



# SIF/ZIServer Training

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# Introduction

- SIF Basics
  - Events vs. Request/Response
  - Push vs. Pull
  - Error Handling
  - Extended Elements
  - Zones
- ZIServer
  - Creating new zones
  - Getting to audits
  - Certificates / Authentication Levels
  - Preview of new Admin tools

## Events

- May be generated by any agent in a zone that has been given authority by ZIS admin to do so, or...
  - More than one agent in a zone may publish events for the same object
- One event per message
- A single event that is generated by a publisher is distributed by the ZIS to all subscribers
- Received by subscriber in the order they were generated, one at a time
  - (per zone)
  - (not multi-threaded)

## Request/Response

- Conversation is between two agents (unlike events)
- Responses may hold many objects of the same type
  - Number of objects depends on
    - the message size specified in the request
    - limited by the maximum buffer size specified when the agent registered
    - Limited by the maximum buffer size of the provider when it registered
  - Good message size is about 128K based on tests we have performed

# Request/Response

- Types of Requests
  - **Simple:** “Give me all StudentPersonal objects”
    - will return all objects of that type in the current zone
  - **Complex:** Give me all StudentPersonal objects with LastName = “Hutchison” and BirthDate = “1/1/1990”
    - will return only those records
  - **Acrobatic:** Give Me all StudentPersonal objects where (LastName = “Hutchison” and BirthDate = “1/1/1990”) OR (LastName = “SMITH” and BirthDate = “1/1/1997”) AND (...)
    - Will return only those records
  - **Not possible through base SIF syntax:** Give me all StudentPersonal objects that are related to students that are related students who are currently enrolled or are marked for future enrollment in school XYZ.
    - We will need to address these needs using zones

## Push vs. Pull

- Often misunderstood because of common understanding of English words “Push” and “Pull”
  - DOES NOT MEAN “pulling information from the ZIS” or “pushing information to the ZIS”
- **SIF Pull Mode**: analogous to “batch mode”
  - Messages get processed on a schedule
- **SIF Push mode**: analogous to “real-time”
  - Messages get processed when they are ready to be processed

# SIF Pull Mode

- Advantages

- Works through firewalls
- Easier to write

- Disadvantages

- More network traffic
- Less Secure
- Don't work well with "chatty" subscribers

# SIF Push Mode

- Advantages

- Network efficient – traffic is only generated when information needs to be sent
- More secure – certificates are installed on both ends and are verified with each packet sent
- Faster – messages are delivered as soon as they are ready

- Disadvantages

- More difficult to program (if you are writing the agent by hand)
- Agent requires a URL (but this also allows it to have a certificate – certificates may be shared)

## Extended Elements

- Used to transport information that needs to be sent that isn't in the current version of the SIF specification
- Extends an existing object
- Should never be used to avoid sending the same information that properly belongs in another object (you should send the other object)
  - Leads to proprietary solutions
- Try to avoid custom objects at all costs – try to use Extended Elements if at all possible
  - They will work with any unmodified ZIS
  - They will work with any other SIF application

## Error Handling

- Always check for a successful ACK when sending a message
- If an agent cannot process a message, do not just log the message
  - Send a SIF\_LogEntry containing why the message could not be processed if possible
  - Perhaps send an email
  - Perhaps send an SMS message
  - Create a SCOM interface to alert it
  - Do not put the message in a log file that will be eventually overwritten

# Zones

- Logical container for exchanging data
  - May contain as little as one school or as many as all schools in an organization
  - Applications register in a zone in order to publish or receive data
    - The ZIS Administrator sets permissions for each agent, determining what the agent is allowed to do with each object
      - Subscribe
      - Provide
      - Answer Requests
      - Receive Responses
      - Generate Adds, Generate Changes, Generate Deletes
  - Data in one zone is isolated from that in any other zone

# Provider vs. Subscriber

- Provider

- The default responder to requests in a zone
- Not to be confused with:
  - Agent that answers requests
  - Agent that generates events
  - “Push agent”

- Subscriber

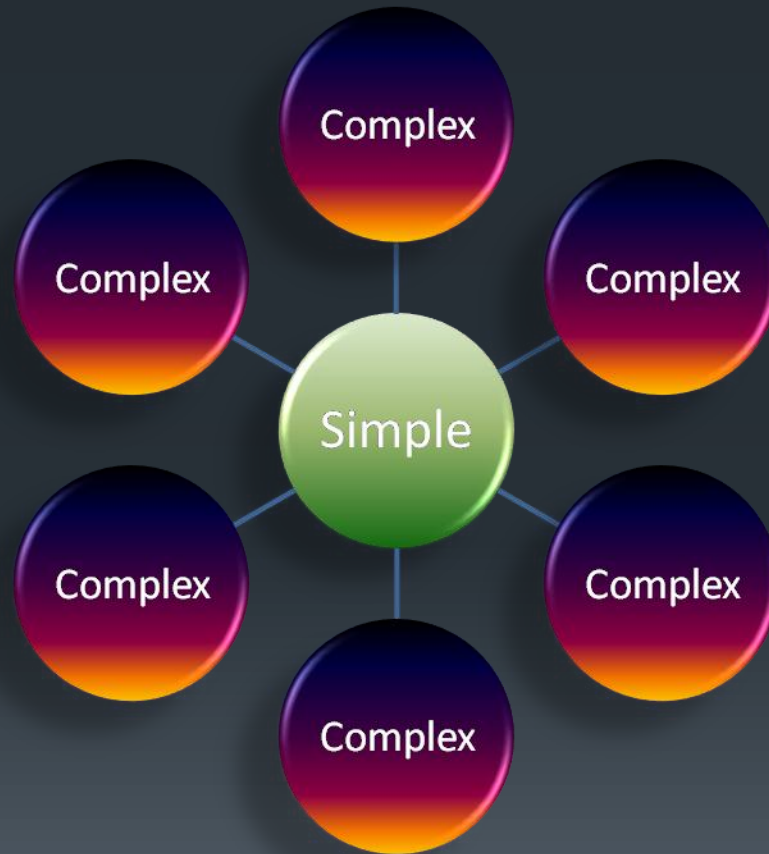
- Agent that subscribes to object will receive events that are generated in that zone for that object
- Non-subscribers may request objects to which they do not subscribe

# Virtual Zones

- Uses a “ZIS Infrastructure Agent”
  - Technically implemented as an agent
  - Becomes part of the infrastructure
  - Acts as a “Proxy Publisher”
    - Provides complex features to the infrastructure without requiring that the individual SIF agents provide them
    - Provides greater reliability because:
      - SIF agents do not need to implement complex functionality such as multi-zoning
      - The rules for handling such complexities are centralized and are exposed in a web-based interface so that they can be reviewed and independently verified, tested

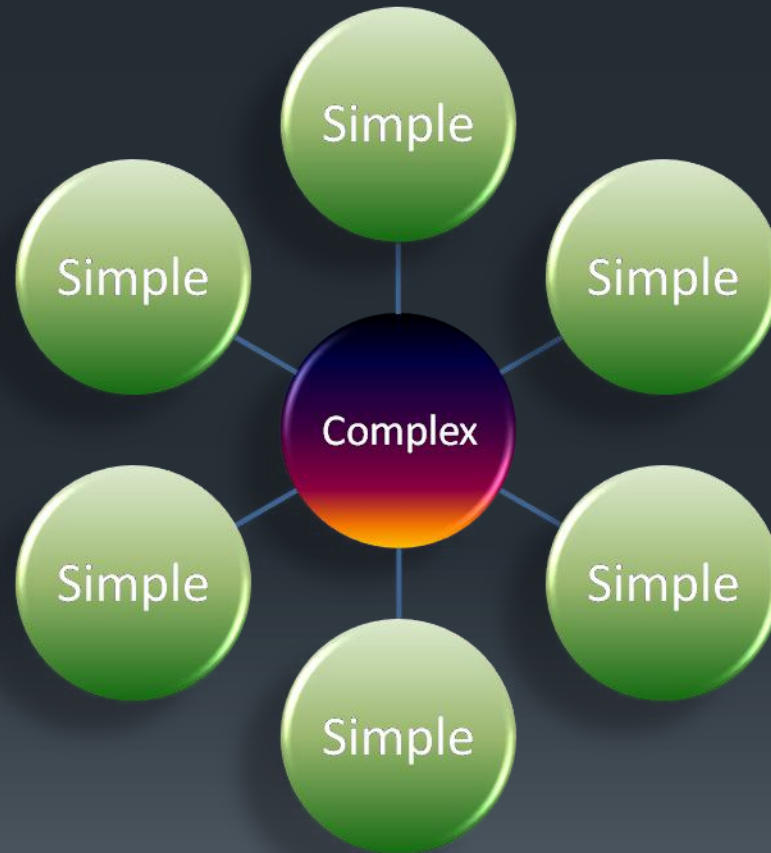
# Reliability – Without Virtual Zones

- Message passing framework sends messages transparently
- Network traffic levels high
- All endpoints (applications) must handle raw data independently
- No consistency among business rules



## Reliability – With Virtual Zones

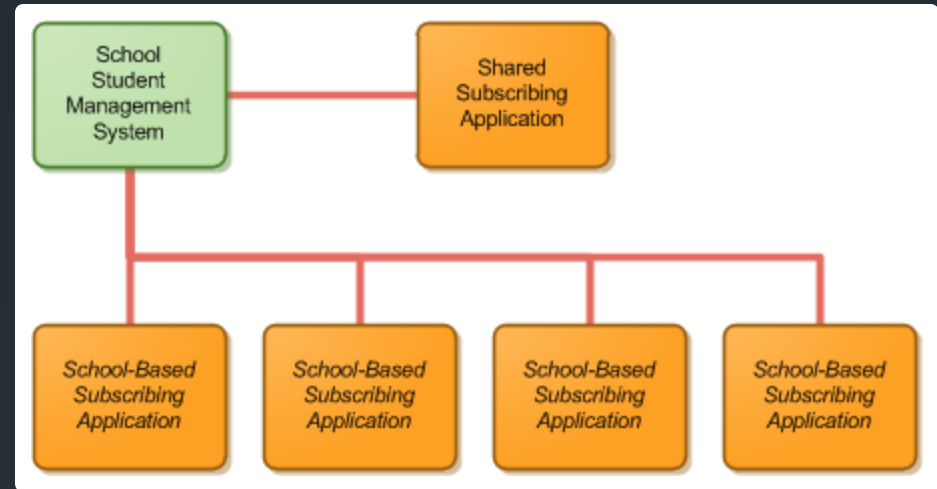
- Message passing framework manages zone complexities
- Network traffic is reduced
- Applications receive “cooked” records
- Business rules are consistent for all applications may be independently tested



# Zone Splitting

- Goals

- Give Subscribing Applications the ability to:
  - Request information by object, by school
- Support applications that would need school-based scope
- Help in conversion effort, so that when requests are done, they can easily be controlled by school.



# ZIServer

- Demo
  - Creating New Zones
  - Getting to Audits
  - Certificates
  - New Admin Tools