LowPowerDevice:1 Service Template Version 1.01

#

For UPnP™ Version 1.0 Status: Design Complete Date: August 28, 2007 Document Version: 1.00

: ;;<

Authors	Company
&	/ &
(= &	/ &
1 92 2	+ >
1 1	+ >
? 9-@	+ >
# > ! "	+ >
8	
% >	# &

\$&& - - %

Contents

```
%
      * / / $ /, +
                            Α
  +, $ /, +
  $88-*6/$ /, +
  +, +93, $2
  $ &
         (#
                            )
  *-6/ * 1 *
                            С
  $ * 6$-/$82*
   Derived data Types ......8
2.2.1.
2.2.2.
   BatteryLow .......9
2.2.3.
   ExternalPowerSupplySource 9
2.2.4.
   PowerSupplyStatus 10
2.2.5.
2.2.6.
   2.2.7.
   2.2.8.
   *6*+ /+3 $+ #, *-$ /, +
3*+*-/ 2 9$O$-* , + -, 2 , /+ -* , ##*+ $ /, +
В
  $ /, +
D
2.5.1.
   2.5.2.
   2.5.3.
   )*,-1, , *-$ /,+
                            D
   2.6.1.
2.6.2.
   $
+&
      $
   " ' - & #
       +&
          $-& #
D
  , O*-
     21
    #*),
D
  O$. *
```

#

. / & 2 = = В & E \$ % & 'E 6 & F & B = G & DE % & % & AE \$ & <E\$ 3 = # / !" & CE * / !" 3 = # & FE * O > !" В & ;E\$ 3 & !" В & E * 3 & !" D & E С

1. Overview and Scope

C; E, +H = % O > \$ - @ C 8)E K) &H \$+, +

C; 'E2/+., H\$ \$)* 8 => , & H & O > 9

C; E, , 9444 - @
! O 2^F"

8)E2/+., +H\$+,

+ 9
= >
! "

\$ O >

C; 'E2/+., H * \$)* 6 + ,

C; 'E2/+., H * \$)* 6 + ,

C; 'E1/+., H * \$)* 6 + ,

R O >

1.1. Referenced Specifications

1.2. Notation

1.3. Abbreviations

Table 2: Abbreviations

Definition	Description
8 # 4	8 = # G
8)	8&
2	2 = =

1.4. Non-goals

2. Service Modeling Definitions

2.1. ServiceType

2.2. State Variables

Reader Note: For first-time reader, it may be more insightful to read the action definition (follow link to & ') before reading the state variable definitions.

2.2.1. Derived data Types

2.2.1.1. XML documents as UPnP Arguments

$$2 = 889$$
 4#2 R S = 889

$$4#2$$
 $2 = 8$ % % & & http://www.upnp.org/schemas/

:

Table 3: State Variables

Variable Name	Req. or Opt. ¹	Data Type	Allowed Value ¹¹	Default Value ²	Eng. Units
8 2 =	,	&	; & S	;	+#\$
*G & = &	,		\$; & =	+#\$	+#\$
O > #	-	!4#2	В	+#\$	+#\$
= &	-	!4#2	D	+#\$	+#\$
&	-	В	9 W / % &	9	
=	-		= E 9\$ % W; W 9 & , & W 9 & , & WB ! ;9B"	;	+#\$

2.2.2. BatteryLow

2.2.3. ExternalPowerSupplySource

2.2.4. WakeupMethod

0 6 + 8 /

2.2.5. PowerSupplyStatus

2.2.6. SleepPeriod

2.2.7. PowerState

2.2.8. Low power SSDP extensions

2.3. Eventing and Moderation

/ , / 7

Variable Name	Evented	Moderated event	Max event rate(N/min)	Logical combination	Min Delta per event
8 2 =	1	1		+#\$	+#\$
*G & = &	1	1		+#\$	+#\$
O > #	+	+#\$	+#\$	+#\$	+#\$
= &	+	+#\$	+#\$	+#\$	+#\$
&	+	+#\$	+#\$	+#\$	+#\$
=	+	+#\$	+#\$	+#\$	+#\$

2.4. Generic LP-aware control point recommendations

2.5. Actions

Table 6: Actions

Name	Req. or Opt. 1
3 = # / !"	-
O > !"	-
3 & !"	_
-W-@, W, &4W+9	

. , . ,

2.5.1. GetPowerManagementInfo()

2.5.1.1. Arguments

Table 7: Arguments for GetPowerManagementInfo()

Argument	Direction	relatedStateVariable
O > #	1	O > #
= &	,	= &

2.5.1.2. Dependency on State (if any)

+

2.5.1.3. Effect on State (if any)

+

2.5.1.4. Control point requirements

2.5.1.5. Errors

-

Table 8: Error Codes for GetPowerManagementInfo()

errorCode	ErrorDescription	Description
<;	=	%

2.5.2. Wakeup()

2.5.2.1. Dependency on State (if any)

& &

2.5.2.2. Effect on State (if any)

2.5.2.4. Errors

Table 9: Error Codes for WakeUp()

errorCode	ErrorDescription	Description		
<;<	\$	%	=	

2.5.3. GoToSleep()

2.5.3.1. Arguments

Table 10: Arguments for GoToSleep()

Argument	i e	Direction	RelatedStateVariable
-	&	1	&
-	=	1	=
&		ı	&
=		,	=

2.5.3.2. Dependency on State (if any)

2.5.3.3. Effect on State (if any)

2.5.3.4. Control point requirements

2.5.3.5. Errors

-

Table 11: Error Codes for GoToSleep()

errorCode	ErrorDescription	Description			
<; D	% (%		=	
	=				
<; A	=		=	&	%
	&				

2.6. Theory of Operation

2.6.1. Explanation of Actions and operations

2.6.2. Low power state behavior

- & , & E\$ % Deep Sleep Online = > = &&

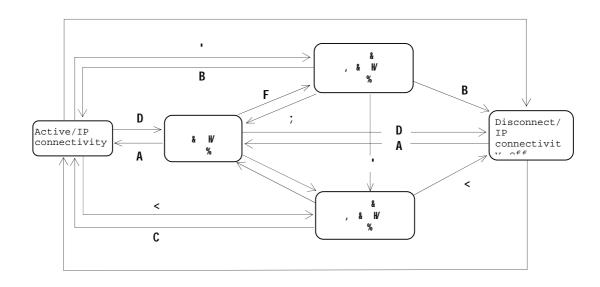
 & G O > !" & >

 Deep Sleep Online & & & & \$ % Deep Sleep Online = &&

 #9 @ = & E\$& \$ %

 = > % > O > !" &

& = = % & &



3

/

77 Active Disconnect byebye Disconnect Active Alive Active Deep Sleep Online byebye G @ & Deep Sleep Online!" В Deep Sleep Online Active Alive & & = > 9 D Active Transparent & EAlive @ & Transparent! " & Α Transparent & Active**E** Alive Active Deep Sleep Offline byebye < & , & !B" C Deep Sleep Offline Active Alive G = > O 2" Deep Sleep Online Transparent & @ & Deep Sleep byebye Online! " Deep Sleep Online Transparent & E & Transparent!" Alive = = @ & Deep Sleep Offline Transparent & byebye @ **&** & H = = , & !B" Deep Sleep Offline Transparent & E @ & Transparent!" Alive = > 9& Deep Sleep Online Deep Sleep Offline byebye = = **@ &** , & !B"

Deep Sleep Online Disconnect byebye

# /		4	. 77
D	Transparent & Disconnect byebye	1	&
A	Disconnect Transparent & E Alive =	1	&
<	Deep Sleep Offline DisconnectE + & % & > /	1	&

3. XML Service Descriptions

%

: ;;<

#

```
<?xml version="1.0" encoding="utf-8"?>
<scpd xmlns="urn:schemas-upnp-org:service-1-0">
   <specVersion>
     <major>1</major>
     <minor>0</minor>
  </specVersion>
  <actionList>
      <action>
        <name>GetPowerManagementInfo
        <argumentList>
           <argument>
              <name>WakeupMethod
              <direction>out</direction>
<relatedStateVariable>WakeupMethod</relatedStateVariable>
           </argument>
           <argument>
              <name>PowerSupplyStatus
              <direction>out</direction>
    <relatedStateVariable>PowerSupplyStatus</relatedStateVariable>
           </argument>
        </argumentList>
      </action>
      <action>
        <name>Wakeup
      </action>
     <action>
        <name>GoToSleep</name>
        <argumentList>
           <argument>
              <name>RecommendedSleepPeriod
              <direction>in</direction>
<relatedStateVariable>SleepPeriod</relatedStateVariable>
           </argument>
           <argument>
              <name>RecommendedPowerState
              <direction>in</direction>
<relatedStateVariable>PowerState</relatedStateVariable>
           </arqument>
           <argument>
              <name>SleepPeriod
              <direction>out</direction>
<relatedStateVariable>SleepPeriod</relatedStateVariable>
           </argument>
           <argument>
              <name>PowerState
              <direction>out</direction>
<relatedStateVariable>PowerState/relatedStateVariable>
           </argument>
         </argumentList>
     </action>
   </actionList>
  <serviceStateTable>
```

\$&& -

& N =

L

&

\$& = 6 &

```
<stateVariable sendEvents="no">
        <name>WakeupMethod
        <dataType>string</dataType>
     </stateVariable>
     <stateVariable sendEvents="no">
        <name>PowerSupplyStatus
        <dataType>string</dataType>
     </stateVariable>
     <stateVariable sendEvents="no">
        <name>PowerState
        <dataType>string</dataType>
        <AllowedValueList>
           <AllowedValue>0</AllowedValue>
           <AllowedValue>1</AllowedValue>
           <AllowedValue>2</AllowedValue>
           <AllowedValue>4</AllowedValue> </AllowedValueList>
</stateVariable>
     <stateVariable sendEvents="no">
        <name>SleepPeriod
        <dataType>i4</dataType>
     </stateVariable>
     <stateVariable sendEvents="Yes">
           <name>BatteryLow</name>
           <dataType>Boolean</dataType></stateVariable>
     <stateVariable sendEvents="Yes">
           <name>ExternalPowerSupplySource
           <dataType>i4</dataType>
     </stateVariable>
  </serviceStateTable>
</scpd>
```

4. Test

+ %

5. Sample Argument XML documents

5.1. PowerSupplyStatus

```
<?xml version="1.0" encoding="UTF-8"?>
<p:PowerSupplyStatus xmlns:p="urn:schemas-upnp-
org:lp:PowerSupplyStatus"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" >
    <p:ExternalPowerSupply>
        <p:ExternalPowerSourceInfo>AC</p:ExternalPowerSourceInfo>
        <p:IsConnected>true</p:IsConnected>
        </p:ExternalPowerSupply>
        <p:InternalPowerSupply>
        <p:PowerRemaining>95</p:PowerRemaining>
        <p:TimeRemaining>P00DT10H30M</p:TimeRemaining>
        </p:PowerSupply>
</p:PowerSupplyStatus>
```

5.2. WakeUpMethod

```
<?xml version="1.0" encoding="UTF-8"?>
<p:WakeupMethod xmlns:p="urn:schemas-upnp-org:lp:WakeupMethod"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <p:BearerWakeupMethod>
   <p:IanaTechnologyType>71</p:IanaTechnologyType>
<p:WakeupPattern>0008744C7F1D0008744C7F1D0008744C7F1D0008744C7F1D0008
744C7F1D0008744C7F1D0008744C7F1D0008744C7F1D0008744C7F1D0008744C7F1D0
1D</p:WakeupPattern>
   <p:AdditionalBearerInfo>
     <p:Address>0008744C7F1D</p:Address>
     <p:Bearer_Info>Adsilon</p:Bearer_Info>
   </p:AdditionalBearerInfo>
  </p:BearerWakeupMethod>
  <p:NonBearerWakeupMethod>
   <p:BearerType>Infrared</p:BearerType>
   <p:VendorNonBearerInfo>Kolhips</p:VendorNonBearerInfo>
  </p:NonBearerWakeupMethod>
</p:WakeupMethod>
```

: ;;< # \$& - -