DIMETRA APPLICATION PROGRAMMING INTERFACE (API) TRAINING

Dimetra Control Interface

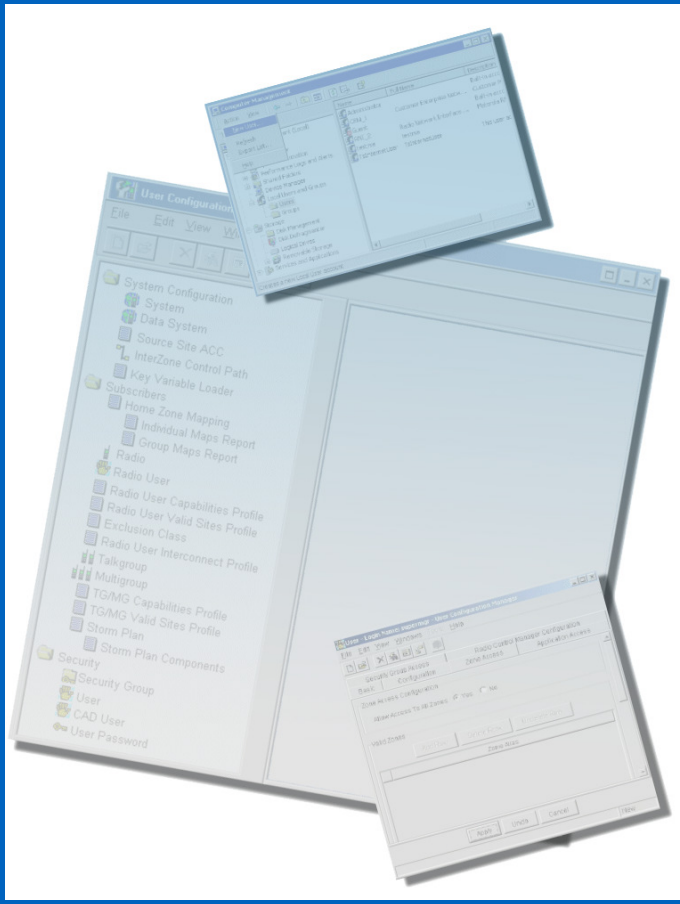
ATIA / FATIA

Course Structure

Module 1 - Course Introduction

Module 2 – ATIA Overview
Module 3 – Backward Compatible ATIA
Module 4 – Flexible ATIA

Module 5 - Course Summary



Air Traffic Interface Access Overview

Overview

Usually used for billing and monitoring purposes

Ability to monitor

- Affiliation
- Call activity
- Status messages
- Radio commands
- System events
- Usage statistics

Overview (cont)

From Dimetra R6.2 onwards there are 2 options to monitor the ATIA packets

- Flexible ATIA
- Backward ATIA

Default packets captured would be FATIA

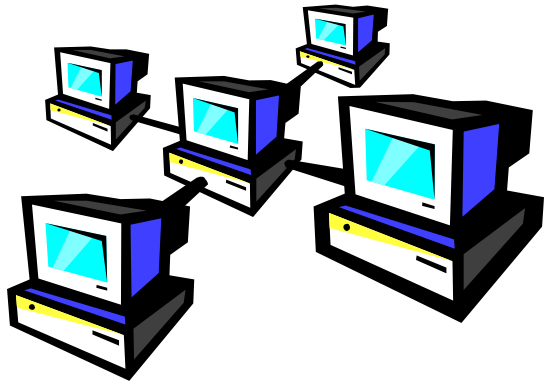
Configurable in ATIA Server to have either interface or both

ATIA API Form

Form of API is network protocol

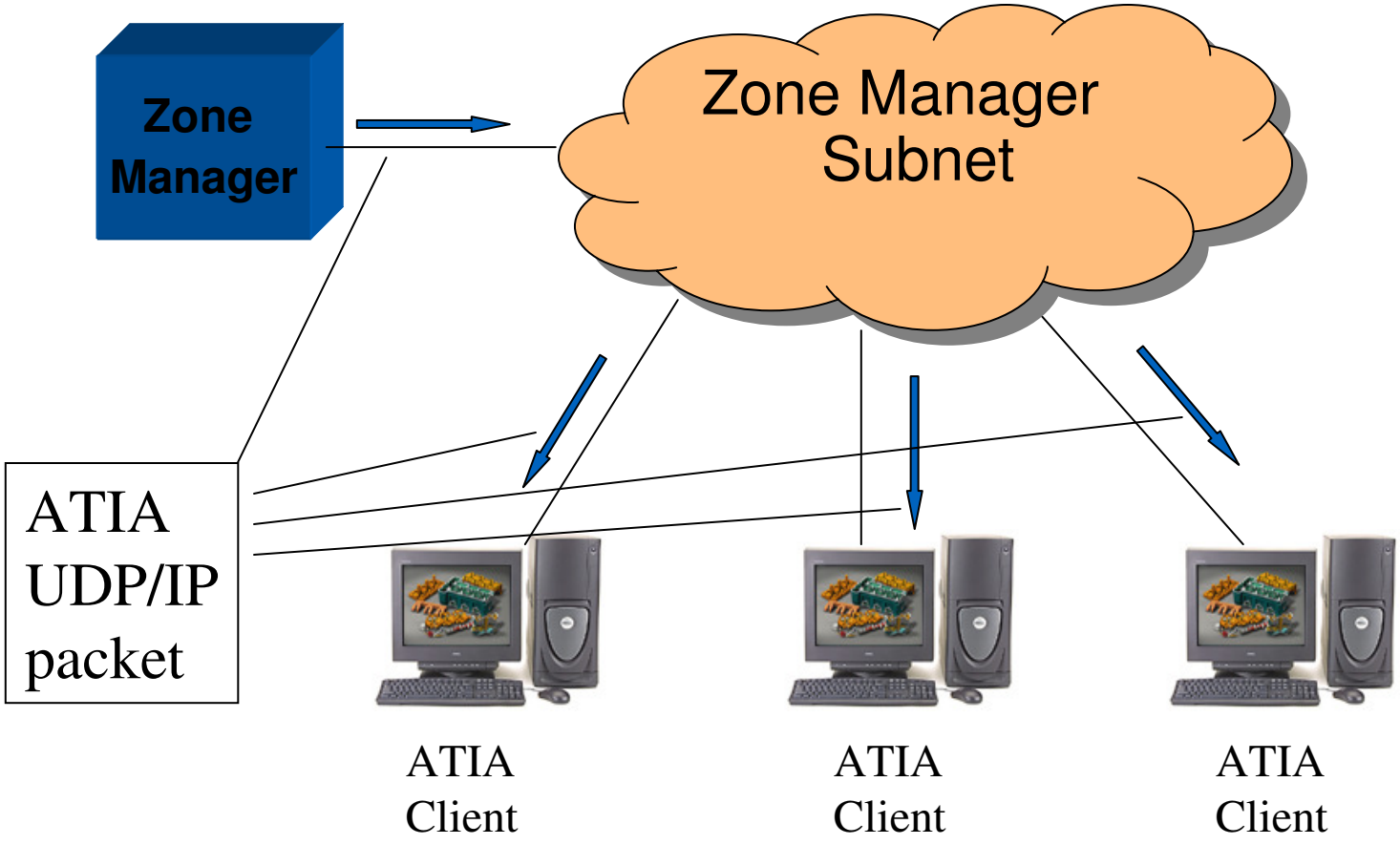
- UDP/IP broadcast from zone manager
- Port configuration can be done in ATIA Server

Read only processing of voice traffic information (not data)



UDP/IP Broadcast

Zone Manager Subnet



Backward Compatible Air Traffic Interface Access (BATIA)

ATIA Clients

ATIA clients are located on the master Ethernet site

- due to broadcast nature of the UDP packets

ATIA clients must constantly be capable of receiving ATIA packets

- no retransmission or confirmation of packets

ATIA Clients (cont)

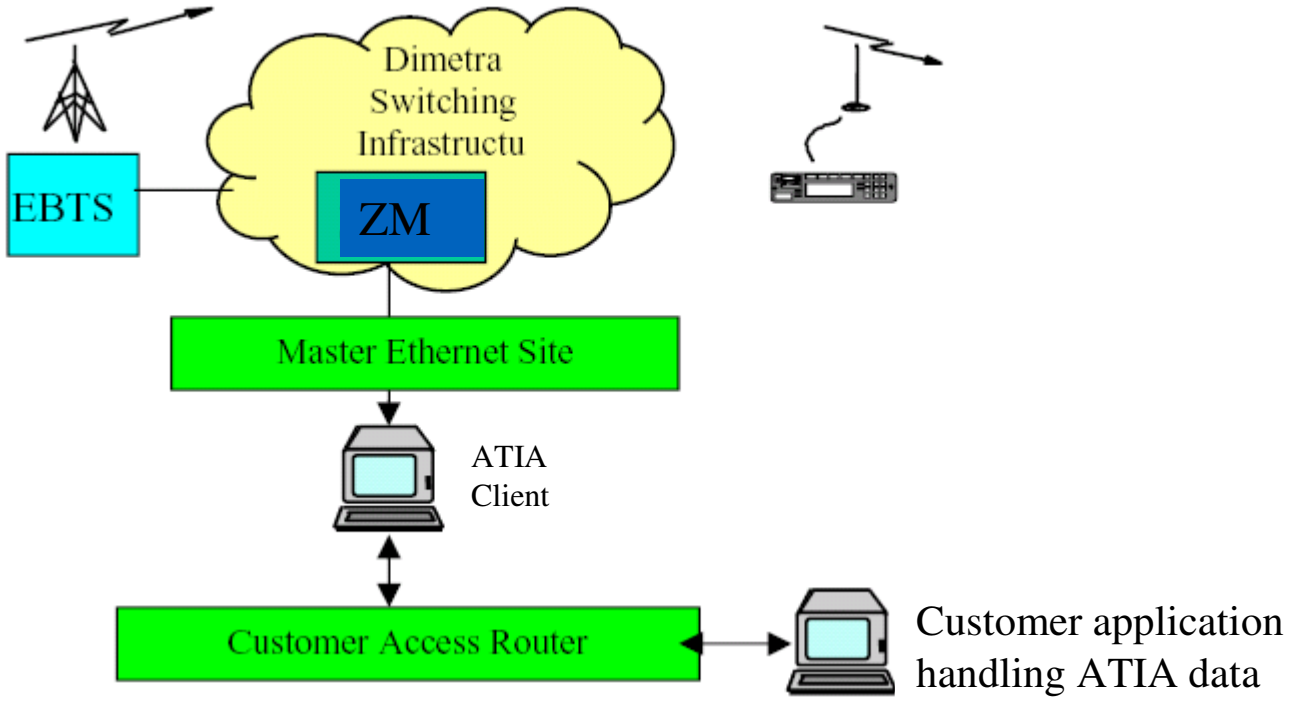
ATIA proxy

- capture ATIA packets in the master Ethernet site
- retransmit via ‘point to point’ to another client outside of the master Ethernet site for processing

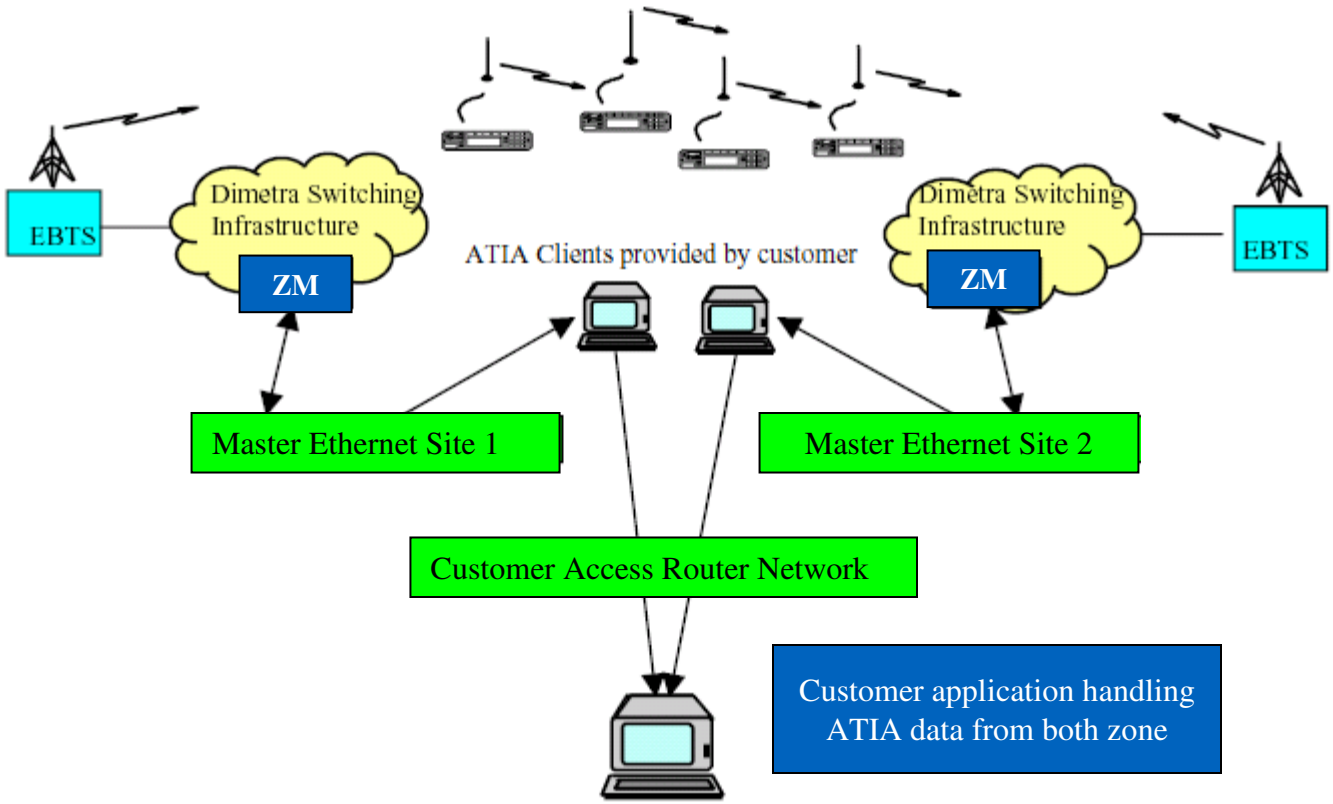
Merging ATIA streams for multi-zone

- each zone will have it’s own ATIA stream
- may be necessary to have information from all zones to obtain correct results (eg. Billing)

ATIA Clients on Single Zone



ATIA/FATIA Clients on Multi-Zone



ATIA Packets

ATIA Packet Documentation

Two important documents on packets:-

- Technical Interface Document (TID)
  - includes all types of ATIA packets
- Dimetra ATIA Fields Used
  - lists Dimetra- specific packets, fields and values

General ATIA packet definition

Block template	Field Size (octet)
Packet length	4
Block source	1
Block destination	1
Block length	2
Block command type	2
Block data	-vary-
Block sequence num	4

Block Data and Field Size depends on command type

ATIA Packet Structure

Several types of ATIA Packets identified by ‘block command type’

Each type of ATIA has different fixed length

Contents of each ATIA packet is further identified by ‘block opcode’

Some fields are only used for certain opcodes

- Unused fields to be ignored

ATIA Commands Type

Ext. Call Activity Update Packet

End of Call Packet

Interconnect Call Info Packet

Radio Status Traffic Packet

Resource Removed Message Packet

Mobility Update Packet

ATIA Commands (cont)

ZC Link Status Update Packet

System Activity Event Packet

System Activity Request Packet

Controlling Zone Update Message Packet

Database Response Message Packet

Radio Command Packet

Command Status Packet

Command Control Packet

Common ATIA Fields

Primary/Secondary ID

- ISSI/GSSI

Primary/Secondary Alias

- Text alias

Time Stamp

- Date, Time and decisecond

Block Sequence Number

- Sequentially increasing number
- Range 1 to 4,294,967,295
- Identify lost packets

ATIA Development Tools

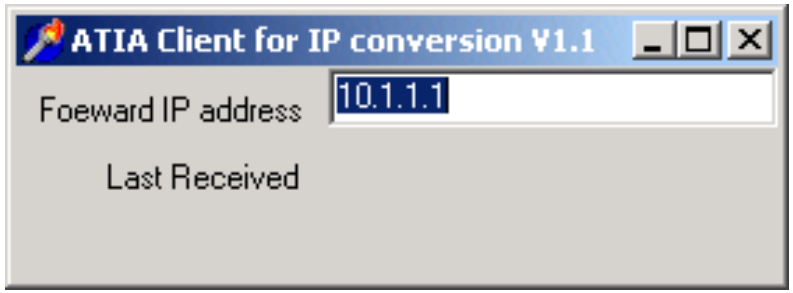
ATIA Log Tool

Record and playback ATIA packets

Send playback to multiple hosts

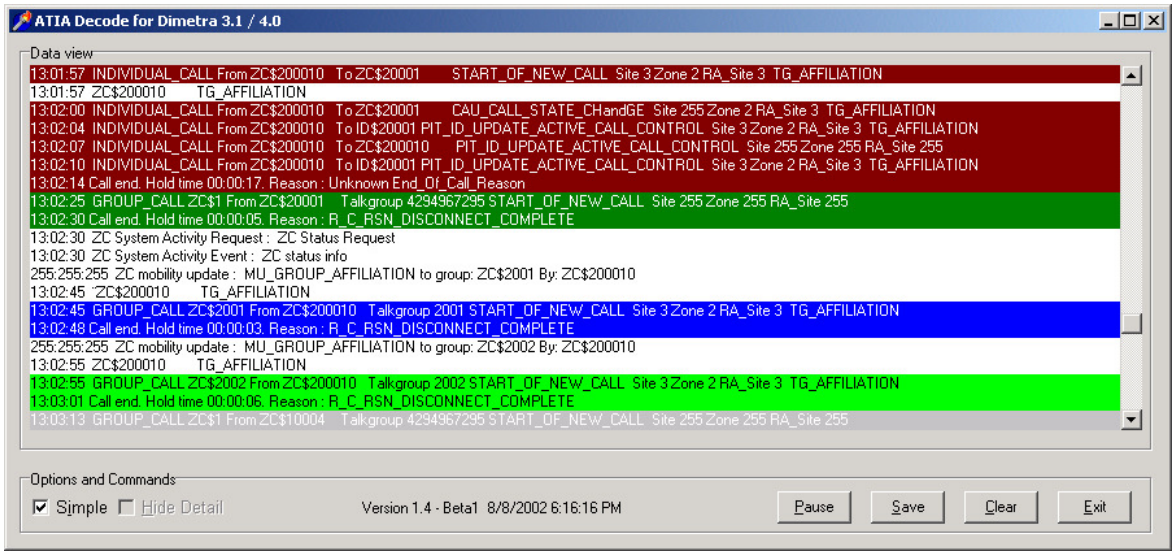
No Delay, Delay and Step playback modes

ATIA Client Tool



Captures broadcast packets and retransmits to specific IP address

ATIA Decoder Tool



Decodes ATIA packets for diagnostics

Simple and detailed display mode

Flexible Air Traffic Information Access API (FATIA)

Flexible Air Traffic Access Overview

FATIA API Overview

Contains a set of data packets defined by command types

Provide and access point for air traffic call information:

- PTT
- Site added to a call
- Affiliations
- Radio commands

Generate billing or management reports

Why do we need FATIA

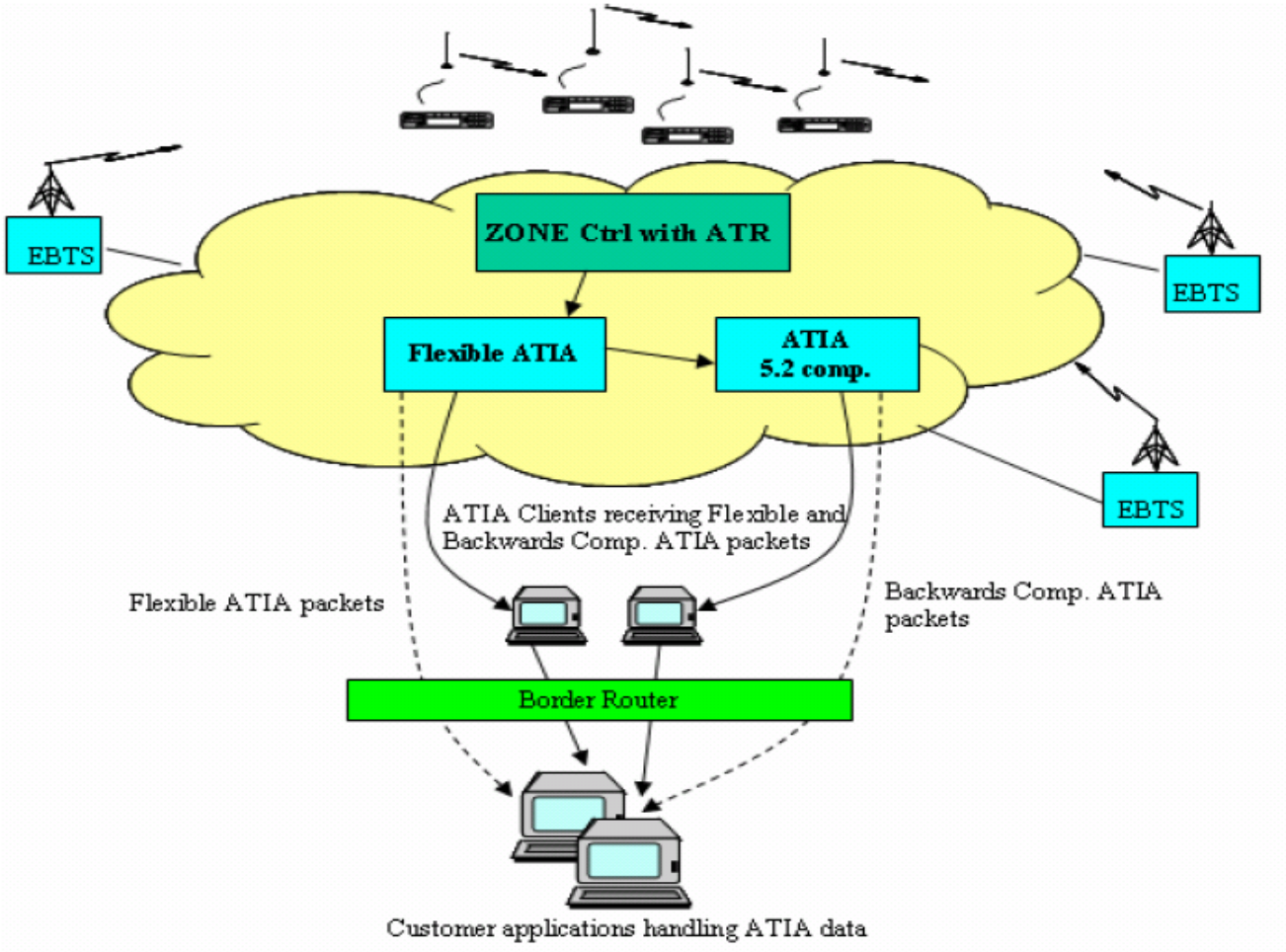
MCC 7500 platform for dispatch consoles using the Elite GUI is introduced into Dimetra IP

- Need Flexible ATIA interface to accommodate new features in MCC7500

Legacy Support – backwards compatibility

- This provides an ATIA interface that is backwards compatible with the ATIA interface on SR5.2
- The configuration of the BATIA interface is done in the ATR admin menu, where it is possible to enable/disable it
- FATIA and the Backward Compatible ATIA interface can be used at the same time

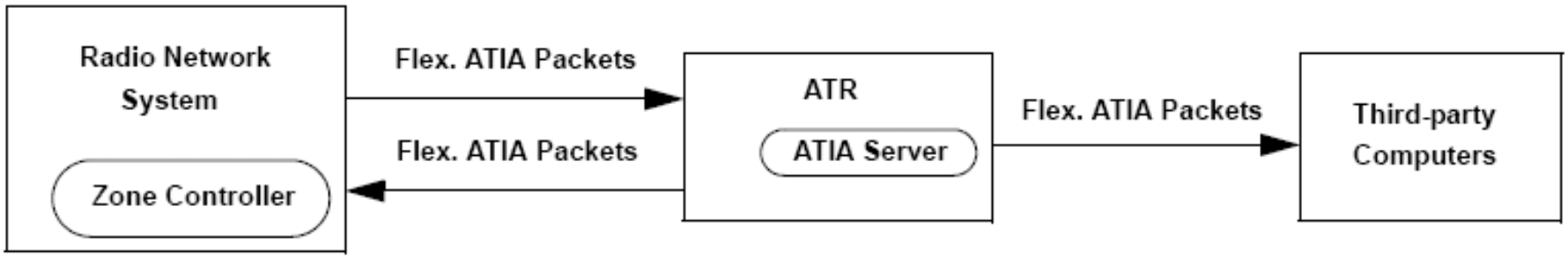
FATIA Client in Single Zone



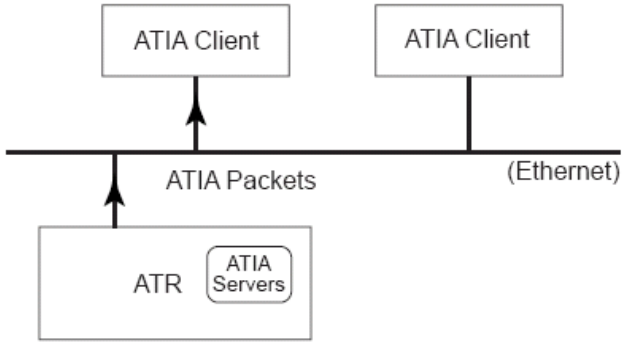
FATIA API Protocol

Uses UDP protocol:

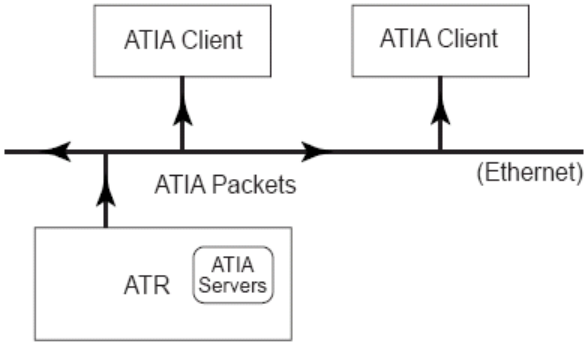
- 8611: to send the participating zone packets
- 8681: to send the controlling zone packets



Data Stream



UDP Unicast scheme – data may be sent outside the ATR subnet



UDP Broadcast scheme – Data available to any host in the ATR subnet

FATIA Packets

FATIA Packet Common Fields

Affiliation Type

Registration Type

Call Status

Call Type

Channel Number

Command Number

Device Type

End of Call Reason

…

General FATIA packet header definition

Block template	Field Size (octet)
Block source	1
Block destination	1
Block length	2
Block command type	2
Block opcode	2
Major version	2
Minor version	2
Logging Sequence Number	4

FATIA packet offset section layout

Field	Value	Size (bytes)
Num Offset	5	2
Offset to Reserved Section	210	2
Offset to Call Section	24	2
Offset to Requestor Section	74	2
Offset to Alias Section	122	2
Offset to Alias Section	190	2

FATIA packet data section layout

Field	Size (byte)
Timestamp	8
Universal Call Num	4
Call Sequence Num	2
Event Sequence Num	2
Call Type	1
State Transition Field	1
Radio Type Qualifier	4
Source Zone ID	2

Field	Size (byte)
Source Site ID	2
Local Zone ID	2
Controlling Zone ID	2
Pre-Determined CZ Controlled flag	1
Active/Busy Status	1
AAID	4
Pri Multicast IP Addr	4
Sec multicast IP Addr	4

Sample FATIA Packet

Section	Field	Value	Size (bytes)
Header Section	Block Source	1	1
	Block Destination	2	1
	Block Length	67	2
	Block Command Type	300	2
	Block Opcode	1	2
	Major Version	1	2
	Minor Version	2	2
	Logging Sequence Number	7322207	4
Offset Section	Num Offsets	3	2
	Offset to Call Section	25	2
	Offset to Requester Section	34	2
	Offset to Alias Section	42	2
Data Section (Call information)	Call number	1	2
	Call status	1	1
	Local Zone ID	1	2
	Target ID	234	4
Data Section (Requester information)	Requester ID	22	4
	Requester Site ID	2	2
	Requester Zone ID	1	2
Data Section (Alias information)	Alias Encoding	0	1
	Num Alias Offsets	2	2
	Offset to Requester Alias	8	2
	Offset to Target Alias	17	2
	Size of Requester Alias	7	2
	Requester Alias	radio22	7
	Size of Target Alias	8	2
	Target Alias	radio234	8

Flexible Database Request

Sent by Zone Dispatcher to the Zone Controller to request information about individual radio or talkgroup

Affiliation status, affiliation database download

Flexible Database Response

Zone controller responds to flexible database request

Contains affiliation information for a specified individual

Eg. Affiliation information response, reject

Flexible Radio Command Status

This packet is sent by ZC in response to Radio Command packets

Function is to update the status of ZC's attempt to send Radio Command to the radio

Block Command Type is 102

Flexible Call Activity Update

Contains information on radio activity related to call activity

Using unique call number to keep track each call

Eg. Start of call, changes to the status of the call

Block Command Type is 106

Flexible End of Call

Generated when call has ended or busy has ended

Call number and timestamp is most important

After call ended, the call number may be reused for new call

Block command type is 136

Summary

Summary

As we moved on in catching up with the Dimetra System, there will be more and more information introduced and supported

FATIA packets has flexible length packets which is more suitable in monitoring purposes

However, this is not a must requirement for third party solution and thus we have backward compatible interface as well

THANK YOU...