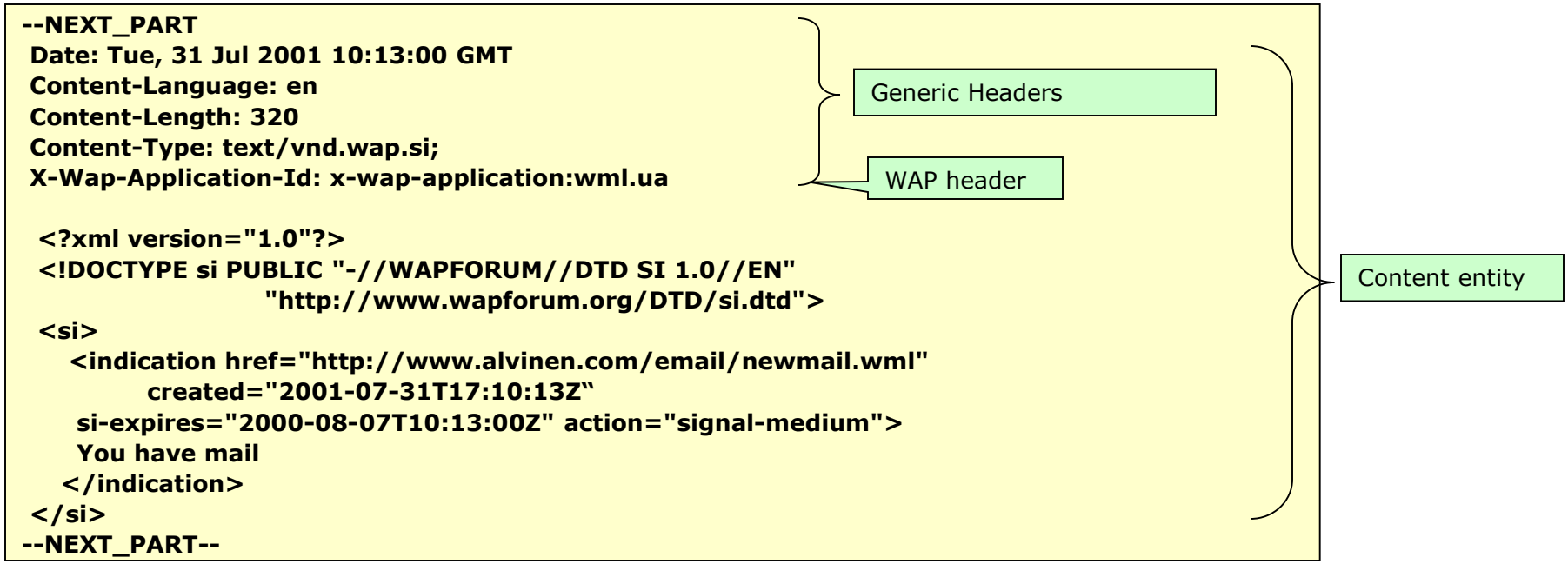
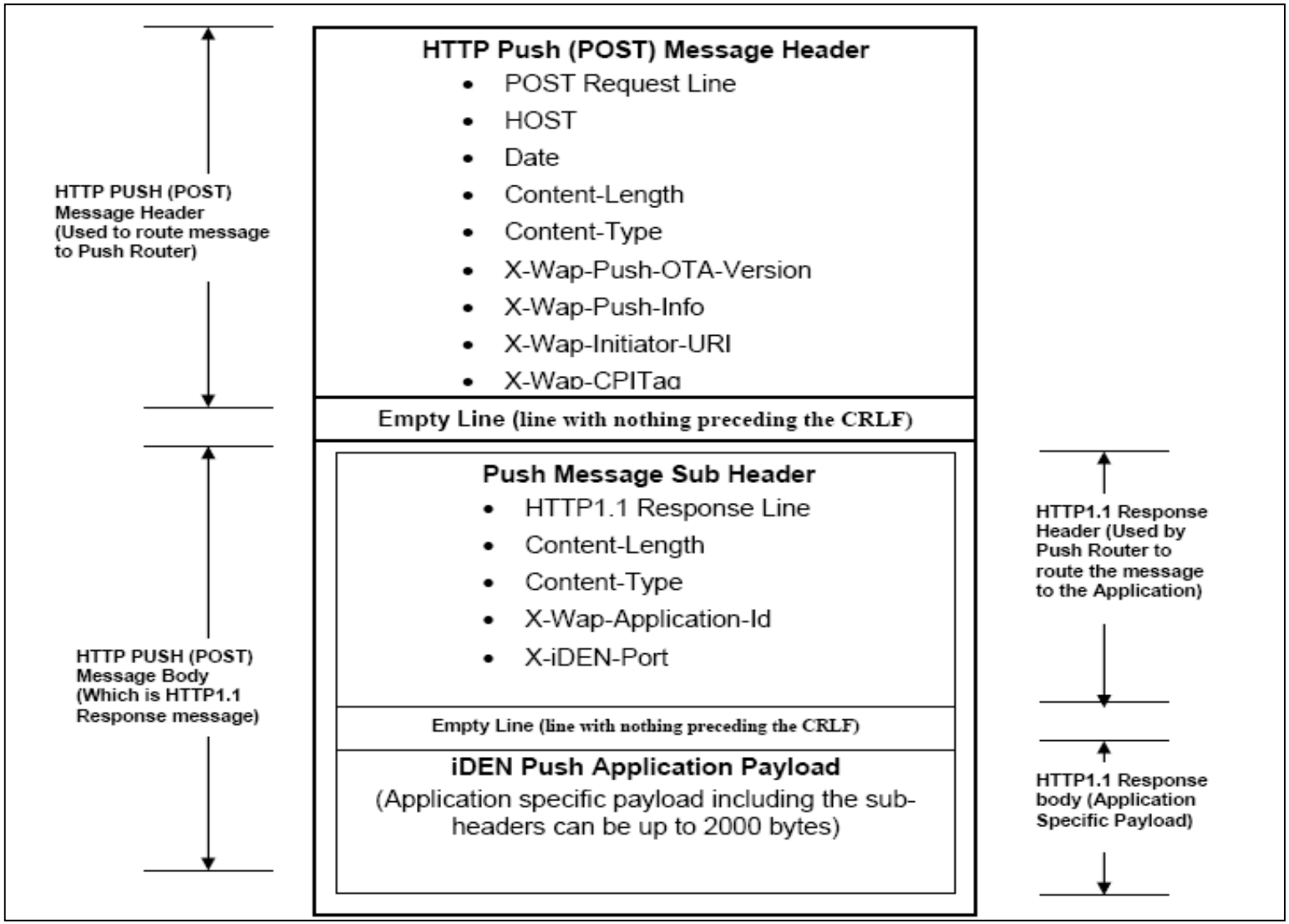


11. Device CPI information Format - example

CPI Field	Value
X-Wap-Push-Accept	text/plain, application/xml, application/vnd.wap.mms-message
X-Wap-Push-Accept-Charset	UTF-8
X-Wap-Push-Accept-Encoding	Identity
X-Wap-Push-Accept-Language	*
X-Wap-Push-Accept-AppID	device:oap, device:PushRegistry, device:RCM, x-wap-application:mms.ua
X-Wap-Push-User-Agent	MOT-i860
X-Wap-CPITag	vXXTqg== (4*OCTET)
X-Wap-Push-Status	501 Registration request accepted, CPITag not present

12. HTTP Push (POST) Request/Response Format - example



12. HTTP Push (POST) Request/Response Format - example

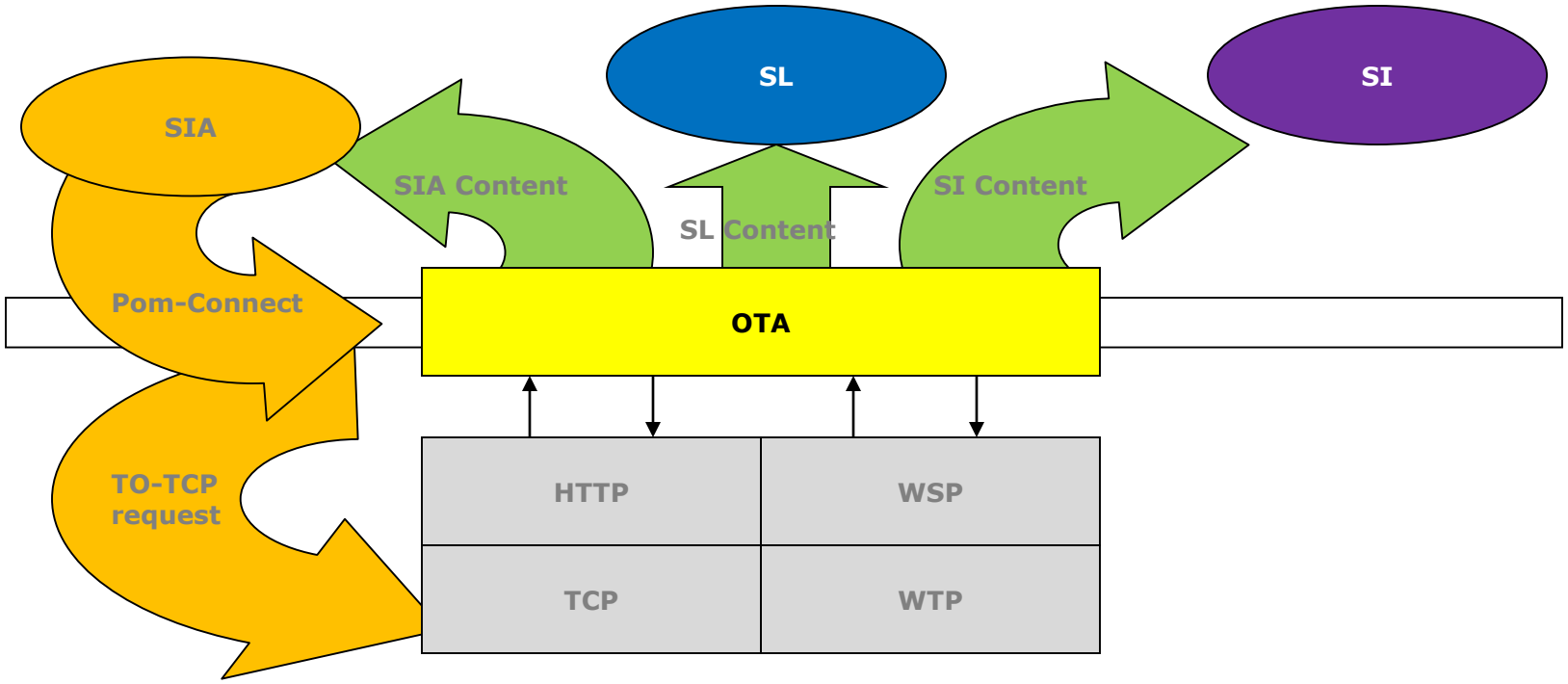
```
POST /wappush HTTP/1.1
Host:
Date: Tue, 31 Jul 2001 10:13:05 GMT
Content-Type: application/http
Content-Length: 491
X-Wap-Push-OTA-Version: 1.0

HTTP/1.1 200 OK
Date: Tue, 31 Jul 2001 10:13:00 GMT
Last-modified: Tue, 31 Jul 2001 10:13:00 GMT
Content-Language: en
Content-Length: 277
Content-Type: vnd.wap.si
X-Wap-Application-Id: x-wap-application:wml.ua

<?xml version="1.0"?>
<!DOCTYPE si PUBLIC "-//WAPFORUM//DTD SI 1.0//EN" "http://www.wapforum.org/DTD/si.dtd">
<si>
<indication href="http://www.xyz.com/email/123/abc.wml" created="2001-07-31T10:13:00Z"
si-expires="2001-08-07T10:13:00Z">You have 4 new emails</indication>
</si>
```

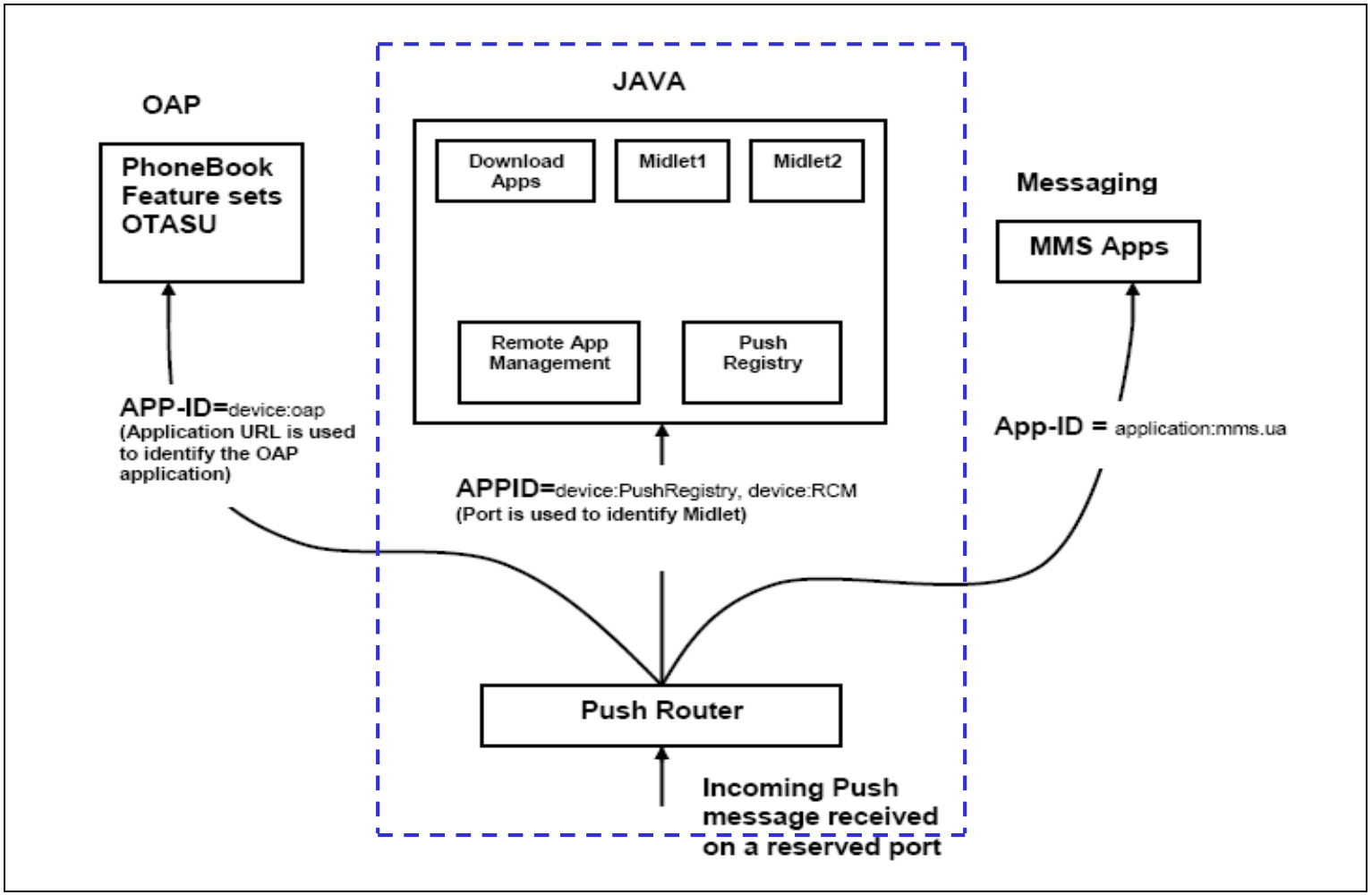
Allows the user to invoke email service

13. Push Message Routing Mechanism (General)



[Client Side]

13. Push Message Routing Mechanism (K사 사례)



14. Reference

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- Push Client Specification / Motorola (confidential)
- WAP Push Technology Overview / Openwave (www.openwave.com)
- Comparison of WAP Push and Short Message Service (SMS) / Openwave (www.openwave.com)
- The Value of WAP Push / openwave (www.openwave.com)