iSync SyncML Guide

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1. Introduction

This document describes specific aspects of the Open Mobile Alliance (OMA) SyncML implementation in iSync. Its goal is to serve as a guide for developers of SyncML clients and phone plug-ins.

Note:

The Open Mobile Alliance (OMA) Data Synchronization Working Group is developing specifications for data synchronization that includes SyncML technology. This book refers to the data synchronization technology as SyncML.

2. References

This section contains references to specifications of SyncML and other related technologies.

OMA SyncML Common Specifications V1.1.2

[SYNCREPRO-1.1.2]	SyncML Representation Protocol, Version 1.1.2, URL:http://www.openmobilealliance.org/release_program/SyncML_v112.html
[SYNCMETA-1.1.2]	SyncML Meta Information, Version 1.1.2, URL:http://www.openmobilealliance.org/release_program/SyncML_v112.html
[SYNCHTTP-1.1.2]	SyncML HTTP Binding, Version 1.1.2, URL:http://www.openmobilealliance.org/release_program/SyncML_v112.html
[SYNCOBEX-1.1.2]	SyncML OBEX Binding, Version 1.1.2, URL:http://www.openmobilealliance.org/release_program/SyncML_v112.html
[SYNCWSP-1.1.2]	SyncML WSP Binding, Version 1.1.2, URL:http://www.openmobilealliance.org/release_program/SyncML_v112.html

OMA SyncML Data Synchronization Specifications V1.1.2

[DSREPRO-1.1.2]	SyncML Representation Protocol, Data Synchronization Usage, Version 1.1.2, URL:http:www.openmobilealliance.org/release_program/ds_v112.html
[DSPRO-1.1.2]	SyncML Data Sync Protocol, Version 1.1.2, URL:http:www.openmobilealliance.org/release_program/ds_v112.html
[DSDEVINF-1.1.2]	SyncML Device Information, Version 1.1.2, URL:http:www.openmobilealliance.org/release_program/ds_v112.html

OMA SyncML Common Specifications V1.2

[SYNCREPRO-1.2]	SyncML Representation Protocol, Version 1.2, URL:http://www.openmobilealliance.org/release_program/SyncML_v12.html
[SYNCMETA-1.2]	SyncML Meta Information, Version 1.2, URL:http://www.openmobilealliance.org/release_program/SyncML_v12.html
[SYNCSAN-1.2]	SyncML Server Alerted Notification, URL:http://www.openmobilealliance.org/release_program/SyncML_v12.html
[SYNCHTTP-1.2]	SyncML HTTP Binding, Version 1.2, URL:http://www.openmobilealliance.org/release_program/SyncML_v12.html

OMA SyncML Common Specifications V1.2

[SYNCOBEX-1.2]	SyncML OBEX Binding, Version 1.2, URL:http://www.openmobilealliance.org/release_program/SyncML_v12.html
[SYNCWSP-1.2]	SyncML WSP Binding, Version 1.2, URL:http://www.openmobilealliance.org/release_program/SyncML_v12.html

OMA SyncML Data Synchronization Specifications V1.2

[DSREPRO-1.2]	SyncML Representation Protocol, Data Synchronization Usage, Version 1.2, URL:http://www.openmobilealliance.org/release_program/ds_v12.html
[DSPRO-1.2]	SyncML Data Sync Protocol, Version 1.2, URL:http://www.openmobilealliance.org/release_program/ds_v12.html
[DSDEVINF-1.2]	SyncML Device Information, Version 1.2, URL:http://www.openmobilealliance.org/release_program/ds_v12.html
[DSEMAIL-1.2]	SyncML Email Data Object Specification, URL:http://www.openmobilealliance.org/release_program/ds_v12.html
[DSFILE-1.2]	SyncML File Data Object Specification, URL:http://www.openmobilealliance.org/release_program/ds_v12.html
[DSFOLDER-1.2]	SyncML Folder Data Object Specification, URL:http://www.openmobilealliance.org/release_program/ds_v12.html

Other Specifications

[IMCVCAL-1.0]	"vCalendar – The electronic calendaring and scheduling exchange format – Version 1.0", URL:http://www.imc.org/pdi/vcal-10.doc
[IMCVCARD-2.1]	"vCard - The electronic business card - Version 2.1", URL:http://www.imc.org/pdi/vcard-21.doc
[VOBJPROFILE-1.0]	"vObject minimum interoperability profile V1.0", URL:http://www.openmobilealliance.org
[RFC2119]	"Key words for use in RFCs to Indicate Requirement Levels" S. Bradner, March 1997, URL:http://www.ietf.org/rfc/rfc2119.txt

3. Conventions

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC2119].

4. SyncML Support Overview

This section provides an overview of the SyncML features supported by iSync.

4.1. Encoding

iSync supports WBXML format, not XML.

4.2. Version

iSync supports SyncML 1.1.2 and SyncML 1.2.

The only SyncML 1.2 specific features currently supported are:

- The new Server Alert Notification (SAN) format, with an empty Digest field.

- The new DevInf format.

- Suspend / Resume feature. Note that for now the iSync implementation forces a slow sync when the client tries to resume the sync session.

4.3. Transport

iSync supports only local sync (BT and USB) over OBEX.

4.4. Authentication

The SyncML authentication mechanism is NOT supported.

4.5. Large Objects

The SyncML client SHOULD support "Large Objects" as soon as the client supports contact picture synchronization.

4.6. Sync Types

- A SyncML client MUST support "Sync Alert".

- A client initiated sync is NOT supported by iSync.

- A SyncML client MUST NOT initiate a "Sync without Separate Initialization".

- A SyncML client SHOULD support Refresh Sync From Server Only for better performance. This mode is described in section 12.5 of [DSPRO-1.1.2]. If a SyncML client does not support this sync type, then iSync will do a Slow Reset: A Slow Sync is initiated, and a Delete command is sent on each device's record.

5. Server Alert

iSync provides its database names in the Server Alert package (Pkg#0). A SyncML client MUST use those names in following messages.

- If SyncML 1.1.2 is used, a SyncML client MUST support a Server Alerted Sync, as defined in section 13 of [DSPRO-1.1.2].

- If SyncML 1.2 is used, a client MUST support Server Alert Notification (SAN), as described in [SYNCSAN-1.2] and section 12 of [DSPRO-1.2].

5.1. SyncML 1.1.2 Server Alert Examples

Here are some examples of SyncML 1.1.2 Server Alert packages that iSync sends. Depending on the phone plug-in configuration, iSync may or may not specify device Target databases in an alert.

5.1.1. Separate Databases for Events and Tasks

The following is an example of Events and Tasks stored in separate databases:

```
<?xml version="1.0"?>
<SyncML xmlns="SYNCML:SYNCML1.1">
  <SyncHdr>
    <VerDTD>1.1</VerDTD>
    <VerProto>SyncML/1.1</VerProto>
    <SessionID>1</SessionID>
    <MsgID>1</MsgID>
    <Target>
      <LocURI>/</LocURI>
    </Target>
    <Source>
      <LocURI>iSync</LocURI>
    </Source>
  </SyncHdr>
  <SyncBody>
    <Alert>
      <CmdID>1</CmdID>
      <Data>206</Data>
      <Item>
        <Target>
          <LocURI>DeviceContacts</LocURI>
        </Target>
        <Source>
          <LocURI>Contacts</LocURI>
        </Source>
        <Meta>
          <Type xmlns="syncml:metinf">text/x-vcard</Type>
        </Meta>
      </Item>
```

```
        </Alert>
        <Alert>
          <CmdID>2</CmdID>
          <Data>206</Data>
          <Item>
            <Target>
              <LocURI>DeviceTasks</LocURI>
            </Target>
            <Source>
              <LocURI>Tasks</LocURI>
            </Source>
            <Meta>
              <Type xmlns="syncml:metinf">text/x-vcalendar</Type>
            </Meta>
          </Item>
        </Alert>
        <Alert>
          <CmdID>3</CmdID>
          <Data>206</Data>
          <Item>
            <Target>
              <LocURI>DeviceEvents</LocURI>
            </Target>
            <Source>
              <LocURI>Events</LocURI>
            </Source>
            <Meta>
              <Type xmlns="syncml:metinf">text/x-vcalendar</Type>
            </Meta>
          </Item>
        </Alert>
        <Final/>
      </SyncBody>
    </SyncML>
```

5.1.2. Common Database for Events and Tasks

The following is an example of Events and Tasks stored in the same database:

```
        <?xml version="1.0"?>
        <SyncML xmlns="SYNCML:SYNCML1.1">
          <SyncHdr>
            <VerDTD>1.1</VerDTD>
            <VerProto>SyncML/1.1</VerProto>
            <SessionID>1</SessionID>
            <MsgID>1</MsgID>
            <Target>
              <LocURI>/</LocURI>
            </Target>
            <Source>
              <LocURI>iSync</LocURI>
            </Source>
          </SyncHdr>
```

```
<SyncBody>
  <Alert>
    <CmdID>1</CmdID>
    <Data>206</Data>
    <Item>
      <Source>
        <LocURI>Contacts</LocURI>
      </Source>
      <Meta>
        <Type xmlns="syncml:metinf">text/x-vcard</Type>
      </Meta>
    </Item>
  </Alert>
  <Alert>
    <CmdID>2</CmdID>
    <Data>206</Data>
    <Item>
      <Source>
        <LocURI>Calendars</LocURI>
      </Source>
      <Meta>
        <Type xmlns="syncml:metinf">text/x-vcalendar</Type>
      </Meta>
    </Item>
  </Alert>
  <Final/>
</SyncBody>
</SyncML>
```

5.2. SyncML 1.2 SAN example

Because iSync does not support SyncML authentication mechanism, the <digest> field is filled with zeros.

5.2.1. Separate Databases for Events and Tasks

The following is an example of Events and Tasks stored in separate databases:

Token stream	Description
00000000 00000000 00000000 00000000	digest: empty
0318000000	version: 1.2 ui-mode: 1 initiator: Server futur-use: 0
0001	sessionid: 1
05 6953796e63	server-identifier: iSync

Token stream	Description
`30`	num-syncs: 3 futur-use: 0
`60`	sync-type: 6 (two-way by server) futur-use: 0
`000007`	content-type:text/x-vcard
`08 436f6e7461637473`	server-uri: Contacts
`60`	sync-type: 6 (two-way by server) futur-use: 0
`000006`	content-type:text/x-vcalendar
`06 4576656e7473`	server-uri: Events
`60`	sync-type: 6 (two-way by server) futur-use: 0
`000006`	content-type:text/x-vcalendar
`05 5461736b73`	server-uri: Tasks

5.2.2. Common Database for Events and Tasks

The following is an example of Events and Tasks stored in the same database:

Token stream	Description
`00000000 00000000 00000000 00000000`	digest: empty
`0318000000`	version: 1.2 ui-mode: 1 initiator: Server futur-use: 0
`0001`	sessionid: 1
`05 6953796e63`	server-identifier: iSync
`20`	num-syncs: 2 futur-use: 0
`60`	sync-type: 6 (two-way by server) futur-use: 0
`000007`	content-type:text/x-vcard
`08 436f6e7461637473`	server-uri: Contacts

Token stream	Description
`60`	sync-type: 6 (two-way by server) futur-use: 0
`000006`	content-type:text/x-vcalendar
`09 43616C656E64617273`	server-uri: Calendars

6. A Device Database Reset

iSync can detect when a user has manually reset a device's database. To do this, iSync looks at anchors provided by the device in Pkg#1. In this case, the corresponding database on Mac is NOT reset: instead, iSync resends all its database records to the device.

iSync considers that a device's database has been reset in following cases when a device in Pkg#1 sends one of the following alerts.

6.1. Last Anchor Is Not Present

```
<Alert>
  <CmdID>3</CmdID>
  <Data>201</Data>
  <Item>
    <Target>
      <LocURI>Contacts</LocURI>
    </Target>
    <Source>
      <LocURI>DeviceContacts</LocURI>
    </Source>
    <Meta>
      <Anchor xmlns="syncml:metinf">
        <Next>1</Next>
      </Anchor>
    </Meta>
  </Item>
</Alert>
```

6.2. Last Anchor Is '00000000T000000Z'

```
<Alert>
  <CmdID>3</CmdID>
  <Data>201</Data>
  <Item>
    <Target>
      <LocURI>Contacts</LocURI>
    </Target>
    <Source>
      <LocURI>DeviceContacts</LocURI>
    </Source>
    <Meta>
      <Anchor xmlns="syncml:metinf">
        <Last>00000000T000000Z</Last >
        <Next>20060925T035440Z</Next>
      </Anchor>
    </Meta>
  </Item>
</Alert>
```

6.3. Last Anchor Is 0, and 'Next Anchor' Is 0

```
<Alert>
  <CmdID>3</CmdID>
  <Data>201</Data>
  <Item>
    <Target>
      <LocURI>Contacts</LocURI>
    </Target>
    <Source>
      <LocURI>DeviceContacts</LocURI>
    </Source>
    <Meta>
      <Anchor xmlns="syncml:metinf">
        <Last>0</Last>
        <Next>0</Next>
      </Anchor>
    </Meta>
  </Item>
</Alert>
```

6.4. Last Anchor Is 0, and 'Next Anchor' Was > 0 During the Previous SyncML Session with That Device

- **Previous session:**

```
<Alert>
  <CmdID>3</CmdID>
  <Data>201</Data>
  <Item>
    <Target>
      <LocURI>Contacts</LocURI>
    </Target>
    <Source>
      <LocURI>DeviceContacts</LocURI>
    </Source>
    <Meta>
      <Anchor xmlns="syncml:metinf">
        <Last>34</Last>
        <Next>35</Next>
      </Anchor>
    </Meta>
  </Item>
</Alert>
```

- **Session following the device's database reset:**

```
<Alert>
  <CmdID>3</CmdID>
  <Data>201</Data>
```

```
            <Item>
              <Target>
                <LocURI>Contacts</LocURI>
              </Target>
              <Source>
                <LocURI>DeviceContacts</LocURI>
              </Source>
              <Meta>
                <Anchor xmlns="syncml:metinf">
                  <Last>0</Last>
                  <Next>1</Next>
                </Anchor>
              </Meta>
            </Item>
          </Alert>
```

After a manual device's database is reset, if the device sends a Delete command for each record on this database, then the corresponding database on the computer is emptied. Note that this is not the expected behavior of a device. The device MUST NOT send a Delete command for each record after a manual database reset.

7. Busy Signaling

It may takes a long time for iSync to mingle data received from a SyncML client in Pkg #3. So before starting to send Pkg #4, in order to avoid a SyncML client timeout, iSync may send one or several Busy Signaling messages, as described in section 7.12 of [DSPRO-1.1.2].

7.1. Example of a Session with a Busy Signaling Message

- **Pkg#3: iSync <= device**

```
<?xml version="1.0"?>
<!DOCTYPE SyncML PUBLIC "-//SYNCML//DTD SyncML 1.1//EN" "http://www.syncml.org/
docs/syncml_represent_v11_20020213.dtd">
<SyncML xmlns="syncml:SYNCML1.1">
  <SyncHdr>
    <VerDTD>1.1</VerDTD>
    <VerProto>SyncML/1.1</VerProto>
    <SessionID>2743</SessionID>
    <MsgID>2</MsgID>
    <Target>
      <LocURI>iSync</LocURI>
    </Target>
    <Source>
      <LocURI>IMEI:000000000000001</LocURI>
    </Source>
  </SyncHdr>
  <SyncBody>
    <Status>
      <CmdID>1</CmdID>
      <MsgRef>2</MsgRef>
      <CmdRef>0</CmdRef>
      <Cmd>SyncHdr</Cmd>
      <TargetRef>IMEI:000000000000001</TargetRef>
      <SourceRef>iSync</SourceRef>
      <Data>200</Data>
    </Status>
    <Status>
      <CmdID>2</CmdID>
      <MsgRef>2</MsgRef>
      <CmdRef>3</CmdRef>
      <Cmd>Alert</Cmd>
      <TargetRef>PhoneContact</TargetRef>
      <SourceRef>Contacts</SourceRef>
      <Data>200</Data>
      <Item>
        <Data>
          <Anchor xmlns="syncml:metinf">
            <Next>20060619T152650Z</Next>
          </Anchor>
        </Data>
      </Item>
    </Status>
    <Sync>
      <CmdID>3</CmdID>
      <Target>
        <LocURI>./Contacts</LocURI>
      </Target>
```

```xml
        <Source>
          <LocURI>./PhoneContact</LocURI>
        </Source>
        <Add>
          <CmdID>4</CmdID>
          <Meta>
            <Type xmlns="syncml:metinf">text/x-vcard</Type>
          </Meta>
          <Item>
            <Source>
              <LocURI>14719</LocURI>
            </Source>
            <Data><![CDATA[BEGIN:VCARD
VERSION:2.1
N:hi;hi;;;
TEL;WORK:879987
END:VCARD
]]></Data>
          </Item>
        </Add>
        <Add>
          <CmdID>5</CmdID>
          <Meta>
            <Type xmlns="syncml:metinf">text/x-vcard</Type>
          </Meta>
          <Item>
            <Source>
              <LocURI>14720</LocURI>
            </Source>
            <Data><![CDATA[BEGIN:VCARD
VERSION:2.1
N:hoho;hoho;;;
TEL;WORK:789987
END:VCARD
]]></Data>
          </Item>
        </Add>
        <Add>
          <CmdID>6</CmdID>
          <Meta>
            <Type xmlns="syncml:metinf">text/x-vcard</Type>
          </Meta>
          <Item>
            <Source>
              <LocURI>14721</LocURI>
            </Source>
            <Data><![CDATA[BEGIN:VCARD
VERSION:2.1
N:e;e;;;
TEL;WORK:156651
END:VCARD
]]></Data>
          </Item>
        </Add>
      </Sync>
      <Final/>
    </SyncBody>
</SyncML>
```

- **Pkg#4 (1): iSync => device**

```xml
<?xml version="1.0"?>
```

```
<!DOCTYPE SyncML PUBLIC "-//SYNCML//DTD SyncML 1.1//EN" "http://www.syncml.org/
docs/syncml_represent_v11_20020213.dtd">
<SyncML xmlns="syncml:SYNCML1.1">
  <SyncHdr>
    <VerDTD>1.1</VerDTD>
    <VerProto>SyncML/1.1</VerProto>
    <SessionID>2743</SessionID>
    <MsgID>3</MsgID>
    <Target>
      <LocURI>IMEI:000000000000001</LocURI>
    </Target>
    <Source>
      <LocURI>iSync</LocURI>
    </Source>
  </SyncHdr>
  <SyncBody>
    <Status>
      <CmdID>1</CmdID>
      <MsgRef>2</MsgRef>
      <CmdRef>0</CmdRef>
      <Cmd>SyncHdr</Cmd>
      <TargetRef>iSync</TargetRef>
      <SourceRef>IMEI:000000000000001</SourceRef>
      <Data>101</Data>
    </Status>
  </SyncBody>
</SyncML>
```

- **Pkg#4 (1): iSync <= device**

```
<?xml version="1.0"?>
<!DOCTYPE SyncML PUBLIC "-//SYNCML//DTD SyncML 1.1//EN" "http://www.syncml.org/
docs/syncml_represent_v11_20020213.dtd">
<SyncML xmlns="syncml:SYNCML1.1">
  <SyncHdr>
    <VerDTD>1.1</VerDTD>
    <VerProto>SyncML/1.1</VerProto>
    <SessionID>2743</SessionID>
    <MsgID>3</MsgID>
    <Target>
      <LocURI>iSync</LocURI>
    </Target>
    <Source>
      <LocURI>IMEI:000000000000001</LocURI>
    </Source>
  </SyncHdr>
  <SyncBody>
    <Alert>
      <CmdID>1</CmdID>
      <Data>221</Data>
      <Item>
        <Target>
          <LocURI>iSync</LocURI>
        </Target>
        <Source>
          <LocURI>IMEI:000000000000001</LocURI>
        </Source>
      </Item>
    </Alert>
  </SyncBody>
</SyncML>
```

- **Pkg#4 (2): iSync => device**

```xml
<?xml version="1.0"?>
<!DOCTYPE SyncML PUBLIC "-//SYNCML//DTD SyncML 1.1//EN" "http://www.syncml.org/
docs/syncml_represent_v11_20020213.dtd">
<SyncML xmlns="syncml:SYNCML1.1">
  <SyncHdr>
    <VerDTD>1.1</VerDTD>
    <VerProto>SyncML/1.1</VerProto>
    <SessionID>2743</SessionID>
    <MsgID>4</MsgID>
    <Target>
      <LocURI>IMEI:000000000000001</LocURI>
    </Target>
    <Source>
      <LocURI>iSync</LocURI>
    </Source>
  </SyncHdr>
  <SyncBody>
    <Status>
      <CmdID>1</CmdID>
      <MsgRef>3</MsgRef>
      <CmdRef>0</CmdRef>
      <Cmd>SyncHdr</Cmd>
      <TargetRef>iSync</TargetRef>
      <SourceRef>IMEI:000000000000001</SourceRef>
      <Data>200</Data>
    </Status>
    <Status>
      <CmdID>2</CmdID>
      <MsgRef>2</MsgRef>
      <CmdRef>3</CmdRef>
      <Cmd>Sync</Cmd>
      <TargetRef>Contacts</TargetRef>
      <SourceRef>PhoneContact</SourceRef>
      <Data>200</Data>
    </Status>
    <Status>
      <CmdID>3</CmdID>
      <MsgRef>2</MsgRef>
      <CmdRef>4</CmdRef>
      <Cmd>Add</Cmd>
      <SourceRef>14719</SourceRef>
      <Data>201</Data>
    </Status>
    <Status>
      <CmdID>4</CmdID>
      <MsgRef>2</MsgRef>
      <CmdRef>5</CmdRef>
      <Cmd>Add</Cmd>
      <SourceRef>14720</SourceRef>
      <Data>201</Data>
    </Status>
    <Status>
      <CmdID>5</CmdID>
      <MsgRef>2</MsgRef>
      <CmdRef>6</CmdRef>
      <Cmd>Add</Cmd>
      <SourceRef>14721</SourceRef>
      <Data>201</Data>
    </Status>
```

```
            <Status>
              <CmdID>6</CmdID>
              <MsgRef>3</MsgRef>
              <CmdRef>1</CmdRef>
              <Cmd>Alert</Cmd>
              <Data>200</Data>
            </Status>
            <Sync>
              <CmdID>7</CmdID>
              <Target>
                <LocURI>PhoneContact</LocURI>
              </Target>
              <Source>
                <LocURI>Contacts</LocURI>
              </Source>
              <Delete>
                <CmdID>8</CmdID>
                <Item>
                  <Target>
                    <LocURI>14719</LocURI>
                  </Target>
                  <Meta>
                    <Type xmlns="syncml:metinf">text/x-vcard</Type>
                  </Meta>
                </Item>
              </Delete>
              <Delete>
                <CmdID>9</CmdID>
                <Item>
                  <Target>
                    <LocURI>14721</LocURI>
                  </Target>
                  <Meta>
                    <Type xmlns="syncml:metinf">text/x-vcard</Type>
                  </Meta>
                </Item>
              </Delete>
              <Delete>
                <CmdID>10</CmdID>
                <Item>
                  <Target>
                    <LocURI>14720</LocURI>
                  </Target>
                  <Meta>
                    <Type xmlns="syncml:metinf">text/x-vcard</Type>
                  </Meta>
                </Item>
              </Delete>
              <Add>
                <CmdID>11</CmdID>
                <Item>
                  <Source>
                    <LocURI>T-0</LocURI>
                  </Source>
                  <Meta>
                    <Type xmlns="syncml:metinf">text/x-vcard</Type>
                  </Meta>
                  <Data><![CDATA[BEGIN:VCARD
VERSION:2.1
N:hi;hi
TEL;WORK:879987
END:VCARD]]></Data>
                </Item>
              </Add>
```

```
          </Sync>
          <Final/>
        </SyncBody>
      </SyncML>
```

7.2. Busy Signaling Not Supported

If a device doesn't support the reception of Busy Signaling messages, then iSync may send empty
Sync commands in order to simulate Busy Signaling.

• **Pkg#3: iSync <= device**

```
      <?xml version="1.0"?>
      <!DOCTYPE SyncML PUBLIC "-//SYNCML//DTD SyncML 1.1//EN" "http://www.syncml.org/
docs/syncml_represent_v11_20020213.dtd">
      <SyncML xmlns="syncml:SYNCML1.1">
        <SyncHdr>
          <VerDTD>1.1</VerDTD>
          <VerProto>SyncML/1.1</VerProto>
          <SessionID>2745</SessionID>
          <MsgID>2</MsgID>
          <Target>
            <LocURI>iSync</LocURI>
          </Target>
          <Source>
            <LocURI>IMEI:000000000000001</LocURI>
          </Source>
        </SyncHdr>
        <SyncBody>
          <Status>
            <CmdID>1</CmdID>
            <MsgRef>2</MsgRef>
            <CmdRef>0</CmdRef>
            <Cmd>SyncHdr</Cmd>
            <TargetRef>IMEI:000000000000001</TargetRef>
            <SourceRef>iSync</SourceRef>
            <Data>200</Data>
          </Status>
          <Status>
            <CmdID>2</CmdID>
            <MsgRef>2</MsgRef>
            <CmdRef>3</CmdRef>
            <Cmd>Alert</Cmd>
            <TargetRef>PhoneContact</TargetRef>
            <SourceRef>Contacts</SourceRef>
            <Data>200</Data>
            <Item>
              <Data>
                <Anchor xmlns="syncml:metinf">
                  <Next>20060619T154320Z</Next>
                </Anchor>
              </Data>
            </Item>
          </Status>
          <Sync>
            <CmdID>3</CmdID>
            <Target>
              <LocURI>./Contacts</LocURI>
            </Target>
            <Source>
              <LocURI>./PhoneContact</LocURI>
```

```
            </Source>
            <NumberOfChanges>3</NumberOfChanges>
            <Add>
              <CmdID>4</CmdID>
              <Meta>
                <Type xmlns="syncml:metinf">text/x-vcard</Type>
              </Meta>
              <Item>
                <Source>
                  <LocURI>14725</LocURI>
                </Source>
                <Data><![CDATA[BEGIN:VCARD
VERSION:2.1
N:hi;hi;;;
TEL;WORK:879987
END:VCARD
]]></Data>
              </Item>
            </Add>
            <Add>
              <CmdID>5</CmdID>
              <Meta>
                <Type xmlns="syncml:metinf">text/x-vcard</Type>
              </Meta>
              <Item>
                <Source>
                  <LocURI>14726</LocURI>
                </Source>
                <Data><![CDATA[BEGIN:VCARD
VERSION:2.1
N:hoho;hoho;;;
TEL;WORK:789987
END:VCARD
]]></Data>
              </Item>
            </Add>
            <Add>
              <CmdID>6</CmdID>
              <Meta>
                <Type xmlns="syncml:metinf">text/x-vcard</Type>
              </Meta>
              <Item>
                <Source>
                  <LocURI>14727</LocURI>
                </Source>
                <Data><![CDATA[BEGIN:VCARD
VERSION:2.1
N:e;e;;;
TEL;WORK:156651
END:VCARD
]]></Data>
              </Item>
            </Add>
          </Sync>
          <Final/>
        </SyncBody>
      </SyncML>
```

- **Pkg#3: iSync <= device**

```
<?xml version="1.0"?>
```

```
    <!DOCTYPE SyncML PUBLIC "-//SYNCML//DTD SyncML 1.1//EN" "http://www.syncml.org/
docs/syncml_represent_v11_20020213.dtd">
    <SyncML xmlns="syncml:SYNCML1.1">
      <SyncHdr>
        <VerDTD>1.1</VerDTD>
        <VerProto>SyncML/1.1</VerProto>
        <SessionID>2745</SessionID>
        <MsgID>3</MsgID>
        <Target>
          <LocURI>IMEI:000000000000001</LocURI>
        </Target>
        <Source>
          <LocURI>iSync</LocURI>
        </Source>
      </SyncHdr>
      <SyncBody>
        <Status>
          <CmdID>1</CmdID>
          <MsgRef>2</MsgRef>
          <CmdRef>0</CmdRef>
          <Cmd>SyncHdr</Cmd>
          <TargetRef>iSync</TargetRef>
          <SourceRef>IMEI:000000000000001</SourceRef>
          <Data>200</Data>
        </Status>
        <Status>
          <CmdID>2</CmdID>
          <MsgRef>2</MsgRef>
          <CmdRef>3</CmdRef>
          <Cmd>Sync</Cmd>
          <TargetRef>Contacts</TargetRef>
          <SourceRef>PhoneContact</SourceRef>
          <Data>200</Data>
        </Status>
        <Status>
          <CmdID>3</CmdID>
          <MsgRef>2</MsgRef>
          <CmdRef>4</CmdRef>
          <Cmd>Add</Cmd>
          <SourceRef>14725</SourceRef>
          <Data>201</Data>
        </Status>
        <Status>
          <CmdID>4</CmdID>
          <MsgRef>2</MsgRef>
          <CmdRef>5</CmdRef>
          <Cmd>Add</Cmd>
          <SourceRef>14726</SourceRef>
          <Data>201</Data>
        </Status>
        <Status>
          <CmdID>5</CmdID>
          <MsgRef>2</MsgRef>
          <CmdRef>6</CmdRef>
          <Cmd>Add</Cmd>
          <SourceRef>14727</SourceRef>
          <Data>201</Data>
        </Status>
        <Sync>
          <CmdID>6</CmdID>
          <Target>
            <LocURI>PhoneContact</LocURI>
          </Target>
          <Source>
```

```
          <LocURI>Contacts</LocURI>
        </Source>
      </Sync>
    </SyncBody>
  </SyncML>
```

- **Pkg#3: iSync <= device**

```
<?xml version="1.0"?>
<!DOCTYPE SyncML PUBLIC "-//SYNCML//DTD SyncML 1.1//EN" "http://www.syncml.org/
docs/syncml_represent_v11_20020213.dtd">
<SyncML xmlns="syncml:SYNCML1.1">
  <SyncHdr>
    <VerDTD>1.1</VerDTD>
    <VerProto>SyncML/1.1</VerProto>
    <SessionID>2745</SessionID>
    <MsgID>3</MsgID>
    <Target>
      <LocURI>iSync</LocURI>
    </Target>
    <Source>
      <LocURI>IMEI:000000000000001</LocURI>
    </Source>
  </SyncHdr>
  <SyncBody>
    <Alert>
      <CmdID>1</CmdID>
      <Data>222</Data>
      <Item>
        <Target>
          <LocURI>iSync</LocURI>
        </Target>
        <Source>
          <LocURI>IMEI:000000000000001</LocURI>
        </Source>
      </Item>
    </Alert>
    <Status>
      <CmdID>2</CmdID>
      <MsgRef>3</MsgRef>
      <CmdRef>0</CmdRef>
      <Cmd>SyncHdr</Cmd>
      <TargetRef>IMEI:000000000000001</TargetRef>
      <SourceRef>iSync</SourceRef>
      <Data>200</Data>
    </Status>
    <Status>
      <CmdID>3</CmdID>
      <MsgRef>3</MsgRef>
      <CmdRef>6</CmdRef>
      <Cmd>Sync</Cmd>
      <TargetRef>PhoneContact</TargetRef>
      <SourceRef>Contacts</SourceRef>
      <Data>200</Data>
    </Status>
  </SyncBody>
</SyncML>
```

- **Pkg#3: iSync <= device**

```xml
<?xml version="1.0"?>
<!DOCTYPE SyncML PUBLIC "-//SYNCML//DTD SyncML 1.1//EN" "http://www.syncml.org/
docs/syncml_represent_v11_20020213.dtd">
<SyncML xmlns="syncml:SYNCML1.1">
  <SyncHdr>
    <VerDTD>1.1</VerDTD>
    <VerProto>SyncML/1.1</VerProto>
    <SessionID>2745</SessionID>
    <MsgID>4</MsgID>
    <Target>
      <LocURI>IMEI:000000000000001</LocURI>
    </Target>
    <Source>
      <LocURI>iSync</LocURI>
    </Source>
  </SyncHdr>
  <SyncBody>
    <Status>
      <CmdID>1</CmdID>
      <MsgRef>3</MsgRef>
      <CmdRef>0</CmdRef>
      <Cmd>SyncHdr</Cmd>
      <TargetRef>iSync</TargetRef>
      <SourceRef>IMEI:000000000000001</SourceRef>
      <Data>200</Data>
    </Status>
    <Status>
      <CmdID>2</CmdID>
      <MsgRef>3</MsgRef>
      <CmdRef>1</CmdRef>
      <Cmd>Alert</Cmd>
      <Data>200</Data>
    </Status>
    <Sync>
      <CmdID>3</CmdID>
      <Target>
        <LocURI>PhoneContact</LocURI>
      </Target>
      <Source>
        <LocURI>Contacts</LocURI>
      </Source>
      <NumberOfChanges>4</NumberOfChanges>
      <Delete>
        <CmdID>4</CmdID>
        <Item>
          <Target>
            <LocURI>14727</LocURI>
          </Target>
          <Meta>
            <Type xmlns="syncml:metinf">text/x-vcard</Type>
          </Meta>
        </Item>
      </Delete>
      <Delete>
        <CmdID>5</CmdID>
        <Item>
          <Target>
            <LocURI>14726</LocURI>
          </Target>
          <Meta>
            <Type xmlns="syncml:metinf">text/x-vcard</Type>
          </Meta>
        </Item>
      </Delete>
```

```
            <Delete>
              <CmdID>6</CmdID>
              <Item>
                <Target>
                  <LocURI>14725</LocURI>
                </Target>
                <Meta>
                  <Type xmlns="syncml:metinf">text/x-vcard</Type>
                </Meta>
              </Item>
            </Delete>
            <Add>
              <CmdID>7</CmdID>
              <Item>
                <Source>
                  <LocURI>T-0</LocURI>
                </Source>
                <Meta>
                  <Type xmlns="syncml:metinf">text/x-vcard</Type>
                </Meta>
                <Data><![CDATA[BEGIN:VCARD
VERSION:2.1
N:hi;hi
TEL;WORK:879987
END:VCARD]]></Data>
              </Item>
            </Add>
          </Sync>
          <Final/>
        </SyncBody>
      </SyncML>
```

7.3. Only One Busy Signaling Message Is Supported

If a device supports the reception of only one Busy Signaling message, then iSync sends a Busy Signaling message first, followed by empty Sync commands.

8. Databases

iSync supports only the vCard 2.1 and vCal 1.0 formats.

iSync can synchronize these databases:

- Contacts

- Events

- Tasks

iSync works with devices that have a common database for Events and Tasks, as well as with those that have separate databases for Events and Tasks.

8.1. vCard

Any client that supports SyncML contact sync, MUST use vCard 2.1 to convey contact information.

8.1.1. Supported Fields

The following table corresponds to the mapping between the Address Book fields that can be synced by iSync, and the default vCard properties used to sync them.

Address Book field	vCard Property	Multiple values allowed
Street / Postal Code / City / Country	ADR (or LABEL)	X
Birthday	BDAY	
Email	EMAIL	X
First / Last / Middle Name / Prefix / Suffix	N	
Note	NOTE	
Company / Department	ORG	
Photo	PHOTO	
Phone	TEL	X
Job Title	TITLE	
URL	URL	X
Nickname	X-NICKNAME	
Dates : Anniversary	X-ANNIVERSARY	X

Address Book field	vCard Property	Multiple values allowed
Dates : Custom	X-DATE	X
Related Names: Father	X-FATHER	X
Related Names: Mother	X-MOTHER	X
Related Names: Parent	X-PARENT	X
Related Names: Child	X-CHILD	X
Related Names: Brother	X-BROTHER	X
Related Names: Sister	X-SISTER	X
Related Names: Friend	X-FRIEND	X
Related Names: Spouse	X-SPOUSE	X
Related Names: Assistant	X-ASSISTANT	X
Related Names: Manager	X-MANAGER	X
Related Names: Other / Custom	X-NAME	X

8.1.2. Type Mapping

The following tables in this section correspond to ideal TYPE parameter mappings.

8.1.2.1. Delivery address (ADR)

Address Book type	vCard type
work	WORK
home	HOME
other / custom	(none)

8.1.2.2. Email (EMAIL)

Address Book type	vCard type
work	WORK
home	HOME

Address Book type	vCard type
other / custom	(none)

8.1.2.3. Phone (TEL)

Address Book type	vCard type
work	WORK
home	HOME
mobile	CELL
main	(none)
home fax	HOME;FAX
work fax	WORK;FAX
pager	PAGER
other / custom	(none)

8.1.2.4. URL (URL)

Address Book type	vCard type
home page	HOME
work	WORK
home	HOME
other / custom	(none)

8.2. vCal

Any client supporting a SyncML event or task sync, MUST use vCal 1.0 to convey event or task information.

8.2.1. Supported Fields

The following table corresponds to the mapping between the iCal fields that can be synced by iSync, and the vCal properties used to sync them.

iCal field	vCal Property
From	DTSTART
To	DTEND
Title	SUMMARY
Location	LOCATION
Notes	DESCRIPTION
Alarm [Message]	DALARM
Alarm [Message with sound]	AALARM
Repeat	RRULE / EXDATE
Priority	PRIORITY
Due date	DUE
Completed	COMPLETED
(hidden)	STATUS
(hidden)	CLASS

8.2.2. All Day Event

SyncML client is said to support All Day events if:

- A user can set an event as All Day on device's UI.

- The All Day information is sent by the device in the associated vCal during the sync session.

iSync supports several All Day event formats.

8.2.2.1. OMA Formatting

If a device supports synchronization of All Day Events, it SHOULD represent them as described in [VOBJPROFILE-1.0].

- Single day:

```
BEGIN:VCALENDAR
VERSION:1.0
BEGIN:VEVENT
DTSTART:20060925T000000
DTEND:20060925T240000
SUMMARY:This is an allday event (on 09/25/06)
END:VEVENT
```

```
                END:VCALENDAR
```

- Multi day:

```
                BEGIN:VCALENDAR
                VERSION:1.0
                BEGIN:VEVENT
                DTSTART:20060925T000000
                DTEND:20060926T240000
                SUMMARY:This is an allday event (from 09/25/06 to 09/26/06)
                END:VEVENT
                END:VCALENDAR
```

8.2.2.2. From Midnight to Midnight (the day after)

- Single day:

```
                BEGIN:VCALENDAR
                VERSION:1.0
                BEGIN:VEVENT
                DTSTART:20060925T000000
                DTEND:20060926T000000
                SUMMARY:This is an allday event (on 09/25/06)
                END:VEVENT
                END:VCALENDAR
```

- Multi day:

```
                BEGIN:VCALENDAR
                VERSION:1.0
                BEGIN:VEVENT
                DTSTART:20060925T000000
                DTEND:20060927T000000
                SUMMARY:This is an allday event (from 09/25/06 to 09/26/06)
                END:VEVENT
                END:VCALENDAR
```

8.2.2.3. Using the CATEGORIES property

Phone plug-in developers must explicitly specify the CATEGORIES values for which a device considers an event to be All Day, and for which a device considers an event to be Timed.

- Single day:

```
                BEGIN:VCALENDAR
                VERSION:1.0
                BEGIN:VEVENT
                CATEGORIES:REMINDER
                DTSTART:20060925T150000
                DTEND:20060925T150000
```

```
SUMMARY:This is an allday event (on 09/25/06)
END:VEVENT
END:VCALENDAR
```

- Multi day:

```
BEGIN:VCALENDAR
VERSION:1.0
BEGIN:VEVENT
CATEGORIES:REMINDER
DTSTART:20060925T150000
DTEND:20060926T150000
SUMMARY:This is an allday event (from 09/25/06 to 09/26/06)
END:VEVENT
END:VCALENDAR
```

8.2.2.4. From Midnight to 23:59

- Single day:

```
BEGIN:VCALENDAR
VERSION:1.0
BEGIN:VEVENT
DTSTART:20060925T000000
DTEND:20060925T235900
SUMMARY:This is an allday event (on 09/25/06)
END:VEVENT
END:VCALENDAR
```

- Multi day:

```
BEGIN:VCALENDAR
VERSION:1.0
BEGIN:VEVENT
DTSTART:20060925T000000
DTEND:20060926T235900
SUMMARY:This is an allday event (from 09/25/06 to 09/26/06)
END:VEVENT
END:VCALENDAR
```

8.2.3. Recurrences Rules

- Only one RRULE property per vCal is supported.

- RRULE is supported only on VEVENT, not on VTODO.