smartThinQ platform

smartThinQ 3rd party open API(smartgrid) Specifications

Ver. 1.0.5

smartThinQ



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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.

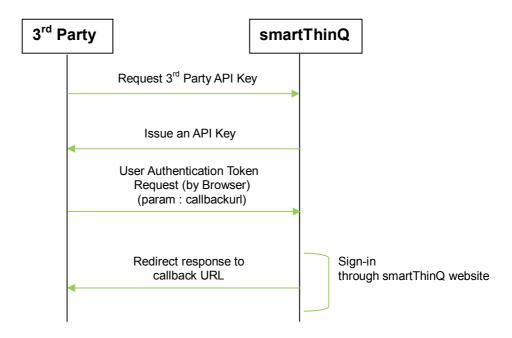
1.1.1. Revision History

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</selected>	
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	2.43.2.5. 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 - IgeptRoot -> IgedmRoot 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 apploval 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.

URI	https://도메인/Grid/requestTokenSvc.inf						
Process	Get an unauthenticated Request Token						
Http Method	POST						
Request Header	N/A						
	Name	Data Ty	Type Multiplicity		/ Descri	iption	M/O
Request Elements	referKey	String	g	1	A Issued Re	eferKey	М
	● M/O - M : N	/landato	ry, O	: Optional			
	Name		Ds	ata Type	Multiplicity	Descri	intion
Response	returnCd				1	Return Co	
Elements				String	•		
	returnMsg			String	1	Return Mo	
	requestToke			String	1	Request	Token
	POST /Grid/ManualPowerSavingSelectSvc HTTP/1.1						
	Accept: text/xml						
	Content-Type: text/xml;charset=utf-8						
Request Sample	Host:127.0.0.1:8090						
	<lgeptroot></lgeptroot>						
	<referkey> 9wf92nyHT/Sev7Lliihge+3ZWatD5LJrVc= <!-- referKey--></referkey>						
	<lgeptroot></lgeptroot>						
	HTTP/1.1 200 OK						
	Server:Apach	ne-Coyo	te/1.	1			
	X-Powered-By:Servlet 2.5; Jboss-5.0/JbossWeb-2.1						
	Content-Type: text/xml;charset=utf-8						
	Content-Length:156						
Response Sample	Date:Tue, 11 Jan 2011 01:29:04 GMT						
	,						
	<ld><lgeptroot></lgeptroot></ld>						
		1>0000<	/retu	rnCd>			
	<returncd>0000</returncd>						
	<returnmsg>OK</returnmsg>						

	<pre><requesttoken>A6xnQhbz4Vx2HulXwZ5Ul8izilRvQ=</requesttoken> </pre>
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.smartthinq.com/Grid/thirdPartyLogin.dev?callbackurl=[Callback_URL]&requestToken=[Request_Token]

Request	paramater	Description
Parameter	callbackurl	Callback URL
	requestToken	Request Token
Response	paramater	Description
Parameter	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	ManualPowerSavingUpdateS vc	POST
Grid	Get the Delay Defrost schedule	ManualPowerSavingGetSvc	POST
Grid	Set an Delay Defrost schedule event	ManualPowerSavingSelectS vc	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 3 rd 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.

URI	https://domain/Grid/SavingModeSetSvc.inf						
Process	This service used when set saving mode						
Precondition	ReferKey and Us	ser Authen	tication Token ar	e mandatory			
Http Method	POST						
	Field		Valu	е	M/C)	
Request Header	x-referKey	x-referKey ReferKey		M			
Request Header	x-userKey		User Authentication Token		M		
	M : Mandatory, O : Optional, N/A : Not applicable						
	Name	Data Type	Multiplicity	Descripti	ion	M/O	
Request Elements	savingType	String	1	Saving Mod	е	М	
	● M/O - M : Mandatory, O : Optional						
	■ savingType :						
	- saving type.						

	Code	Meaning	Descrip	otion			
	Manual	Saving as user configuration	Delay Defrost				
	Auto	Saving auto	Demand Re Function				
Response	Name	Data Type	Multiplicity	Description			
Elements	returnCd	String	1	Result code			
	returnMsg	String	1	Result Message			
	POST /Grid/ SavingI	ModeSetSvc HTT	P/1.1	mercage			
	Accept: text/xml						
	Content-Type: text/xml;charset=utf-8						
	Host:127.0.0.1:8090						
Request Sample	x-referKey: TK0sbs38w						
	x-userKey : Uwdoetn039:						
	<ld><lgeptroot></lgeptroot></ld>						
	<savingtype> Manual<!-- savingType--></savingtype>						
	 /lgeptRoot>						
	Server:Apache-Coyote/1.1						
	X-Powered-By:Servlet 2.5; Jboss-5.0/JbossWeb-2.1						
	Content-Type: text/x	ml;charset=utf-8					
	Content-Length:156						
Response Sample	Date:Tue, 11 Jan 2011 01:29:04 GMT						
	<lgeptroot></lgeptroot>						
	<returncd>0000</returncd>						
	<returnmsg>OK</returnmsg>						
Response Header	N/A						
Description	Return Code 0109 :	do not have conf	iguration informat	ion			

3.2.2. Getting schedule of the Delay Defrost

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

URI	https://domain/Grid/Powe	rSavingInfoSvc.	<u>inf</u>				
Process	The service used when check the Delay Defrost schedules.						
Precondition	Refer Key and User Au	uthentication To	oken are mandato	ry			
Http Method	POST						
Dogwood Hooder	Field x-referKey	Refer Key	Value	M/O M			
Request Header	x-userKey M: Mandatory, O		entication Token A : not applicable	M			
	Name	Data Type	Multiplicity	Description			
	returnCd	String	1	Result code			
	returnMsg	String	1	Result message			
	durationSavingsList	String	1	time sections of schedule			
	└ durationSaving	String	1	Duration(min)			
	∟ startTime	String	String 1 Starting t				
	durationSavaing						
Response	ex) 160 minutes : 160						
Elements	• startTime:						
	ex) 11AM Feb 27, 20)14 - 2014/02/2	27 11:00:00				
	POST /Grid/PowerSav	ingInfoSvc H	TTP/1.1				
	Accept: text/xml						
	Content-Type: text/xml	;charset=utf-8					
	Host:127.0.0.1:8090						
Request Sample	x-referKey: TK0sbs38v	V					
	x-userKey : Uwdoetn03	39:					
	<lgeptroot></lgeptroot>						
	HTTP/1.1 200 OK						
Response Sample	Server:Apache-Coyote/1.1						

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 ch	eck the Delay Defrost schedules	S.			
Precondition	Refer Key and User Author	entication Token are mandatory				
Http Method	POST					
	Field Value M/O					
Request Header	x-referKey Refer Key M					
Request neader	x-userKey User Authentication Token M					
	M : Mandatory, O : Optional, N/A : not applicable					

	Name	Data Type	Multiplicity	Description			
	returnCd	String	1	Return Code			
	returnMsg	String	1	Return Message			
Request Elements	durationSavingsList	String	1	time sections of schedule			
	ւ signalType	String	1	DR Signal Type (DAL/TALR)			
	ւ durationSaving	String	1	Duration(min)			
	∟ startTime	String	1	Starting time			
	● signalType						
	DAL / TALR						
Response	durationSavaing						
Elements	ex) 160 minutes : 16	0					
	• startTime:						
	ex) 11AM Feb 27, 20)14 - 2014/02/2	7 11:00:00				
	POST /Grid/DrScheduleGetSvc HTTP/1.1						
	Accept: text/xml						
	Content-Type: text/xml;charset=utf-8						
	Host:127.0.0.1:8090						
Request Sample	x-referKey: TK0sbs38w						
	x-userKey : Uwdoetn039:						
	<lgedmroot></lgedmroot>						
	 /lgedmRoot>						
	HTTP/1.1 200 OK						
	Server:Apache-Coyote	e/1.1					
	X-Powered-By:Servlet 2.5; Jboss-5.0/JbossWeb-2.1						
	Content-Type: text/xml;charset=utf-8						
Response Sample	Content-Length:156						
	Date: Fri, 14 Feb 2014 01:29:04 GMT						
	<lgedmroot></lgedmroot>						

	<returncd>0000</returncd>			
	<returnmsg>OK</returnmsg>			
	<durationsavinglist></durationsavinglist>			
	<signaltype>DAL </signaltype>			
	<durationsaving>120 </durationsaving>			
	<starttime> 2014/06/27 14:00:00</starttime>			
	<durationsavinglist></durationsavinglist>			
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 A	uthentication To	ken are mandator	у		
Http Method	POST					
	Field Value M/6					
Request Header	x-referKey	Refer Key		M		
	x-userKey		entication Token	M		
	M : Mandatory, O	: Optional, N/	'A : not applicable			
	Name	Data Type	Multiplicity	Description		
	returnCd	String	1	Result code		
Baarranaa	returnMsg	String	1	Result message		
Response Elements	fridgeTemp	String	1	Setting temperature of fridge (degrees Fahrenheit)		
	freezerTemp	p String 1 freezer (degrees Fahrenheit)				
	POST /Grid/ SettingTe	mpGetSvc H	TTP/1.1			
D	Accept: text/xml					
Request Sample	Content-Type: text/xm	l;charset=utf-8				
	Cookie: JSESSIONID=A1D5C67F6C5A2762934ABA6B0DE25CE					

	Host:127.0.0.1:8090
	User-Agent:Apache-HttpClient/4.0.1 (java 1.5)
	x-referKey: TK0sbs38w
	x-userKey : Uwdoetn039:
	<lgedmroot></lgedmroot>
	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
Response Sample	Date: Fri, 27 Feb 2014 01:29:04 GMT
response cample	<lgedmroot></lgedmroot>
	<returncd>0000</returncd>
	<returnmsg>OK</returnmsg>
	<fridgetemp>1</fridgetemp>
	<freezertemp>-15<!-- freezerTemp--></freezertemp>
Response Header	N/A
Description	

3.2.5. Getting door opening event

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

https://domain/Grid/ClosingDoorInfoGetSvc.inf					
The service used when ge	et a door event information from	refrigerator.			
Refer Key and User Author	entication Token are mandatory				
POST					
Field	Field Value M/O				
x-referKey Refer Key M					
x-userKey User Authentication Token M					
M : Mandatory, O : Optional, N/A : not applicable					
	The service used when getter Key and User Author POST Field x-referKey x-userKey	The service used when get a door event information from Refer Key and User Authentication Token are mandatory POST Field Value x-referKey Refer Key x-userKey User Authentication Token			

	Name	Dat Type	Multi	iplicity	De	escription	M/O
	startDate	String		1	Start	date r/mm/dd)	М
Request Elements	endDate	String		1 End		date	M
					UTC	time offset in	
	timeZone	String		1	hour (-23~	·23)	M
	M : Mandato	ry, O : Optio	onal,	N/A : no	t appli	cable	
			_				
	Name returnCd	Data T	• •	Multip 1	licity	Descript Result code	ion
		Strii		·			
Response Elements	returnMsg	Strii	ng ———	1		Result messa	ge ———
Liements	openDoorInfoLi			1		Door event	
	∟ doorType	Strii		1		Door type	
	∟ openTime	Striı	ng 	1		time interval (sec)
	∟ sendTime	String 1 Close time					
	POST /Grid/ClosingDoorInfoGetSvc HTTP/1.1						
	Accept: text/xml						
	Content-Type: tex		et=utf-	8			
	Host:127.0.0.1:80						
	x-referKey: TK0s						
Request Sample	x-userKey : Uwdo	oetn039:					
	<pre><lgeptroot></lgeptroot></pre>						
	<startdate>201</startdate>						
	<enddate>2014</enddate>		Date>				
	<timezone>-5</timezone>						
	HTTP/1.1 200 OK	voto/1 1					
	Server:Apache-Coyote/1.1						
Response Sample	X-Powered-By:Servlet 2.5; Jboss-5.0/JbossWeb-2.1 Content-Type: text/xml;charset=utf-8						
	•		-นแ-0				
	Content-Length:156 Date: Fri, 27 Feb 2014 01:29:04 GMT						
	Date. FII, 21 Feb 2	014 01.29:04	GIVII				

	<lgeptroot></lgeptroot>
	<returncd>0000</returncd>
	<returnmsg>OK</returnmsg>
	<opendoorinfolist></opendoorinfolist>
	<doortype> Refrigerator</doortype>
	<pre><opentime>30</opentime></pre>
	<sendtime>2014/02/14 11:00:00</sendtime>
	<pre><opendoorinfolist></opendoorinfolist></pre>
	openDoorInfoList
Response Header	N/A
Description	

3.2.6. Getting energy consumptions

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

URI	https://domain/Grid/PowerMeteringGetSvc.inf					
Process	The service used	d when ge	t energy consum	ptions.		
Precondition	Refer Key and U	ser Authe	ntication Token a	re 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					Л
	Name	Data Type	Multiplicity	Descript	ion	M/O
	startDate	String	1	Start date (yyyy/mm/do	d)	М
Request Elements	endDate	String	1	End date (yyyy/mm/do	d)	М
	timeZone	String	1	UTC time of hour (-23~23)	ffset in	М
	• M/O - M : M	andatory,	O : Optional			

Name								
returnMsg String 1 Result message priod String 1 Priod(min) Unit String 1 Unit(Wh) powerMeteringList String 1 Energy consumption data (kWh) Learner String 1 Turbin count Learner String 1 Time 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: sqpetRoot> startDate> 2014/02/14 startDate> 2014/02/27 startDate> 2014/02/27 startDate> 2014/02/27 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 sqpdmRoot> steurnCd> steurnCd> String 1 Priod(min) Turbin count Turbin count String 1 Turbin count		Name Data Type Multiplicity Description						
Priod String 1		returnCd String 1 Result code						
Response Elements unit		returnMsg	String	1	Result message			
### Count String 1 Unit(Wh)	Resnonse	priod	Priod(min)					
PowerData String 1 Energy consumption data (kWh) Count String 1 Turbin count String 1 Turbin count String 1 Time 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: String Strin		unit	String	1	Unit(Wh)			
Count		powerMeteringList	String	n				
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: < geptRoot>		د powerData	String	1	Energy consumption data (kWh)			
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: < geptRoot>		د count	String	1	Turbin count			
Accept: text/xml Content-Type: text/xml;charset=utf-8 Host:127.0.0.1:8090 x-referKey: TK0sbs38w x-userKey: Uwdoetn039: < geptRoot>		∟ sendTime	String	1	Time			
Content-Type: text/xml;charset=utf-8 Host:127.0.0.1:8090 x-referKey: TK0sbs38w x-userKey: Uwdoetn039: < geptRoot>		POST /Grid/ PowerMete	eringGetSvc I	HTTP/1.1				
Request Sample Request Sample X-referKey: TK0sbs38w x-userKey: Uwdoetn039: < geptRoot> <md>AlgeptRoot> <md>AlgeptRoot</md> <m< td=""><th></th><td>Accept: text/xml</td><td></td><td></td><td></td></m<></md></md></md></md></md></md></md></md></md></md></md></md>		Accept: text/xml						
x-referKey: TK0sbs38w x-userKey: Uwdoetn039: < geptRoot>		Content-Type: text/xml;	charset=utf-8					
x-userKey: Uwdoetn039: < geptRoot> startDate>2014/02/14 endDate>2014/02/27 stimeZone>-5 deptRoot> 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 start		Host:127.0.0.1:8090						
<pre><lgeptroot></lgeptroot></pre>		x-referKey: TK0sbs38w						
<pre> <startdate>2014/02/14</startdate></pre>	Request Sample	x-userKey : Uwdoetn03	9:					
<pre><enddate>2014/02/27</enddate></pre>		<lgeptroot></lgeptroot>						
<pre></pre>		<startdate>2014/02/14</startdate>						
<pre></pre>		<enddate>2014/02/</enddate>	27 <td>></td> <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 < colspan="2"> colspan=		<timezone>-5<td>Zone></td><td></td><td></td></timezone>	Zone>					
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>								
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								
Content-Type: text/xml;charset=utf-8 Content-Length:156 Date:Tue, 11 Jan 2011 01:29:04 GMT < gedmRoot>		-						
Content-Length:156 Date:Tue, 11 Jan 2011 01:29:04 GMT <pre> </pre> <pre> <pre> <pre></pre></pre></pre>		•			.1			
Response Sample Date:Tue, 11 Jan 2011 01:29:04 GMT <pre></pre> <pre> </pre> <pre> <pre></pre> <pre></pre></pre>								
<ld><lgedmroot></lgedmroot></ld>	Beenenee Cample							
<returncd>0000</returncd>	Response Sample	Date:Tue, 11 Jan 2011 01:29:04 GMT						
<returncd>0000</returncd>		< aedmPoot>						
			eturnCd>					
STELLILINGSOZUM SZIERITINGSOZ								
<pre><pre><pre><pre><pre><priod>15</priod></pre></pre></pre></pre></pre>		_	tarrivisy/					

	<unit>w</unit>
	<powermeteringlist></powermeteringlist>
	<powerdata> 500<powerdata></powerdata></powerdata>
	<count>30</count>
	<sendtime>2014/02/14 11:00:00</sendtime>
	powerMeteringList
	<powermeteringlist></powermeteringlist>
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 Author	Refer Key and User Authentication Token are mandatory		
Http Method	POST			
	Field	Value	M/O	
Request Header	x-referKey	Refer Key	M	
Request rieauei	x-userKey	User Authentication Token	M	
	M : Mandatory, O : Optional, N/A : not applicable			

Name	Data Type	Multiplicity	Description	M/O
scheduleId	String	1	Schedule event ID	М
sectionSched uleList	String	1	List of schedule events (1 st ,2 nd section)	М

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

sectionSchedule

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

Request Elements

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

	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></lgeptroot>
Request Sample	<scheduleid>SH2014022100000057</scheduleid>
	<pre><sectionschedulelist>PHNIY3Rpb25TY2hlZHVsZT4NCjxzZWN0aW9 uPjE8L3NIY3Rpb24+DQo8c3RhcnREYXk+MDIyODwc3RhcnREYXk+D Qo8ZmluaXNoRGF5PjA2Mjk8L2ZpbmlzaERheT4NCjxzdGFydFRpbWU+ MTE6MDA8L3N0YXJ0VGltZT4NCjxmaW5pc2hUaW1IPjEzOjAwPC9ma W5pc2hUaW1IPg0KPC9zZXNzaW9uU2NoZWR1bGU+DQo8c2Vzc2lvbl NjaGVkdWxlPg0KPHNIY3Rpb24+Mjwvc2VjdGlvbj4NCjxzdGFydERheT4 wNzAxPC9zdGFydERheT4NCjxmaW5pc2hEYXk+MTIyOTwvZmluaXNo RGF5Pg0KPHN0YXJ0VGltZT4xMzowMDwvc3RhcnRUaW1IPg0KPGZpb mlzaFRpbWU+MTU6MDA8L2ZpbmlzaFRpbWU+DQo8L3NIY3Rpb25TY2 hlZHVsZT4=</sectionschedulelist></pre>
	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
Response Sample	Date:Tue, 11 Jan 2011 01:29:04 GMT
	<lgeptroot></lgeptroot>
	<returncd>0000</returncd>
	<returnmsg>OK</returnmsg>
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.

URI	https://domain/Grid/ManualPowerSavingGetSvc.inf					
Process	The service used when get list of delay defrost schedules					
Precondition	Refer Key and User Authentication Token are mandatory					
Http Method	POST					
	Field		Defer	Value	M/O M	
Request Header			Refer User A	ney authentication To		
	M : Mandatory	, O : Opti	ional,	N/A : not appli	cable	
	Name	Data Type		Multiplicity	Description	
	returnCd	Strin	ng	1	Result code	
	returnMsg	Strin	ng	1	Result message	
	scheduleList	Strin	ng	1	List of schedules	
Response	ւ scheduleId	Strin	ng	1	Schedule event ID	
Elements	د section	Strin	ng	1	Section(1 or 2)	
	ւ startDay	String		1	Start date (yyyy/mm/dd)	
	∟ endDay	String		1	End date (yyyy/mm/dd)	
	ւ startTime	String		1	Start time	
	ւ endTime	Strin	ng	1	End time	
	∟ selected	String		1	Selected or not (Y or N)	
	POST /Grid/ManualPowerSavingGetSvc HTTP/1.1					
	Accept: text/xml					
	Content-Type: text/xml;charset=utf-8					
	Host:127.0.0.1:8090					
Request Sample	x-referKey: TK0sbs38w					
	x-userKey : Uwdoetn039:					
	<lgeptroot></lgeptroot>					
	HTTP/1.1 200 OK					
Doomonia C	Server:Apache-Coyote/1.1					
Response Sample	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>
                      <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>
                   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	М

	x-userKey User Authentication Token M						
	M : Mandatory, O : Optional, N/A : not applicable						
	Name	Data Type	Multiplicity		Description		M/O
Request Elements	scheduleId	String	1		Schedule ID	event	М
	M/O - M : Manda	atory, O : C	Optional				
Response	Name Data Type Multiplicity Description				ription		
Elements	returnCd	Str	ing		1	Result c	ode
	returnMsg	Str	ing		1	Result messag	e
	POST /Grid/Manua	alPowerSa	vingSele	ectSvc	HTTP/1.1		
	Accept: text/xml						
	Content-Type: text	:/xml;chars	et=utf-8				
	Host:127.0.0.1:8090						
Beguest Cample	x-referKey: TK0sbs38w						
Request Sample	x-userKey : Uwdoetn039:						
	<lgeptroot></lgeptroot>						
	<scheduleid>SH2014022100000057</scheduleid>						
	<lgeptroot></lgeptroot>						
	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;chars	et=utf-8				
	Content-Length:15	56					
Response Sample	Date:Tue, 11 Jan 2	2011 01:29	:04 GMT	-			
	<lgeptroot></lgeptroot>						
	<returncd>000</returncd>						
	<pre><returnmsg>OK</returnmsg> </pre>						

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