

An ActiveSync Primer

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What is ActiveSync?

When I speak of ActiveSync, I am speaking in regards to the protocol itself, not the application. In any communications protocol, there is always a purpose for the transmission. In the case of ActiveSync, it provides a means of ensuring that a specific mobile device is consistent in data, e-mail, and contacts with an exchange account. Ultimately, the goal is for the mobile device to contain the most up-to-date information.

How does it work?

The ActiveSync protocol uses request and response commands transported over HTTPS (HTTP Secured by Secure Sockets Layer). Each ActiveSync command is formatted in binary-encoded XML (WBXML) and sent via an HTTP POST (See [MS-ASWBXML]: <http://msdn.microsoft.com/en-us/library/dd299442.aspx>). This WBXML corresponds directly to XML elements and attributes by a tokenization process. The purpose behind this encoding is for efficient bandwidth usage due to the low-bandwidth nature of mobile clients employing the ActiveSync protocol.

Traversing down the stack, by undoing the tokenization process, you will see the XML Message. Each XML Message will vary in size and structure based upon the type of communications being done. However, the basic principle remains the same. Each XML Message will either be a request or a response.

An analysis of a sample ActiveSync Packet

An ActiveSync XML Message

```
<?xml version="1.0" encoding="utf-8"?>
<FolderSync xmlns="FolderHierarchy:">
  <SyncKey>2</SyncKey>
</FolderSync>
```

Binary-Encoded XML (WBXML) Representation of the XML Message

```
03 01 6A 00 00 07 56 52 03 32 00 01 01
```

HTTP POST Header and Body

See [MS-ASHTTP]: <http://msdn.microsoft.com/en-us/library/dd299446.aspx>

POST /Microsoft-Server

ActiveSync?Cmd=FolderSync&User=fakename&DeviceId=v140Device&DeviceType=SmartPhone

HTTP/1.1

Content-Type: application/vnd.ms-sync.wbxml

MS-ASProtocolVersion: 14.0

User-Agent: ASOM

Host: Contoso.com

03 01 6A 00 00 07 56 52 03 32 00 01 01

An Overview of the WBXML Encoding

The following table presents how the WBXML encoding has happened

Bytes	Description
03	Version number – WBXML version 1.3
01	Unknown public identifier
6A	Charset = UTF-8
00	String table length
00 07	Select code page 7 (FolderHierarchy)
56	<FolderSync>, with content (0x16 + 0x40)
52	<SyncKey>, with content
03	Inline string follows
32 00	2
01	</SyncKey>
01	</FolderSync>

Summary

This blog was intended to present an introduction to the ActiveSync protocol. Although the example was fairly simple, this is the first step in grasping the foundation for the subsequent information in the series to this entry. Stay-tuned for more articles getting more in-depth to the intricate details surrounding ActiveSync!