Annex 6,
Part 3:

Smallpox Post-Event Response

Outbreak Management System (OMS)

CDC Outbreak Management System (OMS)

1. Introduction

1.1 Overview

Based upon the requirement for data collection as a result of a bio-terrorism event, the CDC's Information Resource Management Organization (IRMO) has developed a client-server application for data collection that runs on laptops operated by CDC response teams.

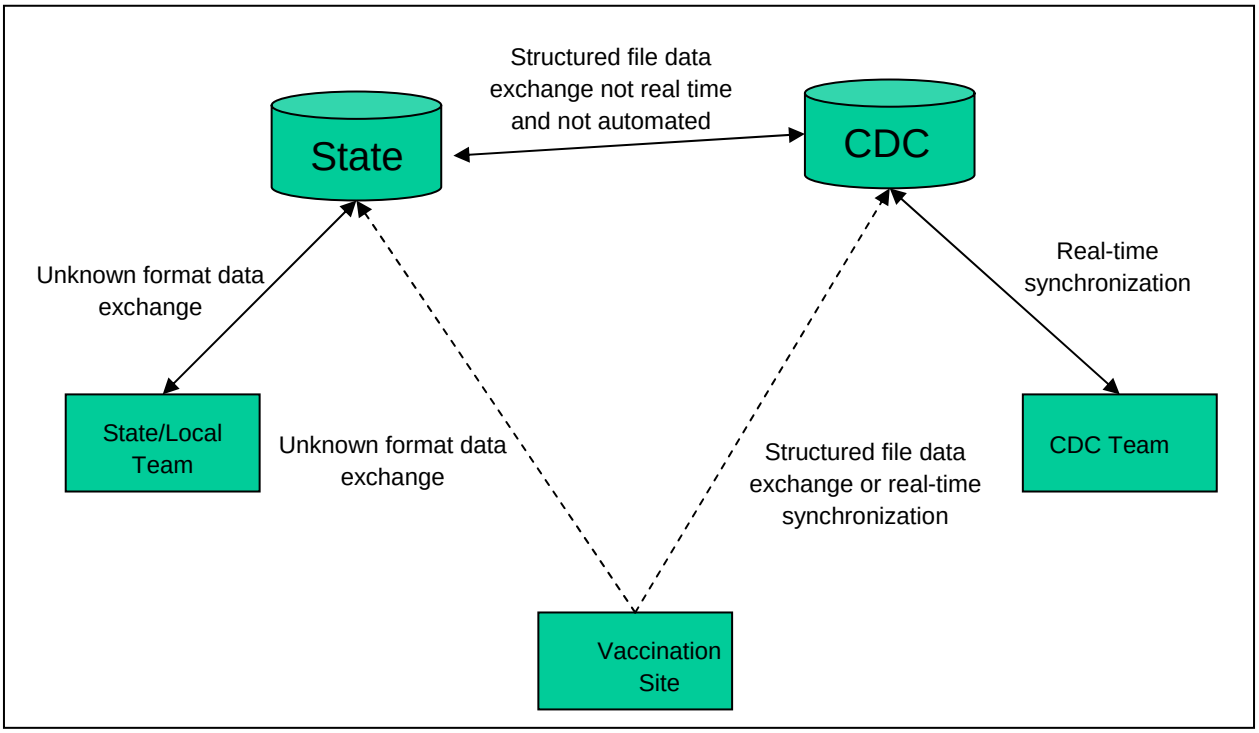
The **Outbreak Management System** (OMS) is a complete system to be deployed should a bio-terrorist event occur. The system includes both hardware and software to provide the CDC, and CDC field response teams, with a standardized and centralized data collection analysis tool. This tool can be accessed both at the CDC by event managers, as well as the CDC field response teams at the event site.

This system is being constructed in cooperation with the various CDC programs and offices associated with Class-A Agents (which are the first priority), as well as the Bio-terrorism Preparedness and Response Program (BPRP). The future goal of the system will be to incorporate functionality to respond to all biological, chemical, radiological agents used in terrorist events. The basis for the application is to capture the required response data and replicate it to the centralized data store located at the CDC.

1.2 Laptop Systems Requirements

- Developed databases to accumulate and link incoming data,
- Use NEDSS data standards,
- Specimen management,
- GPS, bar code reading,
- Communications tools,
- Intra-team and CDC,
- LAN and Internet connectivity,
- Secure data exchange, and
- Protocols, policies, guidelines and help documentation.

1.3 Possible Deployment Architecture

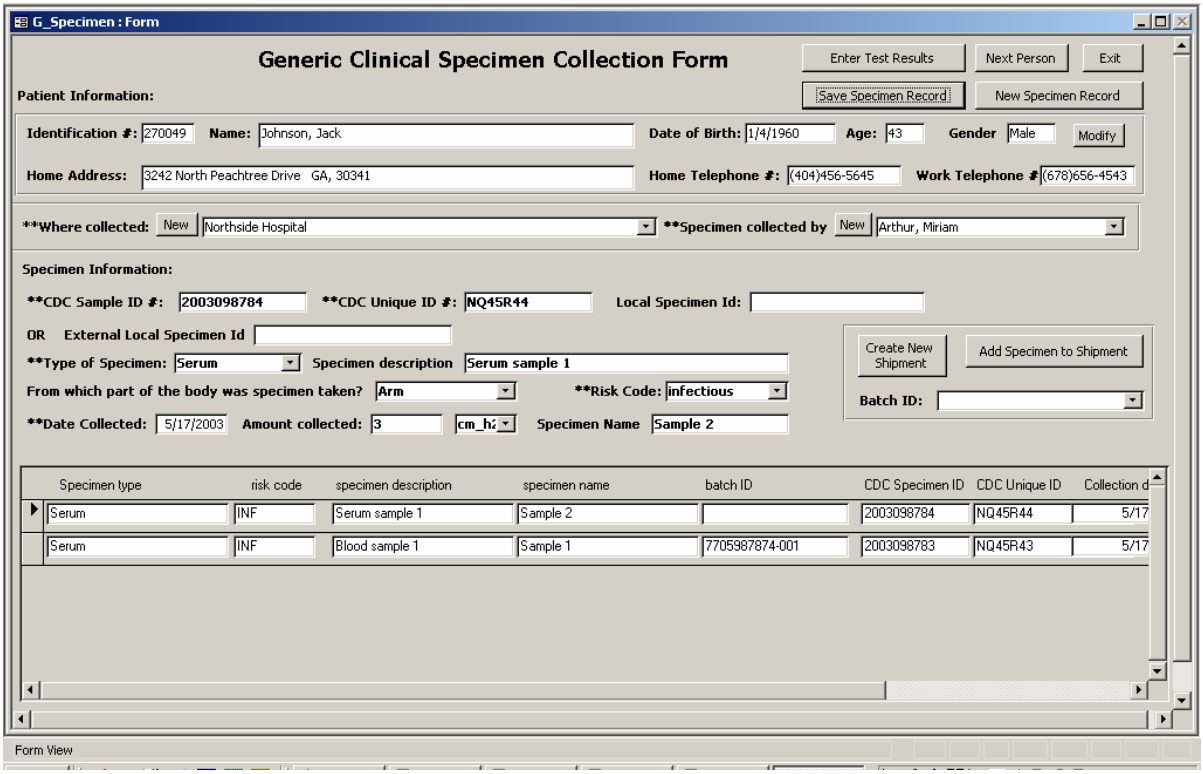


1.4 The OMS is one part of an overall system designed to manage case and contact vaccinations administered during the response due to a verified outbreak. An outbreak of smallpox is defined as a single laboratory defined case.

From a system standpoint, the total solution includes:

- ❖ System hardware functionality
  - Preloaded and tested OMS multi-laptop system ready for deployment,.
  - Designated server/master laptop with master MS SQL® database,
  - Ability for master laptop to periodically replicate data with a master database server at CDC headquarters,
  - Ability for individual response team laptops to replicate with the master database server at CDC headquarters, and
  - LAN in a bag – All hardware needed to network response laptops together.
- ❖ The OMS contains the following functionality
  - Patient demographics,
  - Vaccination records and history,
  - Organization information,
  - Location information, and
  - Material information.

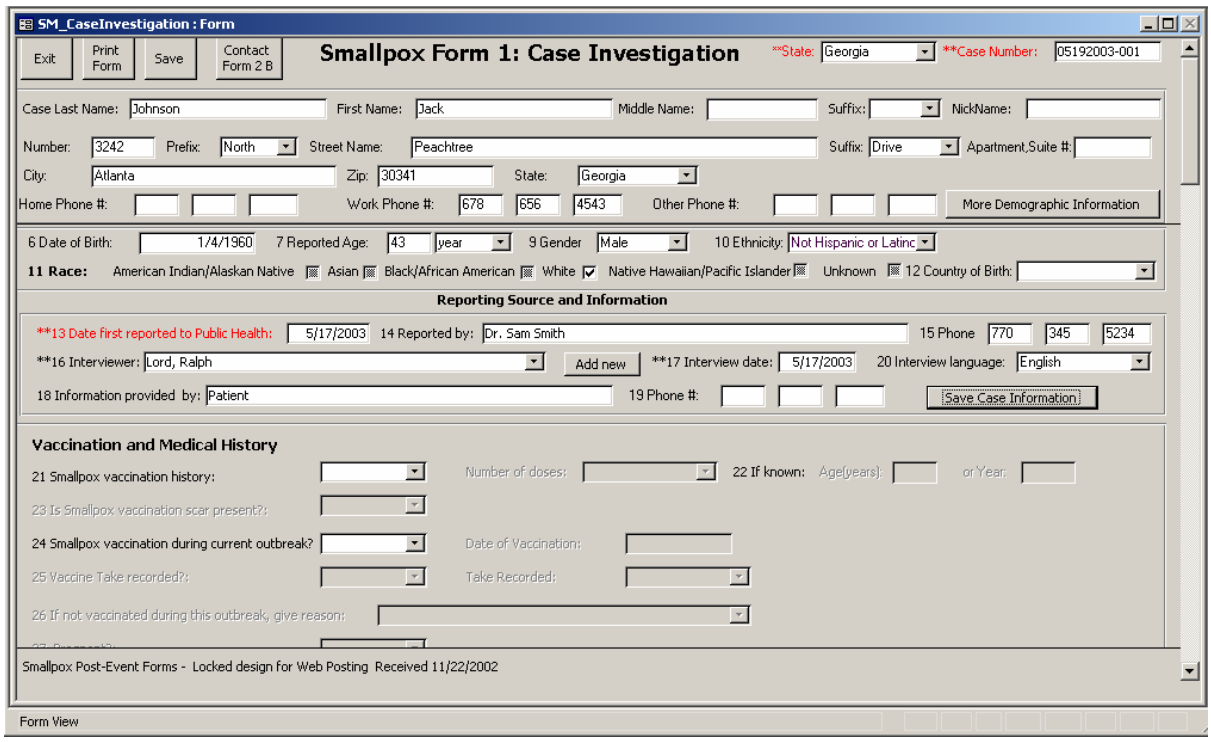
Specimen Collection and Lab Results Reporting:



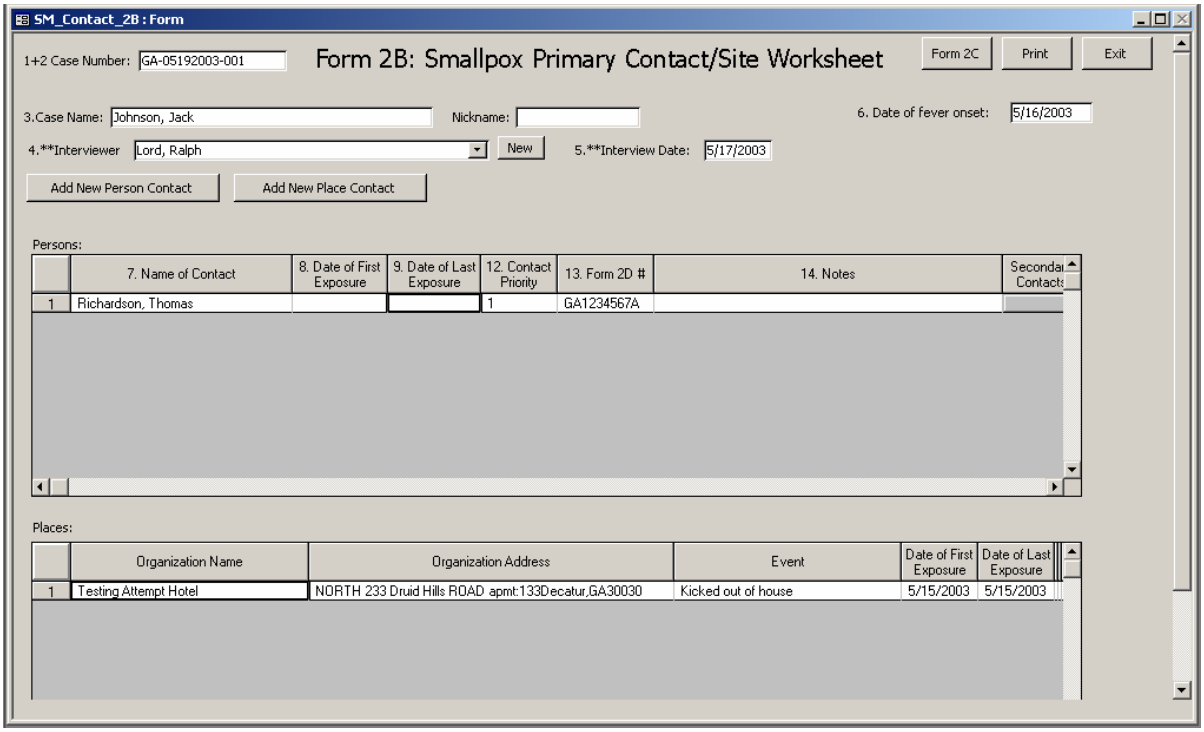
Smallpox Case Investigation Information:

- Off-line (disconnected from Internet) data collection ability,
- Replication capability to local team and centralized databases, and
- Reporting and data analysis.

Smallpox Case Investigation Information:



Smallpox Contact Tracing Information:



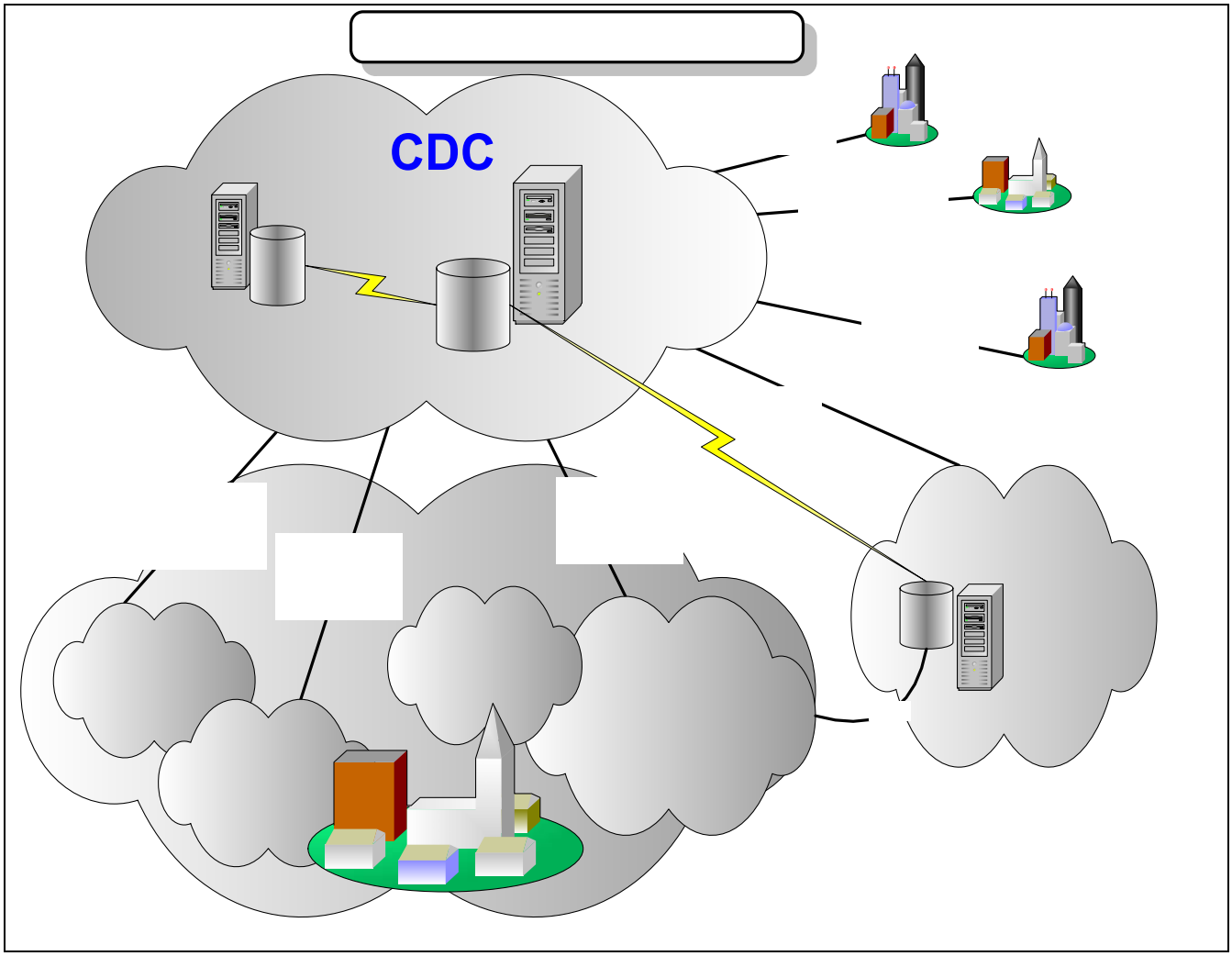
- Other features of this application include:
  - Administration
    - User ID and password creation,
    - Role creation and assignment,
    - Organization and clinic records creation, and
    - Automated SQL server authentication.
  - Reporting
    - Reports on data collected including patient information, vaccination history, incident location, specimen tracking, contact tracing, and case investigation history.

2. Architecture of OMS

- Original Scope:
  - Build an application to be used by CDC response teams that will function in both connected and disconnected modes,
  - Create a system that permits the collection and exchange of case, contact, specimen and result data in the field, as well as centralized data storage,
  - Provide data entry platform for post-event smallpox response and vaccination, and
  - Concentrate on providing functionality and connectivity to CDC teams in the first release of the application.
- Current Issues:
  - Requirement for use of application by state/local public health workers, and
  - Efficient data exchange with state/local and other partner systems.

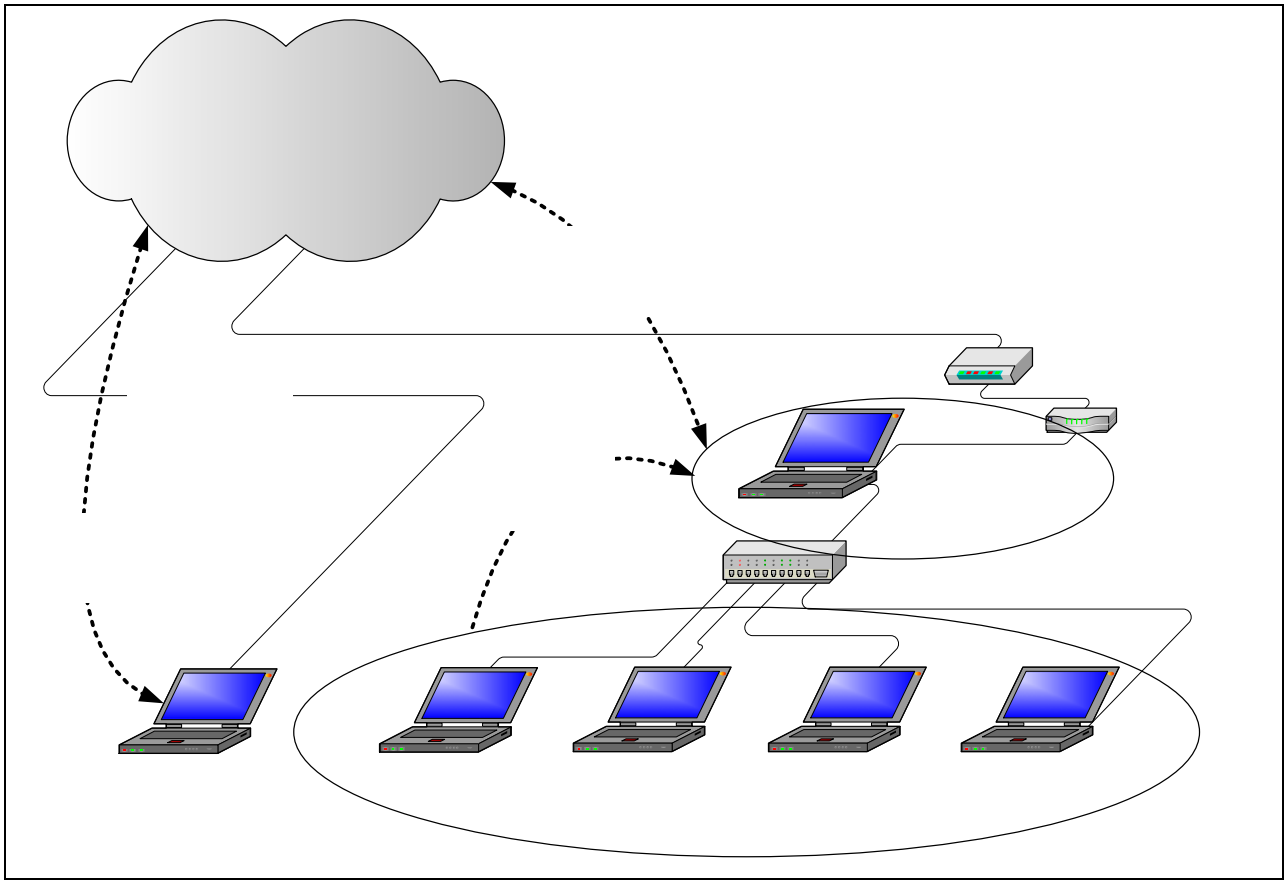
3. Conceptual Models

3.1 OMS − Data Relationships:



DB Replicated For Fail-Safe Access

3.2 OMS – System deployed at event site with DSL modem capability:



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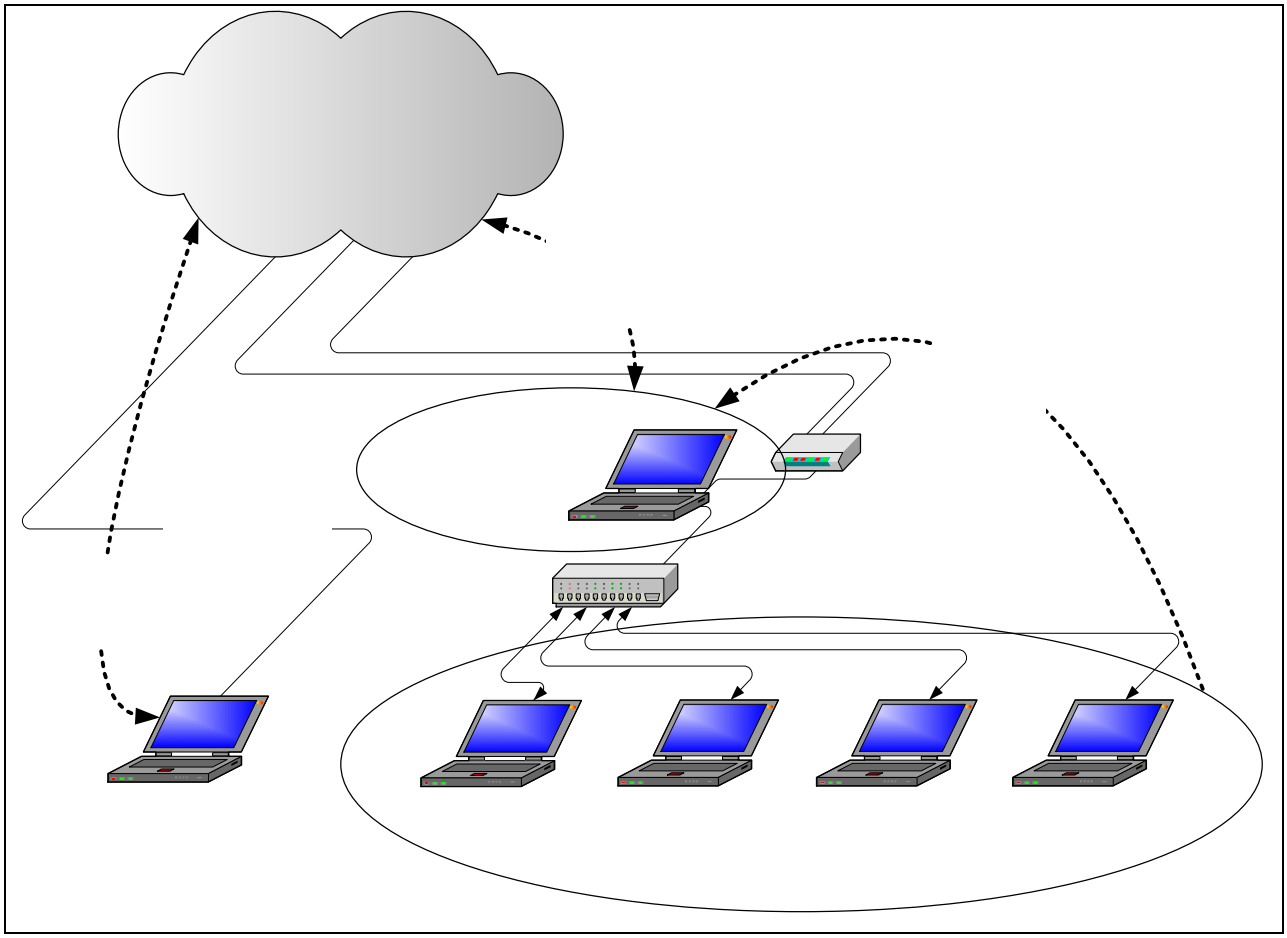
3.3 OMS – System deployed at event site with dial-up capability *only*:



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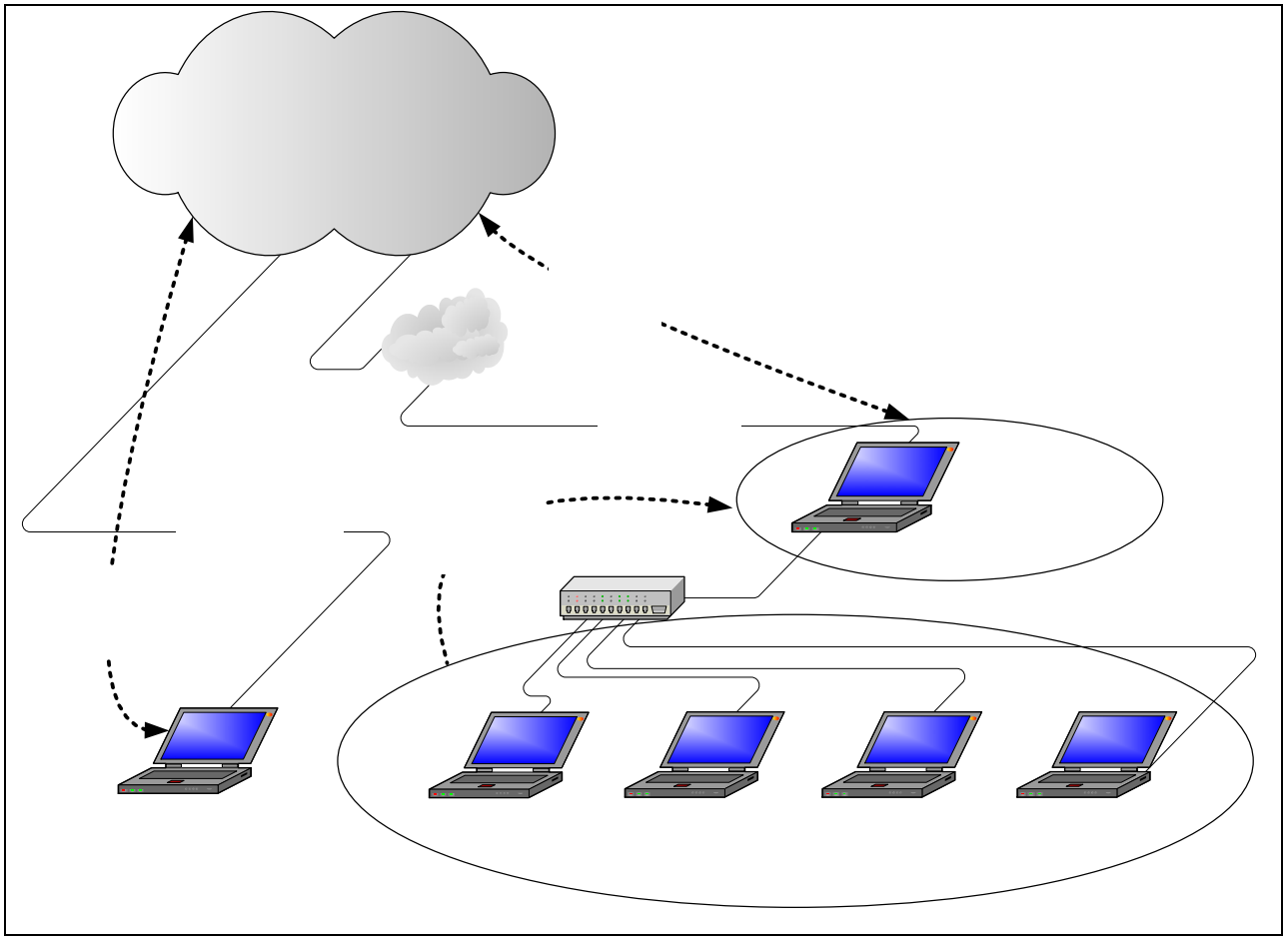
3.4 OMS – System deployed at event site with RS232 LAN/WAN capability (secure VPN Internet LAN/WAN connectivity):



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