THE AUTOMATED ELECTION SYSTEM
Transmission

The exclusion of certain components of the AES from review and certification, specifically the PCOS modem firmware and the non-implementation of Compensating Controls relating to transmission may have rendered the transmission infrastructure vulnerable to attacks or may have allowed the unauthorized access to data/reports for purposes of manipulating the same.

Republic Act 9369[1] (RA9369) mandated that the election reports be electronically transmitted[2]. The law also mandated the use of secure communication channels to transmit election reports.[3]

In response to this mandate, the Commission on Elections provided in its Request for Proposal[4] (RFP) the requirement for secure transmission[5].

RA9369 defines electronic transmission as "conveying data in electronic form from one location to other"[6]. This definition opened up the meaning of electronic transmission to include the conveyance by hand of electronic data stored in electronic storage devices, including Compact Flash (CF) cards used during the recent elections.

Transmission of reports followed a ladderized design as specified in RA9369 where the results of the voting at the precinct level are first transmitted to the City or Municipal Canvassing Center and to the servers of the majority political party, dominant minority party, the Kapisanan ng mga Brodkaster ng Pilipinas (KBP), and the accredited Citizens' Arm[7]. The results of the canvassing at each level are then transmitted to the next higher level of canvassing until these reach the National Boards of Canvassers[8]. In implementing the electronic transmission component of the Automated Election System, transmission to the majority political party, dominant minority party, KBP, and the Citizens' Arm was not done to the individual entities but rather to a single server which the four entities shared.

Field Test and Mock Elections

Transmission problems were encountered in all field tests and mock election exercises. (See separate report) The problems encountered were never demonstrated to have been resolved.

Election Day Transmission

Under the shadow of unresolved transmission problems, transmission of election reports between the period 7 p.m. and 10 p.m. on election day seemed uneventful and by 10 p.m. of that day 14million votes had already been counted.

Field Reports

Reports gathered from the field indicated transmission problems. In Pasay City, for example, as of 10 p.m. May 10, 2010 73 clustered precincts out of the more than 360 precincts have not transmitted the election returns. By 2 a.m. May 11, 2010 only 4 additional clustered precincts had transmitted their respective election returns. The Board of Canvassers had sent instructions to the Board of Election Inspectors of those

clustered precincts that have not yet transmitted to bring the CF Cards to the Pasay Canvassing Center so that the election returns may be uploaded directly into the CCS. Some CF cards were eventually received but the attempt to upload data from the first CF Card received failed because it was taking too long. The technician then present called up the national support center for assistance. He was advised that it could take at least 2 hours to upload the election returns from the CF Card. A file size of only 17KB would take two hours to copy from the CF Card to the laptop storage? There must be something wrong with the system. The Board of Canvassers decided to adjourn the proceedings at around 4 a.m., May 11, 2010 and resume at 1 p.m.

Other reported problems that may have delayed the transmission of election returns from clustered precinct include sharing of wireless modems by a number of clustered precinct and reports of wireless modem antennas falling of the modem thus interrupting the transmission.

Field reports indicate that the failure of PCOS machines in some areas forced the Board of Election Inspectors to transport the ballots to their assigned canvassing center and scan the ballots themselves in the PCOS machines which were made available for the purpose.

Transmission Review[9]:

On May 17, 2010, the percentage of data received by various servers were reported as follows:

- Stakeholders' Workstations connected to the Pius Server viewing through REIS were at approximately 89% complete.
- The Comma Separated Value files (CSV) sent by the Comelec Central and Backup Servers to the Pius workstations were at approximately 90.17% complete.
- The Comelec announced that based on the reports form the CCS laptops on the field, they were already approximately 96% complete.

The discrepancies noted a week after the elections has never been explained.

Telecommunications Coverage[10]:

Reports prior to the elections indicated that the Smartmatic/TIM survey of the telecommunications coverage was 93% complete. The survey concludes that 65% of the country has coverage, 20% definitely has no connectivity, and 12% failed the tests for conducted for various reasons. The survey further concluded that only a portion of the country has GPRS facilities that are capable of wirelessly transmitting election data. GPRS coverage is mostly in the cities and major municipalities. There were around 13,000 sites that had no GPRS or any alternative facilities for data transmission, that is, no DSL, cable, or dialup internet.

To provide coverage to various areas, Broadband Global Area Network terminals were used to transmit data between points using satellite facilities.

Anomalies[11]:

- First PCOS Transmission received was in Datu Odin Sinsuat, Maguindanao, clustered Precinct CP 23 0084A, 0085A, Barangay, Benolen. Received by the Comelec server on May 10, 2010 at 5:42 p.m.
- The last PCOS transmission was received by the Comelec server on May 17, 2010 at 9:29 p.m.

The table below shows that despite concerns of transmission problems already raised to Comelec on election day, ARMM had consistent transmissions and is the only region that transmitted from May 10-17, 2010.

Reception Date	10-May	11-May	12-May	13-May	14-May	15-May	16-May	17-May
ARMM	393,196	362,917	19,466	12,966	10,686	2,832	494	3,211
CAR	434,729	113,945	2,200	502	628			
CARAGA	610,037	266,783	3,774	3,908	561			
I	1,373,446	390,722	63,166	127,671	616			
II	942,736	233,038	4,525	3,200				
III	3,069,912	561,120	76,931	111,798	20,767	435	814	
IV-A	3,488,514	842,949	68,054	1,515				
IV-B	612,416	290,105	7,095	2,379	1,617	341		
IX	632,289	347,523	4,306	317				164
NCR	3,510,452	519,179	23,852	5,240	1,275			
V	1,145,087	730,340	3,045	4,008				
VI	1,725,641	795,954	35,012	2,049	380			
VII	1,254,045	1,043,686	6,880					
VIII	787,918	610,793	7,729	9,542	823			
X	1,027,938	441,829	4,733	842				
XI	1,038,243	515,983	5,364	7,646	528			
XII	842,272	366,725	11,239	2,694				

The period of about a week is certainly too long for an automated elections.

SysTest Lab Report:

SysTest Labs commented in its report: "As the modem firmware was not subjected to full certification process and is required for transmission, Comelec should request source code from Smartmatic and have a thorough review conducted prior to May 10, 2010."

SysTest Labs also recommended: "A final complete, dry run through the reporting hierarchy should be executed prior to election day, in order to validate that all necessary components are indeed in place. SysTest's experience has indicated that missing data may not surface until the reporting structure is executed.

TEC Certification

The Technical Evaluation Committee disclosed that certain components of the AES were not submitted for review and certification. TEC Resolution No. 2010-002 dated March 9, 2010 states in part:

"FURTHER RESOLVED, as it hereby RESOLVES, to state that this certification excludes the public website, KBP server, central server, back-up central server, election system DNS server, PCOS modem firmware, and ballot production tool, which were not submitted for full certification testing."

Conclusion

The exclusion of certain components of the AES from review and certification, specifically the PCOS modem firmware and the non-implementation of Compensating Controls relating to transmission may have

rendered the transmission infrastructure vulnerable to attacks or may have allowed the unauthorized access to data/reports for purposes of manipulating the same.

The COMELEC missed the opportunity to validate that all necessary components are in place and are performing as intended by not executing a final and complete dry run of the AES as recommended by SysTest Labs. Had COMELEC done so, the reported errors like varying date/timestamps on the PCOS and the erroneous registered voters count would have been observed and final corrections to the AES instituted prior to election day.

There is a need to conduct of full technical review of the transmission to fully explain the transmission irregularities.

As it turned out, the COMELEC and Smartmatic ran out of time due to the extremely tight project schedule. *EU-CenPEG Project 3030*

End Notes

1 Republic Act No. 9369, "AN ACT AUTHORIZING THE COMMISSION ON ELECTIONS TO USE AN AUTOMATED ELECTION SYSTEM IN THE MAY 11, 1998 NATIONAL OR LOCAL ELECTIONS AND IN SUBSEQUENT NATIONAL AND LOCAL ELECTORAL EXERCISES, TO ENCOURAGE TRANSPARENCY, CREDIBILITY, FAIRNESS AND ACCURACY OF ELECTIONS, AMENDING FOR THE PURPOSE BATAS PAMPANSA BLG. 881, AS AMEMDED, REPUBLIC ACT NO. 7166 AND OTHER RELATED ELECTIONS LAWS, PROVIDING FUNDS THEREFOR AND FOR OTHER PURPOSES"

2 See Section 19 of RA9369 which amended Section 18 of RA8436 into Section 22 and Section 20 of RA9369 which amended Section 21 of RA8436 into Section 25.

3 See Section 8 of RA9369 which amended RA8436 by adding a new Section 7 and Section 39 of RA9369 which amended Section 28 of RA7166

4 REQUEST FOR PROPOSAL for Solutions, Terms & Conditions for the Automation of the May 10, 2010 Synchronized National and Local Elections

5 See RFP Section II. Item 4

6 See Section 2 of RA9369 which amended Section 2 of RA8436

7 See Section 19 of RA9369 which amended Section 18 of RA8436 into Section 22

8 See Section 20 of RA9369 which amended Section 21 of RA8436 into Section 25

9 Based on the report of Atty. Ronald Solis

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11 Based on the report of Atty. Ronald Solis