

# 56-0229 IPACU XML Services ICD rev.xB3

- 1 Overview
  - 1.1 Using Services
  - 1.2 XML Request Format
  - 1.3 XML Response Format
- 2 Antenna Service
  - 2.1 antenna\_status
  - 2.2 antenna\_versions
  - 2.3 modem\_status
  - 2.4 modem\_info
  - 2.5 mta\_status
  - 2.6 get\_mta\_config
  - 2.7 set\_mta\_config
  - 2.8 get\_commbbox\_config
  - 2.9 set\_commbbox\_config
  - 2.10 get\_antenna\_config
  - 2.11 set\_antenna\_config
  - 2.12 get\_vsatsat\_beam\_table
  - 2.13 get\_satellite\_list
  - 2.14 select\_satellite
  - 2.15 set\_satellite\_identity
  - 2.16 get\_satellite\_params
  - 2.17 set\_satellite\_params
  - 2.18 reset\_satellite\_params
  - 2.19 get\_satellite\_params\_header
  - 2.20 start\_serial\_log
  - 2.21 serial\_log\_status
  - 2.22 set\_gps
  - 2.23 set\_nmea\_gprmc
  - 2.24 get\_nmea\_heading
  - 2.25 set\_nmea\_heading
  - 2.26 reboot
  - 2.27 calibrate\_gyro
  - 2.28 reset\_software
  - 2.29 power
  - 2.30 ophours
  - 2.31 get\_lcd\_brightness
  - 2.32 set\_lcd\_brightness
  - 2.33 set\_date\_time
  - 2.34 get\_blockage\_zones
  - 2.35 set\_blockage\_zones
  - 2.36 get\_hazard\_zones
  - 2.37 set\_hazard\_zones
- 3 System Service Interface
  - 3.1 get\_message\_protocol\_version
  - 3.2 get\_vessel\_config
  - 3.3 set\_vessel\_config
  - 3.4 get\_eth
  - 3.5 set\_eth
  - 3.6 set\_eth\_factory
  - 3.7 get\_wlan
  - 3.8 set\_wlan
  - 3.9 set\_wlan\_factory
  - 3.10 get\_lan
  - 3.11 set\_lan
  - 3.12 broadband\_status
  - 3.13 set\_cell\_modem
  - 3.14 cell\_modem\_status
  - 3.15 cell\_modem\_dial\_out
  - 3.16 get\_smartswitch\_status
  - 3.17 set\_smartswitch
  - 3.18 set\_smartswitch\_config
  - 3.19 get\_smartswitch\_config
  - 3.20 set\_dualdome\_config
  - 3.21 get\_dualdome\_status
  - 3.22 get\_config\_file
  - 3.23 set\_config\_file
  - 3.24 set\_config\_turnkey
  - 3.25 get\_config\_turnkey
  - 3.26 list\_config\_turnkey
  - 3.27 get\_serial\_log

- 3.28 `get_event_history_log`
- 3.29 `get_recent_event_history`
- 3.30 `get_event_history_count`
- 3.31 `upload_software`
- 3.32 `install_software`
- 3.33 `update_satellite_config`
- 3.34 `set_tx_inhibit_reason`
- 3.35 `move_to_next_satellite`
- 4 FrontPanel Service
  - 4.1 `set_display`
- 5 Satellite Selector IP AutoSwitch Service
  - 5.1 `autoswitch_register`
  - 5.2 `autoswitch_master`
  - 5.3 `get_autoswitch_active`
  - 5.4 `get_autoswitch_status`
  - 5.5 `set_autoswitch_service`
  - 5.6 `get_autoswitch_service`
  - 5.7 `set_autoswitch_names`
- 6 Product Registration Data
  - 6.1 `set_product_registration`
  - 6.2 `get_product_registration`
  - 6.3 `set_product_registered`
  - 6.4 `Register Product on Portal`

## Overview

The XML-based message service is detailed in the following sections of this document. This service will be implemented on TCP port 50010 for socket access by internal and defined clients.

RESTFUL web services exist to provide HTTP (rather than socket) access to the IPACU.

All the XML messages are available via the URL [http://{ip\\_address}/webservice.php](http://{ip_address}/webservice.php). All XML requests from the web should be sent via the REST protocol using the http POST mechanism; and the POST body should contain only the XML request.

An IP AutoSwitch service for satellite switching listens on port 50009 for messages to/from the Diseqc capable device(s). This service only applies to the HD11 product.

## Using Services

If a client request contains invalid XML, the service will immediately drop the TCP connection. In the System Service section there is a method named 'get\_message\_protocol\_version'. It is used for retrieving the version and system identifiers for the messaging protocol that is installed. Using this method at startup can help ensure that only messages with valid XML are transmitted.

## XML Request Format

*New for 2.0 HD11 and V7 series*

In general, the XML request format is

### request format

```
<?xml version="1.0" encoding="UTF-8"?>
<ipacu_request >
  <message name="someMessageName" />
  - any message specific data goes here---
</ipacu_request>
```

Where 'someMessageName' is the name of the XML request message  
Request details are defined in the following sections.

## XML Response Format

*New for 2.0 HD11 and V7 series*

In general, the HD11 XML response format is

#### response format

```
<?xml version="1.0" encoding="UTF-8"?>
<ipacu_response>
  <message name="someMessageName" error="0" />
  - any message specific data goes here---
</ipacu_response>
```

If non-zero, the error attribute will contain a message indicating the error. In addition, the 'message-specific' data should be ignored when the error is non-zero.

## Antenna Service

### antenna\_status

*Supported on HD11 and V7IPACU*

**Description:** Returns snapshot of current antenna system status

**Request:**

#### antenna\_status request

```
<ipacu_request >
  <message name="antenna_status"/>
</ipacu_request>
```

**Response:**

#### antenna\_status response

```
<ipacu_response>
  <message name="antenna_status" error="0"/>
  <gps>
    <state>ACQUIRED | ACQUIRING | ERROR</state>
    <lat>41.312934</lat>
    <lon>-71.175168</lon>
    <dt>YYYY-MM-DDTHH:MM:SSZ</dt>
  </gps>
  <acu>
    <state>OK | FLASHING | CALGYRO | ERROR</state>
    <line1>Foo</line1>
    <line2>Bar</line2>
  </acu>
  <antenna>
    <state>
      INITIALIZING |
      WAITING FOR MODEM |    Note: VSAT only
```

```

MODEM SAT SWITCH | Note: VSAT only
SEARCHING |
TRACKING |
IDLE |
ERROR |
CABLE UNWRAP
</state>
<rf>
  <snr>7</snr> Note: HD11 only
  <bars>4</bars> Note: HD11 only
  <rssi>4.3</rssi> Note: VSAT only
  <hazard_zone> Note: VSAT ONLY, indicates transmit disabled if ZONE1 or ZONE2
    NOTSET | no hazard zones set
    ZONE1 | TX OFF in ZONE1
    ZONE2 | TX OFF in ZONE2
    ZONE1 and ZONE2 | TX OFF in the overlap area of ZONE1 and ZONE2
    NONE | TX not in Hazard Zone
    IGNORED hazard zone override is enabled
  </hazard_zone>
</rf>
<brst>
  <hdg>123.6</hdg>
  <az_bow>10.0</az_bow>
  <az>190.0</az> Note: if <hdg> present, this value incorporates azoffset (antenna
computed mounting angle) and is true
  <el>89.1</el>
  <tilt>-87.4</tilt>
  <azoff>180.0</azoff>
</brst>
<motor>
  <az>2.2</az>
  <cross_az>2.2</cross_az>
  <el>3.3</el>
  <skew>3.3</skew>
</motor>
<ant_err>0,0,0,0</ant_err> Note: VSAT only
<power_err>0</power_err> Note: HD11 only
<comms_err>0</comms_err> Note: HD11 only
<device_err>0</device_err> Note: HD11 only
<sys_err>0</sys_err> Note: HD11 only
</antenna>
<satellite>
  <antSatID>26E</antSatID> Note: HD11 only
  <name>BADR-5</name>
  <beam>CONUS-1</beam> Note: VSAT only
    <region>North America</region> Note: HD11 only
  <lon>-26.08</lon>
  <band>Ku</band> Note: VSAT only
    <dlfreq>11960000</dlfreq> Note: VSAT only
</satellite>
<modem> Note: VSAT only (see modem_status for the complete list of states)
  <state>ONLINE</state>
  <ebno>5.0</ebno>
</modem>
<mta> NOTE: VSAT only (see mta_status)
  <state>ONLINE | CONNECTING | UNAVAILABLE | UNKNOWN</state>
  <ports>
    <port>
      <addr>1</addr>

```

```

<sip>REGISTERED | NOT_REGISTERED</sip>
<status>
  AVAILABLE |
  DIALING |
  OFF HOOK |
  RINGING |
  IN USE |

  UNKNOWN
  UNAVAILABLE |
</status>
<mail>Y | N</mail>
</port>
<port>
  <addr>2</addr>
  <sip>REGISTERED | NOT_REGISTERED</sip>
  <status>
    AVAILABLE |
    DIALING |
    OFF HOOK |
    RINGING |
    IN USE |

    UNKNOWN
    UNAVAILABLE |
  </status>
  <mail>Y | N</mail>
</port>
</ports>
</mta>
<autoswitch>      Note: HD11 only
  <enable>Y | N<enable>
  <master>      Note: only if set
  <sn>123456789</sn>
  <sat>A | B | C | D</sat>
</master>
</autoswitch>
<smartswitch>      Note: HD11 only
  <available>Y | N</available>
  <autoselect>Y | N</autoselect>
  <input>A | B</input>
  <output>1 | 2 | 3</output>
</smartswitch>
<dualdome>      Note: HD11 only
  <mode>SINGLE | MASTER | SLAVE</mode>
  <state>
    SINGLE |
    DISCOVER |
    SYNCH |
    NO_RF |
    FOLLOW |
    ACTIVE

```

```
</state>
</dualdome>
</ipacu_response
```

#### Field definitions (gps)

lat – GPS latitude in degrees (6 decimal places, North is +ve);  
lon – GPS longitude in degrees (6 decimal places, East is +ve);  
date – date reported by antenna GPSs (i.e. 05-OCT-2009)  
time – time reported by antenna GPS (24-hour format)

#### Fields (flash)

State (OFF= no flash in progress; FLASHING= flash in progress,  
CALGYRO=gyro calibration in progress  
line1, line2 – text to be shown on FrontPanel, max 20 characters

#### Fields (system):

state = possible values are Initializing, Ready, Searching, Tracking, Idle, Error, Cable Unwrap  
snr = signal noise ratio; unsigned integer  
bars = number of bars for signal strength graph  
az = azimuth angle  
cross\_az = cross azimuth angle  
el = elevation angle  
skew = skew angle  
comms\_err = bit field; if non-zero, indicates communications error  
power\_err = bit field, if non-zero, indicates power error  
device\_err = bit field, if non-zero, indicates device error  
sys\_err = bit field, if non-zero, indicates system error

## antenna\_versions

*New for 2.0, supported on HD11 and V7IPACU*

**Description:** returns system version information

#### Request:

#### antenna\_versions request

```
<ipacu_request >
  <message name="antenna_versions"/>
</ipacu_request>
```

#### Response:

#### antenna\_versions response

```
<ipacu_response >
  <message name="antenna_versions" error="0"/>
  <system>TVRO | VSAT</system>
  <part>04-1234</part>
  <current>102</current>
  <icm>Y | N</icm>
  <acu>
    <model>VSAT-IPACU | TVRO-IPACU</model>
    <part>04-1234</part>
    <rev>A</rev>
    <ver>1.00</ver>
  </acu>
</ipacu_response>
```

```
<sn>1.00123456789</sn>
</acu>
<au>
  <model>HD7 | HD11 | V7 | V7IP | V3 | V11</model>
  <part>04-1234</part>
  <rev>A</rev>
  <ver>1.00</ver>
  <sn>1.00987654321</sn>
</au>
<rf>
  <part>04-1234</part>
  <rev>A</rev>
  <ver>1.00</ver>
</rf>
<az_el>
  <part>04-1234</part>
  <rev>A</rev>
  <ver>1.00</ver>
</az_el>
<skew_xaz>
  <part>04-1234</part>
  <rev>A</rev>
  <ver>1.00</ver>
</skew_xaz>
<app>
  <rev>A</rev>
  <ver>1.00</ver>
</app>
<os>
  <rev>A</rev>
  <ver>1.00</ver>
</os>
<sat_list> Note: HD11 only
  <part>04-1234</part>
  <rev>A</rev>
  <ver>1.00</ver>
</sat_list>
<fpga>
  <part>04-1234</part>
  <rev>A</rev>
  <ver>1.00</ver>
</fpga>
<lbn>
  <ver>1.00</ver>
</lbn>
<sensor>
  <part>04-1234</part>
  <rev>A</rev>
  <ver>1.00</ver>
  <sn>NNNNNNNN</sn>
</sensor>
<gprs>
  <ip>10.221.0.123</ip>
  <ver>12.34.56</ver>
</gprs>
<modem>      Note: VSAT only
  <wan>10.60.123.321</wan>
  <sn>1234567</sn>
  <ver>1.0</ver>
```

```
<sed>acbdef</sed>
<sscf>123456</sscf>
</modem>
<mta>      Note: VSAT only
  <mac>172.31.255.6</mac>
  <ver>9.15.25</ver>
</mta>
<commbox>  Note: VSAT only
  <part>04-1234</part>
  <ver>100</ver>
```



```
<sn>S0207102202AA-00000</sn>
</commbox>
</ipacu_response>
```

**Fields:**

current – KVH master version of HD11 or the V7 software suite

previous – the version of the software suite installed before the current version

icm - integrated commbox model chassis

acu – version of antenna control unit

au – version of antenna unit

rf – version of RF

az\_el – version of AZ\_EL Motor

skew\_xaz – version of SKEW\_XAZ\_Motor

app – application version

os – (internal) operating system version

NOTE – As mentioned above, the field 'current' indicates the current software suite master version as installed on the product. This software suite consists of several components, each which has its own version.

## modem\_status

*New for 2.0, supported on the V7 IPACU only*

**Description:** Returns the current status information of the ViaSat modem

**Request:****modem\_status request**

```
<ipacu_request >
  <message name="modem_status"/>
</ipacu_request>
```

**Response:**

## modem\_status response

```
<ipacu_response>
<message name="modem_status" error="0"/>
<state>
    UPDATING |
    INITIALIZING |
    TRANSMIT DISABLED |
    WAITING FOR HUB COMM |
    ATTEMPTING LOGIN |
    ONLINE |
    OFFLINE |
    SWITCH SAT
</state>
<termid>xxx.xxx.xxx.xxx</termid>
<uptime>{DDD:HH:MM:SS}</uptime>
<acustate>
    OFFLINE, TxInhibit active |
    SIGNAL ACQUISITION, TxInhibit active |
    ONLINE, TxInhibit active |
    ONLINE, TxInhibit inactive |
</acustate>
<ebno>{int16 sig strength 0.1db}</ebno>
<eirp>{uint16 0.1dbW}</eirp>
<attenuator>{uint16}</attenuator>
<amplitude>{uint16}</amplitude>
<flrstate>
    UNLOCKED |
    LOCKED |
</flrstate>
<flrxipcnt>{uint32}</flrxipcnt>
<flrxiperr>{uint32}</flrxiperr>
<rldatarate>{uint32 bps}</rldatarate>
<rltxcnt>{uint32}</rltxcnt>
<txdsblpred>{ see note}</txdsblpred>
<termstate>
    INITIAL PHASE |
    TRANSMIT DISABLED |
    TRANSMIT ENABLED |
    CW |
    ANTENNA POINTING
</termstate>
<loginstatus>{uint16 enum}<loginstatus>
<logincnt>{uint32}</logincnt>
<loginlast>{YYYY-MM-DDTHH:MM:SSZ}</loginlast>
<loginfailcnt>{uint32}</loginfailcnt>
<bbmsgcnt>{uint32}</bbmsgcnt>
<lon>-105.00</lon>
<downlinkfreq>11960000</downlinkfreq>
<uptime></uptime>
</ipacu_response>
```

### NOTE:

txdsblpred = uint32 bitmapped

bit 31 – ATI tx status 0=disabled 1=enabled

bit 30 – Sat tx status 0=disabled 1=enabled  
bit 29 – Sat handoff 0=no handoff avail 1=handoff avail  
bit 19:10 - # of miles to nearest sat handoff  
bit 9:0 - # of miles to nearest ATI disable

lon - satellite orbital slot, +ve value for East satellites, -ve value for West satellites, floating point value to 2 decimal places

termid - unique network-wide static IP address assigned to modem to identify the terminal from the KVH NOC side

downlinkfreq - down link frequency value (also known as forward link frequency) in kHz

## modem\_info

*New for 2.0, supported on the V7 IPACU only*

**Description:** Returns the current static information of the ViaSat modem. <sed> and <sscf> are reserved for future use.

**Request:**

### modem\_info request

```
<ipacu_request >  
  <message name="modem_info" />  
</ipacu_request>
```

**Response:**

### modem\_info response

```
<ipacu_response>  
  <message name="modem_info" error="0" />  
  <sn>AAAA</sn>  
  <ver>String</ver>  
  <wan>1.2.3.4</wan>  
  <lan>10.10.10.10</lan>  
  <mask>255.255.255.0</mask>  
  <dhcp>DISABLED | ENABLED</dhcp>  
  <sed>1234</sed>  
  <sscf>1234</sscf>  
</ipacu_response>
```

## mta\_status

*Supported only on the V7 IPACU*

**Description:** Returns the current status of the MTA VoIP telephone adaptor

**Request:**

### mta\_status request

```
<ipacu_request >
<message name="mta_status"/>
</ipacu_request>
```

### Response:

### mta\_status response

```
<ipacu_response>
<message name="mta_status" error="0"/>
<state>ONLINE | CONNECTING | UNAVAILABLE | UNKNOWN</state>
<ports>
  <port>
    <addr>1</addr>
    <sip>REGISTERED | NOT_REGISTERED</sip>
    <status>
      AVAILABLE |
      DIALING |
      OFF HOOK |
      RINGING |
      IN USE |
      UNAVAILABLE |
      UNKNOWN
    </status>
    <mail>Y | N</mail>
  </port>
  <port>
    <addr>2</addr>
    <sip>REGISTERED | NOT_REGISTERED</sip>
    <status>
      AVAILABLE |
      DIALING |
      OFF HOOK |
      RINGING |
      IN USE |
      UNAVAILABLE |
      UNKNOWN
    </status>
    <mail>Y | N</mail>
  </port>
</ports>
</ipacu_response>NOTE:
```

### MTA State:

ONLINE = MTA is registered with VOIP provider

CONNECTING = Modem is online and MTA is attempting to connect to VOIP provider

UNAVAILABLE = MTA is not able to connect to VOIP provider

UNKNOWN = undefined or no state received from MTA

### Phone Line Status:

AVAILABLE = FXS\_OnHook\_State

DIALING = FXS\_Dialing\_State

DIALING = FXS\_Setup\_Link\_State

OFF HOOK = FXS\_DT\_Timeout\_State

RINGING = FXS\_Ringing\_State

RINGING = FXS\_PSTN\_RingBack\_State

IN USE = FXS\_Talking\_State

UNAVAILABLE = SIP was not registered so line is not available for calls

UNKNOWN = undefined or no state received from MTA

## get\_mta\_config

*Supported only on the V7 IPACU*

**Description:** Returns the current info of the MTA VoIP telephone adaptor

**Request:**

### get\_mta\_config request

```
<ipacu_request >  
  <message name="get_mta_config"/>  
</ipacu_request>
```

**Response:**

## get\_mta\_config response

```
<ipacu_response>
  <message name="get_mta_config" error="0"/>
  <sw_ver>1234</sw_ver>
  <mac>00:10:99:11:90:1a</mac>
  <wan>172.16.30.153</wan>
  <dns1>192.168.1.23</dns1>
  <dns2>192.168.1.24</dns2>
  <dt>YYYY-MM-DDTHH:MM:SSZ</dt>
  <uptime>HH:MM:SS</uptime>
  <outbound_country>United States</outbound_country>
  <intl_prefix>011</intl_prefix>
  <activation>ACTIVATED | NOT_ACTIVATED</activation>
  <display>Y | N</display>
  <ports>
    <port>
      <addr>1</addr>
      <name>Bridge</name>
      <phones>
        <phone>
          <number>123-456-7890</number>
          <country>United States</country>
          <code>1</code>
        </phone>
        <phone>
          <number>12-12-34-34</number>
          <country>France</country>
          <code>3</code>
        </phone>
      </phones>
    </port>
    <port>
      <addr>2</addr>
      <name>Captain's quarters</name>
      <phones>
        <phone>
          <number>45-45-67-67</number>
          <country>France</country>
          <code>3</code>
        </phone>
      </phones>
    </port>
  </ports>
</ipacu_response>
```

**NOTE:**

## set\_mta\_config

*Supported only on the V7 IPACU*

**Description:** Allows client to set MTA VoIP telephone adaptor settings

**Request:**

### set\_mta\_config request

```
<ipacu_request >
  <message name="set_mta_config"/>
  <display>Y | N</display>
  <ports>
    <port>
      <addr>1</addr>
      <name>Bridge</name>
    </port>
    <port>
      <addr>2</addr>
      <name>Captain's quarters</name>
    </port>
  </ports>
</ipacu_request>
```

#### Response:

### set\_mta\_config response

```
<ipacu_response>
  <message name="set_mta_config" error="0"/>
</ipacu_response>
```

#### NOTE:

## get\_commbbox\_config

*Supported only on the V7 IPACU*

**Description:** Returns the current info of the CommBox service

#### Request:

### get\_commbbox\_config request

```
<ipacu_request >
  <message name="get_commbbox_config"/>
</ipacu_request>
```

#### Response:

### get\_commbox\_config response

```
<ipacu_response>
  <message name="get_commbox_config" error="0"/>
  <display_button>Y | N</display_button>
</ipacu_response>
```

**NOTE:**

## set\_commbox\_config

*Supported only on the V7 IPACU*

**Description:** Allows client to set CommBox service settings. This data must be persisted in the ACU and used on each start of ACU services.

**Request:**

### set\_commbox\_config request

```
<ipacu_request >
  <message name="set_commbox_config"/>
  <display_button>Y | N</display_button>
</ipacu_request>
```

**Response:**

### set\_commbox\_config response

```
<ipacu_response>
  <message name="set_commbox_config" error="0"/>
</ipacu_response>
```

**NOTE:**

## get\_antenna\_config

*New for 2.0, Supported on HD11 and **not** V7IPACU*

**Description:** Sends antenna configuration parameters to the client.

**Request:**



### get\_antenna\_config request

```
<ipacu_request >
<message name="get_antenna_config" />
</ipacu_request>
```

#### Response:

### get\_antenna\_config response

```
<ipacu_response >
  <message name="get_antenna_config" error="0" />
  <sidelobe>ON | OFF</sidelobe>
  <sleep>ON | OFF</sleep>
</ipacu_response>
```

## set\_antenna\_config

*New for 2.0, Supported on HD11 and **not** V7IPACU*

**Description:** Set configuration parameters in the antenna.

#### Request:

### set\_antenna\_config request

```
<ipacu_request >
  <message name="set_antenna_config" />
  <sidelobe>ON | OFF</sidelobe>
  <sleep>ON | OFF</sleep>
</ipacu_request>
```

#### Response:

### set\_antenna\_config response

```
<ipacu_response >
  <message name="set_antenna_config" error="0" />
</ipacu_response>
```

## get\_vsat\_beam\_table

*New for 2.0, supported on VSAT systems only*

**Description :** Returns a lookup table of satellite beam names to display using orbital slot and down link (forward link) frequency as keys.

**Request:**

**get\_vsat\_beam\_table request**

```
<ipacu_request >
  <message name="get_vsat_beam_table" />
</ipacu_request>
```

**Response:**

**get\_vsat\_beam\_table response**

```
<ipacu_response>
  <message name="get_vsat_beam_table" error="0"/>
  <beams>
    <beam>
      <sat_orb_slot>-800</sat_orb_slot>
      <sat_fwd_link>127000</sat_fwd_link>
      <acu_desig>EME1</acu_desig>
      <web_desig>EMEA-1</web_desig>
      <satellite/>
      <band>Ku</band>
    </beam>
    <beam>
      <sat_orb_slot>-800</sat_orb_slot>
      <sat_fwd_link>126810</sat_fwd_link>
      <acu_desig>EME2</acu_desig>
      <web_desig>EMEA-2</web_desig>
      <satellite/>
      <band>Ku</band>
    </beam>
    <beam>
      <sat_orb_slot>-800</sat_orb_slot>
      <sat_fwd_link>126900</sat_fwd_link>
      <acu_desig>EME3</acu_desig>
      <web_desig>EMEA-3</web_desig>
      <satellite/>
      <band>Ku</band>
    </beam>
    <beam>
      <sat_orb_slot>-10500</sat_orb_slot>
      <sat_fwd_link>118890</sat_fwd_link>
      <acu_desig>CON3</acu_desig>
      <web_desig>CONUS-3</web_desig>
      <satellite></satellite>
      <band>Ku</band>
    </beam>
    <beam>
      <sat_orb_slot>-5300</sat_orb_slot>
      <sat_fwd_link>41232</sat_fwd_link>
      <acu_desig>AORC</acu_desig>
      <web_desig>AOR-C</web_desig>
      <satellite/>
      <band>C</band>
    </beam>
  </beams>
</ipacu_response>
```

```
</beam>
<beam>
  <sat_orb_slot>6400</sat_orb_slot>
  <sat_fwd_link>41215</sat_fwd_link>
  <acu_desig>IORC</acu_desig>
  <web_desig>IOR-C</web_desig>
  <satellite/>
  <band>C</band>
</beam>
<beam>
  <sat_orb_slot>18000</sat_orb_slot>
  <sat_fwd_link>40660</sat_fwd_link>
  <acu_desig>PORC</acu_desig>
  <web_desig>POR-C</web_desig>
  <satellite/>
  <band>C</band>
</beam>
```

```
</beams>  
<ipacu_response>
```

**NOTE** - This response can include more or less fields depending on the number of satellite beams.

## get\_satellite\_list

*New for 2.0, supported on the HD11, this service is not implemented on the V7 series product*

**Description** : Returns list of satellites based upon a set of filters.

The region filter takes values of "Europe", "North America", "Central/South America", "Asia", "Africa", and "Australia". This filter value has either a single value or a comma separated list of regions. When this filter is blank or not used, all satellites are returned in the response.

The list reported by the region filter may be further narrowed down by the 'user\_choice\_filter'. Note that using this additional filter may result in an empty satellite list when no satellite matches the combined filter criteria.

The user\_choice\_filter has four possible values: "enable", "favorite", "enable,favorite" or "favorite,enable" (equivalent to previous). The filter limits the list of satellites to those that are marked by the user as being enabled, favorite or both. When this filter is blank or not used the satellite list is not modified.

### Request:

#### get\_satellite\_list request

```
<ipacu_request >  
  <message name="get_satellite_list" />  
  <region_filter>North America,Europe</region_filter>  
  <user_choice_filter>enable,favorite</user_choice_filter>  
</ipacu_request>
```

### Response:

### get\_satellite\_list response

```
<ipacu_response>
  <message name="get_satellite_list" error="0"/>
  <region_filter>North America,Europe</region_filter>
  <user_choice_filter>enable,favorite</user_choice_filter>
  <sat_list>
    <satellite>
      <listID>21</listID>
      <antSatID>61W</antSatID>
      <name>Amazonas-2</name>
      <region>North America</region>
      <lon>-61.00</lon>
      <enable>TRUE</enable>
      <favorite>TRUE</favorite>
      <select>TRUE</select>
      <triSatID>FALSE</triSatID>
    </satellite>
    <satellite>
      <listID>23</listID>
      <antSatID>119W</antSatID>
      <name>Echostar VII</name>
      <region>North America</region>
      <lon>-119.00</lon>
      <enable>TRUE</enable>
      <favorite>TRUE</favorite>
      <select>TRUE</select>
      <triSatID>FALSE</triSatID>
    </satellite>
  </sat_list>
</ipacu_response>
```

**NOTE** - This response can include more or less fields depending on the number of satellites included in those services.

## select\_satellite

*New for 2.0, supported on the HD11, this service is not implemented on the V7 series product*

**Description:** request to track satellite and make it current. Send either 'listID' or 'antSatID' in the request, DO NOT SEND BOTH. Reply will contain all identifiers.

**Request:**

### select\_satellite request

```
<ipacu_request >
  <message name="select_satellite"/>
  <listID>21</listID> OR
  <antSatID>61W</antSatID>
</ipacu_request>
```

**Response:**

### select\_satellite response

```
<ipacu_response >
  <message name="select_satellite" error="0" />
</ipacu_response>
```

## set\_satellite\_identity

*New for 2.0, supported on the HD11, this service is not implemented on the V7 series product*

**Description:** set the satellite identifiers. Both the listID and the antSatID must be unique in the database. If not tri-sat mode, at least one of the lo1 or lo2 must not be OFF.

**Request:**

### set\_satellite\_identity request

```
<ipacu_request >
  <message name="set_satellite_identity" />
  <listID>3</listID>
  <antSatID>101W</antSatID>
  <name>DTV101</name>
  <region>North America</region>
  <lon>-101.00</lon>
  <skew>0.00</skew>
  <dt>YYYY-MM-DDTHH:MM:SSZ</dt>
  <enable>TRUE</enable>
  <favorite>TRUE</favorite>
  <select>TRUE</select>
  <triSatID>FALSE</triSatID>
  <lo1>11000</lo1>
  <lo2>10000</lo2>
  <kumode>N | W</kumode>
</ipacu_request>
```

#### Fields definition:

antSatID – satellite identifier with longitude, E/W and suffix  
lon – the actual longitude of the satellite +/-180.00 degrees, +ve=East, -ve=West  
suffix – suffix of available satellite – mostly needed in Europe empty in U.S.  
name – descriptive satellite name  
antSatID – unique satellite identifier  
triSatID – false if not tri-sat mode, otherwise specifies the Ku sat, Ka sat pair  
enable – satellite is marked as enabled  
favorite – satellite is marked as favorite  
select – satellite is marked as selectable by the user to track  
dt – timestamp of when this data was changed  
skew – pre-skew angle for satellite inclination  
lo1, lo2 – LNB Oscillators  
kumode – narrow (N, default) or wide (W) beam

**Response:**

### set\_satellite\_identity response

```
<ipacu_response>  
  <message name="set_satellite_identity" error="0" />  
</ipacu_response>
```

## get\_satellite\_params

*New for 2.0, supported on the HD11, this service is not implemented on the V7 series product*

**Description:** get all satellite parameters for a specific satellite. Send either 'listID' or 'antSatID' in the request, DO NOT SEND BOTH.

**Request:**

### get\_satellite\_params request

```
<ipacu_request >  
  <message name="get_satellite_params" />  
  <listID>1</listID> OR  
  <antSatID>5WW</antSatID>  
</ipacu_request>
```

**Response:**

### get\_satellite\_params response

```
<ipacu_response>
  <message name="get_satellite_params" error="0" />
  <listID>4</listID>
  <antSatID>99W</antSatID>
  <name>DTV99</name>
  <region>North America</region>
  <lon>-99.00</lon>
  <skew>0.00</skew>
  <dt>YYYY-MM-DDTHH:MM:SSZ</dt>
  <enable>FALSE</enable>
  <favorite>FALSE</favorite>
  <select>FALSE</select>
  <triSatID>FALSE</triSatID>
  <lo1>OFF</lo1>
  <lo2>10000</lo2>
  <kumode>N | W</kumode>
  <xponder>
    <id>1</id>
    <pol>V</pol>
    <band>L</band>
    <freq>11960</freq>
    <symRate>20000</symRate>
    <fec>3/4</fec>
    <netID>0xFFFFE</netID>
    <modType>QDVB</modType>
  </xponder>
  <xponder>
    <id>4</id>
    <pol>V</pol>
    <band>H</band>
    <freq>11820</freq>
    <symRate>30000</symRate>
    <fec>2/3</fec>
    <netID>0xFFFFE</netID>
    <modType>QDVB</modType>
  </xponder>
</ipacu_response>
```

## set\_satellite\_params

*New for 2.0, supported on the HD11, this service is not implemented on the V7 series product*

**Description:** set the satellite parameters. Set 1 to 8 parameter banks at a time if not tri-sat mode satellite listing. Send either 'listID' or 'antSatID' in the request, DO NOT SEND BOTH.

**Request:**



### set\_satellite\_params request

```
<ipacu_request >
  <message name="set_satellite_params" />
  <listID>1</listID> OR
  <antSatID>5.0WW</antSatID>
  <xponder>
    <id>4</id>
    <pol>V</pol>
    <band>H</band>
    <freq>11820</freq>
    <symRate>30000</symRate>
    <fec>2/3</fec>
    <netID>0xFFFE</netID>
    <modType>QDVB</modType>
  </xponder>
  <xponder>
    <id>1</id>
    <pol>V</pol>
    <band>L</band>
    <freq>11960</freq>
    <symRate>20000</symRate>
    <fec>3/4</fec>
    <netID>0xFFFE</netID>
    <modType>QDVB</modType>
  </xponder>
</ipacu_request>
```

### Response:

### set\_satellite\_params response

```
<ipacu_response>
  <message name="set_satellite_params" error="0" />
</ipacu_response>
```

## reset\_satellite\_params

*This service is not implemented on the V7 series product*

**Description:** reset the satellite parameters to the defaults defined in the current software version. Send either 'listID' or 'antSatID' in the request, DO NOT SEND BOTH.

**Request:**

### reset\_satellite\_params request

```
<ipacu_request >
  <message name="reset_satellite_params" />
  <listID>21</listID> - OR -
  <antSatID>61W</antSatID>
</ipacu_request>
```

#### Response:

### reset\_satellite\_params response

```
<ipacu_response>
  <message name="reset_satellite_params" error="0" />
</ipacu_response>
```

## get\_satellite\_params\_header

*This service is not implemented on the V7 series product*

**Description:** reset the satellite parameters to the defaults defined in the current software version. Send either 'listID' or 'antSatID' in the request, DO NOT SEND BOTH.

#### Request:

### get\_satellite\_params\_header request

```
<ipacu_request >
  <message name="get_satellite_params_header" />
</ipacu_request>
```

#### Response:

### get\_satellite\_params\_header response

```
<ipacu_response>
  <message name="get_satellite_params_header" error="0" />
  <part></part>
  <rev></rev>
  <rev_dt></rev_dt>
  <edit_dt></edit_dt>
  <master_part></master_part>
  <master_rev></master_rev>
</ipacu_response>
```

## start\_serial\_log

Supported on HD11 and V7IPACU

**Description :** log serial data to a file

**Request:**

#### start\_serial\_log request

```
<ipacu_request >
  <message name="start_serial_log"/>
  <restart>Y | N</restart>
</ipacu_request>
```

**Response:**

#### start\_serial\_log response

```
<ipacu_response>
  <message name="start_serial_log" error="0"/>
</ipacu_response>
```

NOTE – Setting 'restart' to 'Y' will reset the antenna

NOTE – There is only one serial file. It is /var/log/ipacu.serial.log. This file will be overwritten as needed.

NOTE – The HD11 will determine the maximum size of this file. Once a new serial log has started, the HD11 writes to it until it is full. If service is already writing, and another 'start\_serial\_log' message is received, logging will restart immediately and the previous log will be overwritten.

## serial\_log\_status

Supported on HD11 and V7IPACU

**Description :** serial log status

**Request:**

#### serial\_log\_start request

```
<ipacu_request >
  <message name="serial_log_status"/>
</ipacu_request>
```

**Response:**

#### serial\_log\_status response

```
<ipacu_response>
  <message name="serial_log_status" error="0" />
  <dt>YYYY-MM-DDTHH:MM:SSZ</dt>
  <percent> 50</percent>
  <max>2048000</max>
  <current>1024000</current>
</ipacu_response>
```

**Fields:**

dt - serial log collection creation time

percent – percentage complete; rounded down to nearest integer

max – maximum number of bytes written to this log

current – current number of bytes currently contained in the log.

## set\_gps

*New for 2.0, Supported on HD11 and V7IPACU*

**Description:** This request may be used to temporarily set the GPS position. This value will only be used until the antenna GPS is able to determine its location.

**Request:**

### set\_gps request

```
<ipacu_request >
  <message name="set_gps" />
  <lat>32.383228</lat>
  <lon>-65.123456</lon>
</ipacu_request>
```

**Response:**

### set\_gps response

```
<ipacu_response>
  <message name="set_gps" error="0" />
</ipacu_response>
```

## set\_nmea\_gprmc

*New for 2.0, Supported on HD11 and V7IPACU*

**Description:** This request may be used to **override** antenna GPS RMC message. The string sent should be the one received from a NMEA compliant GPS device. This is used to replace defective or missing data from antenna's GPS device. Once sent, the antenna will no longer use local GPS device until a power cycle is done. User should continue to send this message every 1-3 seconds once it has been determined it is necessary to override the antenna's GPS as this data is used to adjust antenna's skew axis for satellite inclination.

**Request:**

### set\_nmea\_gprmc request

```
<ipacu_request >
  <message name="set_nmea_gprmc" />
  <nmea>
    $GPRMC,040302.663,A,3939.7,N,10506.6,W,0.27,358.86,200804,,*1A
  </nmea>
</ipacu_request>
```

**Response:**

### set\_nmea\_gprmc response

```
<ipacu_response>
  <message name="set_nmea_gprmc" error="0"/>
</ipacu_response>
```

## get\_nmea\_heading

*New for 2.0, Supported on HD11 and V7IPACU*

**Description:** Get NMEA heading from attached compass. Result is sent to the antenna.

**Request:**

### get\_nmea\_heading request

```
<ipacu_request >
  <message name="get_nmea_heading" />
</ipacu_request>
```

**Response:**

### get\_nmea\_heading response

```
<ipacu_response>
  <message name="get_nmea_heading" error="0" />
  <status>A | E | M | S | V</status>
  // A=Auto,E=Est,M=Man,S=Sim,V=Invalid
  <true>312.0</true>    // true heading
  <mag>329.1</mag>      // magnetic heading (with deviation)
  <sensor>329.1</sensor> // 0-359.999, 0=north, 90=east ...
  <dev>0.0E</dev>      // deviation, mag = sensor +/- dev
  <var>7.1W</var>      // variation, true = mag +/- var
  // if var/dev=E, add, if W, subtract
  <dt>YYYY-MM-DDTHH:MM:SSZ</dt>
  <nmea>$HCHDG,319.1,,7.1,W*3C</nmea> // string rcvd from device
  <preferred_source>HEHDG</preferred_source> // from acuserverices.conf file
</ipacu_response>
```

## set\_nmea\_heading

*New for 2.0, Supported on HD11 and V7IPACU*

**Description:** Set NMEA heading as backup to attached compass. Result is sent to antenna when compass is not operational.

**Request:**

### set\_nmea\_heading request

```
<ipacu_request >
  <message name="set_nmea_heading" />
  <nmea>$HCHDG,319.1,,,7.1W*3C</nmea>
</ipacu_request>
```

#### Response:

### set\_nmea\_heading response

```
<ipacu_response>
  <message name="set_nmea_heading" error="0" />
</ipacu_response>
```

## reboot

*New for 2.0, Supported on HD11 and V7IPACU*

**Description:** used to reboot the product. If ALL are asked to reboot, it is expected that all sub-systems will be rebooted together; the SBC will first issue an antenna reboot before rebooting itself. An antenna reboot will force a power cycle to restart the antenna sub-system.

#### Request:

### reboot request

```
<ipacu_request >
  <message name="reboot" />
  <sys>
    ALL
    ANT
    SBC
    MTA (V7IPACU only)
  </sys>
</ipacu_request>
```

fields:

sys – defines which sub-systems will be re-booted. ALL for all, ANT for antenna only, SBC for Linux processor , and MTA for MTA only.

#### Response:

### reboot response

```
<ipacu_response>
  <message name="reboot" error="0" />
</ipacu_response>
```

## calibrate\_gyro

*Supported on HD11 and V7IPACU*

**Description:** calibrate gyro

**Request:**

### calibrate\_gyro request

```
<ipacu_request >
  <message name="calibrate_gyro"/>
</ipacu_request>
```

**Response:**

### calibrate\_gyro response

```
<ipacu_response>
  <message name="calibrate_gyro" error="0"/>
</ipacu_response>
```

## reset\_software

*Supported on HD11 and V7IPACU*

**Description:** Used to reset the software on the product to a prior revision. CURRENT updates any software with non-matching revision. ALL updates all software to CURRENT regardless of revision.

**Request:**

### reset\_software request

```
<ipacu_request >
  <message name="reset_software"/>
  <rollback>FACTORY | CURRENT | ALL</rollback>
</ipacu_request>
```

**Response:**

### reset\_software response

```
<ipacu_response>
  <message name="reset_software" error="0"/>
</ipacu_response>
```

## power

*New for 2.0, supported on the HD11 and V7IPACU*

**Description:** voltage level status

**Request:**

### power request

```
<ipacu_request >
  <message name="power" />
</ipacu_request>
```

**Response:**

### power response

```
<ipacu_response>
  <message name="power" error="0" />
  <acu>
    <input50v>48.0</input50v>
    <input24v>24.0</input24v>
    <five>4.8</five>
    <three_three>3.3</three_three>
    <output50v>48.0</output50v>
    <output24v>24.0</output24v>
  </acu>
  <au>
    <dc>48.0</dc>
    <motor>32</motor>
    <thirteen>13</thirteen> Note: V11 only
    <twelve>12</twelve> Note: HD11 and V11 only
    <ten>10</ten> Note: V7IPACU only
    <five>5</five>
    <two_five>2.5</two_five> Note: HD11 and V11 only
    <one_eight>1.8</one_eight> Note: V7IPACU only
    <one_five>1.5</one_five> Note: V7IPACU only
    <one_two>1.2</one_two> Note: HD11 only
    <lbn>5</lbn>
    <buc>25.3 VDC | off</buc> Note: V7IPACU only
  </au>
</ipacu_response>
```

## ophours

*New for 2.0, supported on the HD11 and the V7IPACU*

**Description:** antenna unit operational hours

**Request:**



### ophours request

```
<ipacu_request >
  <message name="ophours" />
</ipacu_request>
```

#### Response:

### ophours response

```
<ipacu_response>
  <message name="ophours" error="0" />
  <hours>123</hours>
</ipacu_response>
```

## get\_lcd\_brightness

*New for 2.0, supported on the HD11 and the V7IPACU*

**Description:** get LCD brightness settings

#### Request:

### get\_lcd\_brightness request

```
<ipacu_request >
  <message name="get_lcd_brightness" />
</ipacu_request>
```

#### Response:

### get\_lcd\_brightness response

```
<ipacu_response>
  <message name="get_lcd_brightness" error="0" />
  <brightness>LOW</brightness>
</ipacu_response>
```

Response detail:

"brightness" – possible values are "LOW", "MED", and "HIGH"

## set\_lcd\_brightness

*New for 2.0, supported on the HD11 and the V7IPACU*

**Description:** set LCD brightness

#### Request:

### set\_lcd\_brightness request

```
<ipacu_request >
  <message name="set_lcd_brightness" />
  <brightness>LOW | MED | HIGH</brightness>
</ipacu_request>
```

**NOTE** – possible values for 'brightness' are 'LOW', 'MED' and 'HIGH'

**Response:**

### set\_lcd\_brightness response

```
<ipacu_response >
  <message name="set_lcd_brightness" error="0" />
</ipacu_response>
```

## set\_date\_time

*New for 2.0, supported on the HD11 and the V7IPACU*

**Description:** Set SBC date and time

**Request:**

### set\_date\_time request

```
<ipacu_request >
  <message name="set_date_time" />
  <dt>YYYY-MM-DDTHH:MM:SSZ</dt>
</ipacu_request>
```

**NOTE** - time is in 24-hour format

**Response:**

### set\_date\_time response

```
<ipacu_response>
  <message name="set_date_time" error="0" />
</ipacu_response>
```

## get\_blockage\_zones

*New for 2.0, supported on the V7IPACU*

**Description:** Gets the current values of all the programmed antenna blockage zones and their on/off state. The values are stored in the antenna and clients should get them from the antenna before modifying them.

**Request:**

#### get\_blockage\_zones request

```
<ipacu_request >
  <message name="get_blockage_zones" />
</ipacu_request>
```

**Response:**

#### get\_blockage\_zones response

```
<ipacu_response>
  <message name="get_blockage_zones" error="0" />
  <el_support>TRUE | FALSE</el_support>
  <total_zones>2</total_zones>
  <zone_list>
    <zone>
      <id>1</id>
      <state>ON | OFF</state>
      <az_min>0</az_min>
      <az_max>360</az_max>
      <el_min>-5</el_min>
      <el_max>10</el_max>
    </zone>
    <zone>
      <id>2</id>
      <state>ON | OFF</state>
      <az_min>233</az_min>
      <az_max>243</az_max>
      <el_min>0</el_min>
      <el_max>75</el_max>
    </zone>
  </zone_list>
</ipacu_response>
```

fields:

el\_support – set to TRUE/FALSE to indicate if antenna supports elevation values

total\_zones – the total number of zones supported by the antenna

id – zone number

state – whether the zone is currently in use or not

az\_min, az\_max – azimuth angle in degrees between 0.00 and 360.00.

el\_min, el\_max - elevation angle in degrees between -90.00 to +90.00 where 0 degrees is horizontal and positive is pointing up. The actual min and max are determined by the maximum look angle allowed by the antenna.

## set\_blockage\_zones

*New for 2.0, supported on the V7IPACU*

**Description:** Sets the current values for one or more antenna blockage zones and their on/off states. The values are stored in the antenna and clients should get them from the antenna first before modifying them.

**Request:**

### set\_blockage\_zones request

```
<ipacu_request >
  <message name="set_blockage_zones" />
  <zone_list>
    <zone>
      <id>2</id>
      <state>ON</state>
      <az_min>233</az_min>
      <az_max>243</az_max>
      <el_min>0</el_min>
      <el_max>75</el_max>
    </zone>
  </zone_list>
</ipacu_request>
```

#### Response:

### set\_blockage\_zones response

```
<ipacu_response>
  <message name="set_blockage_zones" error="0" />
</ipacu_response>
```

#### Fields:

id – (required) zone number

state – (required) on/off for whether the zone is currently to be used or not

az\_min, az\_max – (optional) azimuth angle in degrees between 0 and 360. The az\_min must be less than or equal to the az\_max number.

el\_min, el\_max - (optional) elevation angle in degrees between -90 to +90 where 0 degrees is horizontal and positive is pointing up. The actual min and max are determined by the maximum look angle allowed by the antenna.

## get\_hazard\_zones

*New for 2.0, supported on the V7IPACU*

**Description:** Gets the current values of all the programmed antenna hazard zones and their on/off state. The values are stored in the antenna and clients should get them from the antenna before modifying them.

#### Request:

### get\_hazard\_zones request

```
<ipacu_request >
  <message name="get_hazard_zones" />
</ipacu_request>
```

#### Response:

## get\_hazard\_zones response

```
<ipacu_response>
  <message name="get_hazard_zones" error="0" />
  <el_support>TRUE | FALSE</el_support>
  <mismatch>YES | NO</mismatch>
  <total_zones>2</total_zones>
  <acu_list>
    <override>ON | OFF</override>
    <zone>
      <id>1</id>
      <state>ON | OFF</state>
      <az_min>0</az_min>
      <az_max>360</az_max>
      <el_min>-5</el_min>
      <el_max>10</el_max>
    </zone>
    <zone>
      <id>2</id>
      <state>ON | OFF</state>
      <az_min>233</az_min>
      <az_max>243</az_max>
      <el_min>0</el_min>
      <el_max>75</el_max>
    </zone>
  </acu_list>
  <ant_list>
    <override>ON | OFF</override>
    <zone>
      <id>1</id>
      <state>ON | OFF</state>
      <az_min>0</az_min>
      <az_max>360</az_max>
      <el_min>-5</el_min>
      <el_max>10</el_max>
    </zone>
    <zone>
      <id>2</id>
      <state>ON | OFF</state>
      <az_min>233</az_min>
      <az_max>243</az_max>
      <el_min>0</el_min>
      <el_max>75</el_max>
    </zone>
  </ant_list>
</ipacu_response>
```

### Fields:

el\_support – set to TRUE/FALSE to indicate if antenna supports elevation values

override - set to ON/OFF. ON indicates antenna will transmit regardless of zone settings and antenna position. OFF indicates transmit according to zone settings.

mismatch - set to YES/NO. YES indicates hazard zone configure data do not match with hazard zone antenna readings. NO indicates hazard zone configure data match with hazard zone antenna readings.

total\_zones – the total number of zones supported by the antenna

id – zone number

state – whether the zone is currently in use or not

az\_min, az\_max – azimuth angle in degrees between 0 and 360.

el\_min, el\_max - elevation angle in degrees between -90 to +90 where 0 degrees is horizontal and positive is pointing up. The actual min and max are determined by the maximum look angle allowed by the antenna.

## set\_hazard\_zones

*New for 2.0, supported on the V7IPACU*

**Description:** Sets the current values for one or more antenna hazard zones and their on/off states. The values are stored in the antenna and clients should get them from the antenna first before modifying them.

**Request:**

### set\_hazard\_zones request

```
<ipacu_request >
  <message name="set_hazard_zones" />
  <override>ON | OFF</override>
  <zone_list>
    <zone>
      <id>2</id>
      <state>ON</state>
    </zone>
    <zone>
      <id>1</id>
      <state>ON</state>
      <az_min>233.12</az_min>
      <az_max>243.12</az_max>
      <el_min>0.00</el_min>
      <el_max>75.00</el_max>
    </zone>
  </zone_list>
</ipacu_request>
```

**Response:**

```
<ipacu_response>
<message name="set_hazard_zones" error="0" />
</ipacu_response>
fields:
```

override – (optional) ON indicates antenna will transmit regardless of zone settings and antenna position. OFF indicates transmit according to zone settings.

id – (required) zone number

state – (required) on/off for whether the zone is currently to be used or not

az\_min, az\_max – (optional) azimuth angle in degrees between 0.00 and 360.00. The az\_min must be less than or equal to the az\_max number.

el\_min, el\_max - (optional) elevation angle in degrees between -90.00 to +90.00 where 0 degrees is horizontal and positive is pointing up. The actual min and max are determined by the maximum look angle allowed by the antenna.

## System Service Interface

### get\_message\_protocol\_version

*New for 2.0, supported on HD11 and V7IPACU*

**Description:** Return the version and system identifiers for the messaging protocol.

**Request:**

#### **get\_message\_protocol\_version request**

```
<ipacu_request >
  <message name="get_message_protocol_version" error="0" />
</ipacu_request>
```

**Response:**

#### **get\_message\_protocol\_version response**

```
<ipacu_response >
  <message name="get_message_protocol_version" error="0" />
  <version>2.0</version>
  <system>HD11</system>
</ipacu_response>
```

**Note:** other system values may include: V3, V7, V7IP, V11, HD7

## **get\_vessel\_config**

*New for 2.0, Supported on HD11 and V7IPACU*

**Description:** Return the vessel name and mounting angle of the antenna enclosure.

**Request:**

#### **get\_vessel\_config request**

```
<ipacu_request >
  <message name="get_vessel_config" />
</ipacu_request>
```

**Response:**

#### **get\_vessel\_config response**

```
<ipacu_response >
  <message name="get_vessel_config" error="0" />
  <name>Olympic</name>
  <feet>321</feet>
  <antenna_mount>89.7</antenna_mount>
</ipacu_response>
```

## **set\_vessel\_config**

*New for 2.0, Supported on HD11 and V7IPACU*

**Description:** Set the vessel name and mounting angle of the antenna enclosure.

**Request:**

#### set\_vessel\_config request

```
<ipacu_request >
  <message name="set_vessel_config" />
  <name>Britannic</name>
  <feet>321</feet>
  <antenna_mount>89.8</antenna_mount>
</ipacu_request>
```

**Response:**

#### set\_vessel\_config response

```
<ipacu_response >
  <message name="set_vessel_config" error="0" />
</ipacu_response>
```

## get\_eth

*New for 2.0, Supported on HD11 only*

**Description:** Get wired network settings. For the V7IPACU this is the setting for the IPACU router connection to the product's internal LAN Bridge.

**Request:**

#### get\_eth request

```
<ipacu_request >
  <message name="get_eth" />
</ipacu_request>
```

**Response:**

#### get\_eth response

```
<ipacu_response>
  <message name="get_eth" error="0" />
  <mode>OFF | STATIC | DYNAMIC</mode>
  <ip>192.168.0.3</ip>
  <netmask>255.255.255.0</netmask>
  <gateway>192.168.0.1</gateway>
  <broadcast>192.168.0.255</broadcast>
</ipacu_response>
```



## set\_eth

*New for 2.0, Supported on HD11 only*

**Description:** Set wired network interface parameters. For the V7IPACU this is the setting for the IPACU router connection to the product's internal LAN Bridge.

**Request:**

### set\_eth request

```
<ipacu_request >
  <message name="set_eth" />
  <mode> OFF | STATIC | DYNAMIC </mode>
  <ip>192.168.0.3</ip>
  <netmask>255.255.255.0</netmask>
  <gateway>192.168.0.1</gateway>
  <broadcast>192.168.0.255</broadcast>
</ipacu_request>
```

NOTE - If state is 'OFF or DYNAMIC', fields ip, netmask, gateway, broadcast will be ignored.

**Response:**

### set\_eth response

```
<ipacu_response>
  <message name="set_eth" error="0" />
</ipacu_response>
```

## set\_eth\_factory

*New for 2.0, Supported on HD11 only*

**Description:** Set wired network interface parameters back to factory setting. For the V7IPACU this is the setting for the IPACU router connection to the product's internal LAN Bridge.

**Request:**

### set\_eth\_factory request

```
<ipacu_request >
  <message name="set_eth_factory" />
</ipacu_request>
```

**Response:**

### set\_eth\_factory response

```
<ipacu_response>  
  <message name="set_eth_factory" error="0" />  
</ipacu_response>
```

## get\_wlan

*New for 2.0, Supported on HD11 and V7IPACU*

**Description:** Get wireless settings.

**Request:**

### get\_wlan request

```
<ipacu_request >  
  <message name="get_wlan" />  
</ipacu_request>
```

**NOTE** – client should always look at the "mode" element first. The remaining part of the response will be tailored to this mode. For example, if mode="ADHOC", the response will include "adhoc\_mode" element, but not the "if\_mode" element.

**Response:** Note: No ADHOC or IF on V7IPACU, No AP for HD11

## get\_wlan response

```
<ipacu_response>
  <message name="get_wlan" error="0" />
  <mode>OFF | ADHOC | AP | IF</mode>
  <adhoc_mode>
    <security>
      <mode>OFF | WEP</mode>
      <key></key>
    </security>
    <ip>169.254.100.1</ip>
  </adhoc_mode>
  <ap_mode>
    <mode>BRIDGED</mode>
    <essid>ipacu</essid>
    <security>
      <mode>OFF | WPA_PSK</mode>
      <algorithm>TKIP</algorithm> (TBD: should this be hidden)
      <key>passwordtext</key>
    </security>
    <ip>192.168.1.3</ip>
    <netmask>255.255.255.0</netmask>
    <gateway>192.168.1.1</gateway>
    <broadcast>192.168.1.255</broadcast>
  </ap_mode>
  <if_mode>
    <mode> STATIC | DYNAMIC</mode>
    <essid>ipacu</essid>
    <security>
      <mode>OFF | WPA_PSK</mode>
      <algorithm>TKIP</algorithm>
      <key>passwordtext</key>
    </security>
    <ip>192.168.1.3</ip>
    <netmask>255.255.255.0</netmask>
    <gateway>192.168.1.1</gateway>
    <broadcast>192.168.1.255</broadcast>
  </if_mode>
  <channel>11</channel>
  <band>b|g</band>
</ipacu_response>
```

## set\_wlan

*New for 2.0, Supported on HD11 and V7IPACU*

**Note:** ADHOC and IF mode is not supported on the V7IPACU. AP mode is not supported on the HD11.

**Description:** Set wireless network interface. Send only the section(s) that need to be revised/alterd.

**Request:**

## set\_wlan request

```
<ipacu_request>
  <message name="set_wlan" />
  <channel>11</channel>
  <band>b|g</band>
  <mode>OFF | ADHOC | IF | AP</mode>    NOTE: no ADHOC or IF on VSAT IPACU
  <adhoc_mode>      NOTE: used on HD11 only
  <security>
    <mode>OFF | WEP</mode>
    <key></key>
  </security>
  <ip>169.254.100.1</ip>
</adhoc_mode>
<if_mode>      NOTE: used on HD11 only
  <mode> STATIC | DYNAMIC</mode>
  <ssid>ipacu</ssid>
  <security>
    <mode>
      OFF | WPA_PSK | WPA2_PSK | WEP_1
    </mode>
    <algorithm>
      TKIP | AES | WEP_64 | WEP_128
    </algorithm>
    <key></key>
  </security>
  <ip>192.168.1.3</ip>
  <netmask>255.255.255.0</netmask>
  <gateway>192.168.1.1</gateway>
  <broadcast>192.168.1.255</broadcast>
</if_mode>
<ap_mode>      NOTE: used on VSAT only
  <ssid>ipacu</ssid>
  <security>
    <mode>
      OFF | WPA_PSK | WPA2_PSK | WEP
    </mode>
    <algorithm>
      TKIP | AES | WEP_64 | WEP_128
    </algorithm>
    <key>asbn235bsdjhw4fedfe</key>
  </security>
</ap_mode>
</ipacu_request>
```

### Response:

```
<ipacu_response>
  <message name="set_wlan" error="0" />
</ipacu_response>
```

NOTE – client should always look at the "mode" element first. The remaining part of the request should be tailored to this mode. For example, if mode="ADHOC", the request will include "adhoc\_mode" element, but not the "if\_mode" element.

NOTE 1 – if mode is 'OFF', all remaining fields will be ignored.

## set\_wlan\_factory

*New for 2.0, Supported on HD11 and V7IPACU*

**Description:** set wireless network interface parameters back to factory settings

**Request:**

#### set\_wlan\_factory request

```
<ipacu_request>
  <message name="set_wlan_factory" />
</ipacu_request>
```

**Response:**

#### set\_wlan\_factory response

```
<ipacu_response>
  <message name="set_wlan_factory" error="0" />
</ipacu_response>
```

## get\_lan

*New for 2.0, Supported only on V7IPACU*

**Description:** This is the settings for the IPACU router's connection to the product's internal LAN Bridge. When the DHCP server is enabled this is also the gateway address for the LAN subnet.

**Request:**

#### get\_lan request

```
<ipacu_request >
  <message name="get_lan" />
</ipacu_request>
```

**Response:**

#### get\_lan response

```
<ipacu_response>
  <message name="get_lan" error="0" />
  <mode>
    <code>IPACU | LEGACY | STATIC</code>
    <label>IP-ACU Mode | Legacy Mode | IP-ACU Mode with Static Port</label>
  </mode>
</ipacu_response>
```

## set\_lan

*New for 2.0, Supported on V7IPACU*

**Description:** This is the setting for the IPACU router's connection to the product's internal LAN Bridge. When the DHCP server is enabled this is also the gateway address for the LAN subnet.

**Request:**

#### set\_lan request

```
<ipacu_request>
  <message name="set_lan" />
  <mode>
    <code>IPACU | LEGACY | STATIC</code>
  </mode>
</ipacu_request>
```

**Response:**

#### set\_lan response

```
<ipacu_response>
  <message name="set_lan" error="0" />
</ipacu_response>
```

## broadband\_status

*New for 2.0, Supported only on the V7IPACU*

**Description:** get the internet connection status of the broadband connection.

**Request:**

#### broadband\_status request

```
<ipacu_request>
  <message name="broadband_status" />
</ipacu_request>
```

**Response:**

#### broadband\_status response

```
<ipacu_response>
  <message name="broadband_status" error="0" />
  <internet_access>ONLINE | OFFLINE</internet_access>
  <connection_profile>ViaSat</connection_profile>
</ipacu_response>
```

## set\_cell\_modem

*New for 2.0, Supported on the V7IPACU*

**Description:** The gprsd daemon setting the status of the GPRS cell modem connection.

**Request:**

#### set\_cell\_modem request

```
<ipacu_request>
  <message name="set_cell_modem" />
</ipacu_request>
```

**Response:**

#### set\_cell\_modem response

```
<ipacu_response>
  <message name="set_cell_modem" error="0" />
  <sw_ver>100</sw_ver>
  <signal_strength>15</signal_strength>
  <status>
    UNAVAILABLE | NOSERVICE | REGISTERED | DIALING | CONNECTED
  </status>
</ipacu_response>
```

**Field definitions:**

status – current status of the modem

UNAVAILABLE - the gprsd daemon can not detect the GPRS modem module ( possible low-level comms error or power disconnection)

NOSERVICE – no service

REGISTERED – registered on the network

DIALING – attempting to make connection

CONNECTED – currently communicating

## cell\_modem\_status

*New for 2.0, Supported on HD11 and the V7IPACU*

**Description:** get status of GPRS cell modem connection.

**Request:**

#### cell\_modem\_status request

```
<ipacu_request>
  <message name="cell_modem_status" />
</ipacu_request>
```

**Response:**

### cell\_modem\_status response

```
<ipacu_response>
  <message name="cell_modem_status" error="0" />
  <sw_ver>100</sw_ver>
  <signal_strength>15</signal_strength>
  <remote_ip>vvv.xxx.yyy.zzz</remote_ip>
  <status>
    UNAVAILABLE | NOSERVICE | REGISTERED | DIALING | CONNECTED
  </status>
</ipacu_response>
```

#### Field definitions:

remote\_ip - the local IP address of the ACU used for the ppp connection over the GPRS cell network

status – current status of the modem

UNAVAILABLE - the gprsd daemon can not detect the GPRS modem module ( possible low-level comms error or power disconnection)

NOSERVICE – no service

REGISTERED – registered on the network

DIALING – attempting to make connection

CONNECTED – currently communicating

## cell\_modem\_dial\_out

*New for 2.0, supported on the HD11 and implemented on the V7IPACU*

**Description:** make outgoing GPRS cell modem connection. Causes the GPRS modem to make an internet connection and the SBC to establish an SSH connection to the KVH technical support center.

#### Request:

### cell\_modem\_dial\_out request

```
<ipacu_request >
  <message name="cell_modem_dial_out" />
  <command>DIALOUT | HANGUP</command>
</ipacu_request>
```

#### Response:

### cell\_modem\_dial\_out response

```
<ipacu_response >
  <message name="cell_modem_dial_out" error="0" />
</ipacu_response>
```

## get\_smartswitch\_status

*New for 2.0, supported on the HD11 and **not** implemented on the V7IPACU*



**Description:** report A/B switch selection as well as receiver (1,2,3) selection.

**Request:**

#### get\_smartswitch\_status request

```
<ipacu_request >
  <message name="get_smartswitch_status" />
</ipacu_request>
```

**Response:**

#### get\_smartswitch\_status response

```
<ipacu_response>
  <message name="get_smartswitch_status" error="0" />
  <available>Y | N</available>
  <enable>Y | N</enable>
  <autoselect>Y | N</autoselect>
  <input>A | B</input>
  <output>1 | 2 | 3</output>
</ipacu_response>
```

Fields (smart switch)

available = A/B switch is present and detected

enable = below deck smart switch enabled/disabled status

autoselect = state of autoselect function, see set command below for explanation of use

input = current input RF source A or B

output = current output RF group 1, 2 or 3

## set\_smartswitch

*New for 2.0, supported on the HD11 and **not** implemented on the V7IPACU*

**Description:** make A/B switch selection as well as receiver (1,2,3) selection.

**Request:**

#### set\_smartswitch request

```
<ipacu_request >
  <message name="set_smartswitch" />
  <enable>Y | N</enable>
  <autoselect>Y | N</autoselect>
  <input>A | B</input>
  <output>1 | 2 | 3</output>
</ipacu_request>
```

**Response:**

### set\_smartswitch response

```
<ipacu_response>
  <message name="set_smartswitch" error="0" />
</ipacu_response>
```

#### Fields (smart switch)

enabled = Enable use of below deck smart switch; if set to off, set autoswitch to input source A and output group 1; recommended usage is to always enable use by setting to 'Y'

autoselect = enable ACU to auto switch from A to B when detected RF signal strength is too low and from B to A when RF signal strength is back to normal

input = manual selection of input RF source A or B when autoselect is off

output = One of the three available output groups selected for output

## set\_smartswitch\_config

*New for 2.0, supported on the HD11 and **not** implemented on the V7IPACU*

**Description:** configure below deck smart RF switch hardware.

**Request:**

### set\_smartswitch\_config request

```
<ipacu_request >
  <message name="set_smartswitch_config" />
  <inA>
    <name>Right dome</name>
    <enable>Y | N</enable>
  </inA>
  <inB>
    <name>Left dome</name>
    <enable>Y | N</enable>
  </inB>
  <out1>
    <name>DTV</name>
    <enable>Y | N</enable>
  </out1>
  <out2>
    <name>DISH</name>
    <enable>Y | N</enable>
  </out2>
  <out3>
    <name>EUTEL</name>
    <enable>Y | N</enable>
  </out3>
</ipacu_request>
```

**Response:**

### set\_smartswitch\_config response

```
<ipacu_response>
  <message name="set_smartswitch_config" error="0" />
</ipacu_response>
```

## get\_smartswitch\_config

New for 2.0, supported on the HD11 and **not** implemented on the V7IPACU

**Description:** configure below deck smart RF switch hardware.

**Request:**

### get\_smartswitch\_config request

```
<ipacu_request >
  <message name="get_smartswitch_config" />
</ipacu_request>
```

**Response:**

### get\_smartswitch\_config response

```
<ipacu_response>
  <message name="get_smartswitch_config" error="0" />
  <inA>
    <name>Left dome</name>
    <enable>Y | N</enable>
  </inA>
  <inB>
    <name>Right dome</name>
    <enable>Y | N</enable>
  </inB>
  <out1>
    <name>DTV</name>
    <enable>Y | N</enable>
  </out1>
  <out2>
    <name> DISH</name>
    <enable>Y | N</enable>
  </out2>
  <out3>
    <name>EUTEL</name>
    <enable>Y | N</enable>
  </out3>
</ipacu_response>
```

## set\_dualdome\_config

*New for 2.0, supported on the HD11 and **not** implemented on the V7IPACU*

**Description:** Sets configuration for dual dome support and is usually sent by client to the master ACU. Master ACU should send an equivalent command to the slave ACU when the state is modified. Client may also send this command directly to the slave but there may NOT be a reverse synch command from slave to master. This data is persisted in the ACU data store and restored on startup.

**Request:**

### set\_dualdome\_config request

```
<ipacu_request >
  <message name="set_dualdome_config" />
  <mode>SINGLE | MASTER | SLAVE</mode>
  <master_ip>123.123.123.123</slave_ip>
  <slave_ip>123.123.123.123</slave_ip>
</ipacu_request>
```

**Response:**

### set\_dualdome\_config response

```
<ipacu_response >
  <message name="set_dualdome_config" error="0" />
</ipacu_response>
```

NOTE: This command requires both master and slave ACUs to be powered on and operating in order to synchronize the states.

## get\_dualdome\_status

*New for 2.0, supported on the HD11 and **not** implemented on the V7IPACU*

**Description:** Get configuration for dual dome support.

**Request:**

### get\_dualdome\_status request

```
<ipacu_request >
  <message name="get_dualdome_status" />
</ipacu_request>
```

**Response:**

### get\_dualdome\_status response

```
<ipacu_response>
  <message name="get_dualdome_status" error="0" />
  <mode>SINGLE | MASTER | SLAVE</mode>
  <master_ip>123.123.123.123</master_ip>
  <slave_ip>123.123.123.123</slave_ip>
  <state>
    SINGLE |
    DISCOVER |
    SYNCH |
    NO_RF |
    FOLLOW |
    ACTIVE
  </state>
</ipacu_response>
```

#### Field definitions:

mode – mode of ACU operation

SINGLE – stand-alone mode

MASTER – ACU provides synchronizing data to slave ACU

SLAVE – ACU receives synchronizing data from slave ACU

state –

SINGLE – stand-alone mode

DISCOVER – dual dome mode and communication partner not yet discovered

SYNCH – exchanging information with communication partner

NO\_RF – no signal available from antenna

FOLLOW – tracking and RF signal available but not currently selected.

ACTIVE – RF signal available and currently selected

## get\_config\_file

*New for 2.0, supported on HD11 and implemented on the V7IPACU*

**Description:** Return a specified config file

**Request:**

### get\_config\_file request

```
<ipacu_request>
  <message name="get_config_file" />
  <filename></filename>
</ipacu_request>
```

filename - possible config file names are:

#### For HD11

satInfoWorkingCopy.xml, eth.conf, wlan.conf,

eth.factory.conf, wlan.factory.conf,

serial.conf, vessel.conf, autoswitch.conf,

smartswitch.conf, dualdome.conf

#### For V7IPACU

misc.conf

**Response:**

### get\_config\_file response

```
<ipacu_response >
  <message name="get_config_file" error="0" />
  <content></content>
</ipacu_response>
```

## set\_config\_file

*New for 2.0, supported on HD11 and implemented on the V7IPACU*

**Description:** Provide new content for a specified config file

**Request:**

### set\_config\_file request

```
<ipacu_request>
  <message name="set_config_file" />
  <filename>fileToUpload</filename>
  </content>file contents here</content>
</ipacu_request>
```

#### For HD11

filename - possible config file names are:

satInfoWorkingCopy.xml, eth.conf, wlan.conf,  
eth.factory.conf, wlan.factory.conf,  
serial.conf, vessel.conf, autoswitch.conf,  
smartswitch.conf, dualdome.conf

#### For V7IPACU

filename – misc.conf

**Response:**

### set\_config\_file response

```
<ipacu_response >
  <message name="set_config_file" error="0" />
</ipacu_response>
```

NOTE – after config file changed, the application needs to be restarted for the changes to take effect.

## set\_config\_turnkey

*ICM or CBX-ACU only*

**Description:** Record the turnkey config name in /kvh/acuservices.conf (persistent storage) and log the event to minorACUErrors.log. For DOME2 change the viasat modem contact IP to 192.168.0.2

**Request:**

### set\_config\_turnkey

```
<ipacu_request>
  <message name="set_config_turnkey" />
  <turnkey_config>STANDARD|LEGACY|DUALDOME_PRIMARY|DUALDOME_SECONDARY|STATICIP</turnkey_config>
</ipacu_request>
```

It is assumed that the sender has already sent the CBX WebServices "restore\_configuration" message to COMMBX and this message is to ONLY to synchronize acuserices with the change of COMMBX turnkey config

NOTE: When turnkey\_config is DUALDOME\_SECONDARY then acuserices is reconfigured to contact the viasat modem at 192.168.0.2 and for all other configs is told to use 192.168.0.1

The /kvh/conf/acuserices.conf TURNKEY\_CONFIG= entry is set to the <turnkey\_config> string value

The following entry is added to the minorACUErrors.log

CBX: TURNKEY\_CONFIG IS SET TO STANDARDILEGACYIDUALDOME\_PRIMARYIDUALDOME\_SECONDARYISTATICIP

Brief summary of turnkey modes (this summary is not the authoritative definition)

STANDARD is the factory default

LEGACY is put all the backpanel ethernet ports into one bridge group with the ICM/CBX-ACU at 192.168.0.9 and contact the viasat modem at 192.168.0.1

DUALDOME\_SECONDARY is put all the backpanel ethernet ports into one bridge group with the ICM/CBX-ACU at 192.168.0.10 and contact the viasat modem at 192.168.0.2

STATICIP is put eth0 and eth4 into one bridge group with the ICM/CBX-ACU at 192.168.0.9 and eth1,2,3 into a LAN bridge group with the ICM/CBX-ACU at 192.168.5.1

Note: DUALDOME\_PRIMARY is the same a STATICIP, it is only included as a convenience as to guide the user in the dropbox menu (per the XDR -DUALDOME requirements)

### Response:

### set\_config\_turnkey response

```
<ipacu_response >
  <message name="set_config_turnkey" error="0" />
</ipacu_response>
```

error =15 - COMMBX Webservices socket error

error= 17 - TOO\_MANY\_MSGS ( new message while still waiting for previous CBX WebServices reply)

error =255 - General timeout

## get\_config\_turnkey

*ICM and CBX-ACU*

**Description:** Return the CURRENT turnkey configuration, also advise the sender if there configurable LAN, WIFI or Webcache settings available

for the CURRENT turnkey configuration

**Request:**

**get\_config\_turnkey request**

```
<ipacu_request>
  <message name="get_config_turnkey" />
</ipacu_request>
```

**Response:**

**get\_config\_turnkey response**

```
<ipacu_response >
  <message name="get_config_turnkey" error="0" />
  <turnkey_config>STANDARD|STATICIP|DUALDOME_PRIMARY|DUALDOME_SECONDARY|LEGACY</turnkey_config>
  <lan>Y|N</lan>
  <wifi>Y|N</wifi>
  <webcache>Y|N</webcache>
</ipacu_response>
```

## list\_config\_turnkey

*ICM and CBX-ACU*

**Description:** Return the list of available turnkey configurations and whether LAN, Wi-Fi or WebCache is available for each

**Request:**

**list\_config\_turnkey request**

```
<ipacu_request>
  <message name="list_config_turnkey" />
</ipacu_request>
```

**Response:**



### list\_config\_turnkey response

```
<ipacu_request>
  <message name="list_config_turnkey" />
<turnkey_list>
  <turnkey>
    <turnkey_config>STANDARD</turnkey_config>
    <lan>Y</lan>
    <wifi>Y</wifi>
    <webcache>Y</webcache>
  </turnkey>
  <turnkey>
    <turnkey_config>STATICIP</turnkey_config>
    <lan>Y</lan>
    <wifi>Y</wifi>
    <webcache>Y</webcache>
  </turnkey>
  <turnkey>
    <turnkey_config>DUALDOME_PRIMARY</turnkey_config>
    <lan>Y</lan>
    <wifi>Y</wifi>
    <webcache>Y</webcache>
  </turnkey>
  <turnkey>
    <turnkey_config>DUALDOME_SECONDARY</turnkey_config>
    <lan>N</lan>
    <wifi>N</wifi>
    <webcache>N</webcache>
  </turnkey>
  <turnkey>
    <turnkey_config>LEGACY</turnkey_config>
    <lan>N</lan>
    <wifi>N</wifi>
    <webcache>N</webcache>
  </turnkey>
</turnkey_list>

</ipacu_request>
```

```
<turnkey_config>STANDARD|LEGACY|DUALDOME_PRIMARY|DUALDOME_SECONDARY|STATICIP</turnkey_config>
  <lan>Y|N</lan>
  <wifi>Y|N</wifi>
  <webcache>Y|N</webcache>
</ipacu_response>
```

### get\_serial\_log

*New for 2.0, supported on HD11 and implemented on the V7IPACU*

**Description:** return the unit's serial log

**Request:**

#### get\_serial\_log request

```
<ipacu_request>
  <message name="get_serial_log" />
</ipacu_request>
```

**Response:**

#### get\_serial\_log response

```
<ipacu_response>
  <message name="get_serial_log" error="0" />
  <start_dt>YYYY-MM-DDTHH:MM:SSZ</start_dt>
  <content>log content goes here</content>
</ipacu_response>
```

NOTE – this function may be called at any time.

NOTE – time is in 24-hour format

## get\_event\_history\_log

*New for 2.0, supported on HD11 and implemented on the V7IPACU*

**Description:** retrieve contents of entire log file of historical events.

**Request:**

#### get\_event\_history\_log request

```
<ipacu_request>
  <message name="get_event_history_log" />
</ipacu_request>
```

**Response:**

#### get\_event\_history\_log response

```
<ipacu_response >
  <message name="get_event_history_log" error="0"/>
  <content>event history content goes here</content>
</ipacu_response>
```

## get\_recent\_event\_history

*New for 2.0, supported on HD11 and the V7IPACU*

**Description:** Retrieve range of events from event history log.

**Request:**

#### **get\_recent\_event\_history request**

```
<ipacu_request >
  <message name="get_recent_event_history"/>
  <begin_at_event>1</begin_at_event>
  <how_many_events>9</how_many_events>
</ipacu_request>
```

NOTE – The event log is retrieved in the order in which it is written. Event 1 fetches the oldest event, so if only the three most recent events are desired, it is necessary to first issue a "get\_event\_history\_count" message to know how many events are available, subtract three from that number, and use that value as the "begin\_at\_event" value.

**Response:**

#### **get\_recent\_event\_history response**

```
<ipacu_response>
  <message name="get_recent_event_history" error="0" />
  <event_list>
    <event>"this space available"</event>
    <event>"your message here"</event>
    <event>"et al."</event>
  </event_list>
</ipacu_response>
```

## **get\_event\_history\_count**

*New for 2.0, supported on HD11 and the V7IPACU*

**Description:** Retrieve total number of events from event history log.

**Request:**

#### **get\_event\_history\_count request**

```
<ipacu_request >
  <message name="get_event_history_count"/>
</ipacu_request>
```

**Response:**

### get\_event\_history\_count response

```
<ipacu_response>
  <message name="get_event_history_count" error="0" />
  <event_count>42</event_count>
</ipacu_response>
```

## upload\_software

*New for 2.0, supported on HD11 and VSAT*

**Description:** After delivering a software file (can be binary image) using http: POST method, this function can be invoked to test and return the status of the file transfer. NOTE: This function is implemented in PHP and can only be accessed using the REST protocol, Socket-based clients cannot use this function.

### Request:

### upload\_software request

```
<ipacu_request>
  <message name="upload_software" />
  <filename>fileToUpload</filename>
</ipacu_request>
```

### Response:

### upload\_software response

```
<ipacu_response>
  <message name="upload_software" error="0" />
  <filename>HD11-100.KVH</filename>
  <filesize>2033</filesize>
</ipacu_response>
```

**NOTE** – this service is used to upload software to the IPACU. The software will not get updated until an 'install\_software' message is sent by the client.

## install\_software

*New for 2.0, supported on HD11 and V7IP.*

**Description :** Confirm pending software update. Note: The flash\_all tag is optional. When not sent or set to N the system only updates what is necessary. When set to Y ALL is flashed.

### Request:

### install\_software request

```
<ipacu_request>
  <message name="install_software" />
  <install>Y | N</install>
    <flash_all>Y | N</flash_all>
    <filename></filename>
</ipacu_request>
```

#### Response:

### install\_software response

```
<ipacu_response>
  <message name="install_software" error="0" />
</ipacu_response>
```

## update\_satellite\_config

*New for 2.0, supported on the HD11*

**Description:** apply user customization settings and satellites from the current satellite library file to the new satellite parameters file and install this as the new current file.

#### Request:

### update\_satellite\_config request

```
<ipacu_request >
  <message name="update_satellite_config" />
</ipacu_request>
```

#### Response:

### update\_satellite\_config response

```
<ipacu_response>
  <message name="update_satellite_config" error="0" />
</ipacu_response>
```

## set\_tx\_inhibit\_reason

*New for X.x,supported on the V7IPACU*

**Description:** Sets the Transmit Inhibit reason and associated timer values and sends a Modem Config message to the modem to simulate Tx Inhibit condition. This is used for testing only and can be reset to no Transmit inhibit condition with the same command. Normal system operation

will overwrite these debug settings.

**Request:**

**set\_tx\_inhibit\_reason request**

```
<ipacu_request >
  <message name="set_tx_inhibit_reason" />
  <reason>0</reason>
  <timer>900</timer>
</ipacu_request>
```

**Response:**

**set\_tx\_inhibit\_reason response**

```
<ipacu_response>
  <message name="set_tx_inhibit_reason" error="0" />
</ipacu_response>
```

**Fields:**

reason– (required) reason code for Tx Inhibit. Valid for 0 thru 8, as defined below

	Valid Reason Codes:
	0 – No Transmit Inhibit Active
	1 – Cable Unwrap
	2 – Blockage
	3 – RF Hazard Zone
	4 – Sidelobe Check
	5 – Elevation Limit
	6 – Az/Skew Limit
	7 – Gyro Cap
	8 - Searching

timer – (required) Timer value in seconds for the associated reason used by modem to move to different satellite if Tx Inhibit condition persists after time period specified. Valid range 0 to 900 seconds.

**move\_to\_next\_satellite**

*New for X.x,supported on the V7IPACU*

**Description:** Causes the modem to send the satellite parameters for the next satellite in the list.

**Request:**

**move\_to\_next\_satellite request**

```
<ipacu_request >
  <message name="move_to_next_satellite" />
  <timer>1</timer>
</ipacu_request>
```

**Response:**

**move\_to\_next\_satellite** response

```
<ipacu_response>
  <message name="move_to_next_satellite" error="0" />
</ipacu_response>
```

**Fields:**

time – (required) Timer value in seconds before moving to next satellite. Valid range 0 to 300 seconds.

## FrontPanel Service

### set\_display

*New for 2.0, supported on HD11 and the V7IPACU*

**Description:** allows client to write message to LCD

**Request:****set\_display request**

```
<ipacu_request >
  <message name="set_display" />
  <line1>message</line1>
  <line2>message</line2>
  <ttl>10</ttl>
  <action></action>
  <menus>NEXT</menus>
  <change>CHANGE</change>
  <accept>SELECT | DONE</accept>
  <exit>EXIT</exit>
</ipacu_request>
```

**NOTE** – LCD is limited to 20 characters per line.

**NOTE** – The message will be displayed on the LCD for N seconds, where N is defined by the element 'ttl'. This value must be greater than 0.

**NOTE** – the individual 'button' elements define the actual word to represent the button name as displayed on line 2 of the LCD; used for client to handle button events.

**Response:****set\_display response**

```
<ipacu_response>
  <message name="set_display" error="0" />
  <action> SELECT | EXIT</action>
</ipacu_response>
```

**NOTE** – If 'error' is set to 'TIMEOUT', indicates ttl was not specified or 0; or requested button was not pressed.

**NOTE** – The 'action' element returns the string supplied in the request for the button type that was pressed.

# Satellite Selector IP AutoSwitch Service

NOTE: Not Implemented on the V7IPACU

This section describes the messages exchanged between the SatSelector devices, the ACU and the various clients.

## autoswitch\_register

**Description:** A periodic, every 60 seconds???, "I am alive" registration message. This same message is also sent when the device determines that it is not present on the "actives list" broadcast by the ACU. It is also immediately sent whenever the satellite selection changes or it detects that when it is the active satellite and the currently reported sat is not the same as the one it has requested.

**Request:**

### autoswitch\_register request

```
<ipacu_request >
  <message name="autoswitch_register" />
  <sn>123456789</sn>
  <ip>123.123.123.123</ip>
  <sat>A | B | C | D </sat>
</ipacu_request>
```

**Response:**

### autoswitch\_register response

```
<ipacu_response >
  <message name="autoswitch_register" error="0" />
</ipacu_response>
```

## autoswitch\_master

**Description:** request master status when user pushes the switch on the satellite selector. If not in the active list, this message can act as a registration message as well.

**Request:**

### autoswitch\_master request

```
<ipacu_request >
  <message name="autoswitch_master" />
  <sn>123456789</sn>
  <ip>123.123.123.123</ip>
  <sat>A | B | C | D </sat>
</ipacu_request>
```

**Response:**



### autoswitch\_master response

```
</ipacu_response>
  <message name="autoswitch_master" error="0" />
</ipacu_response>
```

## get\_autoswitch\_active

**Description:** a periodic broadcast message, every 60 seconds???, that contains the list of active SatSelector devices discovered by the ACU. This message is also broadcast when a new device becomes the master device and/or when a device is either added to or deleted from the active list. The device should turn on the master indicator lamp when it detects that ACU has it registered as the master.

**Request:**

### get\_autoswitch\_active request

```
<ipacu_request >
  <message name="get_autoswitch_active" />
</ipacu_request>
```

**Response (or Broadcast):**

### get\_autoswitch\_active response

```
<ipacu_response>
  <message name="get_autoswitch_active" error="0" />
  <master>
    <sn>123456789</sn>
    <sat>A | B | C | D</sat>
  </master>
  <list>
    <sn>123456789</sn>
    <sn>987654321</sn>
  </list>
</ipacu_response>
```

**NOTE:** If there is no master, then the master block will sent as a null tag. The list will contain all active S/N including that of the master.

## get\_autoswitch\_status

*New for 2.0, Supported on HD11 and not implemented for V7IPACU*

**Description:** directed request to get a list of SatSelector devices.

**Request:**

### get\_autoswitch\_status request

```
<ipacu_request >
  <message name="get_autoswitch_status" />
</ipacu_request>
```

### Response:

### get\_autoswitch\_status reponse

```
<ipacu_response>
  <message name="get_autoswitch_status" error="0" />
  <available>Y | N</available>
  <enable>Y | N</enable>
  <master>
    <sn>123456789</sn>
    <sat>A | B | C | D</sat>
  </master>
  <service>1 | 2 | 3</service>
  <satellites>
    <A>
      <listID>64</listID>
      <antSatID>23E</antSatID>
      <name>BADR-5</name>
      <region>North America</region>
      <lon>23.000</lon>
      <enable>Y</enable>
      <favorite>Y</favorite>
    </A>
    <B>
      <listID>65</listID>
      <antSatID>40E</antSatID>
      <name>BADR-6</name>
      <region>North America</region>
      <lon>40.000</lon>
      <enable>Y</enable>
      <favorite>N</favorite>
    </B>
    <C>
      <listID>66</listID>
      <antSatID>33E</antSatID>
      <name>BADR-7</name>
      <region>North America</region>
      <lon>33.000</lon>
      <enable>Y</enable>
      <favorite>N</favorite>
    </C>
    <D/>
  </satellites>
</ipacu_response>
```

### Fields:

service – which RF smart switch output service is active, default is 1

master – S/N of currently selected master (if any)  
sn – KVH supplied serial number  
name – optional name associated with device  
ip – version 4 address, www.xxx.yyy.zzz  
sat – most recently requested sat from SatSelector

## set\_autoswitch\_service

*New for 2.0, supported on the HD11 and **not** implemented on the V7IPACU*

**Description:** Enable/disable the autoswitch service. Optionally, for each of the one to three RF service out channels, associate the four pre-programmed satellite choices. These same satellites should be programmed into all IRDs associated with the service. A satellite is designated by a satellite letter (A, B, C or D).

**Request:**

### set\_autoswitch\_service request

```
<ipacu_request >
  <message name="set_autoswitch_service" />
  <enable>Y | N</enable>
  <services>
    <out1>
      <A>23E</A>
      <B>40E</B>
      <C>33E</C>
    </out1>
    <out3>
      <A>1W</A>
      <D>23E</D>
    </out3>
  </services >
</ipacu_request>
```

**Response:**

### set\_autoswitch\_service response

```
<ipacu_response>
  <message name="set_autoswitch_service" error="0" />
</ipacu_response>
```

## get\_autoswitch\_service

*New for 2.0, supported on the HD11 and **not** implemented on the V7IPACU*

**Description:** For each of the one to three RF service out channels, returns the four pre-programmed satellite choices. These same satellites should be programmed into all IRDs associated with the service. A satellite is designated by a satellite letter (A, B, C or D).

**Request:**

### get\_autoswitch\_service request

```
<ipacu_request >
  <message name="get_autoswitch_service" />
</ipacu_request>
```

### Response:

### get\_autoswitch\_service response

```
<ipacu_response>
  <message name="get_autoswitch_service" error="0" />
  <available>Y | N</available>
  <enable>Y | N</enable>
  <service_list>
    <out1>
      <A>
        <listID>64</listID>
        <antSatID>23E</antSatID>
        <name>BADR-5</name>
        <region>North America</region>
        <lon>23.000</lon>
        <enable>Y</enable>
        <favorite>Y</favorite>
      </A>
      <B>
        <listID>65</listID>
        <antSatID>40E</antSatID>
        <name>BADR-6</name>
        <region>North America</region>
        <lon>40.000</lon>
        <enable>Y</enable>
        <favorite>N</favorite>
      </B>
      <C>
        <listID>66</listID>
        <antSatID>33E</antSatID>
        <name>BADR-7</name>
        <region>North America</region>
        <lon>33.000</lon>
        <enable>Y</enable>
        <favorite>N</favorite>
      </C>
      <D/>
    </out1>
    <out2/>
    <out3>
      <A>
        <listID>67</listID>
        <antSatID>1W</antSatID>
        <name>BADR-8</name>
        <region>North America</region>
        <lon>-1.000</lon>
        <enable>N</enable>
        <favorite>N</favorite>
```

```
</A>
<B/>
<C/>
<D>
  <listID>64</listID>
  <antSatID>23E</antSatID>
  <name>BADR-5</name>
  <region>North America</region>
  <lon>23.000</lon>
  <enable>Y</enable>
  <favorite>Y</favorite>
</D>
```

```
</out3>
</service_list >
</ipacu_response>
```

## set\_autoswitch\_names

*New for 2.0, Supported on HD11 and not implemented for V7IPACU*

**Description:** Allows creation of a list of SatSelector devices identified by their serial numbers and an associated user friendly name.

**Request:**

### set\_autoswitch\_names request

```
<ipacu_request >
  <message name="set_autoswitch_names" />
  <autoswitch_list>
    <autoswitch>
      <sn>123456789</sn>
      <name>Salon</name>
    </autoswitch>
    <autoswitch>
      <sn>123456789</sn>
      <name>Boudoir</name>
    </autoswitch>
  </autoswitch_list>
</ipacu_request>
```

**Response:**

### set\_autoswitch\_names response

```
<ipacu_response>
  <message name="set_autoswitch_names" error="0" />
</ipacu_response>
```

**Fields:**

sn – KVH supplied serial number

name – a user supplied location or identity for the SatSelector device

## Product Registration Data

This section describes the messages exchanged between the clients web browser/application and the ACU as well as any interaction between ACU and KVH portal or client and KVH portal. These message will collect user profiles and product usage details for use by KVH customer management for support and product development activities.

## set\_product\_registration

*New for 2.0, supported on HD11 and the V7IPACU*

**Description:** allows client app/browser to set user information to ACU for storage and submission to KVH portal if and when an Internet connection is available.

**Request:**

### set\_product\_registration request

```
<ipacu_request >
  <message name="set_product_registration" />
  <edit_dt>YYYY-MM-DDTHH:MM:SSZ</edit_dt>
  <user>
    <name></name>
    <salutation></salutation>
    <title/>
    <email></email>
    <company/>
    <addr1></addr1>
    <addr2/>
    <city></city>
    <state></state>
    <country></country>
    <zip></zip>
    <phone></phone>
    <mobile/>
    <fax/>
    <website/>
  </user>
  <dealer>
    <company></company>
    <state></state>
    <country></country>
    <installer_name/>
    <installer_email/>
    <installer_phone/>
  </dealer>
  <product>
    <market></market>
    <sector></sector>
    <platform/>
    <purch_dt>YYYY-MM-DD</purch_dt>
    <vessel_name/>
    <vessel_length/>
    <vessel_year/>
  </product>
</ipacu_request>
```

**Response:**

### set\_product\_registration response

```
<ipacu_response >
  <message name="set_product_registration" error="0" />
</ipacu_response>
```

## get\_product\_registration

*New for 2.0, supported on HD11 and the V7IPACU*

**Description:** allows client app/browser to get stored user information to ACU for storage and submission to KVH portal if and when an Internet connection is available.

### Request:

#### get\_product\_registration request

```
<ipacu_request >  
  <message name="get_product_registration" />  
</ipacu_request>
```

### Response:



## get\_product\_registration response

```
<ipacu_response >
  <message name="get_product_registration" error="0" />
  <edit_dt>YYYY-MM-DDTHH:MM:SSZ</edit_dt>
  <reg_dt>YYYY-MM-DDTHH:MM:SSZ</reg_dt>
  <user>
    <firstname></firstname>
    <lastname></lastname>
    <salutation></salutation>
    <title/>
    <email></email>
    <company/>
    <addr1></addr1>
    <addr2/>
    <city></city>
    <state></state>
    <country></country>
    <zip></zip>
    <phone></phone>
    <mobile/>
    <fax/>
    <website/>
  </user>
  <dealer>
    <company></company>
    <state></state>
    <country></country>
    <installer_name/>
    <installer_email/>
    <installer_phone/>
  </dealer>
  <product>
    <acu_model>VSAT-IPACU | TVRO-IPACU</acu_model>
    <acu_sn></acu_sn>
    <ant_model>HD7 | HD11 | V7 | V7IP | V3 | V11</ant_model>
    <ant_sn><ant_sn>
    <market></market>
    <sector></sector>
    <line></line>
    <platform/>
    <purch_date>YYYY-MM-DD</purch_date>
    <vessel_name/>
    <vessel_length/>
    <vessel_year/>
  </product>
</ipacu_response>
```

## set\_product\_registered

*New for 2.0, supported on HD11 and the V7IPACU*

**Description:** allows client app/browser to inform ACU that product registration was sent to KVH portal successfully.

**Request:****set\_product\_registered request**

```
<ipacu_request >
  <message name="set_product_registered" />
  <reg_dt>YYYY-MM-DDTHH:MM:SSZ</reg_dt>
</ipacu_request>
```

**Response:****set\_product\_registered response**

```
<ipacu_response >
  <message name="set_product_registered" error="0" />
</ipacu_response>
```

## Register Product on Portal

**Reference:**

56-0245 IPACU KVH Portal Web Services ICD

RECEIVE ONLY