

**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.

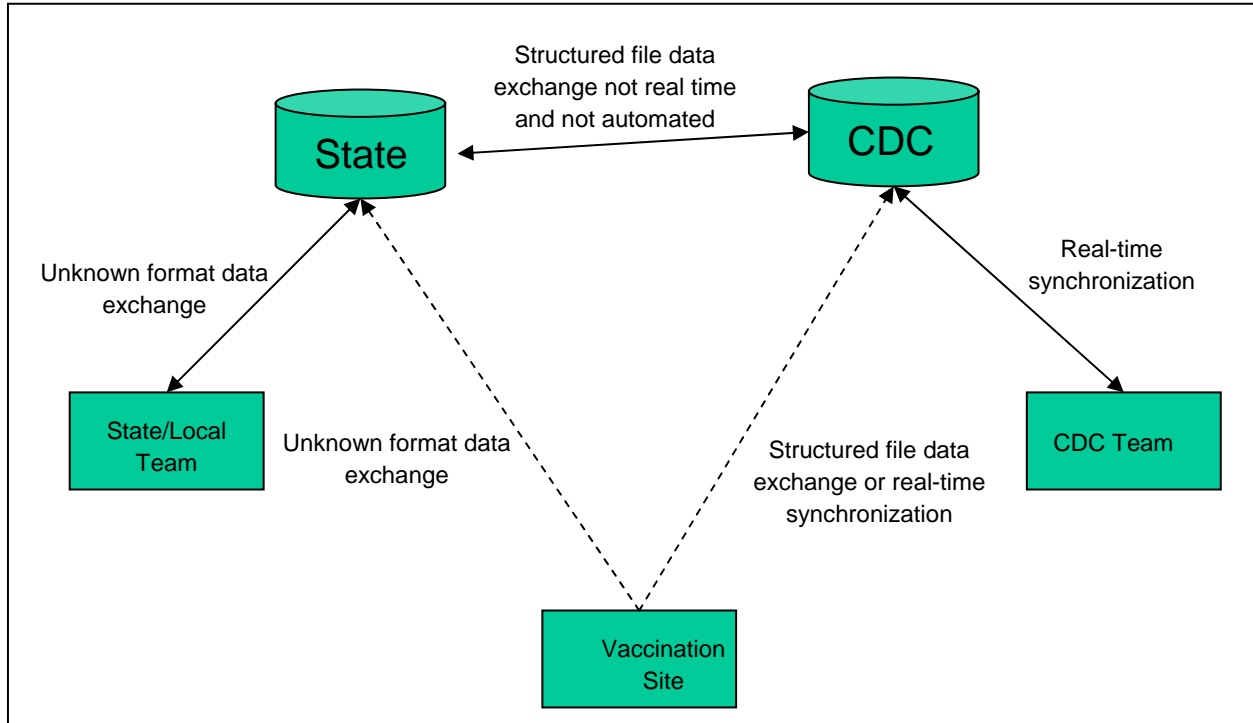
The **Outbreak Management System (OMS)** is a complete system to be deployed should a bio-terrorist event occur. The system includes both hardware and software to provide the CDC, and CDC field response teams, with a standardized and centralized data collection analysis tool. This tool can be accessed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

G_Specimen : Form
Enter Test Results Next Person Exit

Generic Clinical Specimen Collection Form

Save Specimen Record
New Specimen Record

Patient Information:

Identification #: 270049 Name: Johnson, Jack Date of Birth: 1/4/1960 Age: 43 Gender: Male Modify
 Home Address: 3242 North Peachtree Drive GA, 30341 Home Telephone #: (404)456-5645 Work Telephone #: (678)656-4543

**Where collected: New Northside Hospital **Specimen collected by: New Arthur, Miriam

Specimen Information:

**CDC Sample ID #: 2003098784 **CDC Unique ID #: NQ45R44 Local Specimen Id:
 OR External Local Specimen Id:

**Type of Specimen: Serum Specimen description: Serum sample 1 Create New Shipment Add Specimen to Shipment
 From which part of the body was specimen taken? Arm **Risk Code: infectious Batch ID:
 **Date Collected: 5/17/2003 Amount collected: 3 cm_h: Specimen Name: Sample 2

Specimen type	risk code	specimen description	specimen name	batch ID	CDC Specimen ID	CDC Unique ID	Collection d
Serum	INF	Serum sample 1	Sample 2		2003098784	NQ45R44	5/17
Serum	INF	Blood sample 1	Sample 1	7705987874-001	2003098783	NQ45R43	5/17

Form View

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:

SM_CaseInvestigation : Form

Smallpox Form 1: Case Investigation **State: Georgia **Case Number: 05192003-001

Exit Print Form Save Contact Form 2 B

Case Last Name: Johnson First Name: Jack Middle Name: Suffix: NickName:

Number: 3242 Prefix: North Street Name: Peachtree Suffix: Drive Apartment, Suite #:

City: Atlanta Zip: 30341 State: Georgia

Home Phone #: Work Phone #: 678 656 4543 Other Phone #: More Demographic Information

6 Date of Birth: 1/4/1960 7 Reported Age: 43 year 9 Gender: Male 10 Ethnicity: Not Hispanic or Latin

11 Race: American Indian/Alaskan Native Asian Black/African American White Native Hawaiian/Pacific Islander Unknown 12 Country of Birth:

Reporting Source and Information

**13 Date first reported to Public Health: 5/17/2003 14 Reported by: Dr. Sam Smith 15 Phone: 770 345 5234

**16 Interviewer: Lord, Ralph Add new **17 Interview date: 5/17/2003 20 Interview language: English

18 Information provided by: Patient 19 Phone #: Save Case Information

Vaccination and Medical History

21 Smallpox vaccination history: Number of doses: 22 If known: Age(years): or Year:

23 Is Smallpox vaccination scar present?:

24 Smallpox vaccination during current outbreak? Date of Vaccination:

25 Vaccine Take recorded?: Take Recorded:

26 If not vaccinated during this outbreak, give reason:

Smallpox Post-Event Forms - Locked design for Web Posting Received 11/22/2002

Form View

Smallpox Contact Tracing Information:

SM_Contact_2B : Form

1+2 Case Number: GA-05192003-001 **Form 2B: Smallpox Primary Contact/Site Worksheet** Form 2C Print Exit

3. Case Name: Johnson, Jack Nickname: 6. Date of fever onset: 5/16/2003

4. **Interviewer: Lord, Ralph New 5. **Interview Date: 5/17/2003

Add New Person Contact Add New Place Contact

Persons:

	7. Name of Contact	8. Date of First Exposure	9. Date of Last Exposure	12. Contact Priority	13. Form 2D #	14. Notes	Secondary Contact:
1	Richardson, Thomas			1	GA1234567A		

Places:

	Organization Name	Organization Address	Event	Date of First Exposure	Date of Last Exposure
1	Testing Attempt Hotel	NORTH 233 Druid Hills ROAD apt:133Decatur,GA30030	Kicked out of house	5/15/2003	5/15/2003

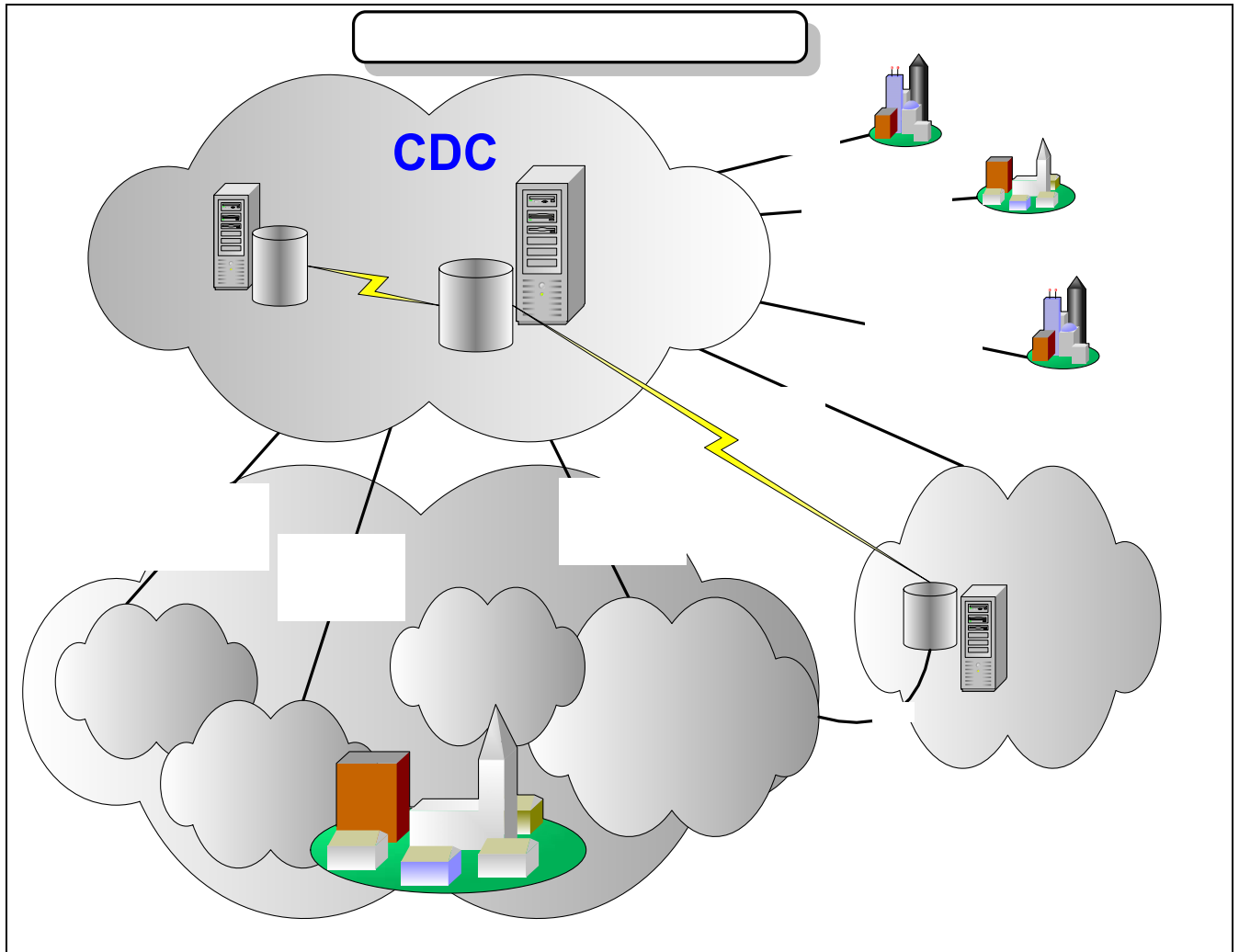
- ❖ Other features of this application include:
 - Administration
 - User ID and password creation,
 - Role creation and assignment,
 - Organization and clinic records creation, and
 - Automated SQL server authentication.
 - Reporting
 - Reports on data collected including patient information, vaccination 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.

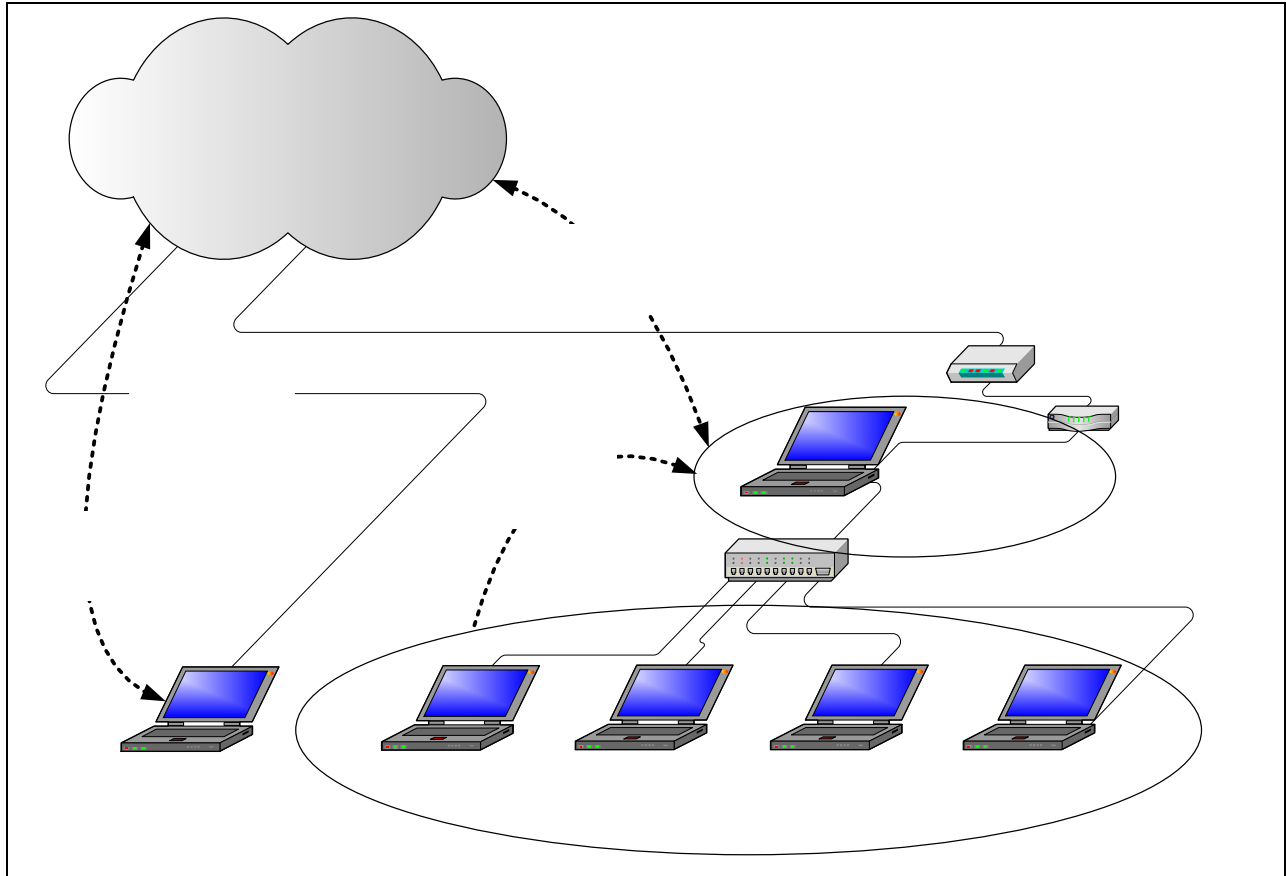
3. Conceptual Models

3.1 OMS – Data Relationships:



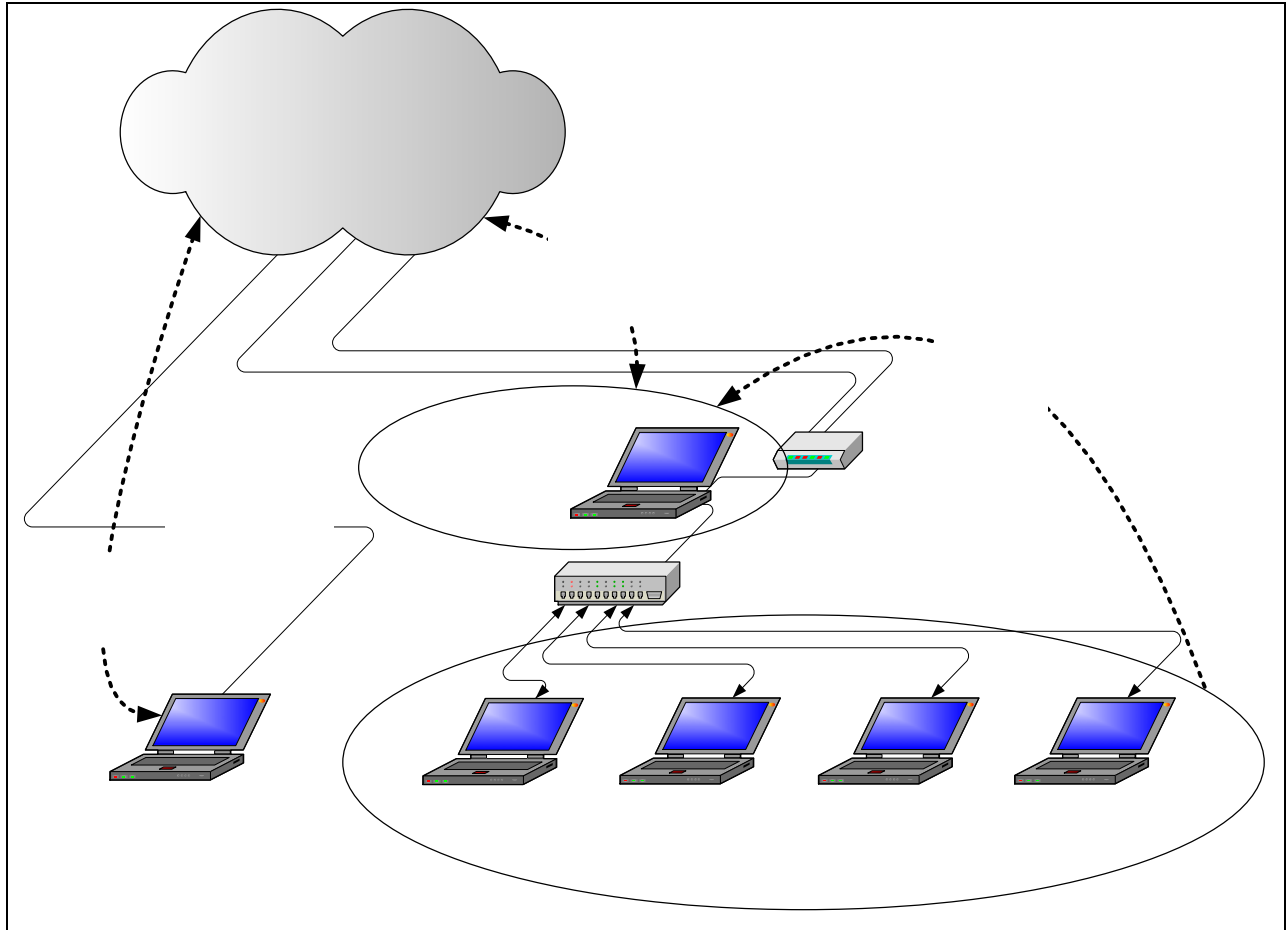
**DB Replicated
For Fail-Safe
Access**

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



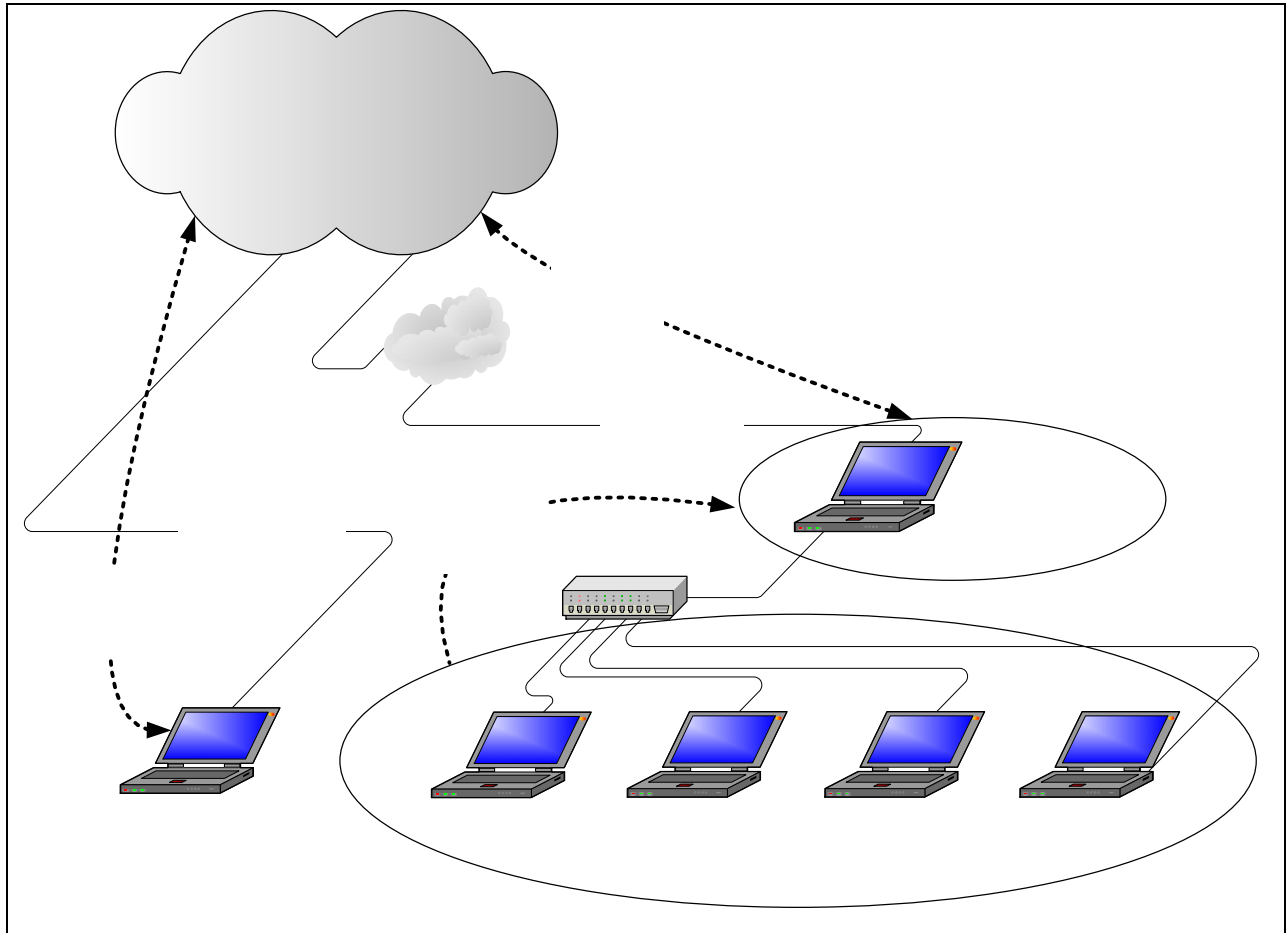
**CDC - Outbreak
Management
System
(OMS)**

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



**CDC - Out
Manager
System
(OMS**

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



**CDC - Out
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