smartThinQ platform

smartThinQ 3rd party open API(smartgrid) Specifications

Ver. 1.0.5

smartThinQ

LG Electronics

Table of Contents

1. General

1.1. Purpose

The purpose of this document is to provide information on policy and procedure for interworking between smartThinQ and 3rd party applications for managing smartgrid feature of LG Smart Refrigerator.

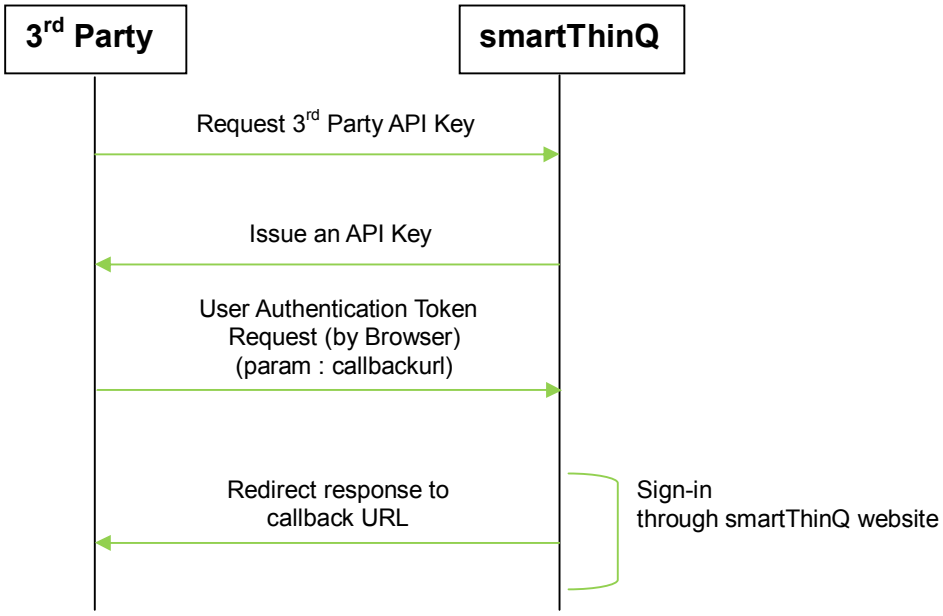
1.1.1. Revision History

ver	Date	Description of Changes	Reason for change
V1.0.0	14.03.27	Initial Draft	
V1.0.1	14.04.10	3.2.9 Setting a delay defrost schedule : a response element added - <selected> column added	
V1.0.2	14.04.17	3.2.3 Getting list of delay defrost schedules : a request elements deleted - modelName : request samples modified - Header and body	
V1.0.3	14.04.22	2.4 3.2.5. Getting energy consumptions : a response element added - errorRate	
V1.0.4	14.04.30	3.2.11Getting DR Schedule Added	
V1.0.5	14.07.29	2.4 Issue an User Access Key - Issuing procedure changed 3.2 OpenAPI Detail - lgeptRoot -> lgedmRoot Inserting a delay defrost schedule event deleted Delete a delay defrost schedule event deleted 3.2.5 Getting energy consumptions - errorRate deleted - priod, unit added	

2. API Key Authentication

2.1. Outline

- The Sequence flow between 3rd party and smartThinQ server as follows:



2.2. Refer Key(3rd Party API Key)

2.2.1. Getting an ReferKey

url : https://us.smartthing.com/Grid/thirdPartyKeyRequest.dev

- **Input list**

Field	Description
referer URL	
application name	
platform	(Web/android/IOS/Desktop/…)
description	

2.2.2. Issuing procedure

- Only Signed-in user can request issue
- You will be issued a API Key through your e-mail when approval is obtained by our staff.

2.3. Authenticate an smartThinQ user

- The 3rd party application have to authenticate smartThinQ Account for using remote control and

monitor device status. smartThinQ serve the User Authentication Token for the user authentication.

1. Get an unauthenticated “Request Token” by below API.

<table>
<tr><td>URI</td><td>https://도메인/Grid/requestTokenSvc.inf</td></tr>
<tr><td>Process</td><td>Get an unauthenticated Request Token</td></tr>
<tr><td>Http Method</td><td>POST</td></tr>
<tr><td>Request Header</td><td>N/A</td></tr>
<tr><td>Request Elements</td><td>
<table>
<tr><th>Name</th><th>Data Type</th><th>Multiplicity</th><th>Description</th><th>M/O</th></tr>
<tr><td>referKey</td><td>String</td><td>1</td><td>A Issued ReferKey</td><td>M</td></tr>
</table>
● M/O - M : Mandatory, O : Optional
</td></tr>
<tr><td>Response Elements</td><td>
<table>
<tr><th>Name</th><th>Data Type</th><th>Multiplicity</th><th>Description</th></tr>
<tr><td>returnCd</td><td>String</td><td>1</td><td>Return Code</td></tr>
<tr><td>returnMsg</td><td>String</td><td>1</td><td>Return Message</td></tr>
<tr><td>requestToken</td><td>String</td><td>1</td><td>Request Token</td></tr>
</table>
</td></tr>
<tr><td>Request Sample</td><td>POST /Grid/ManualPowerSavingSelectSvc HTTP/1.1
Accept: text/xml
Content-Type: text/xml;charset=utf-8
Host:127.0.0.1:8090
<lgeptRoot>
<referKey> 9wf92nyHT/Sev7Lliihge+3ZWatD5LJrVc= </ referKey>
<lgeptRoot></td></tr>
<tr><td>Response Sample</td><td>HTTP/1.1 200 OK
Server:Apache-Coyote/1.1
X-Powered-By:Servlet 2.5; Jboss-5.0/JbossWeb-2.1
Content-Type: text/xml;charset=utf-8
Content-Length:156
Date:Tue, 11 Jan 2011 01:29:04 GMT

<lgeptRoot>
<returnCd>0000</returnCd>
<returnMsg>OK</returnMsg></td></tr>
</table>

	<requestToken>A6xnQhbz4Vx2HuIXwZ5UI8iziIRvQ=</requestToken> </lgeptRoot>
Response Header	N/A
Description	

2. 3rd party application provider have to authenticate smartThinQ User as following http get request through any web browser.

   url : https://us.smartthing.com/Grid/thirdPartyLogin.dev?callbackurl=[Callback_URL]&requestToken=[Request_Token]

Request Parameter	**paramater**	**Description**
	callbackurl	Callback URL
	requestToken	Request Token
Response Parameter	**paramater**	**Description**
	x-userKey	User Access Key

3. User sign-in an smartThinQ Account
4. User Access Key will be sent by way of redirection to callback URL.

3. Interworking OpenAPI and 3rd party application

3.1. Outline

3.1.1. REST style

This API uses the RESTful following the JAX-RS specifications. The client also interworks based on the format which comforts to the specifications

3.1.2. Interface format

https://[domain]:[port]/[interface category]/[resource identifier]

3.1.3. API Category

Category	Description
Grid	Smart grid interface category

3.1.4. API List

Category	Service Name	URI	HTTP Method	Desc

Grid	Set Saving mode	**SavingModeSetSvc**	POST	
Grid	Get Power Saving Schedule	**PowerSavingInfoSvc**	POST	
Grid	Get DR Schedule	**DrScheduleGetSvc**	POST	
Grid	Get Setting Temperature	**SettingTempGetSvc**	POST	
Grid	Get Door Event	**ClosingDoorInfoGetSvc**	POST	
Grid	Get Energy Consumption	**PowerMeteringGetSvc**	POST	
Grid	Modify an Delay Defrost schedule event	**ManualPowerSavingUpdateSvc**	POST	
Grid	Get the Delay Defrost schedule	**ManualPowerSavingGetSvc**	POST	
Grid	Set an Delay Defrost schedule event	**ManualPowerSavingSelectSvc**	POST	

3.1.5. HTTP Common Header

Upon calling the Open API, the headers below should be contained. For more information, see the API Details section

Field	Description	Required
Content-Type	text/xml;charset=UTF-8 by default; if not, separately specified.	Yes
x-referKey	ReferKey (Issued an 3rd party API Key)	Yes
x-userKey	User Authentication Token	Yes

3.2. OpenAPI Details

3.2.1. Setting Saving mode

This service is enable you to set saving mode among Auto(Demand Response Functionality) Manual(Delay Defrost Capability) and Off.

<table>
<tr><td>URI</td><td>https://domain/Grid/SavingModeSetSvc.inf</td></tr>
<tr><td>Process</td><td>This service used when set saving mode</td></tr>
<tr><td>Precondition</td><td>ReferKey and User Authentication Token are mandatory</td></tr>
<tr><td>Http Method</td><td>POST</td></tr>
<tr><td>Request Header</td><td>
<table>
<tr><th>Field</th><th>Value</th><th>M/O</th></tr>
<tr><td>x-referKey</td><td>ReferKey</td><td>M</td></tr>
<tr><td>x-userKey</td><td>User Authentication Token</td><td>M</td></tr>
</table>
• M : Mandatory, O : Optional, N/A : Not applicable
</td></tr>
<tr><td>Request Elements</td><td>
<table>
<tr><th>Name</th><th>Data Type</th><th>Multiplicity</th><th>Description</th><th>M/O</th></tr>
<tr><td>savingType</td><td>String</td><td>1</td><td>Saving Mode</td><td>M</td></tr>
</table>
● M/O - M : Mandatory, O : Optional
● savingType :
</td></tr>
</table>

<table>
<tr><td></td><td>
<table>
<tr><th>Code</th><th>Meaning</th><th>Description</th></tr>
<tr><td>Manual</td><td>Saving as user configuration</td><td>Delay Defrost Capability</td></tr>
<tr><td>Auto</td><td>Saving auto</td><td>Demand Response Functionality</td></tr>
</table>
</td></tr>
<tr><td>Response Elements</td><td>
<table>
<tr><th>Name</th><th>Data Type</th><th>Multiplicity</th><th>Description</th></tr>
<tr><td>returnCd</td><td>String</td><td>1</td><td>Result code</td></tr>
<tr><td>returnMsg</td><td>String</td><td>1</td><td>Result Message</td></tr>
</table>
</td></tr>
<tr><td>Request Sample</td><td>POST /Grid/ SavingModeSetSvc HTTP/1.1
Accept: text/xml
Content-Type: text/xml;charset=utf-8
Host:127.0.0.1:8090
x-referKey: TK0sbs38w
x-userKey : Uwdoetn039:
<lgeptRoot>
<savingType> Manual</ savingType>
</lgeptRoot></td></tr>
<tr><td>Response Sample</td><td>HTTP/1.1 200 OK
Server:Apache-Coyote/1.1
X-Powered-By:Servlet 2.5; Jboss-5.0/JbossWeb-2.1
Content-Type: text/xml;charset=utf-8
Content-Length:156
Date:Tue, 11 Jan 2011 01:29:04 GMT

<lgeptRoot>
<returnCd>0000</returnCd>
<returnMsg>OK</returnMsg>
</lgeptRoot></td></tr>
<tr><td>Response Header</td><td>N/A</td></tr>
<tr><td>Description</td><td>Return Code 0109 : do not have configuration information</td></tr>
</table>

3.2.2. Getting schedule of the Delay Defrost

This service is enable to get the schedules of the Delay Defrost.

<table>
<tr><td>URI</td><td>https://domain/Grid/PowerSavingInfoSvc.inf</td></tr>
<tr><td>Process</td><td>The service used when check the Delay Defrost schedules.</td></tr>
<tr><td>Precondition</td><td>Refer Key and User Authentication Token are mandatory</td></tr>
<tr><td>Http Method</td><td>POST</td></tr>
<tr><td>Request Header</td><td>
<table>
<tr><th>Field</th><th>Value</th><th>M/O</th></tr>
<tr><td>x-referKey</td><td>Refer Key</td><td>M</td></tr>
<tr><td>x-userKey</td><td>User Authentication Token</td><td>M</td></tr>
</table>
• M : Mandatory, O : Optional, N/A : not applicable
</td></tr>
<tr><td></td><td>
<table>
<tr><th>Name</th><th>Data Type</th><th>Multiplicity</th><th>Description</th></tr>
<tr><td>returnCd</td><td>String</td><td>1</td><td>Result code</td></tr>
<tr><td>returnMsg</td><td>String</td><td>1</td><td>Result message</td></tr>
<tr><td>durationSavingsList</td><td>String</td><td>1</td><td>time sections of schedule</td></tr>
<tr><td>ㄴ durationSaving</td><td>String</td><td>1</td><td>Duration(min)</td></tr>
<tr><td>ㄴ startTime</td><td>String</td><td>1</td><td>Starting time</td></tr>
</table>
</td></tr>
<tr><td>Response Elements</td><td>● durationSavaing
ex) 160 minutes : 160
● startTime:
ex) 11AM Feb 27, 2014 - 2014/02/27 11:00:00</td></tr>
<tr><td>Request Sample</td><td>POST /Grid/PowerSavingInfoSvc HTTP/1.1
Accept: text/xml
Content-Type: text/xml;charset=utf-8
Host:127.0.0.1:8090
x-referKey: TK0sbs38w
x-userKey : Uwdoetn039:

<lgeptRoot>
</lgeptRoot></td></tr>
<tr><td>Response Sample</td><td>HTTP/1.1 200 OK
Server:Apache-Coyote/1.1</td></tr>
</table>

	X-Powered-By:Servlet 2.5; Jboss-5.0/JbossWeb-2.1 Content-Type: text/xml;charset=utf-8 Content-Length:156 Date: Fri, 14 Feb 2014 01:29:04 GMT <lgedmRoot> <returnCd>0000</returnCd> <returnMsg>OK</returnMsg> <durationSavingList> <durationSaving>160 </durationSaving> <startTime> 2014/02/27 11:00:00</startTime> <durationSavingList> </lgedmRoot>
Response Header	N/A
Description	

3.2.3. Getting schedule of the Demand Response

This service is enable to get a Demand Response schedule of the refrigerator.

URI	https://domain/Grid/DrScheduleGetSvc.inf
Process	The service used when check the Delay Defrost schedules.
Precondition	Refer Key and User Authentication Token are mandatory
Http Method	POST
Request Header	**Field** / **Value** / **M/O** x-referKey / Refer Key / M x-userKey / User Authentication Token / M • M : Mandatory, O : Optional, N/A : not applicable

Request Elements

Name	Data Type	Multiplicity	Description
returnCd	String	1	Return Code
returnMsg	String	1	Return Message
durationSavingsList	String	1	time sections of schedule
ㄴ signalType	String	1	DR Signal Type (DAL/TALR)
ㄴ durationSaving	String	1	Duration(min)
ㄴ startTime	String	1	Starting time

Response Elements

- signalType

  DAL / TALR

- durationSavaing

  ex) 160 minutes : 160

- startTime:

  ex) 11AM Feb 27, 2014 - 2014/02/27 11:00:00

Request Sample

```
POST /Grid/DrScheduleGetSvc    HTTP/1.1
Accept: text/xml
Content-Type: text/xml;charset=utf-8
Host:127.0.0.1:8090
x-referKey: TK0sbs38w
x-userKey : Uwdoetn039:

<lgedmRoot>
</lgedmRoot>
```

Response Sample

```
HTTP/1.1 200 OK
Server:Apache-Coyote/1.1
X-Powered-By:Servlet 2.5; Jboss-5.0/JbossWeb-2.1
Content-Type: text/xml;charset=utf-8
Content-Length:156
Date: Fri, 14 Feb 2014 01:29:04 GMT

<lgedmRoot>
```

	<returnCd>0000</returnCd> <returnMsg>OK</returnMsg> <durationSavingList> <signalType>DAL </signalType> <durationSaving>120 </durationSaving> <startTime> 2014/06/27 14:00:00</startTime> <durationSavingList> </lgedmRoot>
Response Header	N/A
Description	Return Code 0010 : saving mode is not Demand Response

3.2.4. Getting Setting Temperature

This service is enable to get the.setting temperature from a refrigerator.

URI	https://domain/Grid/SettingTempGetSvc.inf
Process	The Service get
Precondition	Refer Key and User Authentication Token are mandatory
Http Method	POST
Request Header	**Field** / **Value** / **M/O** x-referKey / Refer Key / M x-userKey / User Authentication Token / M • M : Mandatory, O : Optional, N/A : not applicable
Response Elements	Name / Data Type / Multiplicity / Description returnCd / String / 1 / Result code returnMsg / String / 1 / Result message fridgeTemp / String / 1 / Setting temperature of fridge (degrees Fahrenheit) freezerTemp / String / 1 / Setting temperature of freezer (degrees Fahrenheit)
Request Sample	POST /Grid/ SettingTempGetSvc HTTP/1.1 Accept: text/xml Content-Type: text/xml;charset=utf-8 Cookie : JSESSIONID=A1D5C67F6C5A2762934ABA6B0DE25CEA

	Host:127.0.0.1:8090 User-Agent:Apache-HttpClient/4.0.1 (java 1.5) x-referKey: TK0sbs38w x-userKey : Uwdoetn039: <lgedmRoot> </lgedmRoot>
Response Sample	HTTP/1.1 200 OK Server:Apache-Coyote/1.1 X-Powered-By:Servlet 2.5; Jboss-5.0/JbossWeb-2.1 Content-Type: text/xml;charset=utf-8 Content-Length:156 Date: Fri, 27 Feb 2014 01:29:04 GMT <lgedmRoot> <returnCd>0000</returnCd> <returnMsg>OK</returnMsg> <fridgeTemp>1</fridgeTemp> <freezerTemp>-15</ freezerTemp> </lgedmRoot>
Response Header	N/A
Description	

3.2.5. Getting door opening event

This service enable to get a door event information from refrigerator.

URI	https://domain/Grid/ClosingDoorInfoGetSvc.inf
Process	The service used when get a door event information from refrigerator.
Precondition	Refer Key and User Authentication Token are mandatory
Http Method	POST
Request Header	**Field** / **Value** / **M/O** x-referKey / Refer Key / M x-userKey / User Authentication Token / M • M : Mandatory, O : Optional, N/A : not applicable

Request Elements

Name	Dat Type	Multiplicity	Description	M/O
startDate	String	1	Start date (yyyy/mm/dd)	M
endDate	String	1	End date (yyyy/mm/dd)	M
timeZone	String	1	UTC time offset in hour (-23~23)	M

M : Mandatory, O : Optional, N/A : not applicable

Response Elements

Name	Data Type	Multiplicity	Description
returnCd	String	1	Result code
returnMsg	String	1	Result message
openDoorInfoList	String	1	Door event
ㄴ doorType	String	1	Door type
ㄴ openTime	String	1	time interval (sec)
ㄴ sendTime	String	1	Close time

Request Sample

```
POST /Grid/ClosingDoorInfoGetSvc HTTP/1.1
Accept: text/xml
Content-Type: text/xml;charset=utf-8
Host:127.0.0.1:8090
x-referKey: TK0sbs38w
x-userKey : Uwdoetn039:
<lgeptRoot>
    <startDate>2014/02/14</startDate>
    <endDate>2014/02/27</endDate>
    <timeZone>-5</timeZone>
</lgeptRoot>
```

Response Sample

```
HTTP/1.1 200 OK
Server:Apache-Coyote/1.1
X-Powered-By:Servlet 2.5; Jboss-5.0/JbossWeb-2.1
Content-Type: text/xml;charset=utf-8
Content-Length:156
Date: Fri, 27 Feb 2014 01:29:04 GMT
```

	<lgeptRoot> <returnCd>0000</returnCd> <returnMsg>OK</returnMsg> <openDoorInfoList> <doorType> Refrigerator</doorType> <openTime>30</openTime> <sendTime>2014/02/14 11:00:00</sendTime> </openDoorInfoList> <openDoorInfoList> … </ openDoorInfoList> </lgeptRoot>
Response Header	N/A
Description	

3.2.6. Getting energy consumptions

This service is enable to get energy consumptions from a LG smartgrid device.
The error rate is 10%.

URI	https://domain/Grid/PowerMeteringGetSvc.inf
Process	The service used when get energy consumptions.
Precondition	Refer Key and User Authentication Token are mandatory
Http Method	POST
Request Header	**Field** / **Value** / **M/O** x-referKey / Refer Key / M x-userKey / User Authentication Token / M • M : Mandatory, O : Optional, N/A : not applicable
Request Elements	**Name** / **Data Type** / **Multiplicity** / **Description** / **M/O** startDate / String / 1 / Start date (yyyy/mm/dd) / M endDate / String / 1 / End date (yyyy/mm/dd) / M timeZone / String / 1 / UTC time offset in hour (-23~23) / M • M/O - M : Mandatory, O : Optional

Response Elements

Name	Data Type	Multiplicity	Description
returnCd	String	1	Result code
returnMsg	String	1	Result message
priod	String	1	Priod(min)
unit	String	1	Unit(Wh)
powerMeteringList	String	n	
ㄴ powerData	String	1	Energy consumption data (kWh)
ㄴ count	String	1	Turbin count
ㄴ sendTime	String	1	Time

Request Sample

```
POST /Grid/ PowerMeteringGetSvc HTTP/1.1
Accept: text/xml
Content-Type: text/xml;charset=utf-8
Host:127.0.0.1:8090
x-referKey: TK0sbs38w
x-userKey : Uwdoetn039:
<lgeptRoot>
    <startDate>2014/02/14</startDate>
    <endDate>2014/02/27</endDate>
    <timeZone>-5</timeZone>
</lgeptRoot>
```

Response Sample

```
HTTP/1.1 200 OK
Server:Apache-Coyote/1.1
X-Powered-By:Servlet 2.5; Jboss-5.0/JbossWeb-2.1
Content-Type: text/xml;charset=utf-8
Content-Length:156
Date:Tue, 11 Jan 2011 01:29:04 GMT

<lgedmRoot>
    <returnCd>0000</returnCd>
    <returnMsg>OK</returnMsg>
    <priod>15</priod>
```

	<unit>w</unit> <powerMeteringList> <powerData> 500<powerData> <count>30</count> <sendTime>2014/02/14 11:00:00</sendTime> </ powerMeteringList> <powerMeteringList> … </powerMeteringList> </lgedmRoot>
Response Header	N/A
Description	

3.2.7. Modifying a delay defrost schedule event

This service is enable to update a delay defrost schedule to a LG smartgrid device.

URI	https://domain/Grid/ManualPowerSavingUpdateSvc.inf
Process	The service used when update a delay defrost schedule
Precondition	Refer Key and User Authentication Token are mandatory
Http Method	POST
Request Header	**Field** / **Value** / **M/O** x-referKey / Refer Key / M x-userKey / User Authentication Token / M • M : Mandatory, O : Optional, N/A : not applicable

Request Elements

Name	Data Type	Multiplicity	Description	M/O
scheduleId	String	1	Schedule event ID	M
sectionScheduleList	String	1	List of schedule events (1^{st},2^{nd} section)	M

- M/O - M : Mandatory, O : Optional
- sectionScheduleList: must encode to BASE64

sectionSchedule

Name	Data Type	Multiplicity	Description	M/O
section	String	1	Section(1 or2)	M
startDay	String	1	Start date (YYYY/MM/DD)	M
endDay	String	1	End date (YYYY/MM/DD)	M
startTime	String	1	Start time	M
endTime	String	1	End time	M

- example

```
<sectionSchedule>
        <section>1</section>
        <startDay>2013/02/28</startDay>
        <endDay>2013/07/29</endDay>
        <startTime>11:00</startTime>
        <endTime>13:00</endTime>
</sectionSchedule>
<sectionSchedule>
        <section>2</section>
        ....
</sectionSchedule>
```

Response Elements

Name	Data Type	Multiplicity	Description
returnCd	String	1	Result code
returnMsg	String	1	Result message

Request Sample	POST /Grid/ManualPowerSavingUpdateSvc HTTP/1.1 Accept: text/xml Content-Type: text/xml;charset=utf-8 Host:127.0.0.1:8090 x-referKey: TK0sbs38w x-userKey : Uwdoetn039: <lgeptRoot> <scheduleId>SH2014022100000057</scheduleId> <sectionScheduleList>PHNlY3Rpb25TY2hlZHVsZT4NCjxzZWN0aW9uPjE8L3NlY3Rpb24+DQo8c3RhcnREYXk+MDIyODwvc3RhcnREYXk+DQo8ZmluaXNoRGF5PjA2Mjk8L2ZpbmlzaERheT4NCjxzdGFydFRpbWU+MTE6MDA8L3N0YXJ0VGltZT4NCjxmaW5pc2hUaW1lPjE0OjAwPC9maW5pc2hUaW1lPg0KPC9zZWN0aW9uPg0KPHNlY3Rpb24+Mjwvc2VjdGlvbj4NCjxzdGFydERheT4wNzAxPC9zdGFydERheT4NCjxmaW5pc2hEYXk+MTIyOTwvZmluaXNoRGF5Pg0KPHN0YXJ0VGltZT4xMzowMDwvc3RhcnRUaW1lPg0KPGZpbmlzaFRpbWU+MTU6MDA8L2ZpbmlzaFRpbWU+DQo8L3NlY3Rpb24+DQo8c2VjdGlvbj4zPC9zZWN0aW9uPg0KPHN0YXJ0RGF5PjA3MDE8L3N0YXJ0RGF5Pg0KPGZpbmlzaERheT4wNzAxPC9maW5pc2hEYXk+DQo8c3RhcnRUaW1lPjE2OjAwPC9zdGFydFRpbWU+DQo8ZmluaXNoVGltZT4xODowMDwvZmluaXNoVGltZT4NCjwvc2VjdGlvbj4NCjwvc2VjdGlvblNjaGVkdWxlTGlzdD4=</sectionScheduleList> </lgeptRoot>
Response Sample	HTTP/1.1 200 OK Server:Apache-Coyote/1.1 X-Powered-By:Servlet 2.5; Jboss-5.0/JbossWeb-2.1 Content-Type: text/xml;charset=utf-8 Content-Length:156 Date:Tue, 11 Jan 2011 01:29:04 GMT <lgeptRoot> <returnCd>0000</returnCd> <returnMsg>OK</returnMsg> </lgeptRoot>
Response Header	N/A
Description	

3.2.8. Getting list of delay defrost schedules

This service is enable to get list of delay defrost schedules from a LG smart grid device.

<table>
<tr><td>URI</td><td>https://domain/Grid/ManualPowerSavingGetSvc.inf</td></tr>
<tr><td>Process</td><td>The service used when get list of delay defrost schedules</td></tr>
<tr><td>Precondition</td><td>Refer Key and User Authentication Token are mandatory</td></tr>
<tr><td>Http Method</td><td>POST</td></tr>
<tr><td>Request Header</td><td>
<table>
<tr><th>Field</th><th>Value</th><th>M/O</th></tr>
<tr><td>x-referKey</td><td>Refer Key</td><td>M</td></tr>
<tr><td>x-userKey</td><td>User Authentication Token</td><td>M</td></tr>
</table>
• M : Mandatory, O : Optional, N/A : not applicable
</td></tr>
<tr><td>Response Elements</td><td>
<table>
<tr><th>Name</th><th>Data Type</th><th>Multiplicity</th><th>Description</th></tr>
<tr><td>returnCd</td><td>String</td><td>1</td><td>Result code</td></tr>
<tr><td>returnMsg</td><td>String</td><td>1</td><td>Result message</td></tr>
<tr><td>scheduleList</td><td>String</td><td>1</td><td>List of schedules</td></tr>
<tr><td>ㄴ scheduleId</td><td>String</td><td>1</td><td>Schedule event ID</td></tr>
<tr><td>ㄴ section</td><td>String</td><td>1</td><td>Section(1 or 2)</td></tr>
<tr><td>ㄴ startDay</td><td>String</td><td>1</td><td>Start date (yyyy/mm/dd)</td></tr>
<tr><td>ㄴ endDay</td><td>String</td><td>1</td><td>End date (yyyy/mm/dd)</td></tr>
<tr><td>ㄴ startTime</td><td>String</td><td>1</td><td>Start time</td></tr>
<tr><td>ㄴ endTime</td><td>String</td><td>1</td><td>End time</td></tr>
<tr><td>ㄴ selected</td><td>String</td><td>1</td><td>Selected or not (Y or N)</td></tr>
</table>
</td></tr>
<tr><td>Request Sample</td><td>POST /Grid/ManualPowerSavingGetSvc HTTP/1.1
Accept: text/xml
Content-Type: text/xml;charset=utf-8
Host:127.0.0.1:8090
x-referKey: TK0sbs38w
x-userKey : Uwdoetn039:

<lgeptRoot>
</lgeptRoot></td></tr>
<tr><td>Response Sample</td><td>HTTP/1.1 200 OK
Server:Apache-Coyote/1.1
X-Powered-By:Servlet 2.5; Jboss-5.0/JbossWeb-2.1
Content-Type: text/xml;charset=utf-8</td></tr>
</table>

	Content-Length:156 Date:Tue, 11 Jan 2011 01:29:04 GMT <lgeptRoot> <returnCd>0000</returnCd> <returnMsg>OK</returnMsg> <scheduleList> <scheduleId>SH2014022100000057</scheduleId> <section>1</section> <startDay>2014/02/28</startDay> <endDay>2014/06/29</endDay> <startTime>11:00</startTime> <endTime>13:00</endTime> </scheduleList> <scheduleList> <scheduleId>SH2014022100000057</scheduleId> <section>2</section> … </scheduleList> <scheduleList> ….. </scheduleList> </lgeptRoot>
Response Header	N/A
Description	

3.2.9. Setting a delay defrost schedule

This service is enable to set up a delay defrost schedule event. The LG smartgrid device that is set up will run delay defrost as the schedule event.

URI	https://domain/Grid/ManualPowerSavingSelectSvc.inf		
Process	The service used when set a delay defrost schedule event.		
Precondition	Refer Key and User Authentication Token are mandatory		
Http Method	POST		
Request Header	**Field**	**Value**	**M/O**
	x-referKey	Refer Key	M

<table>
<tr><td></td><td>
<table>
<tr><td>x-userKey</td><td>User Authentication Token</td><td>M</td></tr>
</table>
• M : Mandatory, O : Optional, N/A : not applicable
</td></tr>
<tr><td>Request Elements</td><td>
<table>
<tr><th>Name</th><th>Data Type</th><th>Multiplicity</th><th>Description</th><th>M/O</th></tr>
<tr><td>scheduleId</td><td>String</td><td>1</td><td>Schedule event ID</td><td>M</td></tr>
</table>
M/O - M : Mandatory, O : Optional
</td></tr>
<tr><td>Response Elements</td><td>
<table>
<tr><th>Name</th><th>Data Type</th><th>Multiplicity</th><th>Description</th></tr>
<tr><td>returnCd</td><td>String</td><td>1</td><td>Result code</td></tr>
<tr><td>returnMsg</td><td>String</td><td>1</td><td>Result message</td></tr>
</table>
</td></tr>
<tr><td>Request Sample</td><td>POST /Grid/ManualPowerSavingSelectSvc HTTP/1.1
Accept: text/xml
Content-Type: text/xml;charset=utf-8
Host:127.0.0.1:8090
x-referKey: TK0sbs38w
x-userKey : Uwdoetn039:

<lgeptRoot>
<scheduleId>SH2014022100000057</scheduleId>
<lgeptRoot></td></tr>
<tr><td>Response Sample</td><td>HTTP/1.1 200 OK
Server:Apache-Coyote/1.1
X-Powered-By:Servlet 2.5; Jboss-5.0/JbossWeb-2.1
Content-Type: text/xml;charset=utf-8
Content-Length:156
Date:Tue, 11 Jan 2011 01:29:04 GMT

<lgeptRoot>
<returnCd>0000</returnCd>
<returnMsg>OK</returnMsg>
</lgeptRoot></td></tr>
</table>

Response Header	N/A
Description	

3. Appendix A. Result code (response code)

Response Code

returnCd	Description
0000	OK
0001	Partially OK (if delivered and responded with one command containing both the request for multiple search and change of various data, it responds for the partially success.)
0002	Body text error (for example, no data in the XML document)
0003	Header information error (for example, the required setting is not specified in the header).
0100	Failure
0101	No device registered
0102	Not logged in
0103	The smart appliance is busy.
0109	There is not DR schedule information.
9000	Invalid request Invalid XML grammar or invalid URI, etc.
9004	DB processing failed
9999	Other error
4000 - 4999	Reserved code - not available